CHAPTER 8: ECOLOGY

Figures

Appendices

8. ECOLOGY

8.1 Introduction

8.1.1 The aim of this Chapter is to assess the effect of the Proposed Varied Development upon ecological features associated with the development site and surrounding area; these include both terrestrial and aquatic species and habitats. The specific aims of the Chapter are to identify and assess construction effects, potential operational effects, and potential decommissioning effects.

8.1.2 This Chapter should be read in conjunction with Chapter 8 of the June 2015 Environmental Statement ("the 2015 ES"), and the subsequent Further Environmental Information Report (2016 FEI Report), included with the application as supporting information. Where information does not require updating between this Chapter and the 2015 ES, this is stated, and the original information only reproduced where it provides context for the updated assessment.

8.1.3 This Chapter's assessment is undertaken under the 2017 EIA Regulations which require inclusion in the EIA Report of the main respects in which it is considered that the likely significant effects on the environment of the Proposed Varied Development would differ from those described in the 2015 ES and 2016 FEI Report prepared in connection with the relevant section 36 consent.

8.1.4 This assessment has been completed by Chartered Ecologists with relevant accreditations (CEcol, MCIEEM) of RPS.

8.1.5 All of the proposed variations (see Section 1.4, Chapter 1: Introduction and Paragraph 8.8.1 of this Chapter) are relevant to this Chapter.

8.2 Consented Development

Summary of Effects

8.2.1 The 2015 ES assessment of habitat damage and loss (referred to as habitat loss and change within this 2019 assessment) found impacts for the site as a whole to be of Minor significance for both the dominant habitats on site: wet heath and blanket bog. As a result of the removal of one turbine, as assessed within the 2016 FEI Report, the associated amendment to the internal track layout resulted in a reduction in overall track length of approximately 700m, which therefore reduces the length of wet heath and blanket bog crossed. The 2016 FEI Report confirmed therefore that there would be a small reduction in overall habitat damage and loss as a result of the removal of one turbine and associated access track, although the level of significance for the site as a whole on these features remains at Minor, as per the 2015 ES.

8.2.2 Effects on the Gordonbush Estate Habitat Management Plan (HMP) management objectives were assessed as not significant in the 2015 ES. The 2016 FEI Report concluded that there would be no change to these findings as a result of the removal of one turbine and associated access track.

8.2.3 The 2015 ES and 2016 FEI Report assessment of effects on fauna and freshwater ecology found there to be either no impacts, or non-significant impacts, following the implementation of mitigation measures.

Consultation Responses

8.2.4 No objections to the application for consent for the Consented Development were received.

8.2.5 Of relevance to this Chapter, Scottish Natural Heritage (SNH) considered the 2015 ES and 2016 FEI Report in respect of potential impacts on the Caithness and Sutherland Peatlands Special Area of Conservation (in relation to otter), peatlands and protected species. Effects in relation to the HMP for the existing Gordonbush Wind Farm were also considered. SNH did not object to

the Consented Development, but recognised the requirement for certain mitigation measures, such as pre-construction surveys.

Relevant Mitigation Measures and Conditions of Consent

8.2.6 The 2015 ES identified mitigation measures in the form of pre-construction surveys, the employment of an Ecological Clerk of Works (ECoW), micro-siting and the production of a Construction Environmental Management Plan (CEMP).

8.2.7 The following Conditions of the existing consent are relevant for ecological matters.

Condition 8: Decommissioning and Restoration Plan

The Development will be decommissioned and will cease to generate electricity by no later than the date falling twenty-five years from the Final Commissioning Date. The total period for restoration of the Site in accordance with this condition shall not exceed three years from the Final Commissioning Date without prior written approval from the Scottish Ministers in consultation with the Planning Authority.

There shall be no Commencement of Development unless a decommissioning, restoration and aftercare strategy has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA. The strategy shall outline measures for the decommissioning of the Development, restoration and aftercare of the site and will include, without limitation, proposals for the removal of the Development, the treatment of ground surfaces, the management and timing of the works, and environmental management provisions.

No later than 3 years prior to decommissioning of the Development or expiration of this consent (whichever is the earlier) a detailed decommissioning, restoration and aftercare plan, based upon the principles of the approved decommissioning restoration and aftercare strategy, shall be submitted to the Planning Authority for written approval in consultation with SNH and SEPA. The detailed decommissioning, restoration and aftercare plan will provide updated and detailed proposals for the removal of the Development, the treatment of ground surfaces, the management and timings of the works and environment management provisions which shall include:

a) A site waste management plan (dealing with all aspects of waste produced during the decommissioning, restoration and aftercare phases);

b) Details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, material stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;

c) A dust management plan;

d) Details of measurements to be taken to prevent loose or deleterious material being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and adjacent local road network;

e) A pollution prevention and control method statement, including arrangements for the storage and management of oil and fuel on the site;

f) Soil storage and management;

g) A surface water and ground water management and treatment plan, including details of the separation of clean and dirty water drains, and location of settlement lagoons for silt laden water;

h) Sewage disposal and treatment;

i) Temporary site illumination;

j) The construction of any temporary access into the site and the creation and maintenance of associated visibility splays;

k) Details of watercrossings;

l) A species protection plan based on surveys for protected species (including birds) carried out no longer than 18 months prior to submission of the plan.

The Development shall be decommissioned, site restored and aftercare thereafter undertaken in accordance with the approved plan, unless otherwise agreed in writing in advance with the Planning Authority in consultation with SNH and SEPA.

Reason: To ensure the decommissioning and removal of the Development in an appropriate and environmentally acceptable manner and the restoration and aftercare of the site, in the interests of safety, amenity and environmental protection.

8.2.8 It is proposed to vary Condition 8 in order to avoid repetition and remove detailed reference to environmental management provisions which are included in Condition 23: CEMP. The proposed condition is shown below, with proposed modifications highlighted in tracked changes. The resulting Condition 8 is included in Appendix 1.2.

The Development will be decommissioned and will cease to generate electricity by no later than the date falling twenty-five years from the Final Commissioning Date herein referred to as the Last Operational Date. The total period for restoration of the Site in accordance with this condition shall not exceed three years from the ~~Final Commissioning~~ Last Operational Date without prior written approval from the Scottish Ministers in consultation with the Planning Authority.

~~There shall be no Commencement of Development unless a decommissioning, restoration and aftercare strategy has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA. The strategy shall outline measures for the decommissioning of the Development, restoration and aftercare of the site and will include, without limitation, proposals for the removal of the Development, the treatment of ground surfaces, the management and timing of the works, and environmental management provisions.~~

No later than 3 years prior to decommissioning of the Development or expiration of this consent (whichever is the earlier) a detailed decommissioning, restoration and aftercare plan, based upon the principles of the approved decommissioning restoration and aftercare strategy, shall be submitted to the Planning Authority for written approval in consultation with SNH and SEPA. The detailed decommissioning, restoration and aftercare plan will provide updated and detailed proposals for the removal of the Development, the treatment of ground surfaces, the management and timings of the works and environment management provisions ~~which shall include:~~

~~a) A site waste management plan (dealing with all aspects of waste produced during the decommissioning, restoration and aftercare phases);~~

~~b) Details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, material stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;~~

~~c) A dust management plan;~~

~~d) Details of measurements to be taken to prevent loose or deleterious material being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and adjacent local road network;~~

~~e) A pollution prevention and control method statement, including arrangements for the storage and management of oil and fuel on the site;~~

~~f) Soil storage and management;~~

~~*g) A surface water and ground water management and treatment plan, including details of the separation of clean and dirty water drains, and location of settlement lagoons for silt laden water;*~~

~~*h) Sewage disposal and treatment;*~~

~~*i) Temporary site illumination;*~~

~~*j) The construction of any temporary access into the site and the creation and maintenance of associated visibility splays;*~~

~~*k) Details of watercrossings;*~~

~~*A species protection plan based on surveys for protected species (including birds) carried out no longer than 18 months prior to submission of the plan.*~~

The Development shall be decommissioned, site restored and aftercare thereafter undertaken in accordance with the approved plan, unless otherwise agreed in writing in advance with the Planning Authority in consultation with SNH and SEPA.

Reason: To ensure the decommissioning and removal of the Development in an appropriate and environmentally acceptable manner and the restoration and aftercare of the site, in the interests of safety, amenity and environmental protection.

Condition 11: Micro-siting

The turbines, access tracks and crane hardstanding areas may be micro-sited but no more than 50 metres from the positions shown in the approve plan (Figure 4.2 of Volume 3 of the Environmental Statement) unless otherwise agreed in writing with the Planning Authority in consultation with SEPA. Micro-siting will also be constrained to ensure 50m buffers are retained from all watercourses, except in the vicinity of approved water crossings.

Reason: In order to allow some flexibility in respect of the pre development assessment of deep peat and of Groundwater Terrestrial Dependent Eco- systems on the site.

8.2.9 Minor variations to the wording of this Condition are proposed to include underground cables within the micro-siting Condition as these are often aligned with access tracks. The proposed changes are reflected below and in Appendix 1.2.

The turbines, access tracks, cables and crane hardstanding areas may be micro-sited but no more than 50 metres from the positions shown in the approve plan (Figure 4.1~~2~~ of Volume 3 of the EIA Report~~Environmental Statement~~) unless otherwise agreed in writing with the Planning Authority in consultation with SEPA. Micro-siting will also be constrained to ensure 50m buffers are retained from all watercourses, except in the vicinity of approved water crossings.

Reason: In order to allow some flexibility in respect of the pre development assessment of deep peat and of Groundwater Terrestrial Dependent Eco- systems on the site.

Condition 13: Buildings and other Facilities

No development shall commence until full details of the location, layout, external appearance, dimensions and surface materials of all additional buildings, compounds, parking areas, as well as any external lighting, fuel storage, fencing, walls, paths and any other ancillary elements of the development, have been submitted to, and agreed in writing by, the Planning Authority (in consultation with SEPA, as necessary). Thereafter, development shall progress in accordance with these approved details.

Reason: To ensure that all ancillary elements of the development are acceptable in terms of visual, landscape noise and environmental impact considerations.

8.2.10 No changes are proposed to this Condition of Consent.

Condition 14: Borrow Pits

No development shall commence until a site specific scheme for the working and restoration of the borrow pits has been submitted to and approved in writing by the Planning Authority in consultation with SEPA. The scheme shall include:

a) A detailed working method statement based on site survey information and ground investigation;

b) Details of handling of any overburden (including peat, soil and rock);

c) Drainage, including measures to prevent surrounding areas of peatland, water dependent sensitive habitats and Ground Water Dependent Terrestrial Ecosystems (GWDTE) from drying out;

d) A programme of implementation of the works described in the scheme; and,

e) Full details of the reinstatement, restoration and aftercare of the borrow pit(s) at the end the construction period, to include topographic surveys of pre-construction profiles, and details of topographic surveys to be undertaken to restoration the borrow pit profiles.

Reason: To ensure that excavation of materials from the borrow pit(s) is carried out in a manner that minimises the impact on road safety, amenity and the environment and to secure the restoration of borrow pit(s) at the end of the construction period.

8.2.11 No changes are proposed to this Condition of Consent.

Condition 23: Construction and Environmental Management Plan

There shall be no Commencement of Development unless a Construction Environmental Management Plan ("CEMP") outlining the specific details of all on-site construction works, post-construction reinstatement, drainage and mitigation, together with details of the timetabling, has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA.

The CEMP shall include (but shall not be limited to):

a) A site waste management plan (dealing with all aspects of waste produced during the construction period (other than peat), including details of contingency planning in the event of accidental release of materials which could cause harm to the environment;

b) Details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, materials stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;

c) A dust management plan;

d) Site specific details for management and operation of any concrete batching plant (including disposal of pH rich waste water and substances);

e) Details of measures to be taken to prevent loose or deleterious materials being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and the adjacent location road network;

f) A pollution prevention and control method statement, including arrangements for the storage and management of oil and fuel on the site;

g) Soil storage and management;

h) A peat management plan, to include details of vegetated turf stripping and storage, peat excavation (including volumes), handling, storage and re-use;

i) A drainage management strategy, demonstrating how all surface and waste water arising during and after development will be managed and prevented from polluting any watercourses or sources;

j) A surface water and groundwater management and treatment plan, including details of the separation of clean and dirty water drains, and locations of settlement lagoons for silt laden water;

k) Sewage treatment and disposal;

l) Temporary site illumination;

m) The construction of the access into the site and the creation and maintenance of associated visibility splays;

n) The methods of construction of crane pads;

o) The methods of construction of turbine foundations;

p) The methods of working cable trenches;

q) The methods of construction and erection of the wind turbines and meteorological masts;

r) Details of watercourse crossings;

s) Post construction restoration / reinstatement of the working areas not required during the operation of the Development, including construction access tracks, borrow pits construction compound, storage areas, laydown areas, access tracks, passing places and other construction areas.

The development shall be implemented thereafter in accordance with the approved CEMP unless otherwise approved in advance in writing by the Planning Authority in consultation with SNH and SEPA.

Reason: To ensure that all construction operations are carried out in a manner that minimises their impact on road safety, amenity and the environment, and that the mitigation measures contained in the Environmental Statement accompanying the application, or as otherwise agreed, are fully implemented.

8.2.12 Minor variations to the wording of Condition 23 are proposed to clarify wording in relation to specific requirements of the CEMP. The proposed Condition is shown below, with proposed variations highlighted in tracked changes. The resulting Condition 23 is included in Appendix 1.2.

There shall be no Commencement of Development unless a Construction Environmental Management Plan ("CEMP") outlining the specific details of all on-site construction works, post-construction reinstatement, drainage and mitigation, together with details of the timetabling, has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA.

The CEMP shall include (but shall not be limited to):

a) A site waste management plan (dealing with all aspects of waste produced during the construction period (other than peat)~~, including details of contingency planning in the event of accidental release of materials which could cause harm to the environment~~;

b) Details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, materials stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;

c) A dust management plan;

d) Site specific details for management and operation of any concrete batching plant (including disposal of pH rich waste water and substances);

e) *Details of measures to be taken to prevent loose or deleterious materials being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and the adjacent location road network;*

f) *A pollution prevention and control method statement, including arrangements for the storage and management of oil and fuel on the site;*

g) *Soil storage and management;*

h) *A peat management plan, to include details of vegetated turf stripping and storage, peat excavation (including volumes), handling, storage and re-use;*

i) *A drainage management strategy, demonstrating how all surface and waste water arising during and after development will be managed and prevented from polluting any watercourses or sources;*

j) *A surface water and groundwater management and treatment plan, including details of the separation of clean and dirty water drains, and locations of settlement lagoons for silt laden water;*

k) *Sewage treatment and disposal;*

l) *Temporary site illumination;*

m) *The construction of the access into the site and the creation and maintenance of associated visibility splays;*

n) *The methods of construction of crane pads;*

o) *The methods of construction of turbine foundations;*

p) *The methods of working cable trenches;*

q) *The methods of construction and erection of the wind turbines and meteorological masts;*

r) *Details of watercourse crossings;*

s) *Post construction restoration / reinstatement of the working areas not required during the operation of the Development, including ~~construction access tracks~~, borrow pits construction compound, storage areas~~,~~ and laydown areas~~, access tracks, passing places and other construction areas.~~;*

t) *Environmental Incident and Emergency Plan including details of contingency planning in the event of accidental release of materials which could cause harm to the environment;*

u) *Details of species and habitat protection measures to be implemented for the construction period and details of appropriate relevant reporting and monitoring programmes.*

The development shall be implemented thereafter in accordance with the approved CEMP unless otherwise approved in advance in writing by the Planning Authority in consultation with SNH and SEPA.

Reason: To ensure that all construction operations are carried out in a manner that minimises their impact on road safety, amenity and the environment, and that the mitigation measures contained in the Environmental Statement accompanying the application, or as otherwise agreed, are fully implemented.

Condition 24: Ecological Clerk of Works

There shall be no Commencement of Development unless the Planning Authority has approved in writing the terms of appointment by the Company of an independent Ecological Clerk of Works (ECoW) in consultation with SNH and SEPA. The terms of appointment shall;

a) *Impose a duty to monitor compliance with the ecological and hydrological commitments provided in the environmental statement and other information lodged in the*

environmental statement and other information lodged in support of the application, eth Construction and Environmental Management Plan, the Habitat Management Plan approved in accordance with condition 25, and other plans approved in terms of condition 23;

b) Require the ECoW to report to the Company's construction project manager any incidences of non-compliance with the ECoW works at the earliest practical opportunity;

c) Require the ECoW to submit a monthly report to the Planning Authority summarising works undertaken on site; and

d) Require the ECoW to report to the Planning Authority any incidences of non-compliance with the ECoW Works at the earliest practical opportunity.

The ECoW shall be appointed on the approved terms throughout the periods from Commencement of Development, through any period of construction activity and during any period of post construction restoration works approved in terms of condition 8.

No later than 18 months prior to decommissioning of the Development or the expiration of this consent (whichever is the earlier), the Company shall submit details of the germs of appointment by the Company of an independent ECoW throughout the decommissioning, restoration and aftercare phases of the Development to the Planning Authority for approval in consultation with SNH and SEPA. The ECoW shall be appointed on the approved terms throughout the decommissioning, restoration and aftercare phases of the Development.

Reason: To secure effective monitoring of and compliance with the environmental mitigation and management measures associated with the Development.

8.2.13 Minor changes to the wording of Condition 24 are proposed. The proposed variations are reflected below and in Appendix 1.2.

There shall be no Commencement of Development unless the Planning Authority has approved in writing the terms of appointment by the Company of an independent Ecological Clerk of Works (ECoW) in consultation with SNH and SEPA. The terms of appointment shall;

a) Impose a duty to monitor compliance with the ecological and hydrological commitments provided in the environmental statement and other information lodged in the ~~environmental statement~~EIA Report and other information lodged in support of the application, the Construction and Environmental Management Plan, the Habitat Management Plan approved in accordance with condition 25, and other plans approved in terms of condition 23;

b) Require the ECoW to report to the Company's construction project manager any incidences of non-compliance ~~with the ECoW works~~ at the earliest practical opportunity;

c) Require the ECoW to submit a monthly report to the Planning Authority summarising works undertaken on site; and

d) Require the ECoW to report to the Planning Authority any incidences of non-compliance ~~with the ECoW Works~~ at the earliest practical opportunity.

The ECoW shall be appointed on the approved terms throughout the periods from Commencement of Development, through any period of construction activity and during any period of post construction restoration works approved in terms of condition 8.

No later than 18 months prior to decommissioning of the Development or the expiration of this consent (whichever is the earlier), the Company shall submit details of the germs of appointment by the Company of an independent ECoW throughout the decommissioning, restoration and aftercare phases of the Development to the Planning Authority for approval in consultation with SNH and SEPA. The ECoW shall be appointed on the approved terms throughout the decommissioning, restoration and aftercare phases of the Development.

Reason: To secure effective monitoring of and compliance with the environmental mitigation and management measures associated with the Development.

Condition 25: Habitat Management Plan

There shall be no Commencement of Development unless a habitat management plan has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA. The habitat management plan shall set out proposed habitat management of the wind farm site during the period of construction, operation, decommissioning, restoration and aftercare of the site, and shall provide for the maintenance, monitoring and reporting of any deer, breeding birds, otter, pine marten and water vole habitat on site.

The approved habitat management plan will include provision for regular monitoring and review to be undertaken to consider whether amendments are needed to better meet the habitat plan objectives. In particular, the approved habitat management plan will be updated to reflect ground condition surveys undertaken following construction and prior to the date of Final Commissioning and submitted to the Planning Authority for written approval in consultation with SNH and SEPA.

Unless otherwise agreed in advance in writing with the Planning Authority, the approved habitat management plan shall be implemented in full.

Reason: In the interests of good land management and the protection of habitats.

8.2.14 It is proposed to vary Condition 25 to increase clarity of the HMP's objectives and to help ensure it focusses on mitigating the significant predicted effects. The proposed Condition is shown below, with proposed variations highlighted in tracked changes. The resulting Condition 25 is included in Appendix 1.2.

> ~~*There shall be no Commencement of Development unless a habitat management plan has been submitted*~~ *Prior to Commissioning of the Development the draft habitat management plan shall be amended, as necessary, and submitted to and approved in writing by the Planning Authority in consultation with SNH~~. and SEPA.~~ The habitat management plan shall set out proposed habitat management measures ~~of the wind farm site~~ during the operational period of the site to mitigate significant environmental impacts identified in the EIA Report.~~ of construction, operation, decommissioning, restoration and aftercare of the site, and shall provide for the maintenance, monitoring and reporting of any deer, breeding birds, otter, pine marten and water vole habitat on site.~~*
>
> *The Applicant should investigate the opportunity to align and consolidate the Gordonbush Estate HMP and any proposed HMP for the Proposed Varied Development. ~~The approved habitat management plan will include provision for regular monitoring and review to be undertaken to consider whether amendments are needed to better meet the habitat plan objectives. In particular, the approved habitat management plan will be updated to reflect ground condition surveys undertaken following construction and prior to the date of Final Commissioning and submitted to the Planning Authority for written approval in consultation with SNH and SEPA.~~*

Unless otherwise agreed in advance in writing with the Planning Authority, the approved habitat management plan shall be implemented in full.

Reason: In the interests of good land management and the protection of habitats.

8.3 Scope of Assessment

Study Area

8.3.1 The information provided in the 2015 ES remains relevant and the application boundary has not altered between the 2015 ES and this document. Alterations to the proposed development include reduced number of turbines (from 15 to 11), their associated parameters including

blade length, and infrastructure locations. As such, the resulting assessment relating to habitat loss, the effects of the turbines on foraging and commuting bats, and on the local otter population are reconsidered in this document. For context, details of the Proposed Varied Development are illustrated in Figure 4.1: Proposed Varied Development.

Consultations

8.3.2 Pre-application consultation with relevant stakeholders was undertaken in August and September 2018 for the Proposed Varied Development, the responses to which are included in Appendix 6.1: Pre-Application Advice Pack. A summary of the responses received relevant to Ecology are provided in Table 8.1 below.

Table 8.1: Consultation Summary Relevant to Ecological Features

Consultee	Summary Response	Comment / Action Taken
SNH	**Protected Areas**: The proposed development abuts the Caithness and Sutherland Special Area of Conservation (SAC), Special Protection Area (SPA) and Wetland of International Importance (Ramsar site). These sites are designated for otter, peatland habitats and upland birds. Previous surveys identified otter holts in proximity to the development. The impacts of the development should be assessed against the SAC as part of a Habitats Regulations Appraisal (HRA). A Species Protection Plan will be required as part of the EIA Report to ensure that this development can be taken forwards with the SAC otters living alongside. We recommend that otter surveys within and adjacent to the development boundary should be updated to inform and appropriate mitigation plan	Section 8.10 details the potential residual effects of the development to otters (a qualifying feature of the SAC), with Section 8.12 providing an assessment of the potential effects of the development to the SAC. A report to inform the HRA has also been produced as Appendix 8.3. A Species Protection Plan is provided as Appendix 8.1 of this Chapter. Details of the otter surveys completed within and adjacent to the site boundary are provided in Section 8.7.4 and Figure 8.1.
	Protected Species: SNH advised that additional bat survey work was not required to support this submission. However, it was advised that turbine stand-off distances from bat features should be re-assessed in relation to the wider rotor sweep of the larger turbines, taken from turbine tip. Pre-commencement water vole surveys were required to ensure that water voles are safeguarded during construction works.	Section 8.7 – Bats, provides a summary of the survey results for bats completed for the 2015 ES. Section 8.10 – Bats, provides an updated assessment of the potential effects of the Proposed Varied Development to bats. Details of the pre-commencement water vole surveys are provided in Appendix 4.1: Draft Construction Environment Management Plan.
Highland Council	The Highland Council (THC) advised that impacts on natural, built and cultural heritage features within 5km of the proposed development should be considered during the assessment process.	Section 8.12 provides an assessment of the potential effects of the development to the Caithness and Sutherland Peatland SAC which abuts the western development boundary.

Consultee	Summary Response	Comment / Action Taken
SEPA	**Disruption to Ground Water Dependent Terrestrial Ecosystems (GWDTE):** SEPA advised the following: 1. A map demonstrating that all GWDTE are outwith a 100m radius of all excavations shallower than 1m and outwith 250m for all excavations greater than 1m. 2. If the above parameters cannot be achieved, a detailed site-specific risk assessment will be required.	The position of the turbines, tracks and borrow pit search areas will be as per the Consented Development, albeit the number of turbines and track length is reduced. Therefore, the 2015 ES is relied upon and it is not proposed to provide this information again. Condition 14 is designed to protect GWDTEs, and water quality and drainage provisions in the CEMP (Condition 23) also are in place to protect these areas. Section 8.2 – Relevant Mitigation Measures and Conditions of Consent commits to comply with both Condition 14 and 23 for the Proposed Varied Development, with minor variations as outlined in Appendix 1.2 of this EIA Report.

8.4 Legislation, Policy & Guidance

8.4.1 A number of legislative, policy and guidance documents have been updated since the 2015 ES was submitted. A summary of all new or updated documents is provided in Table 8.2 below. Documents not included within Table 8.2 remain as per the 2015 ES and are not included but have been considered where relevant.

Table 8.2 Key Protective Legislation offered to Habitats and Species Which Has Altered Since the 2015 ES

Document	Brief description
Legislation	
The Habitats and Species Regulations 2017	Changes that have been made serve to update references to related legislation and improve the overall text of the Regulations. Such changes include the removal of references to 'regional strategies' and 'unitary development plans' and the insertion of the River Tweed Commission as a relevant authority. This revised legislation is relevant to Scotland only in reserved matters.
Policy	
Highland Council Local Biodiversity Action Plan (2015-2020)	The new Plan identifies 33 priorities for future work. For each, a number of projects have been identified, with a lead partner taking on the responsibility to work with other Highland Environment Forum members to deliver action over the next five years.
Guidance	
Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2018)	This document updates the previous iterations of the guidance detailing the methods for implementing Ecological Impact Assessment and a focus on the hierarchy of avoidance, mitigation and compensation. The table-based approach of assessment has been removed from the original (2006) version of the guidance used in the previous assessment with the emphasis switched to professional judgement.
Bat Conservation Trust's Bat Surveys for Professional Ecologist. Good Practice Guidelines (Collins, 2016).	This document provides the third edition of the standard guidance for professional ecologists assessing the presence of bats for development. There is no great change in the content of the document, only the structure and layout.
SNH General Pre-Application Advice to Developers of Onshore Wind Farms (SNH, 2018)	This document provides a checklist of the submission requirements for onshore wind farm applications. This now includes an assessment of the use of the ground by native deer populations and the potential impact of their dispersal.

8.5 Methodology

8.5.1 The method of assessment follows that of CIEEM (2018) guidance. As part of pre-application advice (see Appendix 6.1: Pre-Application Advice Pack) SNH did not request an up-dated desk study or new fieldwork for the Proposed Varied Development, with the exception of otters (to help inform the EIA and HRA), and a recommendation to undertake a pre-construction water vole survey (to facilitate avoidance of sensitive areas by construction traffic). The 2015 ES has therefore been used for this current assessment, coupled with otter survey results from 2018. This is deemed adequate to fulfil this requirement.

8.5.2 Otter field surveys in 2018 followed the methods described in SNH (2008) and covered all watercourses within the wind farm site boundary and a surrounding buffer of 200m. Surveys were completed by two RPS Ecologists in October 2018 with experience of assessing otter populations in an upland environment. During these surveys, all previously identified resting sites were revisited and assessed for their continued use, along with seeking to identify any additional sites used by the species.

8.5.3 No additional surveys were completed for habitats as these were deemed unlikely to have altered during the intervening time period between submissions. However, the data collected for the 2015 ES will be used to assess the predicted habitat loss as a result of the Proposed Varied Development.

8.5.4 As part of pre-application advice (see Appendix 6.1: Pre-Application Advice Pack) SNH stated that no further field work was required for bat species but did request consideration be given to the turbine locations and their proximity to features potentially used by bats for foraging, commuting and roosting, following Natural England (2014) guidance.

8.5.5 In addition to the species above, the 2015 ES considered the potential impact of the development on water voles, badgers, pine martens, wild cats, reptiles, fish and fresh water pearl mussels. No significant effects were concluded for these species. Further assessment of any likely significant effect of the Proposed Varied Development on these species has not been requested during pre-application discussions, and in any event given the reduced scale of the Proposed Varied Development, it is considered that effects will be similar or reduced compared with the Consented Development. Consequently, as no significant effects were predicted for the Consented Development, no further assessment is necessary within this document.

8.6 Assessment of Effects

8.6.1 The assessment process will follow that as detailed in CIEEM (2018) and is similar in nature to that used in the 2015 ES which followed IEEM (2006), however a greater emphasis is placed on professional judgement of the reporting ecologist rather than a table-based assessment. The term Valued Ecological Receptor (VER) has been replaced with that of Important Ecological Feature (IEF) for those species and habitats identified to be included in the assessment. For each impact with the potential to affect the relevant IEFs, the assessment considers the following parameters:

- Whether the impact is positive or negative in its influence;
- The extent of the impact;
- The magnitude, duration and timing of the impact; and
- The impact's frequency and ease of reversibility.

8.6.2 The assessment similarly includes consideration of any proposed mitigation to avoid or minimise the effect of any potential impact to the relevant IEFs and identifies any potential cumulative impacts from surrounding developments prior to determining the residual significance of any effect, be this negligible, minor, moderate or major.

8.7 Baseline Conditions

Desk Based Assessment

8.7.1 During the 2015 ES the National Biodiversity Network (NBN) Gateway was consulted for records of legally protected and notable species of conservation concern within the 10km grid square NC81 which the development is situated in. The Highland Biological Records Group (HBRG) were also consulted for records of the key species groups protected by both UK or European legislation that are recorded in the locality of the development. The results of these consultations are shown in Tables 8.3 and 8.4 respectively.

Table 8.3: NBN Gateway Records for NC81 provided for the 2015 ES

Species	Status
Arvicola amphibius - European water vole (recorded in one x 1km square in the upper Development site and in one x 1km square on the upper Allt Smeorail to the east of the site)	UK Biodiversity Action Plan Priority Species, Scottish Biodiversity List, Wildlife and Countryside Act
Salmo salar - Atlantic salmon	Annexes II and V Habitats Directive, Schedule 3 UK Habitats Regulations 1994, UK BAP Priority Species, Scottish Biodiversity List

Table 8.4: Records of Legally Protected and Notable Species of Conservation Concern for the Site and Environs obtained from HBRG

Species	Site	2km from site	10km from site (bats only)	Status
Arvicola amphibius - European water vole	Y	Y		UK BAP Priority Species, Scottish Biodiversity List, WCA
Bufo bufo - Common toad		Y		UK BAP Priority Species, WCA
Martes martes - Pine marten		Y		UK BAP Priority Species, WCA, Habitats Directive
Coenonympha pamphilus - Small heath butterfly		Y		UK BAP Priority Species, GB Red List Species
Physocephala nigra - insect - true fly (Diptera)		Y		GB Red List species
Plecotus auritus - Brown long-eared bat			Y	UK BAP Priority Species, Habitats Directive
Pipistrellus - Pipistrelle bat species			Y	UK BAP Priority Species, Habitats Directive

Field Based Assessments

Habitats

8.7.2 The information provided in the 2015 ES remains relevant as habitats mapped are unlikely to have altered in the intervening time period due to the non-intrusive land use of the area between submission dates. Both Phase 1 Habitat survey and National Vegetation Classification (NVC) survey data were compiled for the 2015 ES. The main findings are as follows:

- The majority of the survey area supports the blanket bog community M17 Trichophorum-Eriophorum mire, but with M15 Trichophorum-Erica wet heath, H10 Calluna-Erica heath and H12 Calluna-Vaccinium heath more prevalent to the south and west, where the slope increases and the peat becomes thinner;

- Acid M6 Carex-Sphagnum mire marks out flush lines, typically along the fringes of watercourses. Other communities include small areas of U4 Festuca-Agrostis-Galium grassland, bracken and U6 Juncus-Festuca grassland;
- The blanket bog has been subject to historic draining (with moorland grips present in much of the habitat), peat cutting and, more recently, burning. This has modified the floristic character in certain areas giving rise to a drier bog community largely dominated by deer grass and heather, particularly in the north-west of the site. In other, flatter areas, drainage has had a limited impact on floristic character with good levels of Sphagnum still present;
- Burning has also created a hybrid wet/dry heath community with affinities to both the M15 Trichophorum-Erica wet heath and H10 Calluna-Erica dry heath;
- Species of interest include Sphagnum fuscum and great sundew (Drosera anglica), both of which are found in the M17 mire. S.fuscum occasionally occurs in the least disturbed areas with the deepest peats, while D.anglica is found relatively frequently across the community. S.fuscum, is a scarce plant of raised bogs in northern England and southern Scotland, but is more frequent in the Eastern and Northern Highlands, where it also occurs in flushes and blanket bogs above 400m (Hill et al., 1992 and Smith 2004). D.anglica is a scarce species in southern Scotland and England, but is more commonly found in the Central and Northern Highlands (Preston et al., 2002);
- No Nationally Rare or Scarce species (i.e. occurring in 15 or fewer 10km squares, and 16-100 10km squares respectively) were recorded on the site; and
- There is no hydrological continuum of habitat with the Coir' an Eoin SAC and SSSI to the west of the site.

8.7.3 Figure 8.3 of the 2015 ES provides the Phase 1 Habitat survey results, and a summary of these is provided in Table 8.5, below.

Table 8.5: Phase 1 Habitats & Principal NVC Communities of the Habitat Study Area

Phase 1 Habitat code	Phase 1 Habitat	Associated NVC communities	Hectares / % area of the Study Area
A1.1.1	Semi-natural Broadleaved Woodland	-	0.004 /< 0.01%
A1.2.2	Coniferous Plantation	-	10.12 / 1.39%
A2.1	Continuous Scrub	-	0.01 / <0.01%
B1.1	Unimproved acid grassland	**U4a** *Festuca ovina - Agrostis capillaris-Galium saxatile* grassland, typical sub-community **U6** *Juncus squarrosus - Festuca ovina* grassland	7.40 / 1.01%
B1.2	Semi-improved Acid Grassland	**U4a** *Festuca ovina - Agrostis capillaris-Galium saxatile* grassland, typical sub-community **U6** *Juncus squarrosus - Festuca ovina* grassland	0.47 / 0.06%
B4	Improved grassland/pasture	**U4a** *Festuca ovina - Agrostis capillaris-Galium saxatile* grassland, typical sub-community	1.20 / 0.16%
B5	Marsh/Marshy grassland	**M25** *Molinia caerulea – Potentilla erecta* mire	33.71 / 4.62%
C1.1	Bracken	**U20** *Pteridium aquilinum – Galium saxatile* community	4.60 / 0.63%
D1.1	Dry acid heath	**H12a** *Calluna vulgaris – Vaccinium myrtillus* heath, *Calluna vulgaris* sub-community	54.80 / 7.51%

		H10a *Calluna vulgaris - Erica cinerea* heath, typical sub-community	
D2	Wet heath	**M15b** *Trichophorum germanicum - Erica tetralix* wet heath, typical sub-community	149.64 / 20.50%
D5	Dry heath/acid grassland	**H10a** *Calluna vulgaris - Erica cinerea* heath, typical sub-community **H12a** *Calluna vulgaris – Vaccinium myrtillus* heath, *Calluna vulgaris* sub-community **U4a** *Nardus stricta –Galium saxatile* grassland, species-poor sub-community	5.41 / 0.74%
E1.6.1	Blanket bog	**M17a** *Trichophorum germanicum-Eriophorum vaginatum blanket* mire*, Drosera rotundifolia - Sphagnum spp.* sub-community	462.01 / 63.28%
E2.1	Acid/neutral flush	**M6c** *Carex echinata - Sphagnum recurvum/ auriculatum* mire, *Juncus effusus* sub-community	0.13 / 0.02%
J3.6	Built up (existing) infrastructure)	-	0.23 / 0.07%
			Total Area: 730.05

Otters

8.7.4 Figure 8.1 shows the results of the 2018 otter surveys, with Table 8.6 summarising the results.

Table 8.6: 2018 Otter Survey Results

Sign Number	Sign	Easting	Northing	Brief description
1	Spraint	2843	9138	Very old and grey spraint on rock on east bank.
2	Holt	2843	9138	Holt between boulders on west bank of burn covered in heather and moss. Old spraint inside. Chamber extends 1m into rockface with some bedding material at the back.
3	Spraint	2833	9127	Two old spraints on rock on west bank.
4	Spraint	2835	9134	Old spraint on rock on west bank.
5	Spraint	2844	9142	Old spraint on rock on west bank.
6	Spraint	2841	9147	Recent spraint on moss tussock on west bank.
7	Spraint	2833	9126	1 fresh spraint and 1 recent spraint on rock on east bank.
8	Couch	2837	9135	1 couch under the roots of an over turned silver birch tree 1m from water's edge on east bank.
9	Spraint	2837	9135	5 old spraints on rocks inside couch under overturned silver birch roots. 1m from river's edge on east bank.
10	Couch	2839	9137	Couch on rock overhang on east bank half a meter from water's edge.
11	Spraint	2839	9137	4 old spraints in couch in rock overhang on east bank half a meter from the water's edge.
12	Couch	2839	9139	Couch on north bank under old timber bridge.
13	Spraint	2839	9139	5 old spraints on north bank under an old timber bridge. On south bank under the bridge there were 3 old and 1 slightly more recent spraints.

Sign Number	Sign	Easting	Northing	Brief description
14	Spraint	2840	9141	Old spraint on west bank outside an active badger sett which is possibly used by the otters. However 2 prints were found (possibly badger) and badger hair was found at the entrance to the sett.
15	Couch	2842	9149	Small cave on east bank 1m from water's edge. Cave covered with overhanging heather but is quite open.
16	Spraint	2842	9149	3 old spraints found on rocks in a couch on east bank 1m from water's edge.
17	Slide	2824	9107	Half a metre from water's edge on east bank. Half dug hole with slide into water, within 1m there was another half dug hole with an active wasps nest inside along with salmon eggs. Grass in area was well trodden with paths into surrounding grass.
18	Spraint	2824	9107	Fresh spraint at the top of the slide in TN 17 above entrance to half dug hole.
19	Spraint	2824	9106	Recent spraint on small moss mound on a mammal paths that follow the line of grass up the watercourse.

Bats

8.7.5 No updated bat surveys were completed for this assessment, however the following summarises the information provided to support the 2015 ES.

8.7.6 The study area offers only limited foraging habitat for bats, which were recorded in very low numbers by both the transects and static detectors within the site. Bats were more commonly recorded by the static detectors foraging on and just beyond the south east edge of the study area (i.e. off-site), close to the woodland areas and along stream sides, which are likely to provide foraging corridors into the site.

8.7.7 Four species of bats were recorded by the static detectors - soprano and common pipistrelle bat (*P. pipistrellus* and *P. pygmaeus*), Daubenton's bat (*Myotis daubentonii*) and Natterer's bat (*M.nattereri*). No bat roosts were found on the site. A single pipistrelle bat was found to be roosting nearby in the ruined cottage to the south east of the site, and a number of buildings near to the public road to the south of the site were found to have the potential to support bat roosts.

8.8 Potential Effects

Key Development Issues

8.8.1 The key characteristics of the Proposed Varied Development that are relevant to the assessment of effects are as follows:

- Removal of four turbines from the consented layout;
- Increase in the height of the remaining eleven turbines from 130m up to a maximum blade tip height of 149.9m (with a maximum rotor diameter of up to 136m);
- Reduction in length of access track given removal of four turbines;
- Removal of the consented additional operations building;
- Repositioning of temporary batching plant;
- Amendment to indicative Borrow Pit (BP) extraction volumes;
- Removal of Permanent Operational Met Mast;

- Repositioning and substitution of the Permanent Meteorological Mast to a LiDAR and associated 4x4 track; and
- Retention of existing operational Gordonbush Wind Farm meteorological mast (southern).

Main Potential Effects

8.8.2 The potential effects on Ecology can be split into direct and indirect effects and include:

- Temporary or permanent habitat loss, change and fragmentation by site infrastructure;
- Noise and visual disturbance to fauna during construction, operation and decommissioning;
- Faunal fatalities; and
- Freshwater contamination through sedimentation and/or pollution from surface runoff during construction.

8.8.3 There will be some loss of and change to upland habitat due to the site infrastructure.

8.8.4 The potential for impacts on the local otter population during construction through habitat loss, accidental killing or injury, disturbance and water pollution will be considered, along with ongoing operational impacts from maintenance of the development.

8.8.5 The potential for impacts to the local bat population during construction from illumination of works, and during operation from the rotating rotor blades will be considered.

8.9 Mitigation and Enhancement

8.9.1 Mitigation of the potential effects of the Proposed Varied Development on IEFs present within the site would be achieved through the careful management of the construction and operational phases of the development. Additional enhancement measures are also proposed to improve the biodiversity of the Proposed Varied Development site and the surrounding landscape. All relevant mitigation measures would be implemented through a Construction Environment Management Plan (CEMP) and Construction Method Statements, with enhancement measures implemented through a Habitat Management Plan.

2015 ES / 2016 FEI Report

8.9.2 The following design, management and mitigation measures were proposed in the 2015 ES and will continue to be implemented for the Proposed Varied Development:

- Site infrastructure design to minimise impacts on habitats of highest sensitivity as far as possible, including avoidance of all watercourse crossings (visible on 1:50,000 OS Mapping) and locating turbines more than 50m from watercourses, woodland edges, areas of high GWDTE and moderate where possible), and areas of deep peat;
- An Ecological Clerk of Works (ECoW) would be appointed for the construction period to oversee ecological mitigation measures;
- Final locations of site infrastructure in or close to sensitive habitats to be micro-sited, in consultation with the ECoW, to minimise impacts;
- 50m exclusion zones will be maintained between working areas/machinery and watercourses (except watercourse crossing points). Exclusion zones will be demarcated where necessary by the ECoW;
- Demarcation of defined working areas during construction phase to prevent unnecessary entry to and disturbance of sensitive habitats, including otter habitat along the watercourses;
- The relevant Pollution Prevention Guidelines would be followed;

- Adoption of best practice techniques of track and turbine base construction to ensure that drainage patterns and water quality within the site and environs are maintained; materials inappropriate to site geology are not used in the construction; and to minimise habitat loss and damage;
- Adoption of best practice techniques to ensure stored materials (including fuel, concrete etc.) do not contaminate soils or watercourses;
- Adoption of best practice techniques in borrow pits to ensure any pumped drainage water is settled prior to discharge to watercourses;
- Early restoration of all road batters, turbine bases, site compounds and borrow pits to minimise effects due to soil/peat exposure and erosion and to optimise the chances of successful use of retained live plant material;
- Pre-construction otter and water vole surveys will be undertaken within three months prior to works commencing (or during the suitable survey period prior to works commencing);
- Works will avoid working near watercourses and woodland edges during twilight and night time periods to avoid disturbance to otters and bats. If this cannot be achieved, all illumination will be directed away from watercourses and woodland edges; and
- Site specific species protection protocols would be produced to be included in the CEMP.

Relevant Conditions of Consent

8.9.3 The above mitigation measures are secured through Conditions of Consent, as noted in Section 8.2 of this Chapter (see also Appendix 4.2: Schedule of Mitigation). In addition to the above mitigation measures, a Habitat Management Plan is provided as Appendix 8.2 as per a Condition of the Consented Development (as noted in Section 8.2). The HMP will provide enhancement of the Proposed Varied Development site and the wider Gordonbush Estate, tying into the existing Gordonbush Estate Habitat Management Plan to provide landscape scale improvements to the condition of blanket bog habitats. The plan will restore c. 20ha of degraded peatland habitats.

Additional Mitigation and Enhancement Measures Relevant to the Proposed Varied Development

8.9.4 Given the reduced scale of the Proposed Varied Development in comparison to the Consented Development, and the commitments made above to implement the mitigation and enhancement measures proposed for the larger footprint of the Consented Development, it is considered that no additional measures are necessary.

Monitoring

8.9.5 Monitoring of the effectiveness of both mitigation and enhancement measures will be completed, providing feedback and allowing the associated plans to be updated through the course of the construction and operational phases of the Proposed Varied Development. Monitoring will ensure plans remain effective and will allow any new techniques or technologies to be included. Monitoring timeframes and prescriptive measures are detailed in the relevant section of each plan with construction phase monitoring focusing on otters (Appendix 8.1 – Species Protection Plan – Otters) and operational monitoring focusing on habitat restoration (Appendix 8.2 – Habitat Management Plan).

8.10 Residual Effects

8.10.1 Residual effects are assessed for those habitats and species that have been scoped in to the assessment and are predicted to be affected by the construction and operation of the Proposed Varied Development; these are habitats, otters and bats.

Construction Phase

Habitat Loss and Change

8.10.2 The construction of the Proposed Varied Development would cause the permanent loss of habitats beneath its footprint. Temporary loss of habitats from areas in which construction machinery would operate surrounding permanent infrastructure would occur, along with the use of Construction Compounds, Batching Plants and Borrow Pits. However, these areas would be restored during or at the end of the construction process. In addition, where permanent infrastructure would be present within peatland habitats, permanent habitat change is likely to affect habitats through alterations to the hydrological regime which their vegetation communities rely on. This would likely alter any bog habitat to that of a heath rather than causing habitat loss. Heath habitats are still listed as Annex 1 Habitats under EU legislation, and so whilst alterations to habitat types may occur, valuable habitat assemblages would still remain.

8.10.3 In considering the predicted habitat loss and change from the construction of the Proposed Varied Development, the footprint has been calculated for each segment of both permanent and temporary infrastructure. To account for temporary habitat loss from machinery during the construction process a 4m buffer has been added to this footprint. Where peatland habitats are present surrounding areas of permanent infrastructure, an additional 10m buffer has been added to account for the potential habitat change.

8.10.4 Table 8.7 provides the predicted permanent and temporary habitat loss from the construction of the development, along with the predicted permanent habitat change to peatland habitats.

Table 8.7: Predicted Permanent and Temporary Habitat Loss, and Permanent Habitat Change Resulting from the Construction of the Proposed Varied Development

Habitat	Total area of habitat in Study Area (ha)	Total area of permanent loss (ha)	Total area temporary loss (ha)	Total area of habitat change (ha)	Total affected area (ha)	% of total habitat in Study Area permanently lost
E1.6.1 Blanket bog	462.01	5.88	-	10.99	16.87	3.65%
D2 Wet heath	149.64	0.83	0.57	2.98	4.38	2.93%
D1.1 Dry heath	54.80	0.44	1.27	-	1.71	3.12%
B4 Improved Grassland	1.20	0.08	-	-	0.08	6.67%
C1.1 Continuous Bracken	4.60	0.02	0.08	-	0.10	2.17%
B5 Marsh Grassland	33.71	0.01	0.15	0.23	0.39	1.15%
B1.2 Acidic grassland	0.47	0.01	0.01	-	0.02	4.25%
Totals	**706.43**	**7.27**	**2.08**	**14.20**	**23.55**	**3.33%**

8.10.5 As with the 2015 ES, borrow pit search areas have been excluded from the above assessment. These are large areas and it is currently unknown the total area which would be required. However, concrete batching plants and construction compounds have been included within the calculations which were previously excluded from the 2015 ES calculations. A direct comparison is therefore difficult between the predicted habitat loss and change for the Consented Development and the Proposed Varied Development. However, the sum area of habitats affected for the Consented Development totalled 25.01ha (Tables 8.10 and 8.11 of the 2015 ES), whilst the predicted total area affected for the Proposed Varied Development is 23.55ha; a reduction of 1.46ha which includes additional infrastructure components. The design of the

Proposed Varied Development therefore provides a reduced effect to habitats from the Consented Development.

8.10.6 Table 8.7 details the habitat loss and change predicted during the construction phase. Blanket bog, wet heath and dry heath are predicted to incur the greatest habitat loss or change with 16.87ha, 4.38ha and 1.71ha respectively. Minimal habitat loss is predicted to other habitats on site and consequently these are not considered further in this assessment.

8.10.7 Table 8.8 provides the conservation value of the three habitats principally affected by the Proposed Varied Development and the percentage area that would be lost of each respective habitat in the study area, plus equivalent percentages for the Caithness and Sutherland Peatlands Natural Heritage Futures zone to allow a comparison with a regional peatland resources and the overall Scottish peatland and heath habitats as a national resource.

Table 8.8: Conservation Value of Affected Habitats and Percentage Loss for the Consented and Proposed Varied Development

Development	Habitat	Habitat Designation	Total affected area (ha)	% of total habitat in Study Area permanently lost	Loss & change of bog as % of peatland habitat in C&S NHFZ[1]	Loss & change bog of as % of total Scottish peatland habitat	Loss & change of heath as % of Scottish heath habitat[2]
Proposed Varied Development	E1.6.1 Blanket bog	Annex 1 Habitat, Scottish Biodiversity List and LBAP Priority habitat	16.87	3.65%	0.0042	0.0009	-
	D2 Wet heath		4.38	2.93%	-	-	0.0003
	D1.1 Dry heath		1.71	3.12%			
Consented Development	E1.6.1 Blanket bog and E1.7 Modified bog		16.90	1.16%	0.0042	0.0009	-
	D2 Wet heath		6.85	3.20%	-	-	0.0005
	D1.1 Dry heath		1.24	1.65%			

[1]C&S NHFZ = Caithness & Sutherland Peatlands Natural Heritage Futures Zone (400,000ha)

[2] Using the mean hectarage of area quoted in the UKBAP (1,700,000ha)

Blanket Bog

8.10.8 Blanket bog is the most extensive habitat in the study area, with 63.28% of the total area comprising bog (see Table 8.5). This value takes into account the total quantity of blanket bog

present within the Proposed Varied Development's site boundary and differs from the value used for the Consented Development which did not cover the entire site boundary (Figure 8.7 of the 2015 ES). During assessment of the Proposed Varied Development it has become apparent that there were anomalies with the 2015 ES calculations in respect of the total area of blanket bog present within the site boundary. This Chapter seeks to address the anomaly identified and represents an increase in blanket bog within the site boundary. Whilst the area of blanket bog used for the assessment has increased, importantly the total loss of blanket bog to the Proposed Varied Development has decreased, whilst including additional infrastructure components.

8.10.9 Blanket bog is a globally restricted peatland habitat confined to cool, wet, typically oceanic climates and for this reason is an Annex 1 Habitat. It is the most extensive semi-natural habitat in Scotland (which accounts for around 10% of the world total), covering 1,800,000ha and about 23% of the land area (Bruneau, P.M.C & Johnson, S.M. 2014). Taken together, the peatlands within Caithness and Sutherland National Heritage Future (NHF) zone comprise about a quarter of this area at 400,000ha.

8.10.10 350,000ha of blanket bog has been designated as a SAC in Britain (JNCC website – Habitat Account – Raised bogs and mires and fens), including much of the Caithness and Sutherland peatlands (in the Caithness and Sutherland Peatlands SAC), but not the Development site. A value level of International is not therefore appropriate to the habitat in the study area. The combined area of bog in the study area comprises just 0.12% of the peatland area in the Caithness and Sutherland Peatlands NHF zone and is therefore too small an area to be considered either of Regional or County value. The blanket bog is therefore assessed as being of Local value.

8.10.11 Total loss and change to bog habitats amounts to 3.65% of the total bog habitat in the study area. This habitat loss is therefore assessed as being a permanent and, or long term negative effect of low magnitude, resulting in **minor** impact.

8.10.12 The effect results in loss/damage to 0.0042% of the peatland habitat in the Caithness and Sutherlands NHF zone and 0.0009% of the overall Scottish peatland area, neither of which are significant at these geographical scales.

Heath

8.10.13 Dwarf shrub heaths are recognised as being of international importance because they are largely confined within Europe to the British Isles and the western seaboard of mainland Europe. Upland heathland is the characteristic vegetation of podsolised, free-draining, acid mineral soils (dry heath) and also shallow peat up to about 50cm deep (wet heath). It is characterised by the presence of dwarf shrubs at a cover of at least 25%. The habitat is widespread in the cool, wet climate of the uplands, where it generally occupies land which was once woodland. It is common throughout the uplands of Scotland and covers between 21% and 31% of the area of Scotland, covering between 1,700,000 and 2,500,000ha (UK Biodiversity Action Plan Priority Habitat Descriptions Upland Heathland From: UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock 2008).

Wet Heath

8.10.14 Wet heath is the second most extensive habitat in the study area, covering 149.64 ha (20.5%) of the area (see Table 8.5). This value differs from that provided in the 2015 ES as the total area of the Proposed Varied Development's site boundary has been taken into consideration rather than a proportion. The NVC community M15, as found in the study area, is the most extensive form of wet heath in Scotland. The 2010 Site Condition Monitoring undertaken across the Gordonbush Estate in 2010 (the most up to date data available) showed wet heath to be in the least favourable condition of the habitats on the estate, being most affected by grazing and

burning and it is thought that some areas are converting to dry heath. It is assessed as being of Local value.

8.10.15 Total loss and damage to the wet heath habitat amounts to 2.93% of the habitat type in the study area. This is assessed as being a permanent and long term negative effect of low magnitude, resulting in **minor** impact.

Dry Heath

8.10.16 Dry heath habitats cover 7.51% of the area. The NVC communities found on site, H10a and H12a, are the most common forms of dry heaths in Scotland, and together they cover substantial areas of upland ground and are the predominant element in many upland landscapes. This is a species poor habitat on the study area, affected by burning. Due to its small extent in the study area it is assessed as being of Site value.

8.10.17 Total loss and damage to the dry heath amounts to 1.71ha of the habitat type in the study area. This is assessed as being a permanent and, or long term negative effect of low magnitude, resulting in a **negligible** impact.

Otters

8.10.18 Figure 8.1 and Table 8.6 provide survey results from the 2018 assessment of otter activity along watercourses associated with the Proposed Varied Development. Figures 8.9a and 8.9b of the 2015 ES provide an overview of the survey results from 2013. Both sets of survey results show the Allt a Mhuilinn watercourse running north to south along the western boundary of the Proposed Varied Development provides a well-used resource for the local otter population. Both 2018 and 2013 surveys found the majority of the evidence of otter activity is associated with this watercourse.

8.10.19 In contrast, the main watercourse bordering the eastern boundary of the Proposed Varied Development (the Allt Smeorail) provided little evidence of otter use either in the 2018 or 2013 surveys. The steep, narrow and gorge-like nature of the initial reaches of this watercourse (including mapped waterfalls) moving upstream from its confluence with Loch Brora likely impedes the passage of otter to the higher reaches close to the boundary of the Proposed Varied Development. Indeed, no evidence of otter activity was found on any of the smaller mapped tributaries which drain the south eastern part of the Proposed Varied Development before converging with the main watercourse. As such, any activities associated with the construction of the Proposed Varied Development such as the two potential borrow pits, batching plant, the access track, or turbines in this area are unlikely to have either a direct or indirect effect on the local otter population.

8.10.20 Field signs of otter presence were found along the length of the Allt a Mhuilinn in both 2013 and 2018. Otter signs recorded during the 2018 surveys were similar in location to those of the 2013 surveys, and did not extend a significant distance away from this main watercourse along tributaries which drain the northern and western parts of the Proposed Varied Development site. This is likely due to the main watercourse providing ample foraging opportunities and therefore wider foraging within lesser watercourses is not required by the population.

8.10.21 Within this western extent of the survey area one holt and four couches were identified in 2018, along with a large number of spraints varying in age. This consistent use of the watercourse suggests that it is important in a local context to the otter population in providing a dependable food resource and an abundance of shelter opportunities. As such, it is likely to be important in supporting the otter population associated with the bordering Caithness and Sutherland Peatlands SAC, of which otters are a qualifying interest.

8.10.22 The nearest location of otter signs to the Proposed Varied Development's infrastructure are found on the Allt nan Nathraichean which flows through the Proposed Varied Development in an east to west direction bisecting Turbines 7 and 8 (Figure 8.1). An active otter holt has been

identified on this watercourse equidistant between these two turbines in both the 2013 and 2018 surveys at approximately 250m.

8.10.23 Otters may potentially be affected during the construction phase of the development via either direct or indirect impacts. Direct impacts include disturbance from construction either during rest periods at holts or couches, or during foraging activities along watercourses. Similarly, the potential for fatalities from road traffic accidents on site or becoming trapped within open works could pose a direct impact. The likelihood of these occurring, given the location of the otter signs identified on site is **low**, especially considering the proposed mitigation outlined in Section 8.8 of this Chapter (e.g. maintenance of buffer zones around watercourses and sensitive undertaking of night time works). The magnitude of such impacts to the local otter population is likely to be **low**, as any individuals temporarily displaced are likely to return or be replaced through either migration of other individuals into the area or from births within the population itself. The otter population, utilising the watercourses surrounding the Proposed Varied Development is a qualifying feature of the Caithness and Sutherland Peatland SAC, as well as being a European protected species. Consequently, the population's conservation value is assessed as being nationally important. Taking all these parameters into account, it is assessed that the effect of any direct impacts from construction related activities to the local otter population would be **minor**.

8.10.24 Indirect impacts may occur through pollution related events associated with the construction phase of the development, such as sedimentation or fuel or oil spillages. If not controlled, pollutants have the potential to enter watercourses which will in turn affect the habitat and food resources on which the local otter population depends. With the proposed mitigation outlined in Section 8.8, the likelihood of such events occurring are **low.** Similarly, given the distance of the watercourses from the proposed infrastructure, the magnitude of such a pollution event if it did occur is likely to be **low** and short term in nature. Consequently, the likely effect of any indirect impacts upon the local otter population is assessed as **minor**.

Bats

8.10.25 Watercourses and woodland edge habitats identified across the site during the 2015 ES were deemed to provide important foraging and commuting routes to bat species present within the proposed development area. Activity surveys of the proposed development area identified four species of bat present which may be affected during the Construction Phase.

8.10.26 Direct impacts which might affect bats are limited to the spill of lighting onto watercourses and woodland edges thereby affecting bat foraging and commuting behaviour. Mitigation outlined in Section 8.8 of this Chapter seeks to avoid construction during twilight periods (e.g. to direct lighting away from such features, focusing on works areas only). Consequently, with such mitigation in place the magnitude of any potential impact is considered to be **negligible**. Despite all bats being European protected species, the limited activity by bats recorded during the surveys to support the 2015 ES indicates that the population associated with the proposed development site is only of local conservation importance. As such the effect of any direct impacts on bats is assessed as being **negligible**.

8.10.27 No indirect effects from the construction of the Proposed Varied Development have been identified.

Operational Phase

Habitat Loss and Damage

8.10.28 Potential impacts to habitats during the Operational Phase of the Proposed Varied Development would be limited. These may include small scale habitat loss during maintenance of the development throughout its lifespan, or from small scale pollution incidents relating to vehicle movements across the site. All potential impacts are likely to be temporary and small scale in

nature, as such the magnitude of any effect would be **low** to the habitats present. The likelihood of potential impacts occurring to habitats is considered **low**. Consequently, the potential effect of any impact to the habitats from the Operational Phase of the development is assessed as **minor**.

Otters

8.10.29 Direct impacts which might affect otters during the Operational Phase of the Proposed Varied Development are limited to road related fatalities from the limited traffic accessing the wind farm for maintenance works, and for the limited maintenance works itself which might involve low level construction activities.

8.10.30 With the mitigation outlined in Section 8.8 of this Chapter and considering the locations of the otter signs identified during both the 2013 and 2018 surveys compared to the development footprint, the likelihood of any such impacts occurring is **low.** The magnitude of any impact to the local otter population if a fatality to an otter were to occur through a direct impact would be **low** despite the population being associated with the Caithness and Sutherland Peatland SAC, and so of national conservation importance. Taking the above into account, it is assessed that the effect of any potential direct impacts on otters during the Operational Phase of the development would be **minor.**

8.10.31 Potential indirect impacts identified during the Operational Phase of the development are limited to pollution events arising from small scale maintenance works. As with indirect impacts identified in the Construction Phase of the development, these would occur well away from watercourses and as such the likelihood of these affecting otter habitat and food resources is **low**. The magnitude of any impact is predicted to be short in duration, infrequent and with the mitigation outlined in Section 8.8, reversible. Consequently, the effect of any indirect impacts on otters during the Operation Phase of the development is assessed as **minor**.

Bats

8.10.32 Direct impacts identified during the Operational Phase of the development are the potential for collision and barotrauma to bats when flying in proximity to wind turbines. The design of the development has sought to reduce this, following Natural England (2014) guidance, to locate all turbines so that their rotor swept area is at least 50m from any features (watercourses, woodland edges etc.) which are likely to be used for foraging or commuting by bats. The limited flight activity of bats recorded during the surveys to support the 2015 ES highlights that areas away from foraging and commuting features are not frequently used by bats. As such the likelihood of collision and barotrauma occurring is considered to be **low** and would occur infrequently if at all. Given the local conservation importance of the site's bat population, the effect of the impacts from the Operational Phase of the development to bats is assessed as being **negligible**.

8.10.33 No indirect impacts have been identified to bats during the Operational Phase of the development.

Decommissioning Phase

8.10.34 Decommissioning Phase Impacts and their associated effects to the IEFs identified are assessed as being similar to those considered for the Construction Phase of the development. As such, they are not considered any further in this document.

8.11 Cumulative Effects

8.11.1 The information provided in the 2015 ES remains relevant in terms of the cumulative effect of the development given that the cumulative baseline situation within close proximity to the Proposed Varied Development remains unchanged. The 2015 ES considered the cumulative

effects of the development in conjunction with the existing Gordonbush Wind Farm. The reduced number of turbines associated with the Proposed Varied Development has reduced the risk of impacts to the IEFs identified in this document. No Cumulative Effects were identified during the 2015 ES, and this continues to be the case for the Proposed Varied Development.

8.12 Effects to Designated Sites

8.12.1 The Proposed Varied Development abuts the Caithness and Sutherland Peatland SAC on its western boundary. SNH in their pre-application response (see Appendix 6.1: Pre-Application Advice Pack) stated that consideration should be given to the designated site and the potential impacts of the development to otters; a qualifying feature of the SAC.

8.12.2 The latest assessment of the otter population associated with the SAC completed in 2011 (Findlay *et al.*, 2015) found the qualifying feature to be in an unfavourable condition. The Impact Assessment completed in Section 8.9 of this Chapter identifies several direct and indirect impacts associated with the development which have the potential to impact on the SAC's otter population. However, it has been assessed that any effect from these impacts both during Construction or Operational Phases of the Proposed Varied Development would be minor.

8.12.3 Given that effects are assessed as minor to the local otter population during this EIA Report's impact assessment, it is considered that Construction and Operation of the development is unlikely to affect the conservation status of the wider otter population associated with the SAC. However, further consideration has been given to this and a report to inform the Habitat Regulation Appraisal process has been completed for the development; this is provided as Appendix 8.3.

8.12.4 Effects have been considered alone for the Proposed Varied Development, and in combination with all other proposed and constructed developments in the surrounding area. Consequently, it is concluded that there would be no likely significant effect on the otter population and therefore conservation objectives of the SAC as a result of the Proposed Varied Development.

8.13 Assessment of Residual Effects

8.13.1 Table 8.9 summarises the effects assessed for IEF, the proposed mitigation and residual effect significance.

Table 8.9: Summary of Negative Effects, Mitigation and Residual Effect Significance

Effect	Receptor	Mitigation	Probability of Mitigation Success	Conservation Value	Effect Magnitude Following Mitigation	Residual Significance
Construction						
Habitat loss and damage	Blanket bog	Early restoration of habitats during the construction phase in areas of temporary loss as detailed in the CEMP.	Very High	Local	Low	Minor
	Wet heath		Very High	Local	Low	Minor
	Dry heath		-	Local	Low	Negligible
Construction disturbance	Otter	Pre-construction surveys, demarcation of exclusion zones, direction of lighting away from watercourses	Very high	National	Low	Minor
	Bats	Direction of	Very high	Local	Negligible	No impact

Effect	Receptor	Mitigation	Probability of Mitigation Success	Conservation Value	Effect Magnitude Following Mitigation	Residual Significance
		lighting away from features used by bats for foraging and commuting				
Faunal fatalities - works equipment etc.	Otter	Cap pipes, ramp pits	Very high	National	Low	Minor
Faunal fatalities - increased traffic	Otter	Speed limit on site. Infrastructure design.	Very high	Local	Low	Minor
Water pollution	Otter	Implementation of best practice water quality management	High	Local	Low	Minor
Operation						
Faunal fatalities - works equipment etc.	Otter	Cap pipes, ramp pits	Very high	Local	No impact	No impact
Faunal fatalities - increased traffic	Otter	Speed limit on site. Infrastructure design.	Very high	Local	Low	Minor
Faunal fatalities – barotrauma	Bats			Local	Low	Minor

8.14 Effect on the Existing Gordonbush Estate HMP Objectives

8.14.1 Effects on the Gordonbush Estate HMP management objectives were assessed as not significant in the 2015 ES. This was re-affirmed in the 2016 FEI Report. There is no change from these findings as a result of the Proposed Varied Development as this is of a reduced scale in comparison to the Consented Development and will cause a loss or change to habitats of c.23.5ha in comparison to a previously predicted c.25ha. Whilst habitat loss calculations cannot be directly compared as a greater number of infrastructure components are considered in this EIA Report, the reduced the scale of the development has reduced the area of habitat affected and therefore any effect on the existing Gordonbush Estate HMP.

8.14.2 In addition to there being no effects to the existing Gordonbush HMP, the Gordonbush Extension Wind Farm HMP will be implemented through the Operational Phase of the Proposed Varied Development as detailed in Appendix 8.2. This will aim to restore an additional 20ha of blanket bog habitat, tying into existing blanket bog restoration measures implemented through the existing Gordonbush Estate HMP.

8.15 Comparison of Effects between Proposed Varied Development and Consented Development

8.15.1 Table 8.10 summarises the effects that were assessed for the Consented Development and compares these with the effects of the Proposed Varied Development.

Table 8.10 Comparison of Ecological Effects for the Consented and Proposed Varied Development Including Mitigation and Residual Effect Significance.

Effect	Feature	Consented Development Mitigation	Probability of Mitigation Success	Consented Develop-ment Residual Significance *	Proposed Varied Development Up-dated Mitigation	Proposed Varied Development Residual Significance
Construction						
Habitat loss and damage	Blanket bog	-	-	Minor	CEMP to provide early restoration to affected habitats.	No Change
	Wet heath	-	-	Minor		No Change
	Dry heath	-	-	Not significant		No Change
Habitat loss and damage	Otter	Species Protection Plan and CEMP	-	No impact	None	No Change
	Water vole	Pre-construction surveys, demarcation of exclusion zones	Very high	Not significant	None	No Change
	Pine marten	None required - no impact	-	No impact	None	No Change
Water pollution	Otter	Implementation of best practice water quality management	High	Not significant	CEMP	No Change
	Water vole	Implementation of best practice water quality management	High	Not significant	CEMP	No Change
	Fish	Implementation of best practice water quality management	High	Not significant	CEMP	No Change
Construction disturbance	Otter	Pre-construction surveys, demarcation of exclusion zones	Very high	Not significant	Species Protection Plan and CEMP	No Change
	Pine marten (no dens found, potential effects only if dens present in future)	Pre-construction surveys, demarcation of exclusion zones	Very high	Not significant	None	No Change
	Bats	-	-	Not significant	Direction of lighting away from features used by bats for foraging and commuting	No Change
Faunal fatalities - works equipment etc.	Otter	Cap pipes, ramp pits	Very high	No impact	Species Protection Plan and CEMP	No Change
Faunal fatalities - increased traffic	Otter	-	-	Not significant	Species Protection Plan and CEMP	No Change
Faunal fatalities	Reptiles	Pre- construction works checks	High	Not significant	None	No Change
Faunal	Bats	-	-	Not significant	None	No Change

Effect	Feature	Consented Development Mitigation	Probability of Mitigation Success	Consented Develop-ment Residual Significance *	Proposed Varied Development Up-dated Mitigation	Proposed Varied Development Residual Significance
fatalities – operational turbines						
*Terminology used in this column is as previously stated in Table 8.15 of the 2015 ES.						

8.15.2 No significant impacts on designated sites, species or habitats are identified from the Proposed Varied Development.

8.16 Conclusion

8.16.1 The effects on ecological features from the Proposed Varied Development have been assessed, taking into account consultation feedback from SNH. All effects from the Proposed Varied Development have been assessed as not significant as previously found for the Consented Development (see Table 8.10).

8.16.2 At SNH's request, given the age of the original otter survey data, an updated otter survey was carried out to inform this assessment of the Proposed Varied Development. The results confirm that there would be no likely significant effect on this species, allowing the conclusion to be reached that it would have no adverse impact on the integrity of the Caithness and Sutherland Peatlands SAC. This is the same conclusion as for the Consented Development.

8.16.3 There will be an Otter Species Protection Plan in place to ensure relevant protective measures are implemented during construction, and its implementation will be overseen by an ECoW, in accordance with existing conditions of the relevant section 36 consent.

8.16.4 A pre-commencement water vole survey will ensure this species and its habitats are also suitably protected during construction, as requested by SNH.

8.16.5 Effects to habitats from the construction, operation and decommissioning of the Proposed Varied Development have been assessed and found to be similar or less than the Consented Development; all are not significant.

8.16.6 There would be no negative effect on implementation of the Gordonbush Habitat Management Plan. A Habitat Management Plan for the Proposed Varied Development has been provided to enhance the overall biodiversity of the area through an additional 20ha of blanket bog restoration, tying into that already completed through the Gordonbush Estate HMP. The Proposed Varied Development's HMP is proposed in Appendix 8.2.

8.16.7 Overall, the effects of the Proposed Varied Development would remain as predicted for the Consented Development, with no significant impacts on designated sites, species or habitats.

8.17 References

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