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11. FORESTRY

11.1 Introduction

11.1.1 This Chapter assesses the potential effects of the Proposed Development on forest areas.

11.1.2 The assessment has been prepared by the Director (MICFor) of McKay Forestry Consultant Limited, a professional member of the Institute of Chartered Foresters (ICF). The assessment has been carried out in line with ICF code of conduct and relevant standards and guidance.

11.2 Methodology

Scope of the Assessment

11.2.1 This assessment considers the likely impacts of the Proposed Development on forestry. This includes an assessment of the sensitivity of the forest areas and a determination of the likely level of impact upon them that would arise from the Proposed Development, with particular emphasis on forest structure and management.

11.2.2 This assessment is based on the requirement to form an Operational Corridor (OC) while recognising the potential impact over broader forest management from the Proposed Development. This Chapter assesses the OC only and does not address the overall Forest Plans. Any felling undertaken outwith the OC would be solely under the control of the land owner, and the Applicant would not have any influence or control over such. Consequently, the assessment is limited to consideration of the effects of the Proposed Development on the present forest composition and yield.

Extent of the Study Area

11.2.3 The study area for this assessment is based around the OC. The Applicant defines the area in which it has rights to remove woodland for the purposes of creation of new overhead lines (OHLs), resilience and maintenance of OHLs, or protection of electrical plant as required by the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002 regulations and The Electricity Act 1989. The OC equates to the 'Red Zone' as defined within the 'FISA Safety Guide 804 -Electricity at work: Forestry, 2013'¹. This is, in effect, the distance at which a tree could fall and cause an outage to the OHL.

11.2.4 In general terms the OC for an OHL is approximately 50 m, taking into account site specific circumstances such as topography, ground conditions, etc. However, the final permanent OC would be defined on a case by case basis and along the corridor of the line based on the potential maximum tree height and falling distance between tree and OHL.

11.2.5 For the purposes of this report the OC may lie anywhere within the Limit of Deviation (LOD) which forms the extent of the study area, as indicated on **Figure 3.1**: The Proposed Development.

11.2.6 The Forestry assessment does take note of the implications of the other significant forestry operations planned within the immediate forest units of Dalchork Forest, in particular the extensive felling that has been undertaken in response to pressures on the forest as discussed in Section 11.4.

11.2.7 The woodlands affected by the Proposed Development lie within Dalchork Forest north of the village of Lairg, which are solely part of the National Forest Estate managed by the Scottish Government's agency Forestry and Land Scotland (FLS) within the FLS North Region.

¹ Forest Industry Safety Accord. (2013) Safety Guide 804 Electricity at Work: Forestry. Revision 1. [pdf] Available at: <https://www.ukfisa.com/assets/files/safetyLibrary/FISA%20804%20-%20Electricity.pdf>

11.2.8 The study area includes an area immediately outside the Dalchork Forest area to the north along the A836 where existing woodland is present and new planting is proposed on Altnaharra Estate.

Consultation Undertaken

11.2.9 Scottish Forestry (SF)² is the Scottish Government agency responsible for forestry policy, support and regulations. SF works as part of Scottish Government to protect and expand Scotland's forests and woodlands and so has an interest in major developments that have the potential to impact on local forests and woodlands and / or the forestry sector.

11.2.10 **Table 11-1** below set out the key issues raised by SF, The Highland Council (THC) and FLS as part of the consultation process of relevance to forestry, as described in Chapter 4 of this EIA Report (see also the Scoping Opinion, **Appendix 4.1**), and the comments in response or actions taken.

Table 11-1: Forestry Issues Raised During Consultation

Consultee	Summary Response	Comment / Action Taken
Scottish Forestry (SF) – Scoping Response	The Scottish Government's Control of Woodland Removal Policy includes a strong presumption in favour of protecting Scotland's woodland resources.	The Proposed Development addresses this through minimising the woodland removal both through careful route selection and by defining the OC on a case by case basis.
	Woodland removal should be allowed only where it would achieve significant and clearly defined additional public benefits.	The OHL grid connection relates to the consented Creag Riabhach Wind Farm, which meets the acceptability criteria given in Annex C of the policy, as the proposed change in land use would contribute significantly to helping Scotland mitigate or adapt to climate change by facilitating appropriate development of renewable energy projects.
	SF is satisfied with the proposed scope of the Forest Impact Assessment, and notes Applicant's commitment to vary the width of the OC according to the height of adjacent crop, in order to minimise the area of tree felling and woodland removal required to accommodate the Proposed Development.	Following the tree height predictions, the width of the OC reflects potential falling distance of trees throughout their life cycle.
	As a result of introduction of new guidance (Scottish Government's policy on control of woodland removal: implementation guidance, February 2019), SF now asks that compensatory planting is provided for all areas of woodland that need to be removed to directly accommodate the OHL and associated infrastructure, therefore the Forestry Impact Assessment will need to identify areas of permanent woodland	All woodland removal, both within the OC and anything beyond for the purposes of the Proposed Development, is discussed in this chapter.

² Forestry Commission Scotland became an agency of the Scottish Government known as *Scottish Forestry* (April 2019).

	<p>loss, for which compensatory planting will be required.</p> <p>SF notes the Applicant is aware that any additional felling, outwith the Proposed Development's OC will fall under Forestry and Land Management (Scotland) Act 2018, and therefore will need to be covered by a forest plan or a felling permission, and will be conditioned on a suitable restock plan.</p>	<p>Any permanent woodland removal outwith the OC is identified within this Chapter.</p>
<p>Scottish Forestry (SF) – Gate Check Response</p>	<p>Scottish Forestry noted that they intend to put forward a condition for compensatory planting for all areas of woodland loss.</p>	<p>Noted. Proposals for compensatory planting are discussed within this chapter.</p>
	<p>Scottish Forestry commented during the Gate Check meeting that the OC is for all afforested ground whether there is standing timber or the areas are felled but to be restocked. Only areas of open ground, such as peatland restoration areas, would not be liable for compensatory planting.</p>	<p>As described further in this report, the OC has been determined using the North Sutherland Land Management Plan Future Habitats map (6) which sets out the planned use of each forest block. As such, while much of Dalchork Forest appears as open ground due to recent felling works, the OC takes into account future restocking plans.</p>
<p>The Highland Council (THC) – Scoping Response</p>	<p>The first consideration for all woodland removal decisions should be whether the underlying purpose of the proposal can reasonably be met without resorting to woodland removal. Justification needs to be given as to why an alternate route cannot be taken which avoids any loss of woodland.</p>	<p>The alignment as proposed has been determined following initial route selection studies, as set out in Chapter 2 of this EIA Report, and on balance with other environmental factors, such as landscape and visual effects, avoidance of areas of deeper peat, and the presence of historic assets. The alignment has been refined to avoid standing blocks of forest, where practicable, and the LOD and OC set out so as to further minimise required felling.</p>
	<p>Should no other route be available and on the basis that the OHL grid connection relates to the consented Creag Riabhach Wind Farm, it is considered to meet the acceptability criteria given in Annex C of the policy, as the proposed change would contribute significantly to helping Scotland mitigate or adapt to climate change by facilitating appropriate development of renewable energy projects.</p>	<p>Noted.</p>
	<p>The Scottish Government's Control of Woodland Removal Policy includes a requirement for compensatory planting, details of which will need to be submitted in support of any subsequent application, along with a proposed mechanism for delivery.</p>	<p>All woodland removal, both within the OC and anything beyond for the purposes of the Proposed Development, is discussed in this chapter.</p>

	<p>It will also be necessary for the existing Forest Plan to be amended to incorporate the new wayleave. This will include any additional felling and restocking that may be required in order to secure windfirm edges. As stated in the supporting information, the Applicant must demonstrate that 'future forest operations within Dalchork Wood are not compromised' by the Proposed Development.</p>	<p>The alignment and width of the OC has been designed with consideration of the North Sutherland Land Management Plan, in particular Map 6 – Future habitats, Dalchork (see Appendix 11.1). This is discussed further in this Chapter.</p>
	<p>A dedicated chapter on Forestry will be required, which includes:</p> <ol style="list-style-type: none"> 1. An assessment of the Proposed Development against the SG policy on the Control of Woodland Removal. 2. A detailed Compensatory Planting Plan, including a mechanism for delivery. 3. An amended Forest Plan which incorporates the proposed wayleave. 	<p>This chapter contains an assessment of the Proposed Development with reference to the Scottish Government's policy on Control of Woodland Removal.</p> <p>The alignment and width of the OC has been designed with consideration of the North Sutherland Land Management Plan, in particular Map 6 – Future habitats, Dalchork (see Appendix 11.1). Proposals for addressing Compensatory Planting are included later in the Chapter.</p>
<p>Forestry and Land Scotland (FLS) – Pre-application</p>	<p>FLS raised concerns in relation to potential adverse effects on current open peatland restoration works, and proposed an alternative alignment avoid or reduce these, while noting that a wayleave would not be granted for the EIA Scoping alignment.</p>	<p>The Applicant held meetings with representatives of FLS to discuss the issues raised and carried out supplementary environmental surveys. Ground Investigation (GI) works were also carried out to determine the extent of potential adverse effects on the current restoration works, and this information was presented directly to FLS at the aforementioned meetings. The alignment was revised, as discussed further in Chapters 2 and 4 of this EIA Report, in order to avoid peatland restoration areas. This has consequently increased potential forestry impacts by requiring a greater loss of woodland area in comparison.</p>

11.2.11 During discussions at the Gate Check meeting, the potential for seeking biodiversity net gain (BNG) was raised, as well as the forestry plan requiring revision in light of the Proposed Development passing largely through Dalchork Forest. The Applicant would work with FLS to revise the forestry plan, particularly in relation to the shelterbelts north of the Crask Inn (discussed in Section 11.6 of this chapter), and would seek opportunities for BNG through careful application of the OC. This would be carried out in tandem with ecological considerations for the site.

Method of Baseline Data Collation

11.2.12 FLS North Sutherland Land Management Plan (NSLMP) 2016 – 2026 provides the aspirations of management as well as detailed operational plans. The Dalchork Forest sub compartment database (SCDB), provided by FLS on 19th May 2019 following a request by the Applicant, sets out the detail of current land use and where

woodland cover is present details include tree species, the year which planting took place, and Yield Class (YC). Yield class is an index used in Britain of the potential productivity of even-aged stands of trees. It is based on the maximum mean annual increment of cumulative timber volume achieved by a given tree species growing on a given site and managed according to a standard management prescription. It is measured in units of cubic metres per hectare per year.

11.2.13 The Web based search included review of the Scottish Forestry Map Viewer³ and Scottish Forestry Land Information Search (LIS)⁴.

Forest Walkover

11.2.14 A forest walkover survey was undertaken over the period 30th April to 2nd May 2019 inclusive to confirm current land use and included tree height sampling by hypsometer to obtain current tree height and confirm YC. Photographic records were also taken, and are included in **Appendix 11.2**. A subsequent survey was undertaken over the period 9th to 11th September 2019 following changes to the proposed alignment as discussed in Chapter 4 of this EIA Report.

11.2.15 Conditions during both visits provided sufficient visibility to assess tree height using a hypsometer, visually assess tree health and vigour, observe and record ground conditions and cultivation methods, and to complete photographic records. The walkover surveys included all the compartments within the LOD.

11.2.16 The site visit revealed that the progress of clearfelling and peat restoration has not been fully updated in the SCDB provided by FLS which causes some difficulty in sub compartment referencing. The SCDB map is included as **Appendix 11.3**.

Determining Magnitude of Change and Sensitivity of Receptors

11.2.17 There are currently no standard criteria for assessing the sensitivity / importance and magnitude for forest felling and restocking or determining the value of woodland loss. A subjective methodology has been devised and tested among other forestry professionals as appropriate. Sensitivity / importance is relatively clear in definition whereas magnitude purely by area is far more subjective. Assessing the impact of the Proposed Development on the forest structure relies heavily on the General Forestry Practice Guide set in UK Forestry Standard Fourth Edition⁵ (UKFS). The significance of an impact depends upon the sensitivity / importance of the forest area, combined with the magnitude of the impact. The criteria for assessing these, together with the resultant levels of predicted significance, are described in the following paragraphs.

Sensitivity / Importance

11.2.18 Criteria for assessing the sensitivity / importance of a forest, is as follows:

- High: Ancient Semi Natural Woodland;
- Medium: Plantation on Ancient Woodland Sites (PAWS), Long Term Retention (LTR) and Natural Reserve (NR);
- Low: Productive conifer plantation; and
- Negligible: Unplanted areas.

Magnitude of Direct Impact

11.2.19 Criteria for assessing the magnitude of impact to a forest, is as follows:

- High: >40 ha;

³ Scottish Forestry Map Viewer: <https://forestry.gov.scot/support-regulations/scottish-forestry-map-viewer> Accessed 6 June 2019

⁴ Scottish Forestry Land Information Search: <https://forestry.gov.scot/support-regulations/land-information-search> Accessed 6 June 2019

⁵ The UK Forestry Standard: Forestry Commission Edinburgh. (2017):

- Medium: >15-40 ha;
- Low: >0.1-15 ha; and
- Negligible: <0.1 ha.

11.2.20 The predicted significance of impact is determined by consideration of a site's importance / sensitivity in conjunction with the magnitude of impact predicted on it. **Table 11-2** summarises the criteria for assessing the significance of an impact. A Moderate or Major magnitude of direct impact is considered to be significant in EIA terms.

Table 11-2: Significance of Direct Impact to the Woodland Structure

		Sensitivity of Receptor / Receiving Environment to Change / Effect			
		High	Medium	Low	Negligible
Magnitude of Change/Effect	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Limitations and Assumptions

11.2.21 Forest information has been provided by the forest and land managers and cross checking has only been carried out where observations suggested that the immediate conditions varied from the records.

11.3 Sensitive Receptors

11.3.1 The receptor considered within this Forestry Assessment is the overall integrity of the forest unit. Given the current position in the forest restructuring process the OC will have, for the most part a limited impact on the forest structure and resilience to windthrow. "Forest restructuring" aims to improve the biodiversity, resilience and species diversity of woodlands in the long term. This is achieved through redistributing their age and species composition at the point of re-planting following felling.

11.3.2 The shelterbelts to the north of the main Dalchork forest, along the A836, are considered vital in preventing snow accumulations and keeping the public road open during the winter.

11.4 Baseline Conditions

11.4.1 Approximately 21.19 km of the Proposed Development would be routed through forest / woodland plantation and associated open ground, as shown on **Figure 11.1: Operational Corridor**.

11.4.2 According to the North Sutherland Land Management Plan (NSLMP)⁶, restructuring within Dalchork Forest has been driven by maximising timber recovery from crops affected by wind damage, particularly resulting from the catastrophic storm of January 2015, and / or Dothistroma Needle Blight (DNB) and peatland restoration.

Appendix 11.1 displays four of the LMP maps relating to Dalchork Forest, as follows:

- Map 5 – Management coupes;
- Map 6 – Future habitats;
- Map 7 – CSM6 Planned operations (felling and road construction); and
- Map 7 – CSM6 Planned operations (restocking).

11.4.3 The NSLMP acknowledges that the scale of both windthrow and DNB might protract the desired restructuring aims to beyond the next tree crop rotation.

⁶ North Sutherland Land Management Plan: <https://forestryandland.gov.scot/what-we-do/planning/active/north-sutherland> Accessed 6 June 2019.

- 11.4.4 It is the forest district policy to provide a 5 year fallow period between felling and restocking to allow a natural reduction in large pine weevil (*Hylobius abietis*) population and thereby reduce damage, use of insecticide and costs associated with labour and chemicals.
- 11.4.5 Typically, an adjacent felling coupe will not be felled until the surrounding replanted crops are at least 2 m tall, however delaying harvesting of windthrown crops is not considered to be a realistic option. Therefore, adjacency issues are dealt with by delaying restocking.
- 11.4.6 Detailed forest information was received from FLS North Highland District office in the form of the NSLMP 2016 – 2026. This plan provides detailed background information such as physical site factors, biodiversity and heritage features. Age structure, species and yield class of the existing forest, along with the site capability and access, are also provided. The plan records landscape and land use along with social factors including recreation and community. Statutory requirements and key external policies are documented. The NSLMP considers the analysis and concept and provides a Land Management Plan Brief.
- 11.4.7 The NSLMP summarises the proposals for forest management specifically detailing clearfelling and replanting and new planting areas identified. Of specific importance to Dalchork Forest are the proposals for future habitats and species, restructuring and peatland restoration. Forest restructuring in this plan are driven by maximising timber recovery from crops affected by wind damage and / or DNB and by peatland restoration. NSLMP describes the restructuring as a long term process and continues beyond the next rotation. Productive conifer will be restocked where conditions indicate a positive carbon balance under trees and non-productive broadleaf elements within these coupes will be located where they are of greatest benefit; in riparian zones, adjacent to open ground, other broadleaf woodland or around archaeological features to enhance the setting.
- 11.4.8 North Highland Forest District has significant areas of afforested deep peat. Future management decisions regarding these are based on current UK Forestry Standards (UKFS) requirements, the Scottish Government's Policy on Control of Woodland Removal, and FCS Practice Guide "Deciding future management options for afforested deep peatland". Where deep peat coupes have the potential to be turned into net carbon sink, contributing significantly to biodiversity and hydrology interest of adjacent peatland sites, and there is a good chance of restoration being successful, drain blocking and smoothing of furrows is being undertaken. Significant areas of currently or recently forested ground in Dalchork forest are or have been clear felled and restored to open bog.
- 11.4.9 The SF website provides the Native Woodland Survey of Scotland (NWSS)⁷ as spatial data showing the type, extent, and attributes of these woods. This survey is of all native woodlands, nearly native woodlands and non-native plantations on ancient woodland sites in Scotland.
- 11.4.10 Various web based aerial imagery has been studied as part of this assessment, observing the significant changes in forest cover within Dalchork forest.
- 11.4.11 Determination of the width of the OC has been derived from the potential tree height, accounting for species and location. This varied OC would prevent, by design, damage to the infrastructure due to falling trees thus provide long term resilience and safety to the connection.

Forest Crop Descriptions

- 11.4.12 **Table 11-3**, included in **Appendix 11.4**, records the forest land following the alignment of the Proposed Development from north to south. The location through which the OHL passes is referenced, where possible, by the compartment / sub-compartment number as provided in the Dalchork SCDB and Dalchork Forest block plan provided by FLS, North Region on 17th April 2019 (see **Appendix 11.3**). Where the compartment / sub-compartment has not been identified this has been substituted with a grid reference/ place name.

⁷ Scottish Forestry, Native Woodland Survey of Scotland (NWSS). [online] Available at: <https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss> [accessed 24 June 2019].

11.4.13 **Appendix 11.2** sets out a series of contextual photographs (**11.1** to **11.10**) indicating the current conditions of Dalchork Forest. The Photographs were taken from a variety of locations along the route of the Proposed Development. **Photographs 11.2, 11.4** and **11.9** in particular display the extent of felling that has been undertaken through the forest areas in response to ongoing windthrow and the effects of disease. **Photographs 11.3, 11.5** and **11.8** show instances of new / 2nd rotation planting undertaken recently. **Photograph 11.10** shows the extensive felling that has been undertaken at the south end of the Proposed Development, at the consented Dalchork substation.

Future Baseline

11.4.14 The North Sutherland LMP predicts that Dalchork Forest will have a significantly reduced area of productive woodland through the removal of plantation from peatland and riparian sites.

11.4.15 Map 6 Future habitats Dalchork, accompanying the LMP (see **Appendix 11.1**), lists future habitats as Native woodland, Natural reserve, Open ground, Open water, Productive woodland, Riparian woodland and Successional woodland. The following are anticipated to take place within Dalchork Forest over the coming years:

- peatland restoration through blocking of drains and furrows and removal of regenerating non-native species will be undertaken on significant areas of currently forested ground. These areas have been identified following the processes described in the FCS Practice Guide “Deciding future management options for afforested deep peatland”;
- 70 % of productive conifer woodland to be conifer species to be managed to produce sawlogs, small roundwood and biomass at clearfell. The zone will have 20 % of the area managed for open space and 10 % of the area as broadleaf species;
- native woodland is to achieve a minimum of 1,600 stems per hectare of between 10 % and 60 % broadleaves and up to 70 % Scots pine and 20 % area as open space;
- riparian woodland is to provide a significant buffer between productive forestry and watercourses and waterbodies that will increase biodiversity and enhance riparian and aquatic habitats. This will comprise 800 to 1,600 stems per hectare with 60 % of the area as native species and 40 % open space;
- successional woodland will comprise 500 to 1,600 stems per hectare and will have a canopy cover of at least 20 %. This will be achieved by a mixture of natural regeneration of both native (Downy birch, Goat willow and Dwarf birch) and non-native species (Lodgepole pine, Sitka spruce and Japanese larch) from existing seed sources and the planting of native species not currently on or adjacent to site (Scots pine, Aspen, Rowan, Alder and Juniper); and
- natural reserve is predominantly wooded and permanently identified and is sited where it will be of particularly high biodiversity benefit.

11.5 Issues Scoped Out

11.5.1 Secondary effects resulting from forestry activities, including effects on habitats and species, ornithology, hydrology and landscape and visual effects, are considered within their respective chapters of this EIA Report and are not included within this Chapter.

11.6 Assessment of Effects, Mitigation and Residual Effects

11.6.1 The current restructuring and future forest design for Dalchork Forest allows for the proposed OC to be aligned where there is little impact on the forest growing stock by following current and planned open space. Due to the significant recent felling programme there is minimal interface with 1st rotation mature conifer crops. It is acknowledged that some of these felled areas may be in the fallow phase before replanting; however, much of the northern section of the forest is destined to remain as open ground for peat restoration (see **Appendix 11.1**). In the instances where standing crops are encountered the OC alignment follows the current Open

Ground associated with these compartments. Where current 2nd rotation productive conifer is established the alignment follows the forest road and the roadside edge of the compartment will be affected only. This is shown on **Figure 11.1: Operational Corridor**.

- 11.6.2 The current position for Dalchork Forest is one of significant areas of ground felled resulting from windthrow and disease and through forest management decision allowed to lie fallow for a number of years prior to replanting. Other areas are presently felled and being restored as peatland where soil type, hydrological conditions and past poor tree growth indicate this is the preferred land management. Where restocking has taken place in the past few years, since 2015, the crop is still at an early stage in development and intervention by felling the OC would not affect the overall vulnerability of the forest to windthrow. It is recognised, however, that the introduction of the OHL imposes additional management constraints to future forest operations and amendment to forest plans will be required.
- 11.6.3 The OC width has been designed to reflect the potential tree height of trees adjacent to the OHL, as set out in **Table 11-3** (see **Appendix 11.4**). Based on the present tallest tree height for mature birch trees within the forest, measured at 13 m, the OC is set at 33 m based on a falling tree and a vicinity zone for 132 kV of 3.5 m, as noted within the FISA guidance. For productive conifers the tallest spruce locally were measured at 20 m. The OC for productive conifers is set at 47 m.
- 11.6.4 Rounded up for safety by design the approach should be an OC width;
- broadleaved areas 35 m; and
 - productive conifer 50 m.
- 11.6.5 The NSLMP concludes that the restructuring of Dalchork Forest will take more than two rotations to achieve the Future Habitats detailed on NSLMP Map 6. For the purposes of this Chapter, the assessment of woodland loss is measured against the NSLMP current restocking plan, Map 7 – CSMA6 Planned operations (restocking) – Dalchork (see **Appendix 11.1**). **Table 11-4**, included in **Appendix 11.4**, sets out the area of each woodland type affected by the OC based on this plan and includes areas restocked prior to this plan, and thus resulting in permanent loss of woodland area.
- 11.6.6 The sensitivity of impact by felling and permanent woodland loss to the OC, following the alignment, for the Proposed Development is likely to be low given the current position and due to the planned activity on Open Ground and at the edge of Productive Conifer compartments. The other areas of restocking include native woodland, riparian woodland and successional woodland categories which contain a high proportion of integral open space which can accommodate the OC. The small area of Natural Reserve impacted is Sitka spruce and Lodgepole pine centred on open ground.
- 11.6.7 The magnitude of impact is measured as the permanent loss of woodland cover on ground to be occupied by the proposed OC. Based on the planned restocking operations as presented in the NSLMP maps (see **Appendix 11.1**) and the results of the site survey, the gross area of ground required to maintain the OC totals 42.84 ha. This takes into account that the OC passes through areas of planned Open Ground, and is varied with tree height. Based on the criteria as set out in Section 11.2, this loss of woodland area is considered to be High in magnitude. However, within areas of woodland loss, 6.92 ha is classed as to be restocked with native woodland, riparian woodland or successional woodland which have greater areas of integrated open space able to accommodate the OC without actual tree loss. As such, the net woodland loss from the Proposed Development could be viewed as that of the productive areas and shelterbelt, with a total of 35.92 ha; a Minor and thus **non-significant** effect in EIA terms.
- 11.6.8 The current position of Dalchork Forest is largely one of felled plantation awaiting replanting or peatland restoration and therefore the introduction of the OC does not require any felling which may have an adverse effect on the stability of the standing timber within the forest outwith the OC. The alignment of the OHL has been selected to minimise the long-term effect on forest operations by following forest roads, where practicable,

in the northern part of the forest and adhering to forest edge for most of the southern area intended for replanting as Productive Conifer woodland.

Mitigation by Design

- 11.6.9 The process of alignment selection for the Proposed Development has evolved from initial concept to one which seeks to avoid, as far as practicable considering other constraints, the standing forest blocks.
- 11.6.10 The OC width for conifer plantation has been set at 50 m, which takes into account factors such as ground conditions, topography and tree height. This is the minimum safe design distance for an OHL given a potential tree height / falling distance of approximately 20 m, which is the predicted maximum tree height at the Proposed Development site before timber harvesting or endemic windthrow. In areas of broadleaf trees, the OC would be reduced to 35 m given lower maximum tree heights of around 13 m. In places, the OC would require felling on one side only given the adjacency to open ground.
- 11.6.11 The alignment for the OC follows the forest edge in the south of Dalchork Forest reducing the impact on future forest management whereas in the northern section there is significant open ground. The crossing of the Natural Reserve is at an existing break, although some widening may be required to achieve the required OC.
- 11.6.12 The alignment has been positioned at sufficient distance from forest blocks 11 and 19 (**Figure 11.1: Operational Corridor**) in order to eliminate the need for any woodland edge felling and avoid windthrow effects which would likely result from removal of windfirm edges. The alignment would make use of the open ground to the east of block 22 and west of block 23 to avoid the need for any edge felling.
- 11.6.13 Micrositing would be utilised at the construction stage to restrict felling which may have negative impacts to the stability of compartments.

Construction Phase

Design Solutions and Assumptions

- 11.6.14 The OC defines the area of woodland area impacted. Micrositing would be utilised to further reduce felling requirement, where practicable.
- 11.6.15 No additional felling is planned for establishment of access.
- 11.6.16 Most of the areas for the OC are already felled and are lying fallow or destined as peatland restoration (see **Figure 11.1: Operational Corridor**). A small proportion of tree felling is envisaged in comparison with the area of current standing forest compartments, and the overall area of Dalchork Forest.
- 11.6.17 Area 2, as shown on **Figure 11.1: Operational Corridor**, is the only currently standing forest block likely to require felling during the construction phase of the Proposed Development. The standing forest is below the normal tree felling size, and is estimated to have a volume per hectare of approximately 65 m³. Based on felling to accommodate the OC area of 3.05 ha, this would yield approximately 200 tonnes of biomass.
- 11.6.18 Where replanting has taken place, the crops are still at an early age for intervention without causing issues for stability and resultant windthrow.

Description of Effects

Woodland loss

11.6.19 Given the varying OC width in relation to adjacent tree species and the significant area of open ground crossed by the OHL, the total area of woodland loss as a result of the OC is measured as 35.92 ha, as set out in **Table 11-4** (see also **Figure 11.1**: Operational Corridor).

11.6.20 Although any loss of area in the Productive Conifer zone is disruptive to the plantation's overall performance, the other zones are less sensitive due to a lower number of trees per hectare planned. The Native Woodlands target a minimum of 1,600 stems per ha with 20 % open space. The Riparian Woodlands aim for between 800 and 1,600 stems per ha with 40 % open space, and the Successional Woodlands target is for between 500 and 1,600 stems per ha with a minimum of 20 % canopy cover.

11.6.21 However, during the NSLMP consultation, the shelterbelts along the A836 were noted as being important during winter in the prevention of snow accumulation, and plans are in place to mitigate the removal of conifer with the planting of broadleaves between the road and plantation prior to felling. With regard to the locally important function of the present shelterbelt trees provide, the OC design avoids the felling of the shelterbelts (making use of micro-siting to avoid any overlap of the OC and tree boundary), with the OHL situated in the Open Ground between the road and east shelterbelt. Felling part of the shelterbelt to attain a suitable falling distance is, in this case, considered to be detrimental to crop stability to attempt. It is acknowledged that the OC would prevent the establishment of the planned broadleaved shelterbelt other than low growing shrubs. As displayed on the NSLMP future habitats map (see **Appendix 11.1**), the existing shelterbelts are planned for removal during Phase 3 and Phase 4. Further consideration would be required as part of the approved forest plans to determine how best to provide an ongoing effective snow break following this clearance.

11.6.22 It may be possible for the proposed felling dates for the exposed and slow growing LP shelterbelts to be delayed beyond the period of the Proposed Development and therefore maintain the effectiveness as snow breaks. Alternatively, it may be acceptable for low growing species such as willows and other scrub species to be planted immediately adjacent to the OHL and develop as a reduced width shelterbelt prior to the conifer felling. Either of these options would reduce the effective area of woodland loss by 6.58 ha. The Applicant would work with FLS to revise the forestry plan to determine the best solution for the shelterbelts.

Mitigation During Construction

11.6.23 Best use of micro-siting in areas 11, 12 and 13 would be employed to remove one side only where tree cover is present to reduce the edge effect and a risk of windthrow; the areas of concern are much reduced due to the recent felling programmes.

11.6.24 Similarly, the avoidance of leaving narrow strips of Productive Conifer restricts the areas which may become problematic to harvest due to the additional constraints of the OHL.

Residual Effect

11.6.25 The following residual effects are considered likely as part of the Proposed Development:

- the woodland area would be reduced by 35.92 ha as a result of the Proposed Development;
- OHLs in working forests can present management constraints and safety hazards, and, as such, consideration must be given to access for future timber harvesting and other forest operations;
- overall there would be little significant residual effect to the integrity of the land management in Dalchork Forest; and

- in this situation, because of the significant areas of open ground or felled, lying fallow before replanting, the risk to area 11 of additional windthrow developing by creating any “brown edges”, compartments which have an open felled face have been eliminated by micrositeing to open ground.

Operational Phase

Design Solutions and Assumptions

11.6.26 The species-sensitive variable OC width would provide resilience to the supply of energy from Creag Riabhach Wind Farm by providing sufficient clearance to allow adjacent trees to fall without contact with the conductors or breaching the 3.5 m vicinity zone. This clearance by design should eliminate the requirement for de-energising or “live line” felling when the time comes to fell the yet unplanted Productive Conifer in south Dalchork Forest.

Description of Effects

11.6.27 The alignment has been situated so as to avoid the potential for windthrow progression within area 11, considered to be the only area of standing timber potentially requiring some intervention by opening up a face through felling. The Productive Conifer replanting to the stated OC allows a wind firm edge to develop during the tree crop rotation. The Native, Riparian and Successional woodlands, most of which are to be planted or regenerated, have a higher percentage open space than productive woodlands and should develop incorporating the new OHL.

11.6.28 The OHL would remain a constraint on forest operations and would require to be factored into operational plans to ensure the safety of forest personnel.

Mitigation During Operation

11.6.29 The NSLMP referring to Dalchork Forest would require to be updated to incorporate the OC. Such an update would need to take into account the variable width of the OC and adjust any future replanting to suit. The alignment adjacent to the A836 north of the Crask Inn would have an effect on the proposed new planting for snow breaks, and further consideration would have to be given in future forest plans to provide an effective long term solution to the maintenance of a snow break.

Residual Effect

11.6.30 The residual effect to the forest is negligible to north Dalchork where the significant Open Ground / bog restoration is being undertaken. The OC would not result in a substantial break in the broadleaved canopy which is planned as varying from 20% open space for the Native woodlands, 40% open space for the Riparian woodlands and up to 80% for the Successional woodlands.

11.6.31 The residual effect on the Productive Conifer woodlands is a net reduction on area but this is generally restricted to the western forest boundary in south Dalchork. No additional windthrow risk is anticipated as the replanted crop is developing with the new boundaries.

11.7 Cumulative Effects

11.7.1 The most substantial effect on the woodland cover within Dalchork Forest is the management decision not to replant those areas identified for bog restoration and to convert other areas of previous conifer to the various types of broadleaved woodland.

11.7.2 Outside the Creag Riabhach grid connection within south Dalchork Forest, Dalchork Substation is consented (planning application reference 19/00374/FUL). Dalchork Substation Environmental Appraisal Volume 1, Part 3 includes Annex 2.3: Forestry and Woodland Management Assessment. The assessment describes the site area as 56 ha in total. The substation developer will undertake 32.5 ha of native tree planting as part of the

landscape design, 4.95 ha will remain as open ground for utilities infrastructure post construction, and 8.9 ha is required for an OC for the proposed Lairg to Loch Buidhe 132 kV OHL.

11.7.3 The Decision Notice issued for Dalchork Substation⁸ notes that 6.5 ha of compensatory planting would be required to ensure compliance with the Scottish Government's Control of Woodland removal policy and to offset the loss of trees within the application site. As the policy requires planting to offset all loss of woodland associated with a development, it is assumed that the effective loss of woodland area associated with Dalchork Substation would be zero. Consequently, there would be no increase in area of woodland loss when considering cumulative developments, and cumulative effects remain **non-significant**.

11.8 Compensatory Planting

11.8.1 As discussed above, the Proposed Development would not be likely to result in significant effects on forestry, and thus Compensatory Planting would not be required to offset loss of woodland areas and avoid significant effects in EIA terms.

11.8.2 However, following consultation with Scottish Forestry, Compensatory Planting would be required for all areas of woodland loss associated with the Proposed Development. This would be the 35.92 ha of woodland loss associated with the OC, accounting for woodland areas able to accommodate the OHL without actual woodland loss, as discussed in paragraph 11.6.7.

11.8.3 The Applicant has set out a Compensatory Planting strategy to address loss of woodland areas across their various development sites which identifies a hierarchical approach, prioritising methods which are considered to deliver added value and be efficient to implement. These approaches, described below, have been influenced by a number of wider industry and societal factors, including the Applicant's obligation to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and minimise impacts on the environment.

11.8.4 As a transmission owner, the Applicant does not typically own the land on which an OHL is constructed, which is true for the Proposed Development. This presents barriers to the effective, efficient and timely provision of planting as opportunities on site can be heavily restricted by third party requirements and operational safety. As such, the following three options, in order of preference, have been identified to achieve compensatory planting:

1. Centrally administered 'Scottish Woodland Replanting Fund' (SWRF)
2. 'Not for profit' Partnership
3. Commercial Broker Arrangement

11.8.5 The Applicant would intend to support the development of a centrally administered SWRF which would be administered by a Scottish Government agency, such as Scottish Forestry. This fund, paid into by the Applicant for each site requiring compensatory planting, would be used by the agency to identify opportunities for planting and put in place the necessary agreements and plans to deliver it.

11.8.6 Given that woodland planting can be a complex matter taking significant time to deliver, the Applicant would not wish any condition attached to the grant of consent in relation to compensatory planting to be time limited, i.e. the condition should not stipulate that the compensatory planting must be in place prior to development works commencing, as this would add significant delay to the Proposed Development.

11.9 Summary

11.9.1 This Chapter provides an assessment of the potential effects of the Proposed Development on forest areas. Other than small sections of shelterbelt on Altnaharra Estate, all other areas of woodland affected are part of

⁸ Dalchork Substation planning application, Decision Notice (2 December 2019) (online) Available at:

https://wam.highland.gov.uk/wam/files/5EA750079FBAC3D88C455DA2276D16B6/pdf/19_00374_FUL-ISSUED-1987094.pdf (Accessed 5 February 2020).

the National Forest Estate, managed by FLS as an agency of the Scottish Government. This particular woodland is presently undergoing considerable restructuring as a result of large scale windthrow and the impact of the tree disease Dothistroma Needle Blight. As a result of these devastating events FLS has taken the opportunity to re-evaluate the land use and manage the land by, amongst other targets, the carbon value of peatland and tree growth. As a result, the long-term plan (see future habitats map in **Appendix 11.1**) describes a significant proportion of the land in the north of the forest as open ground or varying degrees of broadleaved tree cover. The immediate position is that large areas of the forest are felled and either will not be replanted or are lying fallow before replanting.

- 11.9.2 The Proposed Development has been designed to follow a route which avoids standing timber crop where possible. Where the alignment passes some 2nd rotation planting, the design is such that this follows the forest road and would not dissect these compartments. Since the majority of the 1st rotation conifer crop has been felled there are no additional windthrow concerns with developing the OC. The North Sutherland Land Management Plan will require a small degree of amendment to allow for the OC which has been planned to vary width with the potential tree height adjacent.
- 11.9.3 The overall change to the forest structure is a permanent loss of 42.84 ha of woodland cover. In EIA terms, the loss of woodland cover would be 35.92 ha, giving rise to a medium magnitude of direct impact. As the forest area is considered to have a low sensitivity to direct impact, with the exception of a small area of natural reserve, this would likely result in a minor, and thus **non-significant**, impact on forestry from the Proposed Development. The overall cumulative impact of the potential woodland loss resulting from both the proposed Dalchork Substation and the Proposed Development would be unchanged as the 6.5 ha of woodland loss associated with the substation will be offset by Compensatory Planting to ensure compliance with the Scottish Government's Control of Woodland removal policy, as per the Decision Notice for the development. This effectively negates the woodland area loss associated with the substation. A total of 35.92 ha of compensatory planting would be required in order for the Proposed Development to adhere to the Scottish Government's Control of Woodland Policy and comments received from Scottish Forestry through the consultation process. It is proposed that this compensatory planting would be achieved through payment into a Scottish Woodland Replanting Fund, and it is requested that any conditions to deliver compensatory planting not be time limited.