BIDWELLS

KIRKTON ENERGY PARK TECHNICAL APPENDIX 3.2 (FORESTRY)

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1.0 Introduction

1.1 The proposed development is situated within a matrix of native and commercial woodland at Kirkton Farm and Upper Bighouse Estate in Sutherland, under separate ownership (Figure 3.2.1).

1.2 The native woodlands within the application boundary, all on Kirkton Farm, were planted in 2007 and 2011 and extend to approximately 58.06ha (Figure 3.2.2).

1.3 The Kirkton Plantation, to the northwest of the site was planted in 1984. The plantation extends to 87.75ha with crops comprising of intimate mixtures of Sitka spruce and Lodgepole pine extending to 70.75ha net hectares within a matrix of rides and open ground extending to 17.00ha. This plantation can be considered to be of poor quality, planted on predominantly peatland habitats where inherent infertility and high water tables inhibit commercial tree growth. This plantation sits partly within, and adjacent to, the Caithness and Sutherland Special Protection Area (SPA) and Special Area of Conservation (SAC). Given its location, there are opportunities to manage this plantation to protect and enhance the qualifying features of these designations.

1.4 A mixed conifer shelterbelt (4.2ha), planted in the 1980s, lies to the southwest of the site on Upper Bighouse Estate, between the application boundary and Turbine 10 (T10). An area of 1.1ha of this shelterbelt lies within the application area. This shelterbelt has previous clearfelling approval under Felling Licence FLA01975, and this management is expected to continue in support of local CHP biomass boilers.

1.5 Design iterations have sought to minimise impacts on the native woodland on the site and the proposed infrastructure layout largely avoids areas of woodland. To the northwest of the site, approximately 547m of track construction to Turbine 2 (T2), and bat protection buffers of 90m at this turbine, and at Turbine 1 (T1), are impacting on 3.58ha of native woodland. Although there is no infrastructure sited within the Kirkton Plantation, opportunity is taken to restructure this plantation to protect and enhance the qualifying features of the adjacent SPA by clearfelling, and thereby removing its edge effect on the SPA, and carrying out a proportion of compensatory planting of native woodland. Woodland removal will allow peatland restoration works as described in the Habitat Management Plan, (Technical Appendix 8.5 (TA8.5). To date, no felling has taken place and there is no approved Forest Plan for the woodlands.

1.6 This Technical Appendix describes the approach adopted to manage the tree felling to facilitate the development and to support the Habitat Management Plan (TA8.5), before describing the timber volumes to be felled, and describing the waste management strategy for forest residues as a result of this felling. The Forest Residue Management Plan details the volumes of residues which would be generated and details how the volumes generated would be utilised.

1.7 The proposed development and its associated Habitat Management Plan would require 70.75ha of conifer woodland to be felled, and 3.58ha of native woodland to be felled, in order to facilitate the proposed development and the associated Habitat Management Plan.

This Technical Appendix provides information on the forestry aspects of the proposed development as follows:

- Scope of Assessment;
- Scoping and Consultation
- Policy, Legislation and Regulation;
- Methodology;
- Impacts of the proposed development;
- Timber Harvesting and Production;

- Forest Residue Management Plan;
- Compensatory Planting.

2.0 Scope of Assessment

2.1 Study Area

This Technical Appendix focusses on the extent of woodland lying within the application boundary and affected by the proposed development. This comprises the following elements, as shown in Figures 3.2.2 and 3.2.3:

- Approximately 13.53ha of native woodland established in 2007 under Scottish Forestry Grant Scheme reference 30901043 (coloured green in Figure 3.2.2);
- Approximately 44.53ha of establishing native woodland planted in 2011 under Rural Development Contract 4335652 (brown hatch as shown in Figure 3.2.2);
- Kirkton Plantation, to the north west of the site extending to approximately 87.75ha of which 70.75ha are commercial conifer crops of Sitka spruce/Lodgepole pine in the mixture (Figure 3.2.3).

The native woodland planted in 2007, is now established with mixed broadleaved species on the lower, more fertile, free draining slopes, with scrub birch and willow dominating as elevation rises to the west, where tree densities become lower towards the upper edge.

The four other enclosures of establishing native woodland planting (hatched brown) were planted with mixed broadleaved species in 2011 and are considered to still be within their establishment phase. Stocking densities are varied, with areas of open ground reflecting soil types and relative fertility across the enclosures.

All native woodland areas are individually deer fenced.

The composition of Kirkton Plantation is reflective of the extensive areas of even aged monoculture created through the original establishment of commercial forestry in the 1980s, with very limited age class and species diversity in the stands.

Kirkton Plantation can be considered to be a poor quality commercial forest with estimated yield classes varying from 6 to 14, with the majority of the Sitka spruce crop recording an average yield class of 10, reflecting the relatively infertile soils for forestry growth, on which it was established. The crop quality is variable both within and between stands, reflecting variations in the underlying fertility and height of water table across the site. In many areas of the crop the intention of the mixture, to produce a final crop of Sitka spruce, has been unsuccessful, with full canopy closure not being achieved and the Lodgepole pine failing to be suppressed.

The current species and age classes are provided in Table 1.1, Current Species.

Table 1.1 Current Species: forest species by planting year (in hectares)

Species / Planting Year	1984 (ha)	2007(ha)	2011(ha)
Native Woodland		13.53	44.53
Sitka spruce / Lodgepole pine mixture plantation	70.75		
Open Ground	17		
Total	87.75	13.53	44.53

3.0 Scoping and Consultation

Table 1.2 summarises the responses from the Scoping Opinions and additional post-scoping comments received relevant to forestry, and how these have been addressed in this Technical Appendix to the EIA Report.

Table 1.2: Summary of Scoping responses in relation to Woodland Management and Felling

Consultee	Response	Comment
Highland Council	Consider the potential effects (wind shear and turbulence) of turbines T1 and T2 which are immediately adjacent and on the leeward edge of the existing woodland.	Management of the plantation forestry in the north of the site is now being considered in the context of its ability to contribute to the Habitat Management Plan, including clearfelling to enhance habitats to support golden plover and dunlin in the adjacent designated site, and to allow peatland restoration. Given the location, quality and age of the plantation forestry it is considered that this is an appropriate option for habitat improvement.
	Consideration to be given to any future impact on existing native woodland, which will change considerably over the operational life of any windfarm. It may be that the native woodland help to soften the visual impact on the proposed turbines, without causing any issues in terms of performance.	The younger native woodland plantations (RDC Woodland Creation) have been avoided (directly) by site infrastructure. Bat protection areas for T1 and T2 and associated track for T2 are within a native woodland enclosure. The forestry appendix includes assessment and summary of the young native woodland plantations. Given the revised layout, the expected growth rates of the native woodlands and their distance from turbines preclude longer term turbine performance issues.
	We note that no forestry felling is currently anticipated as part of the proposed development, however, felling and rewetting the plantation areas on the site would be a significant opportunity for habitat restoration and biodiversity enhancement as per Scottish Forestry guidance.	Management of the plantation forestry block in the north of the site is being considered as part of the planned habitat improvements, including management fellings areas to facilitate restoration as peat bog habitat.

Nature Scot **and Scottish Forestry**	Post scoping meeting held on March 2 2022 with Nature Scot and Scottish Forestry, with the following comments offered. 'As discussed at the meeting, please find attached our map indicating the pullback required to address edge effect on golden plover and dunlin of the Caithness and Sutherland Peatlands Special Protection Area. The map also shows the area that could be restocked and we have calculated this area to be 13.61ha gross approximately 9.7ha net planted. From a habitat management perspective, we consider that it would be preferable to fell the entire block in a single phase and look at compensatory planting elsewhere. From a landscaping perspective, consideration could be given to planting around the two borrow pits to minimise their visual impact. In terms of peatland restoration, it is likely to be more effective given the size of the forest to restore it to blanket bog in one operation. Despite the relatively low yield classes on the western half of the forest, we would advise felling and extracting rather than mulching that has been done on other sites. Whole tree mulching would reduce the effectiveness of peatland restoration and also makes re finding plough furrows /drains difficult when rewetting the forest. We would also advise that felling and restoration is undertaken outside the bird breeding season to avoid disturbance and displacement of SPA breeding birds. In order to minimise conifer regeneration in the restored area, we would advise removing the boundary deer fence to allow grazing of seedlings'.	Nature Scot and Scottish Forestry's preference for felling the plantation all at once is accepted and the strategy to not restock but to compensatory plant with native woodland elsewhere is also accepted. The proposed method for the removal of conifer crops in the plantation is by a combination of shortwood harvesting where timber products are recoverable, and by whole tree extraction for smaller crops to the west of the site. These poorer crops will be chipped on site for produce for the regional biomass market. Harvesting operations will take place outwith the bird breeding season where possible. If felling operations are to take place within the breeding season, then nest checks would be carried out by an appropriately qualified ornithologist in advance of felling.

Consultee	Response	Comment
	We note that a second conifer block is located to the west of turbine 10 & 11 and is within the application area for the wind farm. The inclusion of this forest block in the habitat management plan to ensure that it is managed as agreed under the felling permission would be welcomed.	The shelter belt to the south of the site has previously obtained felling approval by the owner and this management is expected to continue in support of local CHP biomass boilers.
Scottish Environment Protection Agency	The relevant information should be submitted in support of the application to avoid any potential objection to include in relation to forestry in the form of a map and table detailing forest removal.	A map showing the area to be felled, and a table outlining the volumes of timber involved are shown at Figure 3.2.4 and Section 8, the Forest Residue Management Plan, detailing the use and destination of forest produce and residues.
Royal Society for the Protection of Birds	We note that the habitat surveys undertaken to date do not include the entire red-line boundary of the site. An area to the north, mainly plantation forestry has been omitted. We advise this should be surveyed in order to inform the Habitat Management Plan for the site.	The entirety of the site area has now been covered by habitat surveys. These habitat surveys have helped inform the habitat improvements proposed i.e. felling of forestry and restoration of areas to blanket bog.

4.0 Policy, Legislation & Guidance

The following policy and guidance have been referred to as part of the forestry assessment.

- Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017[1];
- UK Forestry Standard (UKFS)[2];
- Scottish Forestry Strategy 2019 (SFS)[3];
- Scottish Land Use Strategy (SLUS)[4];
- Scottish Planning Policy 2014 (SPP)[5];

[1]Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 Available at: The Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 (legislation.gov.uk)
[2]Forestry Commission (2017) The UK Forestry Standard Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687147/The_UK_Forestry_Standard.pdf
[3]Scottish Government (2019) Scottish Forestry Strategy. Available at: https://www.gov.scot/publications/scotlands-forestry-strategy-20192029/
[4] Scottish Government (2016) Scottish Land Use Strategy Available at: https://www2.gov.scot/Resource/0050/00505253.pdf

[5] Scottish Government (2014) Scottish Planning Policy Available at: https://www2.gov.scot/Resource/0045/00453827.pdf
[6] Scottish Government (2014) National Planning Framework 3 Available at: https://www.gov.scot/publications/national-planning-framework-3/

- National Planning Framework for Scotland 3 (NPF3)[6];
- Policy on the Control of Woodland Removal 2009 (CoWR)[7];
- Guidance on Forest and Peatland Habitats, Forestry Commission Scotland 2000[8];
- Guidance to Forest Managers preparing Forest Plans within the Caithness and Sutherland Peatlands SAC/SPA, Forestry Commission Scotland 2015[9];
- Guidance on Deciding Future Management Options for Afforested Deep Peatland - Forestry Commission Scotland 2015 Practice Guide[10];
- Supplementary Guidance to support the FC Forests and Peatland Habitat Guidance Note 2000, (2016)[11];
- Management of Forestry Waste[12];
- Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Position Statement and Guidance (2014)[13];
- Highland Forest & Woodland Strategy (2018)[14] and;
- Implementation Guidance for the Policy on Control of Woodland Removal (2019)[1515].

These documents and their relevance to this Technical Appendix are described in more detail below.

4.1 National Policy

The SFS[3] (2019) is the Scottish Ministers' framework for taking forestry through the first half of this century and beyond.

The Strategy has the principles of sustainable forest management at its core, including an adherence to the principle of 'the right tree, in the right place, for the right purpose'. In addition, by implementing the Strategy, it is vital that we recognise the need for better integration of forestry with other land uses and businesses. This approach will enable forestry in Scotland to continue to deliver an extensive and expanding range of economic, environmental and social benefits, now and in the future.

The SFS sets out the commitment to increase Scotland's woodland cover to 21% by 2032, through maintaining and promoting the UKFS as the benchmark of good forestry practice, and assessment of the quality of forest and woodland expansion proposals and forest management plans.

The SLUS[4] is a strategic framework for achieving the "best" use from Scotland's land resource. The strategy aims to achieve a more integrated approach to land use, maintaining the future capacity of the land resource and is based on the three pillars of sustainability; economy, environment and communities. Attaining multiple benefits from land is a key theme, and the focus on forestry is the identification of areas best for tree planting in an integrated land use system.

[7] Scottish Government (2009) Policy on the Control of Woodland Removal Available at: https://forestry.gov.scot/publications/support-and-regulations/control-of-woodland-removal/285-the-scottish-government-s-policy-on-control-of-woodland-removal

[8]Forestry Commission (2000) Available at: https://forestry.gov.scot/publications/2-forests-and-peatland-habitats

[9] Forestry Commission Scotland (2015) Available at: https://forestry.gov.scot/publications/3-guidance-to-forest-managers-preparing-forest-plans-within-the-caithness-and-sutherland-peatlands-sac-spa

[10] Forestry Commission Scotland (2015) Available at: https://forestry.gov.scot/publications/1-deciding-future-management-options-for-afforested-deep-peatland

[11] Forestry Commission Scotland (2016) Available at: Supplementary Guidance to Support the FC Forests and Peatland Habitats Guideline Note (forestry.gov.scot)

[12] SEPA (2017) Available at: https://www.sepa.org.uk/media/28957/forestry_waste_guidance_note.pdf

[13] SEPA (2017) Available at: Use of Trees Cleared to Facilitate Development on Afforested Land- (sepa.org.uk)

[14]Highland Council (2018) https://www.highland.gov.uk/downloads/file/891/highland_forest_and_woodland_strategy

[15] Scottish Government (2019) Available at: https://scotland.forestry.gov.uk/images/corporate/pdf/Implementation-Guidance-Control-of-woodland-removal.pdf

Regional Forestry and Woodland strategies developed by local authorities are identified as the delivery mechanism to promote good practice and multi benefit land use.

Trees and woodlands are addressed in the SPP[5], which recommends local authorities prepare woodland strategies to support the development of forestry and woodlands in their area (Section 201). The opportunities for woodland creation are highlighted in section 217, along with the need for the Control of Woodland Removal Policy[7] to be taken into consideration in relation to any development (Section 218), stating woodland removal should only be permitted where it would achieve significant and clearly defined additional public benefits. Where woodland is removed in association with development, developers would generally be expected to provide compensatory planting.

NFP3[6] details the national woodland expansion target of 100,000ha over the next ten years with a subsequent review of woodland expansion targets in the 2020s to ensure national objectives on omissions and land use are achieved.

The overarching document for forestry management is the UK Forestry Standard[2] (revised 2017). It is the reference standard for sustainable forest management in the UK. It outlines the context for forestry, sets out the approach of the UK governments approach to forestry, and defines standards and requirements and provides a basis for regulation and monitoring – including national and international reporting.

Its approach is based on applying criteria agreed at international and European levels to forest management in the UK. It has been endorsed by the UK and country governments and applies to all UK forest and woodlands. In its sustainable forest management guidelines with respect to climate change and soil it advises that forest managers consider the balance of benefits of carbon and other eco system services before making the decision to restock on soils with peat depths exceeding 50cm.

In general, there is a strong presumption against woodland removal, and restocking of harvested forests is a normal condition of felling approval being granted. The ability of woodlands to sequester carbon, and hence their role in possible mitigation of climate change is an important factor in shaping regulatory mechanisms.

The control of forestry felling is usually administered under the Forestry Act 1967 (as amended). Woodland removal, defined as "the permanent removal of woodland for the purposes of conversion to another land use" falls within the scope of the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017[1], except in cases when woodland removal is associated with development. In such cases, any significant environmental effects of woodland removal are assessed by the Scottish Government under Section 36 applications for proposals exceeding 50MW in capacity, or by the Local Authority for applications under 50MW.

The Scottish Government's policy document on the Control of Woodland Removal and accompanying Implementation Guidance[7] (2015) provides details and background on the guidance, policy and discusses the principles, criteria and process for managing the policy's implementation in respect of forestry removal on development sites.

The principle aims of the Control of Woodland Removal Policy are to provide a strategic framework for appropriate woodland removal and to support climate change mitigation and adaptation.

The Control of Woodland Removal Policy is built on the following principles:

- a strong presumption in favour of protecting Scotland's woodland resource;
- woodland removal should be allowed only where significant and clearly defined additional public benefit can be demonstrated. A proposal for compensatory planting may add additional public benefit;
- approval for woodland removal should be conditional on the undertaking of actions to ensure full delivery of the defined additional public benefits;
- planning conditions and agreements are used to mitigate the environmental impacts arising from development and SF will also encourage their application to development related woodland removal; and

- where felling is permitted but woodland removal is not supported, conditions conducive to woodland regeneration should be maintained through adherence to good forestry practices as defined in the UK Forestry Standard.

The Control of Woodland Removal Policy identifies the following criteria for areas where woodland removal may occur without a requirement for compensatory planting:

- enhancing priority habitats and their connectivity;
- enhancing populations of priority species;
- enhancing nationally important landscapes, historic environment and geological SSSIs;
- improving conservation of water resources;
- improving conservation of soil resources; and
- public safety.

Woodland removal, without a requirement for compensatory replanting is most likely to be appropriate where it would contribute significantly to enhancing priority habitats and their connectivity, specifically where it contributes to the functional connectivity of priority and associated habitats, without adverse impact on priority woodland habitats or woodland connectivity; and where it enhances population(s) of priority species where woodland is detrimental to nationally significant concentrations of Biodiversity Action Plan species.

The Scottish Government's Implementation Guidance for the Policy on Control of Woodland Removal, updated in February 2019[15], advises that determining and weighting the significance of public benefits is implicit in the development management process, which is subject to EIA regulations. The EIA Report should justify and provide evidence for the need for woodland removal and the associated mitigation measures and present a suite of options that the applicant has considered and assessed.

It advises that the first consideration should be whether the underlying purpose of the proposal could be reasonably met without resorting to woodland removal. Design approaches which reduce the scale of felling required to facilitate the development must be considered. The EIA Report should justify and provide evidence for the need for woodland removal and the associated mitigation measures, and present options that the applicant has considered and assessed.

The requirements raised in the policy can be addressed by implementing changes to forest design, adapting design and/or undertaking compensatory planting or by providing mitigation measures in support of woodland removal which realise or support the public benefit of not restocking or carrying out compensatory planting.

The Forestry Commission's Forest and Peatland Habitats Guideline Note, (2000)[8], associated Practice Guide (2015)[10] and supplementary Guidance (2016)[11] set out forestry policy and practice in relation to afforested peatland habitats, with particular focus on blanket bogs and lowland raised bogs. It indicates how the statutory authority will evaluate proposals for restoration of peatland habitats from woodland. It states that as the Government's policy is to maintain and expand woodland cover, bog restoration on a scale which exceeds normal open ground provision within woodland will only be approved where there are high net environmental benefits to be obtained with permanent tree removal.

As such, an Environmental Impact Assessment under the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 may be required by Scottish Forestry to approve such removal. It notes that in both private and public forest there are cases likely to be found on deep peat sites (averages depth 1m or more) which are judged to have a high probability of successful restoration to active blanket bog; and are either hydrologically linked to significant remnant areas of active bog or are adjacent to them and are important to their ecological integratory.

In identifying sites for restoration from woodland to bog this guideline note suggests that woodland planted in peatland deeper than 1m which was formerly blanket bog and where the feasibility and benefits of restoration include where the site is hydrologically linked to large areas of active bog especially SAC, SPA or SSSI sites and where restoration would greatly enhance the ecological integratory of adjacent sites, these higher benefits and prospects of restoration then FC will consider allowing felling without replanting.

In 2013 SEPA produced guidance on the Management of Forestry Waste[12] in response to renewable energy developments on afforested land and more recently 'The Use of Trees Cleared to Facilitate Development on Afforested Land[13]' – was produced by SEPA, SNH and FCS to compliment this advice. The guidance notes do not apply to conventional forestry activities because no land use change is involved as there are exclusions under the EU Waste Framework Directive 2008 applicable to forestry. Where trees are being removed for conversion to a non-forestry land use, the guidance note advises the following considerations:

- professional forester input to quantify the likely volumes, markets and economic uses of trees to be exported from the site;
- developer commitment to employ a professional to implement and maximise the removal of timber and forest residue onsite;
- quantify the likely volumes of material for which no economic off-site use can be found and;
- identify if there are valid uses onsite for material for which no economic off-site use can be found, using professional ecological consultant input where ecological uses are proposed, and using professional water quality expertise when material is to be retained onsite. Boundaries of areas proposed for such uses should be set out on plans, and information on depth and size of material to be used for such uses provided, within the EIA Report.

4.2 Regional Policy

The proposed development falls within the administrative boundary of Highland Council which is covered by the Highland wide Local Development Plan (HwLDP), which is supported by Supplementary Guidance in the form of the Highland Forest & Woodland Strategy[14] (2018).

The Highland Forest & Woodland Strategy is intended to provide a framework for the delivery of Scottish Government priorities, including sustainable economic development, climate change and woodland creation.

Regional priorities for woodland expansion and management are detailed by spatial landscape zones, with the Strategy identifying the surrounding land as 'Sensitive' for woodland creation.

In considering present challenges and opportunities to deliver the Strategy it considers more emphasis is required in prioritising efforts to reverse the decline in productive forestry by supporting opportunities for expansion of high quality productive planting and restocking on the most appropriate sites and where there are appropriate transport links.

One of the objectives under the key theme of Climate change is to 'support opportunities for peatland habitat restoration in combination with "peatland edge" and "transition" type woodland and habitat connectivity as part of restructuring / long term forest plan proposals.

5.0 Methodology

This Technical Assessment follows the assessment methodology set out in the Scottish Government's Policy on Control of Woodland Removal: Implementation Guidance (2019)[15]. This report also draws on the principles set out in the Environmental Assessment (Forestry) (Scotland)

Regulations 1999 (as amended 2017)[1] and Appendix 2 of the 'Environmental Assessment of Forestry Projects' (Scottish Forestry)[16].

Following the Scottish Government's Policy on the Control of Woodland Removal Implementation Guidance 2019, this chapter will describe and recognise the social, economic and environmental values of the forest and the woodland habitat and take into account the fact that, once fully mature, the forest would have been expected to have undergone a Forest Plan approval process, and would have been required to consider the aforementioned policy and guidance in drawing up any restructuring proposals, in line with the UK Forestry Standard.

Onsite and site adjacent constraints influence the design approach and felling and restocking decisions. The foregoing policies and associated guidance place significant constraints on any restocking design while providing opportunities for forest management to support sustainable management of non-forest habitats.

A number of parameters driven by the following policy and guidance, were therefore taken into account in considering the felling and restocking requirements for the proposed development and supporting Habitat Management Plan;

- Guidance to Forest Managers preparing Forest Plans with the Caithness and Sutherland's SAC/SPA[9;]
- Scottish Government's Policy on Woodland Removal: Implementation guidance (2019)[15];
- Supplementary guidance to support the FC Forest and Peatland Habitat guideline note of 2000[11];
- detailed guidance in Deciding Future Management Options for Afforested Deep Peatland Practice Guide, Forestry Commission (2015)[10];
- consideration of the stability of crops in relation to possible longer term retentions and appraisal of the existing under canopy ground conditions in relation to further cultivation disturbance required to establish subsequent commercial rotations.

The design methodology also takes into account specific responses to Scoping and post-Scoping comments and concepts explored in the final design iteration and tree felling and management plans include:

- minimise impact on native woodlands, including avoiding future conflict between turbine performance and growing native woodlands, by siting turbines well away from native woodland enclosures;
- explore opportunities to restructure Kirkton plantation to support peatland restoration and the qualifying interests of the adjacent SPA;
- consider harvesting procedures which avoid mulching of forest crops

5.1 Desk Study

Kirkton Plantation does not benefit from active professional management and had limited base data relating to current tree species, planting years, Yield Class, and Wind Hazard Class to provide reliable information to support silvicultural decision making.

[16] Scottish Forestry Available at: https://forestry.gov.scot/publications/support-and-regulations/environmental-impact-assessment/1003-environmental-impact-assessment-for-forestry-projects-application-guidance

However extensive desk and field work was undertaken to establish the base line data of the forest using information from the owner and Scottish Forestry data sets.

5.2 Field Survey

Ground truthing of specific aspects of the forest was undertaken to support desk study figures and to provide quantitative validation for specific aspects of the proposal, particularly those identified in the aforementioned guidance. Field survey validation was primarily in relation to cultivation techniques at establishment and its present status, crop mixtures and their relative progress and likelihood of silvicultural success, and tree canopy top heights to estimate General Yield Class across the forest as well as in proximity to specific turbine locations (T1 and T2) to help inform the appropriateness of any turbine specific management proposals, in the event that these would support the development.

In considering yield, where the Sitka spruce in mixture with Lodgepole pine had effectively closed canopy and suppressed Lodgepole pine, the Sitka spruce model was used. However, across the majority of the site where the mixture remains in competition and full canopy closure has not been achieved, a 50/50 split of the crop was modelled, reflecting the persistence of the Lodgepole pine in the mixture.

5.3 Forest Plans

In 1919 the Forestry Commission was established and tasked with encouraging large scale forest expansion, to provide a strategic timber reserve for the United Kingdom. Afforestation often took place in the uplands with a limited number of tree species capable of successful establishment. As these forests have matured and policy has changed, a move towards creating multi-purpose woodlands has developed.

Restructuring of even age, single species dominated forests to achieve more sustainable forests is required through the UK Forestry Standard. Forest restructuring is approved through the forest planning process, usually in the form of a Forest Plan, which is assessed and authorised by Forestry Scotland. However, forest felling, as part of any development application, can be approved through the development process (in consultation with the Forestry Scotland). This appendix forms a proposed Forest Plan associated with the proposed development, which would be implemented alongside the development, should it be consented.

Forest Plans can relate to individual forests or groups of woodlands and represent a strategic document describing forest operations such as harvesting, restocking and road building over a 20 year period. Forest Plans bring together and attempt to balance management objectives, silvicultural prescriptions and other considerations relevant to the forest area such as landscape, biodiversity and the water environment. Forest Plans describe how the management strategy would deliver these objectives, through the structures detailed within the UKFS requirements and guidelines. Silvicultural prescriptions are underpinned by site specific conditions such as location, soils, species, age structure of the woodlands, and the risk of windthrow damage to commercial conifer crops.

5.4 Timber Harvesting Volumes

Timber volumes are derived from the Forestry Commission's Yield Model (2017)[17], using the age of the tree crops and an average estimated Yield Class of General Yield Class 6 for Lodgepole pine, and General Yield Class 10 for Sitka spruce crops across the felling range.

The default yield models used were Sitka spruce, no thinning, 2m initial planting spacing, and Lodgepole pine no thinning, 2m initial planting spacing, as these reflect the dominant species types

[17] Forest Research Available at : https://www.forestresearch.gov.uk/tools-and-resources/fthr/forest-yield/

at the proposed development site. The Sitka spruce model was also used where Sitka spruce had achieved full canopy dominance species in a mixed stand.

Net areas have been used for the purposes of this assessment. This was calculated by deducting 15% of the gross area to account for drainage ditches and open spaces within the crop.

A conversion factor of 1.08 has been used to convert the net volume into tonnage and this was used to determine the number of lorry movements associated with the forestry aspect of the proposed development based on an average 25 tonne payload per lorry.

5.5 Design Approach

A 12 turbine proposal was initially scoped (followed by a Scoping Addendum for a 14 turbine layout). As design iterations and Habitat Management Plan proposals progressed following Scoping, further consultation with forestry stakeholders took place, including with Nature Scot and Scottish Forestry in a meeting on 2nd March 2022, to discuss tree management and felling approaches across the site.

A range of factors were considered and balanced including detailed consultee feedback, peat depths, tree growth and National Vegetation Classification types within the ride vegetation coplanar, and hydrologically associated with, adjacent tree stands. This process involved taking into account the various, soil, species, age class and adjacent Natura interests and looking at opportunities for operations that would support the wider Habitat Management Plan objectives. The following section explores how the various elements of this design approach fed into the wind farm felling plan design process, leading to the final felling and compensatory planting proposals.

5.6 Kirkton Energy Park Forest Plan

Kirkton Plantation has been infrequently managed since planting as commercial forestry.

Key issues for wind farm developments in relation to commercial forestry often revolve around what felling and restocking would be acceptable under normal routine forestry operations and what is required to accommodate a wind farm and supporting habitat management. In the absence of any approved Forest Plan for the forest in this instance, the UKFS provides the baseline against which to assess the forest management proposals to facilitate any wind farm development.

The UKFS recognises 'some forests have been established on what are now recognised as priority open-ground habitats, such as bogs and heaths. Although there is a general presumption against deforestation, some of these sites may have potential for restoration where this offers significant and demonstrable benefits for biodiversity. The decision to restock forests on deep peat should be carefully considered, taking into account the balance of benefits for carbon and other ecosystem services'.

The premise in the design concept has been to: protect native woodlands as far as a possible, and where this is not possible to relocate these within the existing native woodland habitat network through compensatory planting; recognise the underlying site conditions and the composition and extent of vegetation communities which indicate Kirkton Plantation was partially established on areas of deep peat supporting priority habitats. This premise is reinforced by the surrounding Natura designations to the west of Kirkton, and the peatland habitat restoration as proposed in the Habitat Management Plan (TA8.5) and shown at Figure 3.2.5. In recognition of the designated sites adjacent, supporting a wide range of priority wader species, the design approach also takes into account the guidance contained Forestry Commission Scotland's Guidance to Forest Managers preparing Forest Plans within the Caithness and Sutherland Peatlands SAC/SPA, (2015).

This guidance states that 'for edge effects on the Peatlands SPA topography, the presence of pool systems and degree of enclosure of the adjacent open ground are significant factors in the degree of these effects. The most sensitive forest edges for Golden Plover and Dunlin are where the adjacent habitat is flat and with pool systems. Here forest edges should be removed and not replanted for up to 800m from the edge of the SPA. New forest edges should be shaped to minimise enclosure effects on adjacent open ground i.e. be convex in profile'. Further, the supporting sensitivity maps 'show the degree of benefit likely to result to bog habitats and Dunlin and Golden

Plover populations from removing forest edges adjacent to the Caithness and Sutherland Natura sites'. The sensitivity maps in the guidance identify areas where removal of the forest edge will be likely to reduce pressure on sensitive habitats for Dunlin or Golden Plover and yield the most benefit. To achieve these benefits crop restocking 'holdbacks' are prescribed to redefine the physical boundary of the forest edge further way from sensitive habitats. In such holdbacks, no restocking of woodland would take place after clearfelling. The relevant sensitivity maps are shown in Annex 01[18].

Given this advice and following discussion with Nature Scot and Scottish Forestry (meeting of March 2nd 2022), the design approach then modelled non restocked holdbacks between 400m and 800m from the SPA, in line with the guidance and consultee advice. From these models, and taking into account the falling topography to the east of the plantation, holdbacks of between 450m to 750m were considered adequate to remove the detrimental 'forest edge effect' on wader habitat.

Such holdbacks allow for woodland to remain in a 100-200m strip on the eastern edge of the plantation. This was supported and requested by Scottish Forestry. Therefore, an area of forest extending to 13. 61ha gross and 9.75ha net of commercial woodland outwith the area of immediate felling to enhance the Special Protection Area, could then be considered for tree felling and management under conventional forestry felling and restocking regimes.

The design approach also considered other criteria advised by the Practice Guide. Growth rates (average Yield Class 10 in Sitka spruce) and Ecological Site Classification (ESC)[19]data suggest that the 9.75ha is capable of being restocked with Sitka spruce, either pure or in mixture. The Accumulated Temperature Score is >1062, again showing restocking potential. The Detailed Aspect Method of Scoring (DAMS) of the site is 15, which suggests the areas is suitable for restocking.

In terms of the Practice Guide's flowchart to decide future options for such crops, current growth rates and the ESC data, show that the site is capable of supporting commercial forestry.

However, in looking at opportunities for restocking in this area, peat depths, vegetation communities, (See TA 8.1) and site conditions of a consistently high water table, suggest that opportunities for commercial restocking are limited without further significant silvicultural input such as reinstatement of forestry drainage, and further cultivation by excavator mounding, to provide elevated planting positions for restocked crops.

The mechanical cultivation required to successfully restock a relatively small area of woodland and the subsequent regrowth of forest is considered to provide a barrier to the successful adjacent restoration of blanket bog habitat, as proposed in the Habitat Management Plan (TA 8.5), and to reduce the benefits of this peatland restoration in the context of improving habitat connectivity to the peatlands of the adjacent SPA.

Therefore in considering the design of the future layout of the Kirkton Plantation, the design approach taken is to fell all 70.75ha of conifer crops in a single phase to best support the adjacent dunlin and golden plover communities, not restock those areas which support enhancement of the adjacent SPA in line with guidance in the Control of Woodland Removal Policy (2009) and further to not restock the 9.75ha ha of crops that do not fall within the qualifying criteria under the policy.

It is proposed, therefore, that compensatory planting be carried out elsewhere on Kirkton Farm for the 9.75ha of forest which is capable of being restocked, but which will not be restocked in its present location.

This compensatory planting will be native in character and be designed to strengthen the connectivity of the existing native woodland matrix and provide landscape improvements.

[18] Contact made with Forest Research, NatureScot and Peatland Action with the aim of retrieving the GIS Shapefiles for the Golden Plover and Dunlin Maps. GIS Shapefiles could not be retrieved and as such the quality of the imagery in these maps could not be improved.
[19] Forest Research Available at http://www.forestdss.org.uk/geoforestdss/

The wind farm Felling Plan is presented at Figure 3.2.4.

6.0 Impacts of the proposed development

6.1 Role of the Forest Plan

Forest Plans are a pivotal tool in strategic forest management planning, designed to balance the objectives of the owner with site specific considerations such as landscape, biodiversity, protection of soils and water, archaeology and public access, i.e. balancing the social, economic and environmental aspects of the forest.

There is currently no approved Forest Plan for Kirkton Forest.

In the absence of an Approved Forest Plan for Kirkton Forest there is no effective 'baseline' with which to compare the present wind farm Forest Plan proposals with proposed woodland management operations in the absence of any development. Nevertheless, Forest Plan Guidance and supporting detailed Peatland Guidance set the context in which any felling proposals in the absence of development can be judged.

A discussion and assessment of the impacts of the Wind Farm Forest Plan in relation to the social, landscape, economic, and environmental aspects of the forest follows.

6.2 Social

As set out in the design approach, the premise for designing the Forest Plan reflected the desire to adhere to existing guidance in relation to commercial forestry in the context of the adjacent Natura interest. The decision not to restock follows the long-term trend in the reduction of commercial forestry adjacent to the Caithness and Sutherland SAC/SPA in support of the priority habitats and species associated with these designations

Socially, the forest is not presently well used recreationally. The limited network of forest tracks provides no basis for either circular or through routes in the forest, and very wet and rough ground conditions inhibit informal routes.

An archaeological survey was commissioned as part of the EIA Report, which reveals no Scheduled Ancient Monuments were identified, but there is potential for archaeological features within the Habitat Management felling area.

Known and newly discovered archaeological features would be marked onsite prior to any felling and protected from operations following the guidance in the UK Forestry Standard Guidelines.

6.3 Landscape

A full landscape and visual assessment of the proposed development is provided in Chapter 7: Landscape and Visual Amenity. Forestry and landscape are considered here within the context of the proposed development and the current forestry best practice under the UKFS and supporting documentation including the UKFS Guidelines - Forests and Landscape and Forestry Commission Guidance Notes such as Design Techniques for Forest Design Planning.

The design approach in relation to landscape reflects the distinct landscape unit associated with the proposed development.

In landscape terms, Kirkton Forest does not currently conform to best guidance. It is an isolated block of even aged commercial forest in the peatland landscape and can be seen in the distance from the A897. It is a geometric block, whose eastern face intrudes over the skyline of the long, pronounced ridge running northeast-southwest. Felling this entire block and not restocking will permanently remove this incongruous element from the landscape.

6.4 Economic

One of the key management objectives in the UK Government's support for the creation of the forest was to maximise the economic activity from growing timber in balance with other site considerations.

The investment by timber processors over the last 10 years to adapt to utilising poorer grade timber material from forests of comparable quality to Kirkton, for use in biomass energy production and timber products, provides markets for the trees to be felled to enable the Habitat Management operations. This production of timber and biomass material helps to supply and support considerable regional rural economic benefits associated with both in-forest and downstream industries.

The decision to restore the site to peatland habitats through the Habitat Management Plan, provides employment in the local land management sector. Management activities such as those identified in the Habitat Management Plan including the reprofiling operations provides economic activity at a scale and in a sector similar to that if the forest were to be conventionally restocked under a Forest Plan approved in the absence of any development.

6.5 Environmental

Kirkton Wind Farm Forest Plan seeks to retain as much of the recently established native woodland as possible, and the proposed infrastructure layout avoids any further longer term conflict between turbine performance and native woodland growth, by incorporating substantial offsets between turbine bases and native woodland.

The proposed felling of Kirkton plantation supports operations in the Habitat Management Plan to restore peatland habitats and as demonstrated in Section 5.6, supports the enhancement of priority habitats in line with the relevant guidance and the Policy on the Control of Woodland Removal (2009).

The element of compensatory planting required for that proportion of the plantation which is outwith the proscribed area benefit of forest removal to remove the effects of “forest edge” will be delivered as a hectare for hectare native woodland in the locality of Kirkton Farm.

7.0 Timber Harvesting and Production Figures

The harvesting associated with the proposed development can be considered routine in relation to crop size and as such will be harvested using conventional forestry practices and associated guidelines. All timber harvested from site will be transported to conventional timber markets via Consultation and Agreed Timber Transport Routes, as identified in the Timber Transport Forum's Agreed Routes Map. This map has been developed by the Timber Transport Groups at local authority level and categorises the roads leading to forests in terms of their capacity to sustain the likely level of timber haulage from adjacent forests.

7.1 Timber Haulage

Post construction felling (out with the bird breeding season) would commence in either late summer 2027 or 2028 (dependent on completion of construction) and would take approximately 6 months to complete and to extract all commercial timber to market. Delays in the commencement date may occur subject to consenting timelines, discharging of planning conditions and the timing for the grid connection.

A prediction of the timber standing volumes has been made using the published Yield Models for Forest Management, Forestry Commission. Timber production in the post construction phase for the felling of 70.75ha would produce 12,027.50m3 of merchantable timber.

This has been derived from the Forestry Commission’s Yield Models, (2017), using the age of the tree crops and an estimated Yield Classes (YC) of General Yield Class 6 for Lodgepole pine crops across the felling range, and General Yield Class 10 for Sitka spruce crops across the felling range. This provides a volume per gross hectare for standing crops, which is converted to a net hectarage

calculated by deducting 15% of the gross hectarage to account for drainage ditches, rides and small open spaces within the crop.

A conversion factor of 1.08 has been used to convert net timber volume into tonnages, giving 11,136.57T.

The pay load of timber lorries is approximately 25 tonnes, so the removal of 11,136.57T of timber would require a total of 445 timber lorry movements. Assuming extraction of timber is completed steadily over a 6-month period then there would be approximately 2-3 loads of timber removed each day assuming a 6-day working week. There could be variation in the frequency of timber haulage due to weather conditions and the speed that timber is felled and extracted to roadside.

Access to the main recognised markets would be gained via the A897 to the east of the proposed development, (and thereafter the A836 and eventually the A9 which are Agreed Routes).

This volume of timber is not expected to cause any market saturation in the markets to which it is destined.

8.0 Forest Residue Management Plan

Consideration has been given to the disposal of non-forestry residues in line with the Management of Forestry Waste WST-G-027 version 2 (July 2013) advice from SEPA and the accompanying Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Position Statement and Guidance (February 2014) from the SEPA, SNH and FCS.

These policies require consideration of unmerchantable timber, residual brash and stumps produced by tree harvesting to facilitate developments where standard forestry restocking is not being undertaken.

In the context of the proposed development, this relates to all previously afforested areas associated for unmerchantable timber and brash, and the following areas for stumps:

- Access tracks
- Turbine bases
- Crane hard standings
- areas of temporary construction compounds, substations and control buildings.

The following Forest Residue Management Plan (FRMP) has been produced to address the areas of forest where trees would be harvested and not replanted in order to accommodate the proposed development, detailing the amount and management of merchantable trees and brash generated.

8.1 Ground Conditions

Turbine 2 and associated infrastructure are located in locations on peat dominated soils. Wet, infertile peats result in tree crops with poor growth and correspondingly low commercial, landscape and ecological value. Such soils are at risk of being damaged as part of forestry operations, regardless of being associated with forestry or renewables developments.

The passage of forestry machinery used for felling, processing and extraction of timber can result in rutting, compaction and soil erosion unless appropriate ground protection measures are employed as detailed under the Section 8.8 in this FRMP. Further details of ground conditions across the proposed development site, including details of peat distribution and condition, are provided in Chapter 10 of the EIA Report.

8.2 Access

Approximately 5.48km of new track and access infrastructure would be required within the site, of which 446.95m is floating track.

Further details on access to the proposed development site, access infrastructure, specification and construction, are provided in Chapters 2 and 10 of the EIA Report.

8.3 Timber Markets

At the time of writing, timber markets are relatively buoyant and Kirkton Forest is well located to take advantage of major sawlog, wood panel, small roundwood and biomass processors located in the region. As well as traditional timber markets (saw log, pallet wood, pulp and chip wood) the emerging biomass market has grown steadily since 2011, with the FCS Woodfuel Demand and Usage in Scotland Report predicting continued growth.

8.4 Merchantable Timber

The crop area to be felled extends to 70.75 ha all of which carry merchantable timber, defined as having a diameter greater than 7cm over bark, as detailed in SEPA's Guidance Note on the Use of Trees Cleared to Facilitate Development on Afforested Land.

These areas would be conventionally harvested, using recognised adapted forestry timber harvesting and forwarding machinery to respond to the wet site conditions, with merchantable material stacked by product at roadside ready for onward haulage to market. A critical part of the harvesting approach at Kirkton Plantation would be the use of brash mats to support harvesting and extraction machinery and to protect underlying soils from rutting, compaction and erosion.

Based on an average maximum production of 200 cubic metres (m3) or 160 tonnes per hectare over the 70.75ha of crop to be felled and not replanted, 12,027.50 m3 of merchantable timber, (extracted either as sawn product or whole tree for smaller crops), weighing approximately 11,136.57 T would be generated,

8.5 Unmerchantable Timber

All crops are considered to contain a proportion of unmerchantable timber. Within some stands there are areas of checked crops. These trees will be harvested as whole trees and forwarded to roadside for onsite chipping and haulage to the biomass market.

8.6 Brash

Unlike timber volumes and tonnages, there is an absence of published research data regarding volumes and tonnages of brash produced per hectare of commercial conifer crop. A common assumption used by forest managers is that brash volumes are equivalent to 20 - 30% of the standing volume of merchantable timber. Therefore, if a tree crop is measured at 400T of standing timber, then 80 - 120T of brash may be produced.

On this basis, calculating maximum brash generation is achieved by multiplying the area of merchantable crops being felled and not replanted (70.75 ha) by quarter the average timber production per hectare:

Brash Production = 70.75 ha x 0.85 x 200 m3/ha x 0.25 = 3,006.87 m3 (2,784.14 T)

8.7 Destination of Forestry Material

The following section details the use and destination of the various forestry materials resulting from felling associated with the proposed development.

Merchantable Timber

Merchantable materials would be sold into existing markets, which for sawlogs are likely to include Gordons of Nairn and James Jones at Mosstodloch. Local small roundwood markets would include Norbord at Dalcross and Balcas at Invergordon. Freighted timber out of Wick and/or Scrabster would be available to BSW at Fort William, Iggesund at Workington, or Egger at Hexham.

8.8 Unmerchantable Material

As trees are felled the branches and tips of the trees are removed to leave clean tree trunks, which are cut into product specification lengths, forming the merchantable material. The remaining branches and "lop and top" form the brash, which are collected up to form brash lanes/brash mats to protect the soil and help support the weight of harvester and forwarder movements across the site. This results in brash lanes across the harvesting site approximately every 10-15m, with the intervening areas being relatively free from brash.

The use of brash mats is particularly important on wet, peaty soils characteristic of those found over the entirety of Kirkton Plantation, especially to southwest locations associated with the proposed development. Following industry best practice, the use of brash mats is considered essential. As the brash mats break down and drop needles the brash mats would be renewed using fresh material generated from harvesting. As brash mats degrade in service they become embedded in the soft, wet ground. It is proposed that extraction brash mats are left in-situ where there is no infrastructure post-harvesting, as the ground disturbance associated with digging out brash material from the ground is considered to be greater than leaving it in place.

Due to the risk of soil erosion associated with stump removal on peaty soils, tree stumps in areas to be harvested and maintained as tree free would remain in-situ and allowed to degrade naturally along with the brash mats as per standard forestry practice for areas reverting to open ground habitats in forests.

Brash from harvesting areas (2,784.14 T) will be recovered by forwarder and will be stored at roadside for on site chipping and onward transport to the regional biomass market.

This FRMP demonstrates that all forestry materials generated as a result of felling to construct the proposed development can either be sold to existing timber and biomass markets in the case of the majority of the material or re-used onsite. On this basis there would be no requirement for mulching or spreading of crops across the site.

9.0 Compensatory Planting

9.1 A total felling programme of 74.33ha is directly associated with the proposed development and its Habitat Management Plan.

To enable the proposed development, 3.58 ha of woodland will be removed to create part of the access track to Turbine 2 and to create a 90m bat protection buffer around T1 and T2.

Following the Scottish Government's Policy on the Control of Woodland Removal (2009), its latest implementation guidance (2019), and the complementary suite of policy and detailed guidance on the future management of afforested peatlands and forests in the Caithness and Sutherland SAC/SPA, this Technical Appendix proposes that 70.75 ha of Kirkton Plantation also be felled. Of this area it is proposed that all 70.75 ha is deforested to enhance priority habitats (an additional 17 ha of open space and forest rides within the Kirkton Plantation boundary would also be used to enhance priority habitats), as defined in the Policy, and as described in the Habitat Management Plan.

Compensatory Planting for the entire Kirkton Plantation area is not considered appropriate due to the ecological benefits delivered, however 9.7ha of the plantation are considered to be outwith the holdback area where deforestation would provide benefits to the SPA. While these 9.7ha are considered to be capable of being restocked under current guidelines, such restocking is considered be potentially to be detrimental to adjacent enhancement operations. Therefore, the area of 9.7 ha of woodland beyond the holdback from the Caithness and Sutherland SPA will not be restocked but will be compensatory planted by native woodland in the Kirkton Farm area, to strengthen the existing native woodland habitat network.

Using the most up to date (2019) Guidance to SF staff on implementing the Scottish Governments' Policy on Control of Woodland Removal, compensatory planting areas have been calculated on the basis of a requirement for a hectare for hectare replacement.

Table 1.3 summarises the considerations in arriving at an appropriate level of compensatory planting for addressing the Scottish Government's Control of Woodland Removal Policy in relation to the Development.

Table 1.3: Compensatory Planting Calculation Associated with the Development

Consideration	Area	Cumulative area to be accounted for under CoWRP
Infrastructure footprint at T1, T2	3.58 ha	3.58 ha
Kirton Plantation Felling outwith Forest Edge Effect boundary	9.7 ha	9.7 ha
Total area to be accounted for:		13.28 ha

An area of 13.28 ha has been identified as requiring compensatory planting under the Control of Woodland Removal Policy.

The required area of compensatory planting, in line with the Policy on the Control of Woodland Removal, will be delivered via a suspensive planning condition.

Compensatory Planting will be subject to full consultation and EIA, if required, by Scottish Forestry under the Forestry (Environmental Effect Assessment) (Scotland) Regulations 2017.

Ground for compensatory planting will be secured via a lease over the identified ground to the Developer, with the Developer meeting all costs for planting, protection and establishment plus associated professional costs for monitoring and management.

The Compensatory Planting Scheme will comply with the requirements set out in the UK Forestry Standard, and the guidelines to which it refers, and will include:

- details of the location(s) of the area(s) to be planted;
- details of land owners and occupiers of the land to be planted;
- the nature, design and specification of the woodland to be planted;
- details of all Necessary Consents for the Compensatory Planting Scheme and timescales within which each shall be obtained;
- the phasing and associated timescales for implementing the Compensatory Planting Scheme;
- proposals for the maintenance and establishment of the Compensatory Planting Scheme, including; annual checks; replacement planting; fencing; ground preparation; and drainage; and
- proposals for reporting to the Scottish Ministers on compliance with timescales for obtaining the Necessary Consents and thereafter implementation of the Compensatory Planting Scheme.

The approved Compensatory Planting Scheme will thereafter be implemented in full and in accordance with the phasing and timescales set out, unless otherwise agreed in writing by Scottish Ministers after consultation with Scottish Forestry and the Planning Authority.

Suggested text for the suspensive planning condition is provided as follows:

'There shall be no Commencement of Development until a woodland planting scheme to compensate for the removal of 13.28 hectares of existing woodland ("the Replanting Scheme"), or as otherwise agreed with the Planning Authority, has been submitted to and approved in writing by the Scottish Ministers in consultation with Scottish Forestry and the Planning Authority.

Unless otherwise agreed in writing by the Scottish Ministers, the development will not be commissioned to supply electricity on a commercial basis until all relevant Necessary Consents for implementation of the Replanting Scheme in accordance with the phasing and timescales set out therein have been obtained.

"Commencement of Development" means the implementation of this consent by the carrying out of-

(a) a material operation within the meaning of section 27(4) of the 1997 Act (other than any operations associated with ground or Site investigation works); or

(b) any deforestation associated with the implementation of this consent.

"Necessary Consents" means

any consent or permission required by an enactment to enable the approved Replanting Scheme (or an approved Amended Replanting Scheme as the case may be) to be implemented in accordance with the phasing and associated timescales for implementation contained in the approved Replanting Scheme (or an approved Amended Replanting Scheme as the case may be); and

any right or permission to take entry to or access over land required by the Company or parties acting on its behalf to implement the approved Replanting Scheme (or an approved Amended Replanting Scheme as the case may be)

The Applicant may submit an amended Replanting Scheme to the Scottish Ministers for approval and in this case-

(a) the development will not be commissioned to supply electricity on a commercial basis until the Amended Replanting Scheme has been approved in writing by the Scottish Ministers in consultation with Scottish Forestry and the Planning Authority; and

(b) unless otherwise agreed in writing by the Scottish Ministers, the development will not be commissioned to supply electricity on a commercial basis until all Necessary Consents for the Amended Replanting Scheme have been obtained.

All Compensatory Planting areas will be protected within a deer fence with rabbit netting as required with incursions shot out to ensure tree protection. Ground will be mounded where machine access is possible, with manual screef ground preparation on steeper ground where machine access is not possible. Mounding density should achieve 1,800 per hectare for native woodland areas, into which native, local provenance trees appropriate to Site will be planted.

Target stocking density will be to achieve no less than 1,600 stems per hectare for native woodland areas at establishment, with trees capable of onward growth without significant additional management input.

Delivery of the planting, establishment and maintenance will be overseen by a Forestry Manager (being a Member of the Institute of Chartered Foresters) who will conduct annual inspections to year 5 and produce annual silvicultural management recommendation to be delivered by the Applicant in order to deliver successful and timely tree establishment. Maintenance will include protection against browsing damage from wild animals (deer, hare, rabbit, weevil) and domestic stock, as well as drainage and weed maintenance (as required) to ensure crop establishment. All compensatory planting areas will be protected and insured against fire by the Applicant.

Establishment will be defined as the point when the average tree height is 1.0m or more with average stocking densities of 1,600 stems per hectare for broadleaved areas. At this point ECU, as the Consenting Authority for the Development will be invited to inspect the compensatory planting along with SF, before being asked to agree the compensatory planting as having been established. It is anticipated establishment will take 5 to 10 years to achieve and the Applicant will retain the lease for this period or such additional time as is required to deliver establishment of the compensatory planting area. After the area is agreed as being established by SLC and SF the responsibility for the woodland will revert to the landowner.'

10.0 Summary of Forestry Effects Resulting from the Development

The Following is a summary of the areas of felling and replanting required to construct and operate the Development and support its associated Habitat Management Plan and for which consent is being sought from Scottish Ministers:

- consent for the felling of 70.75ha of commercial forest at Kirkton Plantation;
- felling approval for 3.58 ha of native woodland to accommodate construction of the energy park and associated infrastructure and Habitat Management Plan as detailed in the wind farm Felling Plan and detailed in Figure 3.2.4;
- delivery of compensatory planting extending to approximately 13.28 ha as detailed in section 9.

FIGURE 3.2.1 SITE LAYOUT

285000 286000 287000 288000 289000 290000 291000

962000 961000 960000 959000

N

LEGEND

- Application Boundary
- Proposed Turbine
- Proposed Track / Turning Head / Passing Place
- Proposed Crane Pad
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Watercourse Crossing

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APPENDIX - FORESTRY

SITE LAYOUT

FIGURE 3.2.1

Scale 1:20,000 @ A3

Date NOVEMBER 2022

0 0.5 1 Kilometres

11143.00001.0243.0 Site Layout

FIGURE 3.2.2 WOODLAND CREATION SCHEMES

286000 287000 288000 289000 290000

961000 960000 959000

Native Woodland Area Measurements

Native Woodland (RDC) : Area (ha)
Total Area (ha): 69.25

1 : 6.73 (0.25 Within Application Boundary)

2 : 1.93 (0.41 Within Application Boundary)

3 : 16.68 (0.37 Within Application Boundary)

4 : 11.19 (10.84 Within Application Boundary)

5 : 13.84 (13.84 Within Application Boundary)

6 : 5.14 (5.07 Within Application Boundary)

7 : 13.75 (13.75 Within Application Boundary)

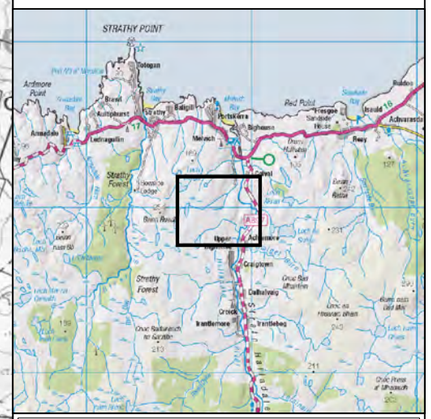
Native Woodland (SGFS) Area Measurements

Native Woodland (SGFS)
Total Area (ha): 13.527

N

LEGEND

- Application Boundary
- Proposed Turbine
- Proposed Turbine 90 m Buffer
- Proposed Track / Turning Head / Passing Place
- Proposed Crane Pad
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Native Woodland Scottish Forestry Grant Scheme (SFGS)
- Native Woodland Rural Development Contracts (RDC)



Lochan Coulbackie
Cemy
Cnoc Chorkael
Havaig Pool
Quarry
Loch Earacha
Havaig
Thaiphaig
Sort
Loch a'Bhealaich
Daospluich Scan
Loch na h-Eaglaise Mòr
Loch nan Clach
Loch na h-Eaglaise Beag
Loch nan Gall
Hut Circle
Meall Mòr a' Bealaich
Hut Circle and Field System
Am Bealach
Ceargaraidh Mhòr
Galgarry Beg
Creag na Gaibhre
Creag nan Iola
Culfern
Ford
Strath Halladale
Achiemore Pool
Creag an Daimh
Sheepfold
Meeting House (remains of)
Hut Circles
Achiemore
Weirs
Weir
Smigel Pool
Tigh-chorneimh

0 0.5 1 Kilometres

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APPENDIX - FORESTRY

WOODLAND CREATION SCHEMES

FIGURE 3.2.2

Scale 1:15,000 @ A3

Date NOVEMBER 2022

11143.00001.0244.0 Woodland Creation Schemes

FIGURE 3.2.3 BASELINE FORESTRY SPECIES

287000 287500 288000 288500

961500

961000

Forestry Compartment Measurements

Forestry Compartment: Area (ha)
Total Area (ha): 70.75

1 : 29.44

2 : 13.47

3 : 1.02

4 : 1.07

5 : 0.28

6 : 0.36

7 : 0.48

8 : 1.76

9 : 5.02

10 : 0.76

11 : 0.19

12 : 16.91

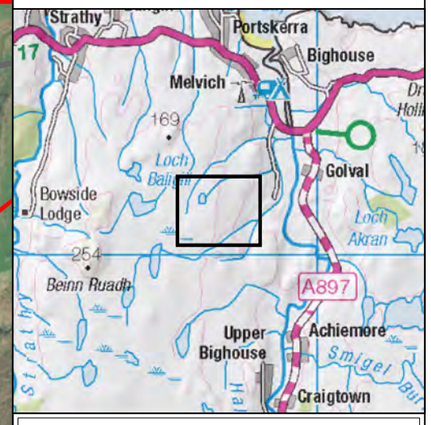
N

0 250 500

Metres

LEGEND

- Application Boundary
- Proposed Turbine
- Proposed Track / Turning Head / Passing Place
- Proposed Crane Pad
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Forestry Area Boundary
  Total Area (ha): 87.75
- Forestry Sub-Compartments - Sitka Spruce / Lodge Pine Mix
- Native Woodland (SFGS)
  Total Area (ha): 13.53



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APPENDIX - FORESTRY

BASELINE FOREST SPECIES

FIGURE 3.2.3

Scale	Date
1:6,000 @ A3	NOVEMBER 2022

11143.00001.0245.0 Baseline Forest Species Map

FIGURE 3.2.4 FELLING PLAN

287000 287500 288000 288500

961500

961000

Felling Measurements

Forestry Compartment: Area (ha)
Total Area (ha): 70.75

1 : 29.44

2 : 13.47

3 : 1.02

4 : 1.07

5 : 0.28

6 : 0.36

7 : 0.48

8 : 1.76

9 : 5.02

10 : 0.76

11 : 0.19

12 : 16.91

Native Woodland: Area (ha)
Total Area (ha): 3.58

13 : 0.30

14 : 0.66

15 : 2.54

16 : 0.08

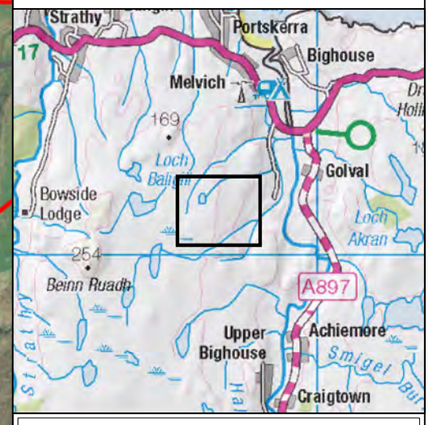
N

0 250 500

Metres

LEGEND

- Application Boundary
- Proposed Turbine
- Proposed Turbine 90 m Buffer
- Proposed Track / Turning Head / Passing Place
- Proposed Crane Pad
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Forestry Area to be Felled Boundary Total Area (ha): 87.75
- Forestry Sub-Compartments to be Felled
- Native Woodland (SFGS)
- Native Woodland (SFGS) to be Felled



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APPENDIX - FORESTRY

FORESTRY FELLING MAP

FIGURE 3.2.4

Scale 1:6,000 @ A3

Date NOVEMBER 2022

11143.00001.0246.0 Forestry Felling Map

FIGURE 3.2.5 PEATLAND RESTORATION

284000 285000 286000 287000 288000 289000 290000 291000 292000

963000 962000 961000 960000 959000

11143.00001.0247.0 Peatland Restoration Areas

N

LEGEND

- Application Boundary
- Proposed Turbine
- Proposed Track / Turning Head / Passing Place
- Proposed Crane Pad
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Area for Felling and Peatland Improvements, Total Area (ha): 87.75

0 0.5 1 Kilometres

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APPENDIX - FORESTRY

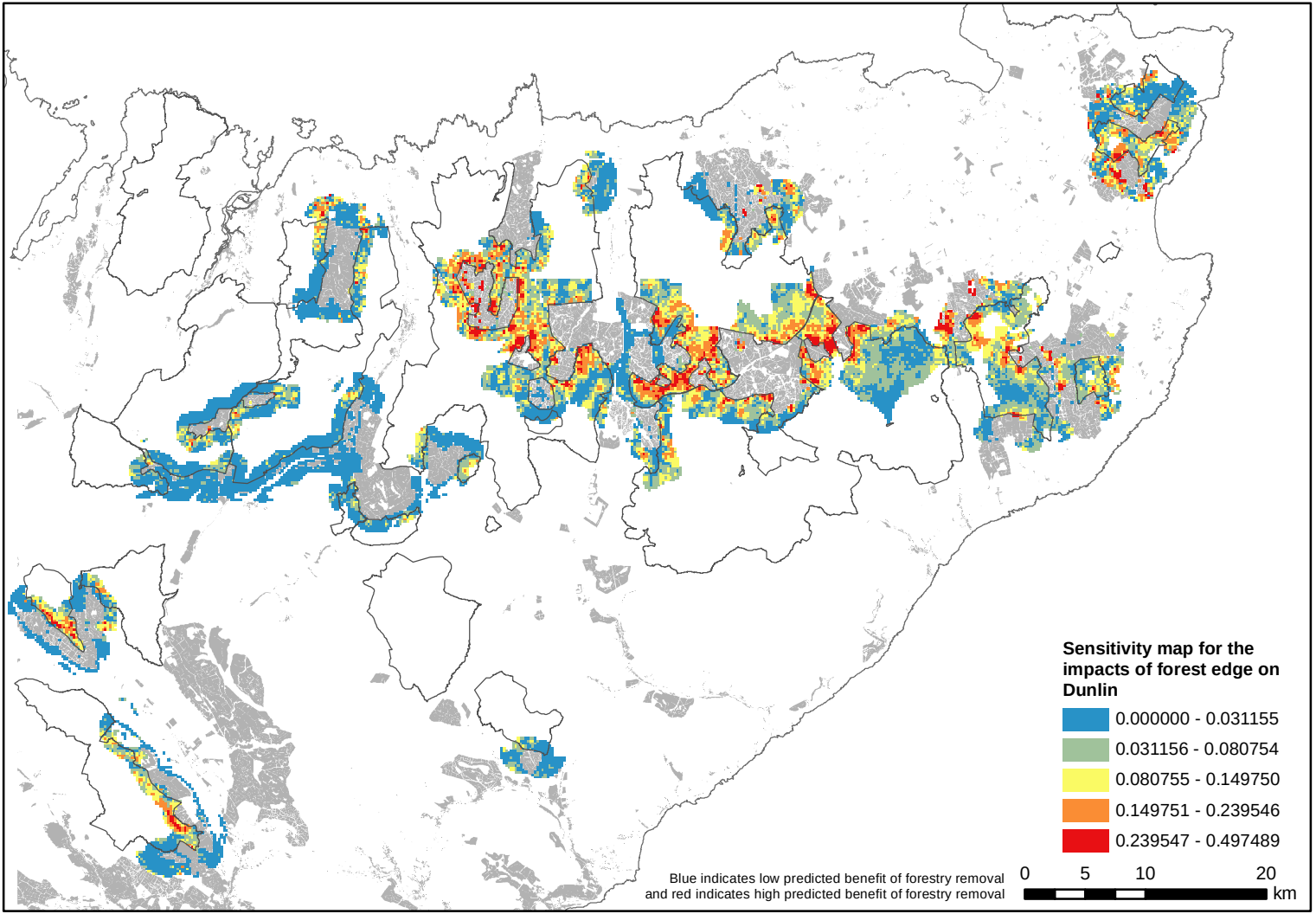
PEATLAND RESTORATION AREAS

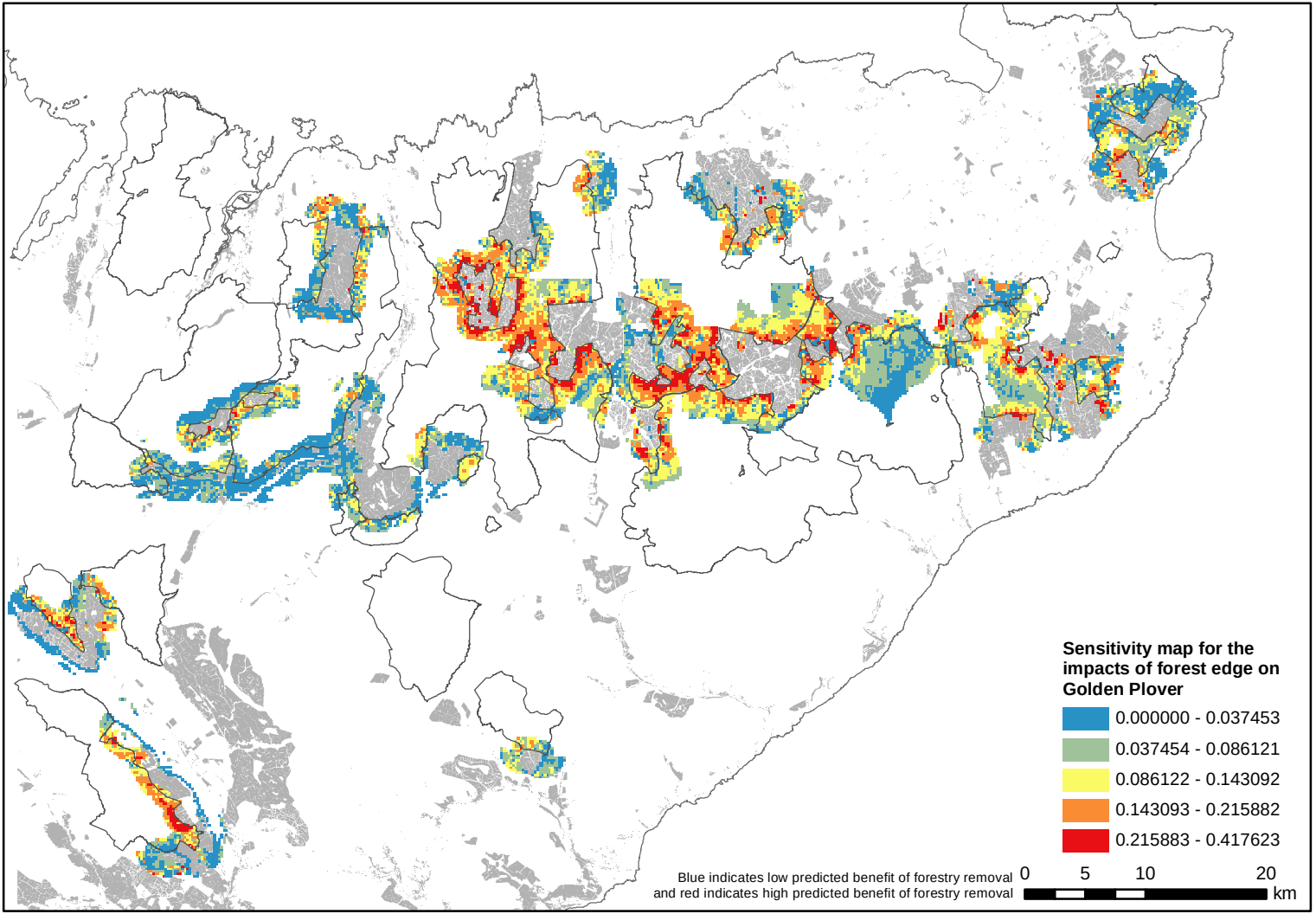
FIGURE 3.2.5

Scale 1:25,000 @ A3

Date NOVEMBER 2022

ANNEX 01 DUNLIN & GOLDEN PLOVE SENSITIVITY MAP


Sensitivity map for the impacts of forest edge on Dunlin
0.000000 - 0.031155
0.031156 - 0.080754
0.080755 - 0.149750
0.149751 - 0.239546
0.239547 - 0.497489
Blue indicates low predicted benefit of forestry removal and red indicates high predicted benefit of forestry removal
0
5
10
20
km


Sensitivity map for the impacts of forest edge on Golden Plover
0.000000 - 0.037453
0.037454 - 0.086121
0.086122 - 0.143092
0.143093 - 0.215882
0.215883 - 0.417623
Blue indicates low predicted benefit of forestry removal
and red indicates high predicted benefit of forestry removal
0
5
10
20
km

BIDWELLS