18 TERRESTRIAL HABITATS AND ECOLOGY

18.1 The table below provides a list of all the supporting studies which relate to terrestrial habitats and ecology. All supporting studies are provided on the accompanying CD.

Details of study	Location on supporting studies CD
Extended Phase 1 Habitat Survey Report – MeyGen (Xodus, 2011a)	ONSHORE\Phase 1 Habitat Survey

18.1 Introduction

18.2 This section addresses impacts of the onshore component of the Project specific to terrestrial ecology, focusing on impacts to terrestrial habitats and protected species. This assessment was undertaken by Xodus.

18.3 This section deals solely with terrestrial ecology impacts, focusing on terrestrial habitats and protected terrestrial species (bat species, otter, Scottish wildcat, badger, water vole, red squirrel, amphibian and reptile species) with consideration of nature conservation issues. Impacts on bird species are considered and assessed separately in the ornithology section, Section 12. Additionally, impacts on marine mammals and fish species, including anadromous salmonid species and commercial marine fish species are assessed in Sections 13, and 14, respectively.

18.4 Statutorily protected sites are also considered in this section and in the separate Habitats Regulations Appraisal (HRA) report, the results of which have been reported separately to the Environmental Statement (ES) (MeyGen, 2012).

18.2 Assessment Parameters

18.2.1 Rochdale Envelope

18.5 In line with the Rochdale Envelope approach, this assessment considers the maximum ('worst case') project parameters. Identification of the worst case scenario for each receptor (i.e. Environmental Impact Assessment (EIA) topic) ensures that impacts of greater adverse significance would not arise should any other development scenario be taken forward in the final scheme design. Table 18.1 describes the detail of the project parameters that have been used in this assessment and explains why these are considered to be worst case. The potential impacts from alternative Project parameters have been considered in Section 18.9.

Project parameter relevant to the assessment		'Maximum' Project parameter for impact assessment	Explanation of maximum Project parameter
Onshore Power Conversion Centre (PCC)	Construction, operation / maintenance and decommissioning	Maximum potential footprint at both Ness of Quoys and Ness of Huna (at EIA commencement)	Assessment of potential impacts associated with the construction, operation and maintenance activities and decommissioning of the Power Conversion Centre (PCC) at both the Ness of Huna and Ness of Quoys maximum potential footprint.
Onshore cable routes between PCC and SHETL substation	Construction, operation / maintenance and decommissioning	All potential cable corridors between PCC locations and SHETL substation proposed at Phillips Mains (at EIA commencement)	Assessment of potential impacts associated with all potential cable corridors identified between PCC locations and SHETL substation proposed at Phillips Mains.
Cable landfall	Horizontal Directional Drill (HDD) site	Maximum potential footprint at both Ness of Quoys and Ness of Huna (at EIA commencement)	Assessment of potential impacts associated with the construction, operation and reinstatement of the temporary HDD site at both the Ness of Huna and Ness of Quoys maximum potential footprint.
Offshore Project components		N/A	The offshore Project parameters do not influence the terrestrial habitats and ecology impact assessment.

Table 18.1: Rochdale Envelope parameters for the terrestrial habitats and ecology assessment

18.2.2 Area of assessment

18.6 It is also important to define the geographical extent of the assessment area. The focus of the terrestrial habitats and ecology assessment is on the potential for impacts on areas that could be directly impacted by the onshore the Project infrastructure and adjacent areas.

18.7 It should be noted that since this assessment was completed on a more extensive Project area (Figure 18.2), this has since been refined to a smaller footprint at both the Ness of Quoys and Ness of Huna PCC sites and a single cable corridor to the SHETL substation option areas. The final Project is described in Section 5 and shown in Figure 5.2; the selection process for these is discussed in Section 4. The potential mitigation measures proposed in this ES section should be considered as the maximum list of required mitigation relevant to terrestrial ecology impacts. The definition of final required mitigation measures will be addressed as part of the European Protected Species (EPS) licence regime and any scheme of mitigation will be included in the Environmental Management Plan (EMP).

18.8 **Following the completion of the EIA, landowner consultation has identified potential issues with small areas of the proposed cable route. It has therefore been necessary to include areas outside that surveyed for the onshore impact assessments. The area is 0.50km^2 and is shown in Figure 2.1. Unfortunately this issue was not identified at the time of ES compilation and therefore is not addresses in this document. Work to survey and assessment of any changes required to the original impact assessment as a result of the altered cable route is ongoing and will be provided in an ES addendum.**

18.3 Legislative Framework and Regulatory Context

18.3.1 Legislation

18.9 In addition to the EIA Regulations the following legislation relevant to the assessment of terrestrial ecology includes the following:

- Statutorily protected sites: 'Habitats Directive' (Directive 92/43/EEC) and the 'Birds Directive' (Directive 79/409/EEC). The Habitats Directive is implemented by the Conservation (Natural Habitats, &c) Regulations 1994 (as amended);
- The Habitats Regulations 1994 (as amended in Scotland) implements species protection requirements of the Habitats Directive in Scotland, on land and in inshore waters;
- Wildlife and Countryside Act 1981, as amended by the Nature Conservation (Scotland) Act 2004;
- Wildlife and Natural Environment (Scotland) Act 2011;
- UK Biodiversity Action Plan (UK BAP); UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992 in Rio de Janeiro; and
- Scottish Biodiversity List.

18.3.2 Policy and guidance

18.10 In addition to EIA guidance published by Marine Scotland and Scottish Natural Heritage (SNH), the following guidance has been taken into account during this assessment:

- The Scottish Planning Policy (SPP) (paragraphs [37, 77, 93,102,126,129,134,137, 39, 142, 143, 144, 145, 146 and 147]);
- PAN 60 Planning for Natural Heritage;
- Scottish Government Interim Guidance on European Protected Species, Development Sites and the Planning System;
- The Scottish Biodiversity Strategy;
- Institute of Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment in the United Kingdom (2006); and
- The Highland Council's Caithness Local Plan (2002) and the Highland Council's Structure Plan (2001)[1]. These will be supplemented and eventually superseded by the Highland-wide Local Development Plan (HwLDP)[2].

18.4 Assessment Methodology

18.11 The impact assessment considers the likely effects of the Project on terrestrial ecology receptors (i.e. terrestrial habitats and species) which may occur during the following phases of development; construction and installation, operation (including maintenance activities) and decommissioning. Consideration of variance in impacts (accounting for different Project options) will also be given due consideration; in addition to potential for cumulative impacts arising from other proposed developments occurring in the vicinity of the Project. The sections below outline the assessment methodology including results of the scoping and consultation process, baseline data collection (i.e. desk based study and field survey) and the criteria employed to assess significance of impacts within the impact assessment.

18.4.1 Scoping and consultation

18.12 Since commencement of the Project, consultation on terrestrial habitat and ecology issues has been ongoing. Table 18.2 summarises all consultation relevant to terrestrial habitats and ecology. In addition, relevant comments from the EIA Scoping Opinion are summarised in Table 18.3, together with responses to the comments and reference to the ES sections relevant to the specific comment.

Date	Stakeholder	Consultation	Topic / specific issue
7th April 2011	Marine Scotland and SNH	Pre-scoping meeting	EIA surveys and studies required and the data requirements for each EIA study.
27th May 2011	Marine Scotland, statutory consultees and non statutory consultees	Submission of EIA Scoping Report	Request for EIA Scoping Opinion from Marine Scotland and statutory consultees, and request for comment from non statutory consultees.
30th June – 2nd July 2011	Local stakeholders	Public event - EIA Scoping Report	Public event to collate information / opinions on proposed EIA scope.
8h August 2011	Marine Scotland and SNH	Submission of document for comment	Submission of HRA Screening Report.
9th August 2011	SNH	Submission of document for comment	Submission of the report of the extended Phase 1 habitat survey.
22nd August 2011	SNH	Letter	Comments on extended Phase 1 habitat survey report.
30th August 2011	Scottish Environment Protection Agency (SEPA)	Submission of draft ES sections	Copy of draft Geology, Hydrology & Hydrogeology and Terrestrial Habitats ES sections provided for comment.
12th September 2011	SEPA	Letter	Comments received on draft Geology, Hydrology & Hydrogeology and Terrestrial Habitats ES sections.
14th September 2011	The Highland Council (THC)	Meeting	Planning pre-application meeting. Presentation on overall Project and results of EIA studies to date.
30th September 2011	Marine Scotland and SNH	Letter	Response to HRA Screening Report.
31st September 2011	Marine Scotland, The Highland Council, statutory consultees and non statutory consultees	Receipt of EIA Scoping Opinion	Receipt of response to EIA Scoping Report and other comments from non statutory consultees.
10th October 2011	THC	Receipt of pre application advice	Receipt of pre application advice from TCH
2nd November 2011	Marine Scotland and SNH	Meeting	EIA progress and HRA discussion.
6th – 7th December 2011	Local stakeholders	Public event – pre application consultation	Public event to communicate the findings of the EIA to local stakeholders.
2nd March 2012	Marine Scotland and SNH	Meeting	Final meeting to close out HRA approach to the Project.

Table 18.2: Consultation undertaken in relation to terrestrial habitats and ecology

Name of organisation	Key concerns	Response	ES section within which the specific issue is addressed
SNH Response to extended Phase 1 habitat survey report	On the basis of information available to date, it appears unlikely that Stroupster Peatlands SSSI (the most northerly component of the Peatlands of Caithness and Sutherland Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site) will be affected. The potential for indirect effects due to disturbance of birds may need further assessment as the design, and more specifically, construction methods become clearer.	Potential for disturbance to bird species during the construction phase is considered within the impact assessment.	Indirect disturbance to bird species is considered in the ornithology section, Section 12. HRA Report (MeyGen, 2012).
SNH Response to extended Phase 1 habitat survey report	The presence of otters, particularly in coastal habitats adjacent to the Project footprint requires further investigation once the cable landfall location is confirmed and when proposals for horizontally directionally drilling have been developed. Assessment should consider impacts on otter as a European Protected Species (EPS) and establish if there could be connectivity with Caithness and Sutherland Peatlands SAC, for which otter is a qualifying interest. Information should be sufficient to allow SNH and the competent authority to determine if there could be a	An otter survey will be commissioned once the onshore cable landfall location is confirmed and proposals for horizontal directional drilling developed. This will include assessment for potential connectivity with Caithness and Sutherland Peatlands SAC.	For consideration of impacts to otters, refer to Section 18.6.4 Impact 18.4: Disturbance to otters, Section 18.7.1 Impact 18.6: Temporary disturbance to otters during maintenance operations and Section 18.8.2 Impact 18.8: Temporary disturbance to otters during decommissioning operations. HRA Report (MeyGen,

[1] Still in force at time of EIA and ES compilation.

[2] Not adopted at the time of EIA and ES compilation.

Name of organisation	Key concerns	Response	ES section within which the specific issue is addressed
	significant effect and thus whether an appropriate assessment would be required.		2012).
SNH Response to extended Phase 1 habitat survey report	SNH support the extended Phase 1 habitat survey report findings on bats, breeding bird habitat and water voles and support proposals for future assessment of these species.	Further, targeted protected species surveys where relevant, will be undertaken in future as the Project develops.	Refer to extended Phase 1 habitats survey report which is available on the accompanying supporting studies CD (Xodus, 2011a.
SNH Scoping Advice	Caithness and Sutherland Peatlands SAC: advice on otters The potential options for cabling and onshore works are within the home range (10-20km) of otters from this designated site. Boat movements, cable laying, directional drilling and other construction activity may also give rise to disturbance of otters. Additionally, there may be impacts to their prey species (particularly marine fish species), either from placement of infrastructure or due to noise. SNH advise that there is potential for the proposal to have likely significant effect on otters, a designatory feature of Caithness and Sutherland Peatlands SAC.	Impacts to otters will be considered within the EIA; including potential for disturbance during the construction, operation and decommissioning Project phases, with consideration of potential for likely significant effect on the otter qualifying interest of the Caithness and Sutherland Peatlands SAC.	For consideration of impacts to otters, refer to Section 18.6.4 Impact 18.4: Disturbance to otters, Section 18.7.1 Impact 18.6: Temporary disturbance to otters during maintenance operations and Section 18.8.2 Impact 18.8: Temporary disturbance to otters during decommissioning operations HRA Report (MeyGen, 2012).
SNH Scoping Advice	Based on the conservation objectives of Caithness and Sutherland Peatlands SAC, the following questions need to be addressed in an appropriate assessment, focussing on the potential impacts of the proposal on the otter population of the Caithness and Sutherland Peatlands SAC: Will the proposal cause significant disturbance to otters while they are outwith the SAC, such that the viability of this SAC population will be affected? Will the proposal affect the viability of the SAC population of otters in any way? Further information on cabling and on-shore infrastructure is required to assess whether there will be any direct disturbance to otters, including their potential displacement from foraging grounds and other supporting habitats.	Potential impacts of disturbance to otters are given due consideration within the EIA and within the separate HRA process. The status and distribution of otters within the Project footprint and surrounding environment is not currently known. Further ecological investigation will be undertaken to ascertain otter presence, to enable accurate assessment of potential impacts to this protected species and to inform mitigation. Mitigation against disturbance to otters (throughout the Project duration) has been proposed. Where disturbance cannot be avoided, application for a European Protected Species Licence will be undertaken.	For consideration of impacts to otters, refer to Section 18.6.4 Impact 18.4: Disturbance to otters, Section 18.7.1 Impact 18.6: Temporary disturbance to otters during maintenance operations and Section 18.8.2 Impact 18.8: Temporary disturbance to otters during decommissioning operations. HRA Report (MeyGen, 2012)
Royal Society for the Protection of Birds (RSPB)	Special Protection Areas (SPAs) considered in subsequent ornithological studies should not be limited to those on or adjoining the coast.	All SPA's occurring in the surrounding environment (and not limited to those occurring on the coast) have been given due consideration (refer to Figure 18.1).	Consideration has also been given to potential for impact on relevant SPAs within the Habitat Regulations Appraisal. HRA Report (MeyGen,

Name of organisation	Key concerns	Response	ES section within which the specific issue is addressed
			2012). Ornithological issues are considered separately in Section 12.
Mary Legg, local ecologist	Indicated there are records of *Colletes succinctus* (bee) in Scotland's Haven and also the small white orchid (*Psuedorchis albida*) which is rare in Caithness.	Data available from the local biological records centre and further consultation with Mary Legg concluded these records were out with the assessment area / potential onshore footprint for the Project. These species were not recorded during the extended Phase 1 habitats survey.	N/A

Table 18.3: Scoping comments relevant to terrestrial habitats and ecology

18.4.2 Desk based assessment

18.13 A desk based assessment (DBA) identified the following statutorily protected sites in the vicinity of the Project footprint; Caithness and Sutherland Peatlands SAC, SPA and Ramsar site, located 0.16km from the southern boundary of the Project footprint and Philips Main Mire Site of Special Scientific Interest (SSSI), located approximately 0.55km to the south-east of the Project footprint. Notably, these protected sites are classified by SEPA as Water Dependant Conservation Areas. Caithness and Sutherland Peatlands SAC, SPA and Ramsar site (including Stroupster Peatlands SSSI) and Phillips Main SSSI are considered sufficiently remote as not to be affected by the proposed development (Figure 18.1).

18.14 A detailed DBA was undertaken for the provision of comprehensive background information to inform and guide the field survey. Data sources consulted as part of the desk-based assessment included the following:

- Multi Agency Geographic Information for the Countryside (MAGIC) (http://magic.defra.gov.uk/default.htm);
- National Biodiversity Network website (http://www.nbn.org.uk/);
- UK Biodiversity Action Plan and Local Biodiversity Action Plan (http://www.ukbap.org.uk/);
- Scottish Natural Heritage Information Service (http://www.snh.org.uk/snhi/);
- SEPA water quality classification and salmonid watercourse maps;
- Data from the Highlands Biological Recording Group (provided in the form of an excel spreadsheet);
- Local Government Agency Biodiversity Officer; and
- Aerial photography (using widely available aerial mapping for initial assessment of habitat types).

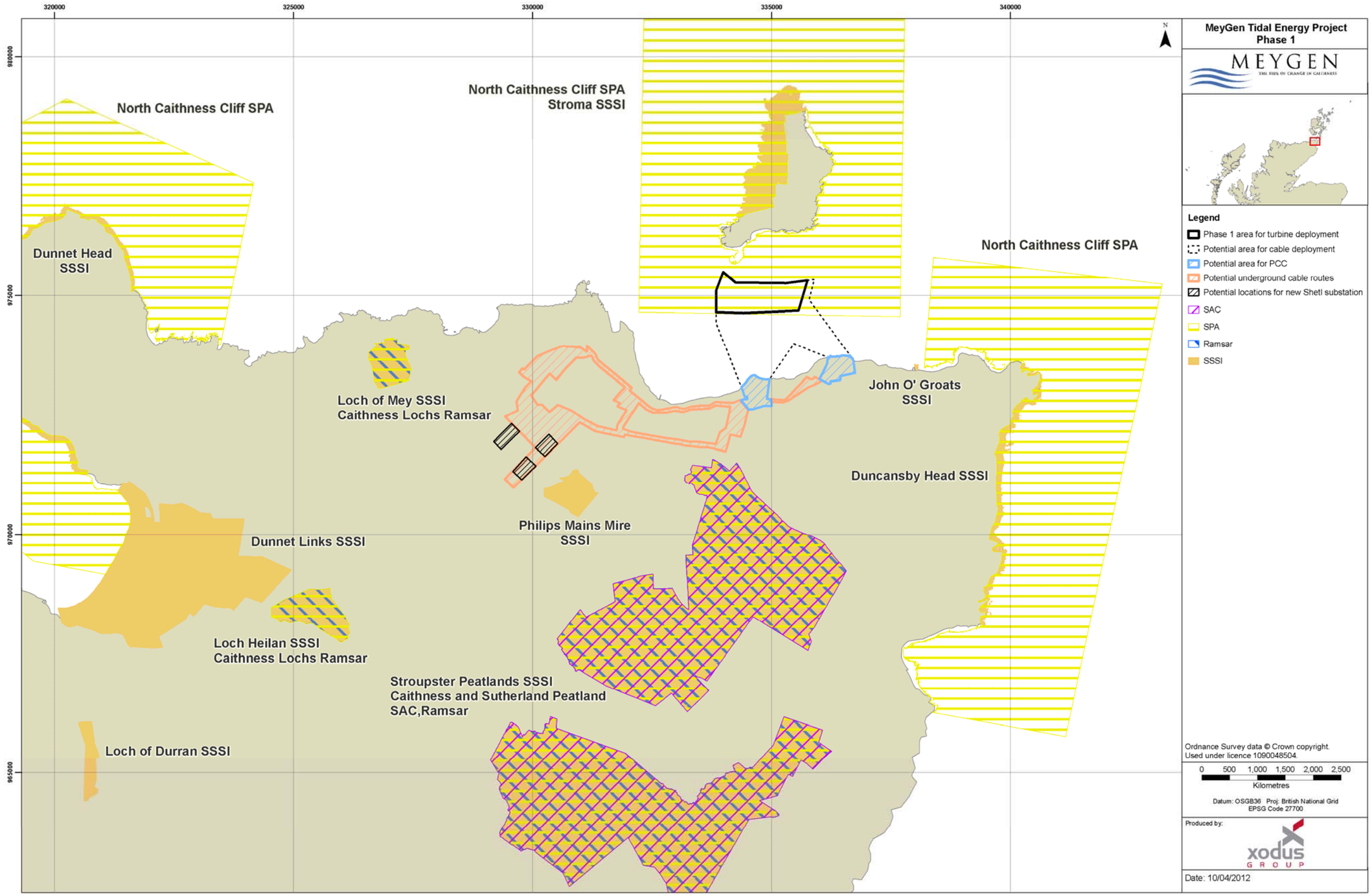

Figure 18.1: Statutorily protected sites located in the vicinity of the Project

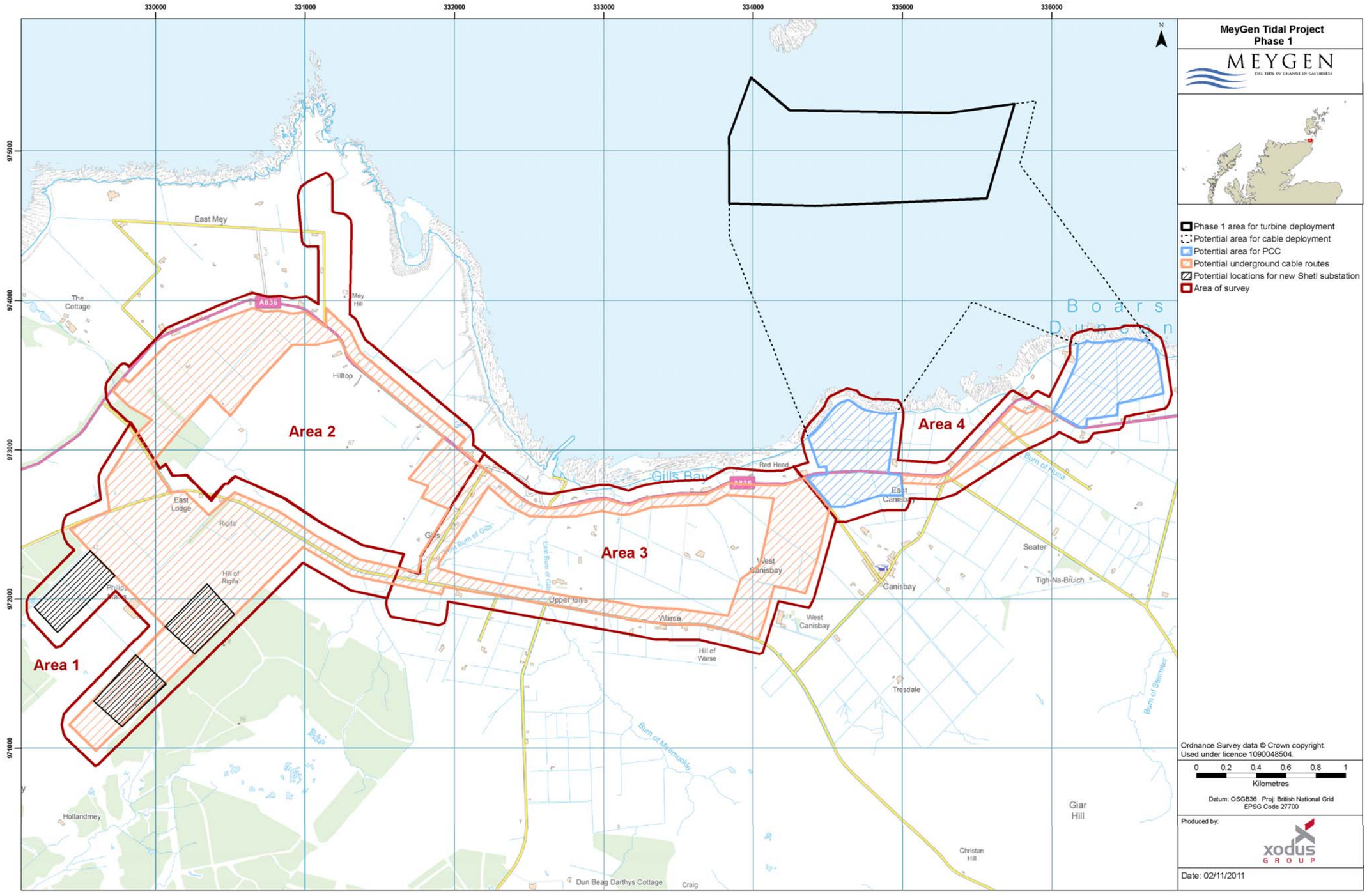

Figure 18.2: Details of extended Phase 1 habitat survey extent

18.4.3 Field survey

18.15 An extended Phase 1 habitat survey was carried out to characterise the terrestrial ecology baseline. It provides comprehensive baseline information for the assessment of impacts regarding terrestrial habitats and species. The extended Phase 1 habitat survey followed the Joint Nature Conservation Committee (JNCC) Guidelines (JNCC, 2010), to map and describe habitats within the Project footprint. Dominant botanical species were recorded for each habitat type observed, with evidence of protected species and areas of ecological interest recorded using target notes. Habitats within the Project footprint were also assessed for potential to support protected species; therefore a 100m buffer zone around the Project footprint was included in the survey extent (Figure 18.2) to ensure all potential environmental licensing requirements (particularly in relation to protected species) were given due consideration.

18.16 The extended Phase 1 habitat survey was undertaken at an optimal time of year (27th June to 1st July 2011), by suitably qualified and experienced environmental consultants from Xodus Environment (Leona Graves (MIEEM) and Anne-Marie Hodgson (AIEEM)).

18.17 The survey area covered 1339.31ha including 1004.44ha within the potential Project footprint, with an additional survey area of 100m (334.87ha) surrounding the potential Project footprint. The survey was constrained by limited access to several fields throughout the site, predominantly due to the frequent occurrence of livestock, particularly in Areas 3 and 4. Where livestock occurred within the site boundary, habitats were surveyed from field boundaries and survey results checked against aerial photography.

18.4.4 Significance criteria

18.18 In concurrence with IEEM guidance (IEEM, 2006) an ecologically significant impact within this assessment is defined as an impact (positive or negative) on the integrity of an ecological receptor (e.g. a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area). To determine if an impact on an ecological receptor is significant, it is necessary to determine if changes arising from the Project are likely to affect baseline conditions or the integrity of ecological receptors. The value of an ecological receptor will be used to identify the geographical scale at which the impact is significant. Notably, the value of an ecological receptor also relates to the consequences of Project development at an appropriate level (in terms of legislation, policy and/or development control). To determine whether there is likely to be an effect on the integrity of an ecological receptor from a Project impact, the following factors will be taken into consideration;

- Occurrence of alteration or removal of an ecosystem process;
- Effects on the nature, extent, structure and function of component habitats;
- Effects on the average population size and viability of component species; and
- Condition of the ecosystem / site being assessed.

18.19 Adherence to the EIA Regulations requires consideration of the significance of environmental effects as part of the EIA; within this section consideration of significance of Project effects is undertaken in relation to terrestrial ecology, specifically habitats and species. Assessment criteria regarding the significance of Project effects has been developed in accordance with standard principals and guidance; adapted from SNH (SNH, 2009) and IEEM guidance (IEEM, 2006).

18.20 The EIA process and methodology are described in detail in Section 8. Each assessment section is, however, required to develop its own criteria for the 'sensitivity of receptor' and 'magnitude of impact' aspects since the definition of these will vary between different topics. For terrestrial habitats and ecology, the significance criteria used in this section is based on the methodology described in Section 8 but the sensitivity of the receptor and magnitude of impact are defined in Table 18.4 and Table 18.5 respectively.

18.21 The environmental consequences of impacts are then considered by reference to the relevant criteria in the EIA Regulations. The significance of impacts in relation to the EIA Regulations is defined in Section 8, Table 8.2.

Sensitivity of receptor	Definition
Very High	▪ Sites of international designation (e.g. SAC, SPA) or species / assemblages which form qualifying interests of internationally designated sites. ▪ Globally threatened species or habitats (e.g. IUCN list). ▪ Species which are considered to be present in internationally important numbers or habitats, comprising an internationally important proportion of that habitat type.
High	▪ Nationally important sites (e.g. SSSI) or species / assemblages which form qualifying interests of nationally designated sites. ▪ Species / assemblages which contribute to an international site but which are not listed as qualifying interests. ▪ Ecologically sensitive species/habitats (e.g. rare) or present in nationally important numbers / area.
Medium	▪ Sites of local value. ▪ Habitats on Annex I or species on Annex II of the EC Habitats Directive. ▪ Species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). ▪ Species present in regionally important numbers. ▪ Species / assemblages which contribute to a national site but which are not listed as qualifying interests. ▪ Species occurring within international/national sites but are not crucial to the integrity of the site. ▪ Species listed as priority species in the UK Biodiversity Action Plan (BAP).
Low	▪ Sites not containing features that would meet the criteria for sites of local value, but nevertheless having some biodiversity value. ▪ Any other species of conservation interest (e.g. Local BAP species, Scottish Priority Marine Features).
Negligible	▪ Habitats / species of undesignated Importance (e.g. a widespread species). ▪ Habitat / species of no conservation concern.

Table 18.4: Definitions for sensitivity of terrestrial ecology receptors

Magnitude of impact	Definition
Severe	▪ Widespread total loss or very major alteration to species and habitats such that the condition of features of qualifying interest (of internationally designated sites) will be fundamentally altered. ▪ Little or no recovery anticipated, with a high likelihood of impact occurrence.
Major	▪ Widespread change to characterising species or lasting change to habitat leading to medium-term damage with a medium likelihood of occurrence. ▪ Recovery (to original condition) anticipated taking several years following decommissioning.
Moderate	▪ Change to terrestrial species in a localised area (confined to Project footprint and immediate locality) for Project duration, with a moderate likelihood of occurrence, but with no lasting change to habitats. ▪ Good recovery potential following decommissioning (approximately 2 years).
Minor	▪ No significant effect. ▪ Change from baseline conditions measurable but within scale of natural variability, and confined to Project footprint, with a minor likelihood of occurrence. ▪ Temporary alteration or effects confined to a small percentage of available habitat, with rapid recovery likely.
Negligible	▪ No effect or not measurable effect. ▪ Effects unlikely to be discernable or measurable, with a negligible or no likelihood of occurrence.

Magnitude of impact	Definition
Positive	▪ An enhancement of an ecosystem or population parameter.

Table 18.5: Definitions for magnitude of impact on terrestrial ecology receptors

18.4.5 Data gaps and uncertainties

18.22 The extended Phase 1 habitat survey was undertaken at an optimal time of year (27th June to 1st July 2011) by suitably qualified and experienced consultants. It is therefore likely that the majority of flowering plants were visible and where dominant (or of conservation concern) were recorded; however, the survey was constrained by limited access to several fields throughout the site. This was primarily due to the presence of livestock, frequently occurring around the site and most abundantly in central areas within the footprint of proposed onshore cable routes.

18.23 Where livestock occurred within the site boundary, habitats were surveyed from field boundaries and survey results checked against aerial photography. This constraint may have contributed to some limitations in the recording of habitats and botanical species, with some field margins potentially surveyed in more detail than the mainstay of habitats in fields grazed by livestock at the time of survey. Additionally, several field drains and minor watercourses occurring in fields grazed by livestock were also not surveyed in detail due to constraining access.

18.5 Baseline Description

18.24 The terrestrial ecology baseline description presents the results of the desk-based ecological assessment, followed by consideration of data obtained from the extended Phase 1 habitat survey. Existing terrestrial ecology conditions, specifically habitat type, habitat extent and occurrence / distribution of relevant and protected species, are outlined and discussed in this section.

18.5.1 Statutorily protected sites

18.25 The Project footprint and survey extent does not lie within a statutorily protected site for nature conservation (Figure 18.1). However a number of sites with statutory protection do occur in the vicinity of the Project footprint; these are detailed below in Table 18.6. Statutorily protected sites within the vicinity of the Project include the following; Caithness and Sutherland Peatlands SAC, SPA and SSSI, located approximately 0.16km south of Area 3, North Caithness Cliffs SPA located 0.7km from Area 4, Caithness Lochs SPA and Ramsar site located 0.15km from Area 3 and Philips Main Mire SSSI, located approximately 0.55km to the south-east of one of the potential cable routes.

Site name	Qualifying feature(s) / interest(s) / Ramsar criteria	Approximate distance to potential Project footprint, with reference to area number shown in **Figure** 18.2 **(km)**			
		1	**2**	**3**	**4**
Caithness and Sutherland Peatlands SPA, SAC and Ramsar	SPA *Under Article 4.1* Regularly supporting populations of European importance of: ▪ Black throated diver (*Gavia arctica*); ▪ Golden eagle (*Aquila chrysaetos*); ▪ Golden plover (*Pluvialis apricaria*); ▪ Hen harrier (*Circus cyaneus*); ▪ Merlin (*Falco columbarius*); ▪ Red throated diver (*Gavia stellata*); ▪ Short eared owl (*Asio flammeus*); and ▪ Wood sandpiper (*Tringa glareola*).	1.82	1.7	0.16	1.07
	Under Article 4.2 During the breeding season, supporting populations of European importance of migratory: ▪ Common scoter (*Melanitta nigra*); ▪ Dunlin (*Caldris alpine schinzii*); and ▪ Wigeon (*Anas Penelope*). SAC *Under Article 3* ▪ Blanket bogs ▪ Depression on peat substrates of the *Rhynchosporion*; ▪ Otter (Lutra lutra); ▪ Natural dystrophic lakes and ponds; ▪ Northern Atlantic wet heaths with *Erica tetralix*; ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and / or of the *Isoeto-Nanoju*ncetea; and ▪ Transition mires and quaking bogs. Ramsar *Criterion 1* The site supports one of the largest and most intact areas of blanket bog in the world. *Criterion 2* The site supports a number of rare species of wetland plants and animals, including 3 species of nationally rare moss, 8 internationally scarce vascular plants and 4 nationally scarce mosses, 1 internationally rare species of insect and 10 nationally important species of breeding waterfowl. *Criterion 6* Regularly supporting species of dunlin and alpine (*schinzii*).				
North Caithness Cliffs SPA	SAC *Under Article 4.1* ▪ Regularly supporting populations of European importance of peregrine (Falco peregrinus). *Under Article 4.2* Regularly supporting populations of European importance of migratory common guillemot (*Uria alge*). Regularly supporting in excess of 20,000 individual seabirds.	6.5	0.9	1.7	0.7
Caithness Lochs SPA and Ramsar	SPA *Under Article 4.1* ▪ Winter populations of whooper swan (*Cygnus Cygnus*) and Greenland white fronted goose (*Anser albifrons*). *Under Article 4.2* ▪ Winter populations of migratory greylag goose (*Anser anser*). Ramsar *Criterion 6* ▪ Supporting internationally important populations of	1.87	1.75	0.15	1.06

Site name	Qualifying feature(s) / interest(s) / Ramsar criteria	Approximate distance to potential Project footprint, with reference to area number shown in Figure 18.2 (km)			
		1	2	3	4
	whooper swan, Greenland white-fronted goose and greylag goose.				
Philips Main Mire SSSI	SSSI ▪ Bogs (upland); blanket bog habitat.	0.55	1.4	1.0	3.7

Table 18.6: Details of statutorily protected sites located within the surrounding environment

18.26 Notably, there are no local nature conservation designations in the Caithness area (Bromham, pers. com. The Highland Council, Highland Biodiversity Officer, 2011). In addition to sites which have statutory protection, there are a number of species and habitats which are considered important at either an international, national or local level. A number of these species and habitats have been recorded in the vicinity of the Project footprint or have the potential to occur there, refer to Table 18.8 for further details.

18.5.2 Terrestrial habitats

The UK Biodiversity Action Plan

18.27 The UK Biodiversity Action Plan (UK BAP) was published in 1994 and is the UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992 in Rio de Janeiro.

18.28 The UK BAP describes the biological resources of the UK and provides detailed plans for conservation of these resources, at both national and local levels. Action plans for the most threatened species and habitats have been set out to aid recovery, and with reporting rounds every three to five years showing how the UK BAP has contributed to the UK's progress towards the significant reduction of biodiversity loss. The UK BAP encompasses over 160 Local Biodiversity Action Plans (LBAPs), which highlight local priorities for biodiversity and conservation, in addition to delivering agreed actions and targets for priority habitats and species including locally important wildlife and nature conservation sites.

18.29 Priority species and habitats are those that have been identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). Following review in August 2007 the UK BAP priority list now contains 1,150 species and 65 habitats. The UK BAP list is an important reference source and is used to inform statutory lists.

18.30 The objectives of the Caithness LBAP are outlined below in Table 18.7 and priority habitats specific to the Caithness Area plan are detailed in Table 18.8; some of these habitats have potential to occur within the potential Project footprint.

Objectives of the Caithness Local Biodiversity Action Plan (LBAP)
▪ To ensure that all habitats are managed in a way that takes account of their wildlife interests;
▪ To ensure that future development plans and proposals take account of local biodiversity;
▪ To promote projects and initiatives that help maintain or restore biodiversity towards natural levels;
▪ To develop quality education at all levels, to raise awareness of the biodiversity of Caithness amongst local people, visitors, funding organisations and policy makers;
▪ To reduce perceived or real conflicts between biodiversity and people, by increasing community involvement and local action for biodiversity;
▪ To improve access to information about important habitats and species, and their management requirements, and enable interested residents to improve their specialist knowledge and understanding;
▪ To secure additional support for biodiversity and related projects, and help publicise existing sources of funding and advice; and
▪ To establish a mechanism to help individuals, community groups and partners deliver the Caithness Biodiversity Action Plan, monitor progress and share information on biodiversity matters.

Table 18.7: Details of statutorily protected sites located within the surrounding environment

Habitat type		Potential to be found in the vicinity of the study area
Sea and coast	sublittoral sands and gravels	Y
	deep water mud habitats	N
	maerl beds	N
	horse mussel beds	N
	tidal rapids	N
	machair	Y
	coastal saltmarsh	Y
	coastal sand dunes	N
	coastal vegetated shingle	Y
	mudflats	N
	saline lagoons	N
	seagrass beds	Y
	sheltered muddy gravels	Y
	maritime cliff and slope	Y
River, loch and wetland	mesotrophic lochs	N
	eutrophic standing waters	Y
	fens	Y
	reedbanks	Y
Farm and croft land	native pine woodland	Y
	upland mixed ash woodland	N
	wet woodland	N
	lowland wood pasture and parkland	Y
Blanket bog and woodland	blanket bog	Y
	lowland heathland	Y
	upland heathland	N

Table 18.8: UK priority habitat types (UK BAP, 2011)

Aerial photography

18.31 Aerial photography (obtained online using Bing maps) was consulted to gain an initial insight into the possible habitats found within the four study areas. The level of image resolution was sufficient to identify areas of woodland and to indicate the presence of slightly larger watercourses such as burns; however image resolution was not good enough to detect smaller water bodies such as field drains and streams, or to enable identification of woodland type.

18.32 **Area 1 – cable routes close to proposed substation (see Figure 18.2):** Aerial photography from this area indicates habitats are dominated by agriculture. The area is divided into a number of fields of varying sizes, consisting of grassland displaying various levels of improvement. A strip of forestry occurs along the eastern boundary of the site, in addition to a small area along the western boundary. The north-east of the area is dissected by a minor road, to the north of which there is an area of heathland.

18.33 Based on aerial photography, it was predicted that the habitats with the most potential to support important or rare species would be found in the woodland strips and heathland areas. The field survey concentrated on these habitats within the area to assess potential for locally important habitats and / or species.

18.34 **Area 2 - cable routes (northern approach) to proposed substation (see Figure 18.2):** Aerial photography shows a large area of heathland which appears uniform in nature. This is surrounded by agricultural land of varying uses. The A836 road runs close to the northern boundary of the area; north of this road (to the east of the area) there appears to be a further heathland habitat in addition to a very small area of woodland, occurring to the north of the road (to the west of the area).

18.35 Based on aerial photography, it was predicted that the habitats with the most potential to support important or rare species would be found in the woodland strips and the heathland area. The field survey examined in detail the nature of all the habitats within this area and assessed the potential for the presence of key species.

18.36 **Area 3 - cable routes (eastern approach) to proposed substation (see Figure 18.2):** Aerial photography indicated that this area is largely dominated by agriculture and predominantly consists of fields divided by fences and walls. A small area of heathland can be seen in the south-west of the area, with two potential watercourses to the west of the area.

18.37 Based on aerial photography, it was predicted that the habitats with the most potential to support important or rare species would be found in heathland areas and along potential watercourses. The field survey concentrated on these habitats within the area and identified the potential for key species to occur in heathland and riparian zones.

18.38 **Area 4 – Ness of Quoys and Ness of Huna cable landfall / PCC sites and interconnecting cable routes (see Figure 18.2):** Aerial photography indicated that this area is largely dominated by agriculture and consists largely of fields divided by fences and walls. The area is dissected by the A836 road along an almost central line. This area also includes some intertidal habitats.

18.39 Based on aerial photography, it was predicted that habitats which have the most potential to support important or rare / protected species would comprise littoral areas located along the coastline.

Extended Phase 1 Habitat Survey results: Habitats within the Project footprint

18.40 Habitats within the Project footprint are dominated by grasslands of various levels of improvement and grazing pressure. Both semi-improved neutral and acidic grassland habitat types are present throughout the site, in addition to improved grassland, occurring where grazing and nutrient enrichment by livestock has been more intense. Dominant grasses include species typical of such habitats, including; rough meadow grass, Yorkshire fog, cocksfoot, perennial ryegrass, meadow foxtail and crested dogs tail. Broad-leaved dock, common nettle, sorrel and thistle species were present around field margins, with meadow buttercup, daisy and clover species occurring throughout.

18.41 *Juncus spp.* (soft rush) species were frequently observed in areas of acidic grassland, which were commonly located adjacent to heathland; often producing acid grassland / heathland mosaic habitats (both wet and dry heathland mosaics were recorded). Species observed in these habitats included common heather, cross-leaved heather, bog cotton, heath rush and matt grass species, with frequently observed tormentil, heath bedstraw, milkwort and occasional orchids. Sphagnum moss was present throughout these areas in varying abundance. Notably, land markings suggest previous peat extraction throughout the site in heathland habitats; therefore it is possible (and likely) that existing heathland may be comprised of historically degraded blanket bog.

18.42 Woodland, where present, is largely limited to coniferous plantation, with only a small area of semi-natural broad-leaved woodland present to the west of Area 2. Within Area 2, some scattered and immature rowan trees are present along field boundaries; however the most frequently observed habitat present along field boundaries was gorse scrub, commonly observed in Area 3 lining several field drains.

18.43 Watercourses occurring within the Project footprint are restricted to burns and shallow field drains, with the two principal watercourses (comprising the East and West Burn of Gills) located in Area 3. The Burn of Huna, located in Area 4, also provides some freshwater habitat; elsewhere in the site small watercourses have been culverted with likely re-profiling of burns to promote field drainage. Small pools are present in wet heathland habitats to the south of Area 3 (within the survey buffer), where terrestrial habitats support more areas of sphagnum moss than present elsewhere around the site.

18.44 Several farm steadings and residential properties are located across the site, with the majority of buildings occurring along roads and in peripheral areas of the site. In addition to livestock, several fields of arable crop are present, particularly in Areas 2 and 4, with areas of bare ground recorded where fields had been recently ploughed. In general, habitats occurring within the site can be described as semi-natural and frequently were considered as degraded, due to previous and current land uses.

Phase 1 habitat classification

18.45 Details of habitat types and dominant botanical species recorded within the Project footprint are presented in the extended Phase 1 habitat survey report which is provided on the accompanying supporting studies CD (Xodus, 2011a). An overview of recorded habitat types and dominant species observed within the Project footprint are listed below in Table 18.9; a summary of the Phase 1 habitat survey results is presented in Figure 18.3.

Habitat code	Habitat type	Details specific to habitats occurring within the Project footprint
A.1.1.1	Semi-natural Broadleaved Woodland	Broadleaved woodland is very limited throughout the site, with only a small area located to the west of Area 2. Trees species in this habitat included sycamore, alder and ash with understory scrub dominated by grasses, ferns and marsh thistle.
A.1.2.2	Coniferous Plantation	Coniferous plantation is present in solid blocks throughout the site, particularly in Area 1 and Area 2 where is it located adjacent to grassland used for grazing livestock. Additionally, a small area of plantation in Area 3 may provide a wind breaking function to an adjacent residential property.
A.1.3	Mixed Woodland	A small area of mixed woodland is present adjacent to residential properties in Area 3. Tree species include sycamore, ash, hawthorn, rowan and planted spruce species.
B.1.2	Semi-improved Acid Grassland	Several fields of acid grassland exists where grazing occurs and where the habitat grades into dwarf shrub heath. Within these habitats, soft rush (*Juncus spp.*) is abundant, with heath rush, sorrel and thistle species present throughout.
B.2.2	Semi-improved Neutral Grassland (SING)	This is the most abundant habitat type occurring within the Project footprint and is comprised of grassland modified by grazing; therefore the diversity of species in this habitat is lower than would be expected in similar unimproved grasslands. Cocksfoot, Yorkshire fog and fescue species were present in the majority of SING, with meadow buttercup also frequently observed.
B.4	Improved Grassland	Improved grassland was frequently observed throughout the site, occurring where grazing had taken place and the resultant sward was short, even and nutrient enriched. Within fields of improved grassland, marsh thistle, broad-leaved dock and spear thistle were recorded around field margins, with white clover and occasional meadow buttercup located throughout this habitat.
B.6	Poor Semi-improved Grassland	This habitat was evident where grazing by livestock was very intensive and where species diversity was lower than observed in fields of improved grassland.
C.3.1	Tall Ruderal	Tall ruderal vegetation was occasionally recorded at field margins, where common nettles, broad-leaved dock and thistle species comprised tall stands of vegetation.
D.1.1	Dry Dwarf Shrub Heath (acid)	This habitat was recorded where heather species were dominant (greater than 25% cover), with occasional bilberry and cowberry.
D.5	Dry heath / acid grassland mosaic	This habitat was recorded where a mixture of acid grassland and dry heath was present. Where present, this habitat was often grazed.
D.6	Wet heath / acid grassland mosaic	This habitat was recorded where a mixture of acid grassland and wet heath was present. Small pools were recorded in this habitat, particularly in Area 1.
E.1.7	Wet Modified Bog	This habitat was very localised and where present appeared to have markings suggestive of previous peat extraction. This habitat supported little or no sphagnum vegetation.
G.2	Running Water	Small water courses were present within the Project footprint, including; the East Burn of Gills, the West Burn of Gills and the Burn of Huna. Field drains were present throughout the site and occasionally supported shallow water courses.
H.4	Boulders / rocks above the high tide mark	This habitat type was present in Area 4, where the site boundary is located adjacent to the coast.

Habitat code	Habitat type	Details specific to habitats occurring within the Project footprint
H.5	Strandline Vegetation	This was present in coastal areas immediately adjacent to Area 4. Common orache was recorded in this habitat, with a large pebble substrate.
J.1	Arable	Several fields within the site boundary were used to grow arable crops.
J.2	Amenity	Small areas of amenity grassland were present around buildings, such as around the church at Canisbay.
J.3.6	Buildings	Residential and agricultural buildings were located throughout the site, with the majority of buildings located along the main roads of the area.
J.4	Bare Ground	Bare ground was present and noted where fields had been recently ploughed and additionally where bare ground occurred around buildings.

Table 18.9: Habitat types recorded within the Project footprint and surrounding environment during the extended Phase 1 habitat survey (June 2011)

18.5.3 Protected and relevant terrestrial species

Caithness Biodiversity Action Plan Priority Species

18.46 The terrestrial species detailed in Table 18.10 have been identified as priority species in the UKBAP and are known to occur in Caithness, with potential to occur within the Project footprint.

Terrestrial species		Potential to be found in the vicinity of the study area
Bees	great yellow bumble bee (*Bombus distinguendus)*	Y
Fungi	pink meadow cap (*Hygrocybe calyptriformis)*	Y
Mammals	water vole (*Arvicola terrestris)*	Y
	brown hare (*Lepus europaeus)*	Y
	otter (*Lutra lutra)*	Y
	pipistrelle bat (*Pipistrellus pipistrellus)*	Y
Mosses	long-leaved threadmoss (*Bryum neodamense)*	Y
Vascular plants	Scottish small reed (*Calamagrostis scotica)*	Y
	an eyebright *(Euphrasia rotundifolia)*	Y
	yellow marsh saxifrage (*Saxifraga hirculus)*	Y
	Killarney fern (*Trichomanes speciosum)*	Y

Table 18.10: Caithness BAP priority species (UK BAP, 2011)

Scottish Biodiversity List

18.47 The Scottish Biodiversity List (SBL) is a list of plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The purpose of the list is to help public bodies carry out their Biodiversity Duty by identifying the species and habitats which are the highest priority for biodiversity conservation in Scotland. It is also a useful source of information on nature conservation in Scotland (SNH, 2010). Of the species and habitats listed, a number have the potential to occur in the vicinity of the study area.

18.5.4 Extended Phase 1 Habitat Survey results: Protected species with potential to occur within the Project footprint

18.48 Table 18.11 details historical species records within the Project footprint and surrounding environment. This data includes species which have statutory protection, are listed as a priority UK BAP species or LBAP species, or additionally if a species is featured on the SBL and is relevant to the study area.

Species	Status	Record description	Source
AMPHIBIAN AND REPTILE SPECIES			
Common toad (*Bufo bufo)*	UK BAP Priority species	Reptiles and Amphibians Dataset, provided by Biological Records Centre. Recorded before 1995 NGR ND3472	NBN Gateway
Adder (*Vipera berus*)	UK BAP Priority species	Atlas of amphibians and reptiles in Britain 1995. Field observation recorder unknown. Recorded circa 1994 NGR ND37 (10km grid square)	NBN Gateway
MAMMAL SPECIES			
European water vole (*Arvicola terrestris)*	UK BAP Priority species SBL	Field record by Mary Legg (03/05/2008) NGR ND313718	HBRG
Wild cat (*Felis silvestris)*	UK BAP Priority species SBL	Mammal records from Britain from the Atlas of Mammals (1993). Recorded by Caithness Records Centre in 1985 (Dataset resolution of 100m)	NBN Gateway
European otter (*Lutra lutra)*	European Protected Species UK BAP Priority species SBL	Field record of one live otter by Mary Legg (21/01/2011) NGR ND 360732	HBRG
Roe deer (*Capreolus capreolus)*	SBL	Field record by Dave Jones for three Roe deer (24/10/2008) NGR ND3770	NBN Gateway
Harbour Seal *(Phoca vitulina)*	Annex II UK BAP Priority species	Field record by Dave Jones for one live harbour seal (10/05/2009) NGR ND328730	NBN Gateway
Common pipistrelle (*Pipistrellus pipistrellus)*	European Protected Species UK BAP Priority species SBL	Field record by Les Hatton (06/08/2010) NGR ND379735	NBN Gateway
INVERTEBRATE SPECIES			
Great yellow bumble bee (*Bombus distguendus)*	UK BAP Priority species SBL	Field record by Bob Dawson (06/09/2009) NGR ND327727	HBRG
VASCULAR PLANT SPECIES			
Narrow fruited water stalwort *(Callitiche palustris)*	SBL	Vascular Plants Database, provided by Botanical Society of the British Isles (08/08/2011) (10km resolution in grid square ND37)	NBN Gateway
Heather *(Calluna vulgaris)*	SBL	Vascular Plants Database, provided by Botanical Society of the British Isles (08/08/2011) (10km resolution in grid square ND37)	NBN Gateway
Harebell (*Campanula rotundifolia)*	SBL	Vascular Plants Database, provided by Botanical Society of the British Isles (Between 1970-1986) (10km resolution in grid square ND37)	NBN Gateway

Table 18.11: Records of protected and relevant species occurring in the vicinity of the Project footprint (obtained from NBN Gateway, 2011, HBRG records, 2011)

Bat

18.49 Several outbuildings and residential properties located within the Project footprint were identified as having potential to support roosting bats. A derelict house located adjacent to a potential underground cable route in the centre of the Project footprint, in addition to agricultural buildings and a farmhouse to the west of the Project footprint near the Ness of Huna (occurring within a potential cable route) were assessed as having numerous structural features which may support roosting bats. These features include large undisturbed and south-facing roof spaces, with unobstructed roof voids and entrances which may enable bats to fly through. Additionally, the use of traditional stone and pre 20th century/early 20th century building construction may provide roosting opportunities for crevice dwelling species such as pipistrelles. The aforementioned buildings are located in close proximity to good bat foraging habitat, including woodland edges and wet heath/acid grassland mosaic, also enhancing their potential as suitable roosting sites for bat species. Bat species (*Pipistrelle spp*.) have been recorded in the wider environment, however their status within the Project footprint is unknown. Refer to Figure 18.4 for locations of buildings occurring within the Project footprint identified as having potential to support roosting bats.

18.50 Notably, no large mature deciduous trees (with features that may support roosting bats) were identified within the Project footprint; semi-mature woodland present within the potential cable route (occurring in the central area of the Project footprint) was generally comprised of coniferous plantation, assessed as having generally limited opportunities to support roosting bats. However, woodland habitats within the site boundary may provide bat species with suitable foraging habitat, particularly where woodland edges occur in close proximity to watercourses, wet heathland and pools.

18.51 Currently there are no plans to undertake works affecting potential roosting sites in residential and / or agricultural buildings, therefore further consideration of bat species is not required.

Otter

18.52 Field evidence of otter (predominantly otter spraint) was identified inland along the Burn of Huna and in coastal habitats adjacent to the east of the Project footprint, including around the Ness of Quoys and adjacent to the Ness of Huna. In coastal habitats otter spraint was present on large boulders and at the bottom of cliffs, including at the coastal outflow of a vegetated drainage channel, immediately adjacent to the proposed Ness of Quoys Horizontal Directional Drilling (HDD) area. The location of this spraint suggests otters may use this field drain as a corridor to move into terrestrial habitats from the coast, or potentially otters may utilise the dense riparian vegetation for resting purposes as a “couch”. Further east along the coast a possible holt and additional couch was identified; located at the base of coastal cliffs, adjacent to the Ness of Huna.

18.53 Field evidence observed during the survey suggests that locally, otters utilise coastal habitats to a greater extent than fresh-water watercourses, pools and field drains. However, evidence also suggests that otters are likely to use burns and field drains in the area (including within the Project footprint) as corridors to other habitats such inland holts and freshwater pools, for foraging purposes and to obtain shelter. Notably, the Caithness and Sutherland Peatlands SAC (designated for its otter population) is located less than 2km away from the onshore Project footprint; it is therefore possible that otters originating from the SAC use habitats within the Project footprint as a corridor to the marine environment or for sheltering / foraging purposes. Refer to Figure 18.4 for details regarding the location of otter field evidence identified within the Project footprint.

Scottish wildcat

18.54 No field evidence of wildcat was identified within the Project footprint or in the surrounding environment. Habitats including grassland / heathland mosaic and farmland may provide foraging habitat for this species; however the level of localised habitat disturbance (due to agricultural activities, peat extraction and forestry operations) may make this area unsuitable for this cryptic species. One dated record of wildcat (National Biodiversity Network, 1985) occurs at the boundary of the Ness of Quoys PCC site and the footprint of potential underground cable routes within the central area of the Project footprint; however there are no further National Biodiversity Network records of this species occurring in the surrounding area or wider environment. More recent sightings of wildcat (Scottish Wildcat Association, 2007) show two records of wildcat occurring in the Caithness region, located approximately 10km to the south of the site.

18.55 According to the Wildcat Association, less than 400 individual wild cats remain in the wild, with the highest percentage of wildcat records occurring in Aberdeenshire, followed by Inverness-shire, Ardnamurchan and Morvern, then Perthshire and the central Highlands (Davis and Gray, 2010). Due to the Project location it is considered unlikely that habitats within the Project footprint are of particular importance to this species. However due to their ecology, wildcats have extensive territories with potential to cover large distances of up to 10km in one night[3]. It is therefore possible that wildcats may occasionally use habitats within the Project footprint and surrounding environment for foraging purposes, however as noted; habitats within the Project footprint are unlikely to be of key importance to this species. Further consideration of wildcat is not deemed necessary.

Badger

18.56 No field evidence of badger was observed within the Project footprint or in the surrounding environment. Habitats such as grassland (particularly improved and semi-improved grassland) occurring within the Project footprint may provide suitable badger foraging habitat. However, the absence of badger field evidence and paucity of historical badger records in the wider area strongly suggests that badgers are not present within the Project footprint or are present within the surrounding environment. Further consideration of this species is not necessary.

Water vole

18.57 No field evidence of water vole was identified during the survey, both within the Project footprint and in the surrounding environment. However, habitats occurring within the Project footprint, predominantly small watercourses including vegetated burns and field drains, were identified as having potential to support this species. Notably, water vole habitat is protected against damage and destruction, and water voles are protected against disturbance whilst using their habitats[4].

3 Scottish Wildcat Association webpage. www.scottishwildcats.co.uk/ [Accessed 12/07/2011}.
4 SNH. Conserving Scotland’s Water Voles. www.snh.org.uk/publications/on-line/wildlife/voles/default.asp [Accessed 05/2011]

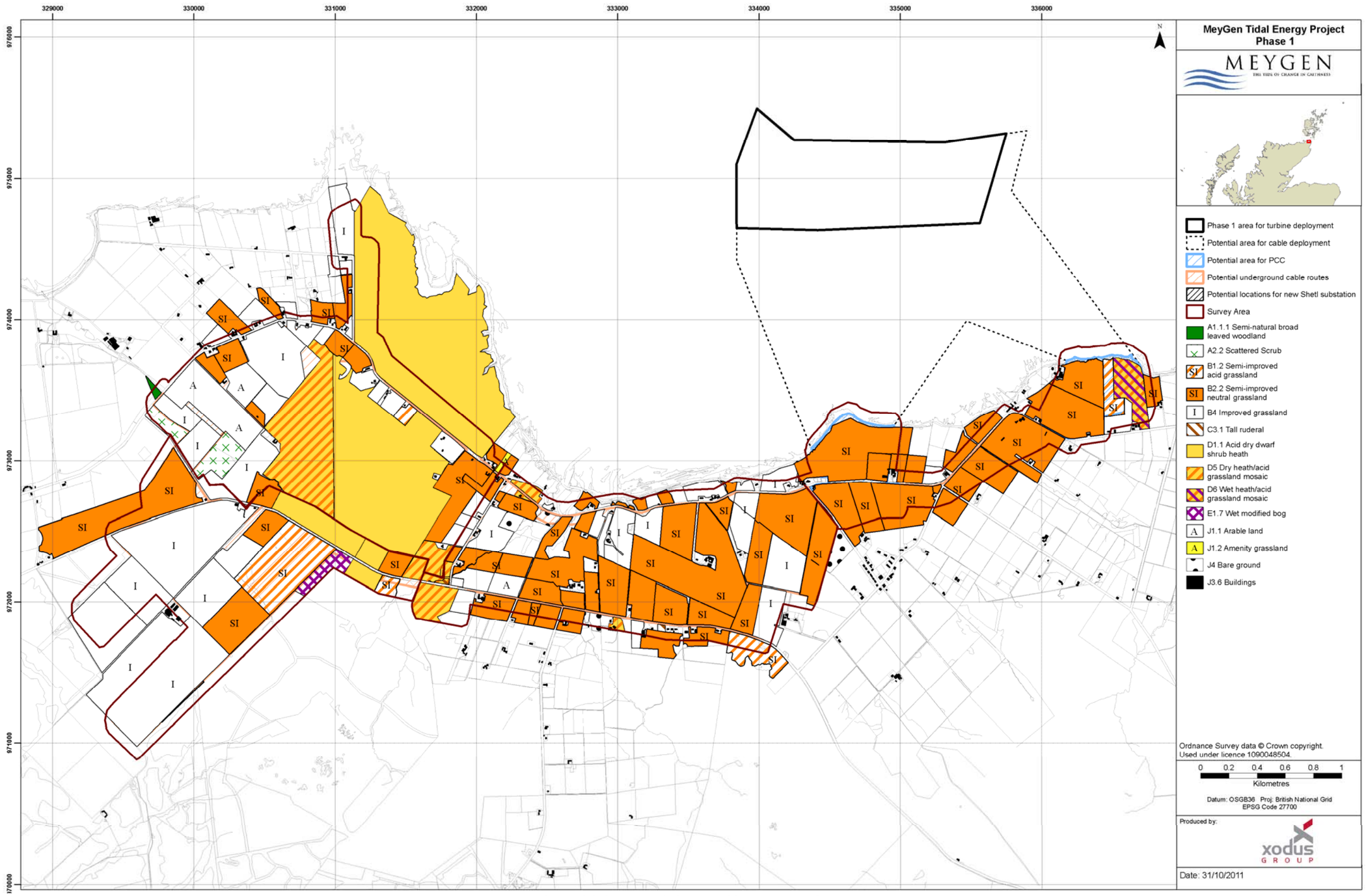

Figure 18.3: Summary of Phase 1 Habitat survey results

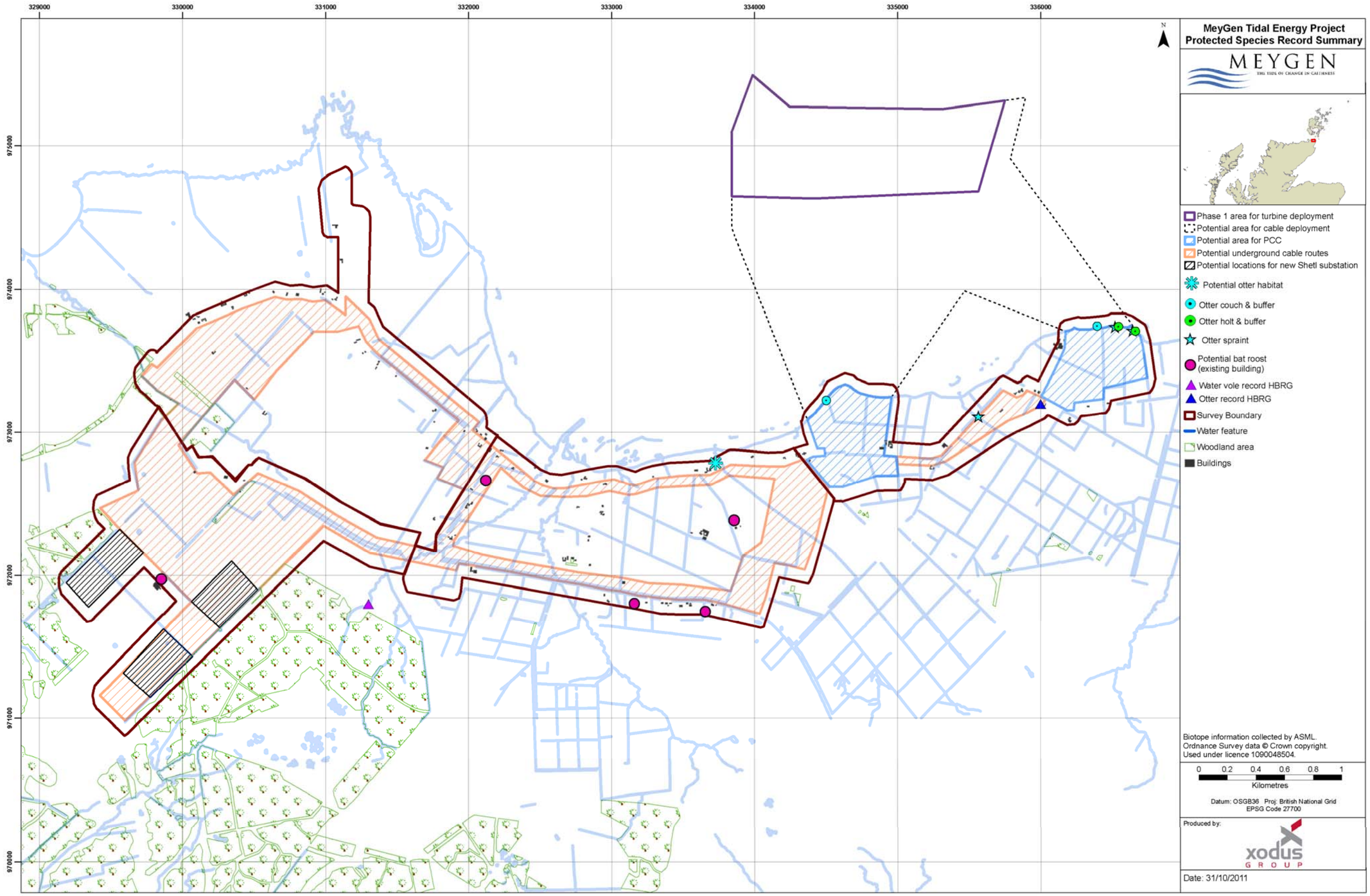

Figure 18.4: Summary of protected species survey results

18.58 Relatively recent records of water vole (National Biodiversity Network, 2008) occur in close proximity to the west of the Project footprint (in close proximity to the proposed SHETL substation locations and potential underground cable routes) and additionally along minor watercourses which flow into the site boundary. These watercourses may suffice as corridors to habitats within the Project footprint; it is therefore possible that this protected species is present within the Project footprint and / or immediate surrounding environment.

Red squirrel

18.59 Despite the presence of occasional blocks of coniferous woodland within the western area of the Project footprint and coniferous woodland occurring adjacent to the proposed substation locations (within Area 1), woodland habitats were assessed as largely unsuitable for red squirrel. Coniferous plantation was dominated by spruce species, with very small areas of deciduous woodland occurring around the site. Mature coniferous plantation dominated by Sitka Spruce will likely support only low densities of red squirrel[5], however the lack of connectivity to other woodland habitats within the surrounding environment makes it very unlikely that red squirrels will be present within this habitat. Notably, there are no known records of red squirrel occurring in either the local or wider area; further consideration of this species is therefore not required.

Amphibian species

18.60 No permanent ponds or lochans were identified within the potential Project footprint; however two ponds were identified adjacent to the survey extent, south of the potential underground cable route at West Canisbay and to the south-west of the proposed substation location and potential cable routes to the west of the Project footprint. Temporary and occasional pools were present in areas of wet heathland; during the field survey a common frog was observed in wet heathland / acid grassland mosaic habitat within the footprint of a potential underground cable route, to the central and south of the Project footprint. Records of common toad and common frog exist for the wider area, and one record of both palmate and great crested newt occurs in the surrounding environment. Notably, these newt records are relatively remote from the site (greater than 10km for the closest great crested newt record and approximately 2km for the closest palmate newt record). The paucity of amphibian records for the local area and absence of suitable breeding habitat makes it very unlikely that habitats within the Project footprint are of importance to amphibian species. Further consideration of amphibian taxa is therefore not deemed necessary.

Reptile species

18.61 Habitats within the Project footprint were assessed to be largely unsuitable for reptile species, due to the absence of suitable hibernacula sites, abundance of grazed grassland, poor connectivity to other more suitable habitats, northerly aspect and location on the northern coast of Scotland. The northerly aspect of the Project footprint and likely exposure to strong northerly winds makes it unlikely that environmental conditions suitable for reptile species will occur in the locality. No known reptile records occur within the Project footprint; however two relatively dated records of adder (National Biodiversity Network, 1989) occur approximately 2km south-east of the Project footprint. Habitats in which reptile species are more likely to occur are remote from the Project footprint; further consideration of reptile species is not required.

18.5.5 Terrestrial ecology baseline summary

18.62 The Project footprint does not fall within the boundaries of any statutorily protected nature conservation sites (Figure 18.1); however it is acknowledged that Caithness and Sutherlands Peatlands SAC is located approximately 0.2km from the study area. Whilst recommendations are provided in the extended Phase 1 habitat survey report for further pre-construction studies to ascertain the status of several protected species potentially occurring within the Project footprint (including otter and water vole); habitats occurring within the survey area are considered to be of limited ecological value. Grassland (with various degrees of grazing pressure), heathland and coniferous plantation are widespread in the surrounding environment. Where recorded, these habitats were often degraded and supported commonly occurring botanical species, typical of the region. The majority of habitats within the Project footprint (approximately 70%) are comprised of improved and semi-improved grassland used for agricultural grazing. The remaining approximate 30% of habitat occurring within the Project footprint is comprised of coniferous woodland, heathland and heathland / grassland mosaic.

18.63 Heathland, peatland, mire and woodland habitats occur outwith the Project footprint (particularly to the south of the survey area); these habitats are exposed to less anthropogenic pressure and therefore are likely to be of greater ecological significance than habitats occurring within the Project footprint, supporting more established and diverse botanical communities, and potentially offering increased opportunities for protected species.

18.64 Field evidence of otter was recorded in coastal habitats and along the Burn of Huna during the field survey; habitat continuity observed within the Project footprint suggests it is possible for otter to occur elsewhere in the local environment. No field evidence of water vole was observed during the field survey; however suitable vole habitat was identified along vegetated burns and field drains (including the East and West Burn of Gills, and the Burn of Huna). Additionally, recent records of water vole occur in close proximity to the Project boundary, suggesting that there is potential for water vole to be present within the Project footprint (see Figure 18.4 for further details). Several residential and agricultural buildings were also identified as having potential to support roosting bats; however the status of bat species within the Project footprint is currently unknown. Further consideration of bat species will not be necessary unless current design proposals change and buildings identified as potential roosting sites are affected by the proposed works.

18.6 Impacts during Construction and Installation

18.6.1 Impact 18.1: Impact to statutorily protected sites

18.65 Construction of subterranean cable routes may have temporary implications for the local hydrological regime. It is recognised that several water dependant statutorily protected sites (including areas of blanket bog, a UKBAP priority habitat) are located in close proximity to the proposed Project footprint; it is notable that these protected sites occur at a slightly higher elevation than the proposed Project. Philips Main Mire SSSI consists of a complex of blanket bog habitat and is situated in the vicinity of the Project; however, this habitat is surrounded by an extensive area of coniferous woodland which may buffer indirect hydrological impacts resulting from the construction works. Although Philips Main Mire SSSI and other designated sites local to the Project footprint are of high value, indirect impacts on the local hydrological regime (due to construction activities) are considered to be of a temporary nature and local to the construction footprint only, with restoration of habitats to an original condition where affected. Within the hydrological assessment, relevant potential Project effects including modification of the drainage regime and impact to surface flows were assessed as not significant. For further details regarding the likely hydrological impacts resulting from the Project, refer to Section 17. Also see Section 18.11 on Habitats Regulations Appraisal.

Impact significance

18.66 Due to the high ecological value of the statutorily protected sites, the sensitivity of this ecological receptor is considered very high; however, the temporary and localised nature of construction impacts is considered of a negligible magnitude.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Very high	Negligible	Minor	Not Significant

MITIGATION IN RELATION TO IMPACT 18.1
▪ No proposed mitigation proposed as no significant impact is predicted.

5 Red Squirrels in South Scotland. Habitat Management for Red Squirrels. Available at http://www.red-squirrels.org.uk/habitat.asp [Accessed 12/07/2011].

18.6.2 Impact 18.2: Disturbance to terrestrial habitats

18.67 Throughout the construction phase, particularly during site preparation including vegetation clearance and excavation works for the installation of subterranean cable routes, there is potential for disturbance impacts to terrestrial habitats; both within the Project footprint and in the immediate surrounding environment. It is acknowledged that construction related disturbance impacts will be of a temporary nature only.

18.68 Construction of cable route, HDD and PCC site will likely cause direct physical disturbance to habitats across the site. Construction activities likely to cause disturbance impacts to terrestrial habitats include the following; vegetation clearance, ground excavations, materials storage, increased noise, localised increases in ground vibrations, increased road traffic and an increase in general human presence. Temporary works during the onshore construction and installation phase of the Project including; HDD site establishment, PCC construction and subterranean cable installation, will likely include one or more of the following;

- Creation of a lay-down areas;
- Fencing for pubic safety and cable security;
- Topsoil storage;
- Spoil and water management;
- Traffic management at entrance to work area; and
- Road crossings.

18.69 Habitats occurring within the cable route footprints are comprised predominantly of semi-improved and improved grassland, with localised areas of dry dwarf shrub heath and agricultural drainage channels; these habitats are modified and are considered of low ecological value. In addition to potential for impacts to grassland habitats, construction activities taking place in the western region of the Project (within the proposed footprint of potential underground cable routes and the SHETL substation option locations), may indirectly impact upon coniferous trees (forming part of plantation woodland), located immediately adjacent to the proposed Project footprint.

18.70 Habitats likely to be affected by construction related disturbance impacts consist of widespread and modified habitat types of undesignated importance and of no conservation concern; therefore, the sensitivity of this ecological receptor is considered negligible. As noted above, construction impacts will be of a temporary nature and will be confined to the Project footprint and working area only.

Impact significance

18.71 The sensitivity of terrestrial habitats present within the Project footprint is considered negligible. No significant impact is expected, with full recovery of affected habitats expected, through habitat restoration works undertaken as part of completion of construction. The magnitude of disturbance impacts to terrestrial habitats is therefore assessed as minor.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Negligible	Minor	Negligible	Not Significant

18.72 Additionally, it is recognised that disturbance to terrestrial habitats, particularly in coastal areas, such as around the Ness of Quoys or Ness of Huna and to minor watercourses, may have implications for protected species including otter and water vole. Otters are present in coastal habitats immediately adjacent to the proposed PCC locations; construction activities taking place in these areas have potential to indirectly impact upon this protected species through habitat disturbance, increased noise, ground vibrations and human presence. This has been recognised and is accounted for in the proposed mitigation outlined below.

18.73 The status of water vole within the Project footprint and surrounding environment is currently unknown. Should further ecological investigation confirm water vole presence within the Project footprint, construction-related habitat disturbance will be assessed in conjunction with regulatory consultation, to ascertain appropriate licensing requirements and mitigation. Further ecological investigation in relation to otter and water vole will be undertaken in advance of construction, to inform Project design and construction methodologies, with the aim to reduce disturbance related impacts where possible.

MITIGATION IN RELATION TO IMPACT 18.2

- Although no significant impact has been identified, mitigation measures have been provided as a precautionary approach to ensure this remains the case.
- Employment of best working practices during construction works, including restoration of affected habitats to an original condition, where conditions allow.
- Submission of Construction Environmental Management Plan (CEMP), including details of measures to reduce construction disturbance to terrestrial habitats and species where possible.
- Further ecological investigation in relation to otter and water vole status (once onshore Project specifics are confirmed), to ascertain protected species licensing requirements.
- Application for a EPS licence in relation to disturbance of otter habitat and application for a water vole habitat disturbance licence, if either licensing requirement is deemed necessary.

18.6.3 Impact 18.3: Terrestrial habitat loss

18.74 Terrestrial habitat loss will occur within the Project footprint, specifically where permanent onshore structures are built, including the area of cable landfall and PCC location. Habitat loss will be localised and will only occur within the Project footprint. Habitats likely to be impacted by permanent habitat loss comprise widespread and modified habitats; predominantly agricultural semi-improved and improved grassland, and potentially a small area of wet / heath acid grassland mosaic located within the footprint of the Ness of Huna cable landfall area (should this option be selected). Habitat loss at the selected PCC will be permanent.

Impact significance

18.75 Habitats likely to be affected by habitat loss are undesignated, widespread and of no conservation concern, therefore the sensitivity of this receptor is considered negligible. The magnitude of the impact is considered minor.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Negligible	Minor	Negligible	Not Significant

MITIGATION IN RELATION TO IMPACT 18.3

- Although no significant impact has been identified, mitigation measures have been provided as a precautionary approach to ensure this remains the case.
- Where ecologically sensitive habitat loss does occur, compensatory measures (such as replanting of lost tress) will be considered as part of completion of construction and restoration of habitats to

an original condition (where project operations allow).

- Where otter habitat is disturbed (particularly in the vicinity of the PCC location where long term disturbance may occur), application for a European Protected Species Licence will be undertaken and a programme of relevant mitigation will be implemented where necessary.

18.6.4 Impact 18.4: Disturbance to otters

18.76 Construction related impacts including habitat disturbance, increased noise, increased ground vibrations and an increase in human activity (including an increase in local road traffic and vessel presence in nearshore waters) may result in indirect disturbance to otters. Otters are present in coastal habitats around the Ness of Huna and Ness of Quoys and additionally have been recorded in close proximity to the Project footprint. It is therefore likely, where present, that otters will be vulnerable to disturbance during the construction phase of the Project, especially during intrusive activities such as HDD activity.

18.77 Should fish species in marine habitats be disturbed or displaced during offshore construction works, it is recognised that there is also potential for otters to be indirectly displaced to meet foraging requirements. In coastal habitats otters predominantly forage in waters of 2m depth (McCafferty, 2005) and have been recorded at depths of up to 15m (Twelves, 1983), therefore impacts to otters using marine habitats are most likely to take place during the construction and installation phase, particularly during HDD activities. Potential for disturbance and displacement of fish species in the marine environment is discussed further in Section 13; it is considered unlikely that the proposed development will significantly impact upon the behaviour or movements of fish species in the Inner Sound, therefore indirect impacts to otter foraging are not anticipated.

18.78 A particular risk to otters (as a secondary impact from construction disturbance) is the potential for increase in road traffic due to a temporary increase in construction traffic and use of temporary access routes; this may increase the risk of fatality due to an increase in the likelihood of road traffic accidents during the construction phase. It is acknowledged that an increase in construction related road traffic will be small and a temporary impact only (refer to Section 22); however the potential for significant impact to the local otter population (i.e. increased road fatality) during the construction phase remains.

18.79 Additionally, habitat disturbance and loss will likely occur, which may result in an increase in local otter movements (away from disturbance sources). Specific mitigation will be put in place to reduce this impact where possible.

Impact significance

18.80 Due to the European Protected Species and 'near threatened[6]' status of otter, the sensitivity of this ecological receptor is considered high. The magnitude of impact is considered moderate.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
High	Moderate	Major	Significant

MITIGATION IN RELATION TO IMPACT 18.4

- Once specific Project details are known, further targeted investigation will be undertaken to ascertain the status, distribution and habitat use of otters within the Project footprint and surrounding environment.
- Where it is ascertained that disturbance to otters will be likely, application for a European Protected Species licence will be made.
- As part of the licence, implementation of on otter management plan may be necessary; this will outline best industry practices to minimise disturbance to otters where possible.
- Where increased otter road fatality risk is identified, specific mitigation measures will be put in place; this may include otter culverts (for new access tracks), steering fences and wildlife reflectors. It is recognised that installation of such measures may comprise a condition of (European Protected Species) licence, if deemed necessary and should be implemented as part of the Construction Environmental Management Plan (CEMP).

Residual impact

18.81 Following implementation of the mitigation measures outlined above, the sensitivity of the ecological receptor will remain high; however the magnitude of impact will be considered negligible. Management of indirect disturbance to otters will therefore be necessary throughout the construction phase, to ensure effective mitigation is applied to reduce this impact to an acceptable level and that the viability of the local otter population is not affected.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
High	Negligible	Minor	Not Significant

18.6.5 Impact 18.5: Disturbance to water vole

18.82 The status of water vole within the Project footprint and in the surrounding habitat is currently unknown; however, historical records of water vole exist in the local environment and suitable habitat has been identified within the Project footprint. There is potential for this species to be present within the Project footprint and therefore potential to cause disturbance to water vole habitat. Impacts to water vole are most likely to occur in Area 3, where the East and West Burn of Gills are located, in addition to numerous field drains. Notably, these habitats are located downstream of minor water courses where water vole has been previously recorded. Disturbance impacts will likely arise from construction of subterranean cable routes; this may result in physical habitat disturbance, increased ground vibrations, increased noise and increased human presence.

Impact significance

18.83 Water voles are a protected species, therefore the ecological sensitivity of this ecological receptor is considered medium. The magnitude of impact is considered moderate.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Medium	Moderate	Moderate	Significant

MITIGATION IN RELATION TO IMPACT 18.5

- Once specific Project details are known, further ecological investigation will be undertaken to ascertain the status of water vole within the onshore Project footprint and surrounding environment.
- Should water vole be present within the Project footprint, application for a relevant licence will be necessary and habitat protection measures will be implemented during the construction phase to prevent causing disturbance to water voles and water vole habitat. This will likely be included as part of a water vole mitigation plan and / or CEMP.
- Should water vole habitat be impacted by construction, affected areas will be restored to an original condition to minimise long term impacts on the local water vole population.

[6] IUCN Red List of threatened species. Available at www.iucnredlist.org [Accessed 01/09/2011]

Residual impact

18.84 Following implementation of mitigation as outlined above, the sensitivity of the ecological receptor will remain medium; however the magnitude of impact will be reduced to negligible. Management of mitigation to reduce indirect disturbance to water vole during the construction phase will be necessary, to ensure that levels of disturbance to water vole are reduced where possible.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Medium	Negligible	Negligible	Not Significant

18.7 Impacts during Operations and Maintenance

18.7.1 Impact 18.6: Temporary disturbance to otters during maintenance operations

18.85 The Project will have a planned operational life of 25 years. The majority of maintenance activities will be associated with the offshore turbines which will be retrieved from their turbine support structures (TSS) and brought ashore for maintenance. Although the specific maintenance / servicing base has not yet been determined, it will likely be removed from the onshore PCC and will utilise one of the nearby harbour / port facilities. Onshore Project components, including the PCC and grid connections will also require maintenance throughout the Project duration, although onshore components will not normally be manned. This may result in a small increase in human activity in the local environment and potentially may involve small-scale construction activities. These may result in localised habitat disturbance including increased noise and ground vibrations. There is potential for maintenance and operational activities to cause temporary disturbance to otters, particularly if sensitive habitats (otter holts and resting sites) are located in close proximity to such activities. Localised increases in road traffic may also temporarily increase the risk of otter road fatality. The results of the baseline assessment have indicated otter is the only protected species that requires detailed consideration in the impact assessment during the operational and maintenance Project phases. With reference to water vole it is their habitat that is protected and not the species itself; potential impacts on water vole habitat have therefore been give apt consideration in relation to construction and decommissioning impacts only.

18.86 Notably, coastal process modelling has confirmed that there will be no effects on coastal habitats during the operation of the tidal array (see Section 9).

Impact significance

18.87 Due to the European Protected Species and 'near threatened[7]' status of otter, the sensitivity of this ecological receptor is considered high. The temporary nature and small scale of proposed operational and maintenance activities have given a magnitude impact of negligible.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
High	Negligible	Minor	Not Significant

MITIGATION IN RELATION TO IMPACT 18.6

- Although no significant impact has been identified, mitigation measures have been provided as a precautionary approach to ensure this remains the case.
- Once specific onshore Project details are known, further, targeted investigation will be undertaken to ascertain the status, distribution and habitat use of otters within the Project footprint and surrounding environment.
- Should sensitive habitats (i.e. otter holts and resting sites) be located in close proximity to where onshore maintenance and operational activities are taking place (including near shore vessel activities), best industry practices and relevant mitigation measures will be implemented, to avoid causing unnecessary disturbance.
- Where disturbance impacts from small scale construction activities involved in the operations and maintenance of the PCC cannot be avoided, acquisition of a European Protected Species licence will be undertaken to ensure potentially disturbing works are legally permitted.
- Long term mitigation against increased risk of otter road fatality will be put in place from the construction phase onwards; it is anticipated that mitigation measures such as otter culverts (for new access tracks) and wildlife reflectors will remain effective at deterring otters from crossing roads throughout the duration of the Project.

18.8 Impacts during Decommissioning

18.8.1 Impact 18.7: Temporary disturbance to habitats during decommissioning operations

18.88 It is possible that decommissioning will involve localised construction activities such as building demolishment, with potential for temporary habitat disturbance. Precise details regarding decommissioning have yet to be confirmed; however, it is likely that disturbance impacts to terrestrial habitats will be confined to the Project footprint and immediate surrounding area. Decommissioning activities will be of a temporary nature and where occurring onshore, will have potential to cause temporary disturbance to terrestrial habitats through direct physical disturbance, increased noise, increased ground vibrations and increased human presence. Where excavations will be necessary as part of decommissioning; vegetation clearance and ground disturbance may be required.

Impact significance

18.89 Due to the modified and widespread nature of terrestrial habitats (which notably are not of conservation concern) occurring within the Project footprint, the sensitivity of this ecological receptor is considered negligible. As described above, disturbance impacts will be of a temporary nature and will likely be confined to the Project footprint and working area only. No significant impact is expected, with full recovery of affected habitats to an original condition expected through habitat restoration works, undertaken as part of completion of decommissioning activities. The magnitude of disturbance impacts to terrestrial habitats is therefore assessed as minor.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
Negligible	Minor	Negligible	Not Significant

MITIGATION IN RELATION TO IMPACT 18.7

- Although no significant impact has been identified, mitigation measures have been provided as a precautionary approach to ensure this remains the case.
- Employment of industry best practise during decommissioning works, including restoration of affected terrestrial habitats to an original condition.
- Adherence to the Environmental Management Plan (and where relevant, working method statements) throughout the decommissioning phase, aiming to reduce disturbance to terrestrial habitats where possible.

[7] IUCN Red List of threatened species. Available at www.iucnredlist.org [Accessed 01/09/2011].

18.8.2 Impact 18.8: Temporary disturbance to otters during decommissioning operations

18.90 Decommissioning operations will comprise offshore works, likely to involve vessels in near shore marine environments. Additionally, onshore decommissioning operations may include localised onshore activities occurring within the Project footprint, such as building demolishment. Precise details regarding decommissioning have yet to be confirmed; however, it is likely that any disturbance impacts to otters will be confined to the Project footprint and immediate surrounding area.

18.91 Decommissioning activities will be of a temporary nature and where occurring onshore, will have potential to cause temporary disturbance to terrestrial habitats through direct physical disturbance. Increased activity within the Project footprint may also potentially result in a localised increase in road traffic; this may have implications for otters within the surrounding environment by temporarily increasing the risk of road fatality. Offshore decommissioning activities involving near shore vessels may also cause temporary disturbance to otters utilising coastal habitats in close vicinity to the Project.

Impact significance

18.92 Due to the European Protected Species and 'near threatened[8]' status of otter, the sensitivity of this ecological receptor is considered high. The magnitude of impact is considered minor, due to the temporary nature of decommissioning activities and the fact the activities will be less than during the construction phase.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
High	Minor	Moderate	Significant

MITIGATION IN RELATION TO IMPACT 18.8

- Although the impact is of a temporary nature, it will require some management to ensure that temporary disturbance to otters from decommissioning activities remains within acceptable levels.
- Should sensitive habitats (i.e. otter holts and resting sites) be located in close proximity to where onshore and inshore decommissioning activities are taking place, best working practices and relevant mitigation measures will be implemented to avoid causing unnecessary disturbance to otters where practicably possible.
- Where disturbance impacts to otters from decommissioning activities cannot be avoided, acquisition of a EPS licence will be undertaken, to ensure potentially disturbing works are legally permitted.
- Long term mitigation against increased risk of otter road fatality will likely be in place from the construction phase onwards; it is anticipated that mitigation measures such as otter culverts (for new access tracks), steering fences and wildlife reflectors will remain effective at deterring otters from crossing roads, throughout the duration of the Project and beyond.

Residual impact

18.93 Following implementation of the mitigation outlined above, the sensitivity of otters to decommissioning disturbance impacts will remain very high; however the magnitude of impact will be reduced to negligible.

Sensitivity of receptor	Magnitude of impact	Consequence	Significance
High	Negligible	Minor	Not Significant

[8] IUCN Red List of threatened species. Available at www.iucnredlist.org [Accessed 01/09/2011].

18.9 Potential Variances in Environmental Impacts

18.94 Impact assessment in relation to terrestrial ecology has included consideration of all potential onshore Project options with assessment of impacts using a 'Rochdale envelope' approach. Both terrestrial habitats and relevant / protected species occurring within the maximum Project footprint have been given due consideration, therefore further consideration of potential variances is not required.

18.95 Existing terrestrial habitats and species occurring within the Project footprint are unlikely to change significantly in the near future. Localised changes in land use may occur due to agricultural rotation or small-scale private development; it is considered that these changes will have a limited and very localised impact (if any), on terrestrial ecology components.

18.10 Cumulative Impacts

18.10.1 Introduction

18.96 MeyGen has in consultation with Marine Scotland and The Highland Council identified a list of other projects (MeyGen, 2011) which together with the Project may result in potential cumulative impacts. The list of these projects including details of their status at the time of the EIA and a map showing their location is provided in Section 8; Table 8.3 and Figure 8.1 respectively.

18.97 Having considered the information presently available in the public domain on the projects for which there is a potential for cumulative impacts, Table 18.12 below indicates those with the potential to result in cumulative impacts from a terrestrial ecology perspective. The consideration of which projects could result in potential cumulative impacts is based on the results of the project specific impact assessment together with the expert judgement of the specialist consultant.

18.98 The following sections summarise the nature of the potential cumulative impacts for each potential project phase:

- Construction and installation;
- Operations and maintenance; and
- Decommissioning.

Project title	Potential for cumulative impact	Project title	Potential for cumulative impact	Project title	Potential for cumulative impact
MeyGen Limited, MeyGen Tidal Energy Project, Phase 2	✓	SHETL, HVDC cable (onshore to an existing substation near Keith in Moray)	✗	OPL, Ocean Power Technologies (OPT) wave power ocean trial	✗
ScottishPower Renewables UK Limited, Ness of Duncansby Tidal Energy Project	✓	Brough Head Wave Farm Limited, Brough Head Wave Energy Project	✗	MORL, Moray Offshore Renewables Ltd (MORL) offshore windfarm	✗
Pelamis Wave Power, Farr Point Wave Energy Project	✗	SSE Renewables Developments (UK) Limited, Costa Head Wave Energy Project	✗	SSE and Talisman, Beatrice offshore Windfarm Demonstrator Project	✗
Sea Generation (Brough Ness) Limited, Brough Ness Tidal Energy Project	✗	EON Climate & Renewables UK Developments Limited, West Orkney North Wave Energy	✗	BOWL, Beatrice Offshore Windfarm Ltd (BOWL) offshore windfarm	✗

Project title	Potential for cumulative impact	Project title	Potential for cumulative impact	Project title	Potential for cumulative impact
		Project			
Cantick Head Tidal Development Limited, Cantick Head Tidal Energy Project	✖	EON Climate & Renewables UK Developments Limited, West Orkney South Wave Energy Project	✖	Northern Isles Salmon, Chalmers Hope salmon cage site	✖
SSE, Caithness HVDC Connection - Converter station	✓	ScottishPower Renewables UK Limited, Marwick Head Wave Energy Project	✖	Northern Isles Salmon, Pegal Bay salmon cage site	✖
SSE, Caithness HVDC Connection - Cable	✓	SSE Renewables Developments (UK) Limited, Westray South Tidal Energy Project	✖	Northern Isles Salmon, Lyrawa salmon cage site	✖
RWE npower renewables, Stroupster Windfarm	✓	EMEC, Wave Energy test site (Billia Croo, Orkney)	✖	Scottish Sea Farms, Bring Head salmon cage site	✖
SSE, Gills Bay 132 kV / 33 k V Substation Phase 1: substation and overhead cables (AC)	✓	EMEC, Tidal energy test site (Fall of Warness, Orkney)	✖	Northern Isles Salmon, Cava South salmon cage site	✖
SSE, Gills Bay 132 kV / 33 k V Substation Phase 2: HVDC converter station and new DC buried cable	✓	EMEC, Intermediate wave energy test site (St Mary's Bay, Orkney)	✖	Scottish Sea Farms, Toyness salmon cage site	✖
SHETL, HVDC cable (offshore Moray Firth)	✖	EMEC, Intermediate tidal energy test site (Head of Holland, Orkney)	✖	Northern Isles Salmon, West Fara salmon cage site	✖

Table 18.12: Summary of potential cumulative impacts

18.10.2 Potential cumulative impacts during construction and installation

18.99 The construction operations of the projects listed in Table 18.12 (identified with potential for cumulative impact) will likely involve disturbance and localised loss of terrestrial habitats as the likely cumulative impacts to terrestrial ecology. Although specific construction details and timescales are not presently available the following summarises potential cumulative impacts from the information available to date.

18.100 The proposed Ness of Duncansby onshore infrastructure and Gills Bay substation, cable corridors and HVDC components may impact upon ecologically sensitive and important habitats such as blanket bog, which comprise designated features of protected sites. It is likely that construction related habitat disturbance will be temporary; cumulative impacts of habitat disturbance and loss may be significant where ecologically sensitive or valuable habitats are affected; however this is not applicable to the Project in consideration, where affected habitats have been assessed as modified, widespread and of little ecological value.

18.101 With regards to protected species, cumulative impacts to otter and water vole may occur during the construction phase of the Project and of the projects identified as having potential for cumulative impact. Cumulative impacts to otters and water vole of habitat disturbance and specifically to otters (potential for) displacement of prey species is recognised, however it is noted that these impacts are likely to be temporary and localised, occurring during construction and maintenance project phases only.

18.102 A key potential cumulative impact to the local otter population may be a temporary increase in road fatality risk due to an increase in road traffic during the construction phases of the Project and other projects occurring in the surrounding environment. This impact will likely be temporary and implementation of relevant project specific mitigation will reduce road fatality risk to otters throughout the region.

18.10.3 Potential cumulative impacts during operations and maintenance

18.103 Phase 2 of the MeyGen Tidal Energy Project will comprise the deployment of a further 312MW of tidal turbines offshore and associated cables to shore and onshore infrastructure. The exact geographical location, extent and nature of the onshore facilities required for Phase 2 are not yet defined and will incorporate lessons learned from and technology advancements beyond Phase 1. These factors will influence the potential for, nature of and significance of any cumulative impacts. From a terrestrial habitats and ecology perspective the requirement for additional land for onshore infrastructure has the potential for cumulative impacts. The onshore land requirement for the MeyGen Tidal Energy Project Phase 2 will not involve use of any land of conservation importance. Significant cumulative impacts are therefore not expected.

18.104 It is also acknowledged that there is potential for cumulative impacts to protected species, particularly to otters. Maintenance activities may result in disturbance to terrestrial and possibly marine otter habitats, including the potential for a slight increase in road traffic, resulting in temporary implications for otter road fatality risk. However again, significant cumulative impacts are not expected.

18.10.4 Potential cumulative impacts during decommissioning

18.105 At present it cannot be determined what concurrent works will be ongoing in the area of the Project at the time of decommissioning, other than Phases 1 and 2 of the MeyGen Project will be decommissioned at the same time, and therefore it is not possible to determine potential cumulative impacts. However, if any other works ongoing at the time are undertaken to recognised good practice standards and make use of mitigation similar to that set out for this Project, cumulative impacts will be minimised.

18.10.5 Mitigation requirements for potential cumulative impacts

18.106 No mitigation is required over and above the Project specific mitigation.

18.11 Habitats Regulations Appraisal

18.107 For projects which could affect a Natura site, a competent authority (in this case The Highland Council) is required to determine whether the proposal will have a likely significant effect on the conservation objectives of a site or any of its qualifying interests, and depending on the outcome of this determination, undertake an Appropriate Assessment of the implications of the proposal on the Natura site's conservation objectives. The responsibility for provision of information with which to inform the Appropriate Assessment rests with the applicant.

18.108 There is one SAC in the area surrounding the proposed Project, Caithness and Sutherland Peatland SAC which needs to be considered from a HRA perspective. The impact assessment work undertaken has concluded there is no likely significant effect on the habitat qualifying species for this SAC. However there is potential for impacts on otters originating from this SAC. Further information to support the Appropriate Assessment is provided in the HRA report (see HRA document on the supporting CD, MeyGen 2012).

18.109 SPAs have been considered in Section 12, Ornithology.

18.12 Proposed Monitoring

18.110 Once specific onshore development areas are known, further investigation of potential species, specifically otter and water vole will required to ascertain the status of these protected species and their habitat within the Project footprint and immediate surrounding environment. Targeted species surveys will be undertaken to determine otter and water vole presence and distribution to inform protected species licensing and monitoring requirements (should monitoring be deemed necessary), throughout the duration of the Project.

18.111 The construction contractors Environmental Clerk of Works (or equivalent) will monitor the construction team to avoid any accidental disturbance or damage to protected species or their habitats.

18.13 Summary and Conclusions

18.112 The baseline assessment identified various habitats within the Project footprint; including include semi-improved neutral and acidic grassland, improved grassland, coniferous plantation, mixed woodland, scattered trees, heathland / acid grassland mosaic, dry dwarf shrub heath and small areas of wet modified bog. These habitats are locally widespread, modified and support commonly occurring species typical of the region; no rare botanical species were observed during the field survey. Additionally, terrestrial habitats occurring within the Project footprint are not of conservation concern; therefore the sensitivity of this ecological receptor was considered negligible. Impacts to terrestrial habitats are likely to be temporary and apparent during the construction and decommissioning phases only; with affected habitats rapidly restored to an original condition following exposure to disturbance related impacts. Overall impacts associated with terrestrial habitats have been assessed as insignificant.

18.113 Although impacts on terrestrial habitats have been assessed as insignificant, habitats within the Project footprint and immediate surrounding environment may be of value to protected species; specifically water vole and otter. Terrestrial habitats including minor water courses, littoral habitats and sublittoral areas may provide these species with opportunities for shelter and foraging. Otters are present in coastal habitats adjacent to the Project footprint, therefore there is potential to cause disturbance to this species throughout the construction, operation and decommissioning phases of the Project.

18.114 Assuming a precautionary approach, impacts to otters are considered significant, albeit temporary. Potentially significant impacts to otters are only likely to occur during the construction phase of the Project, though direct disturbance to otters and otter habitats with some potential for localised habitat loss. Additionally, it is recognised there is potential to increase baseline levels of local road traffic, potentially increasing the risk of otter road fatality, particularly during the construction phase. Proposed mitigation, where implemented effectively, will manage potential impacts to otters throughout Project duration; ensuring impacts, temporary or long term, remain within acceptable levels and do not affect the viability of the local otter population.

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