TABLE OF CONTENTS

13.1 Introduction **13-1**
13.2 Issues scoped out **13-1**
Television Reception 13-1
Air Quality 13-1
Population and Human health 13-2
Vulnerability of the Development to Risks of Major Accidents and/or Disasters (including Climate Change) 13-2
13.3 Shadow Flicker **13-3**
13.4 Telecommunications **13-4**
Introduction 13-4
Consultation 13-4
Baseline 13-1
Assessment of Effects 13-1
13.5 Climate change / Carbon Balance **13-2**
13.6 Aviation **13-2**
Introduction 13-2
Statutory and planning context 13-3
Consultation undertaken 13-5
Approach to Assessment 13-6
Existing Environment 13-7
Predicted effects 13-7
Mitigation 13-7
Summary of effects 13-7
13.7 Forestry **13-7**
Introduction 13-7
Legislation, Policies and Guidance 13-8
Consultation Undertaken 13-10
Approach to the Assessment 13-11
Existing Environment 13-15
Embedded Mitigation 13-18
Predicted Effects 13-19
Mitigation 13-20
Summary of Residual Effects 13-20
13.8 Waste and Environmental Management **13-21**
13.9 References **13-22**

TABLES

Table 13.1: Link operator responses 13-1
Table 13.2: Legislation, Policy and Guidance relevant to Aviation 13-3
Table 13.3: Consultees and responses 13-5
Table 13.4 Summary of consultation 13-10
Table 13.5 Fearnoch Forest Age Class Structure of current baseline forestry onsite 13-16

Table 13.6 Fearnoch Forest species composition of current forestry onsite 13-16
Table 13.7 Fearnoch Forest baseline felling plan 13-17
Table 13.8 Fearnoch Forest baseline restocking plan 13-18

13 OTHER ISSUES

13.1 Introduction

13.1.1 This Chapter considers the potential effects of the Proposed Development on the following topics:

- infrastructure;
- forestry;
- telecommunications;
- shadow flicker;
- carbon balance;
- aviation; and
- waste and environmental management.

13.1.2 The following issues have been scoped out based on professional judgment and the responses to scoping consultations:

- television reception;
- air quality;
- population and human health;
- vulnerability of the development to risks of major accidents and/or disasters (including climate change); and
- shadow flicker.

13.2 Issues scoped out

Television Reception

Wind turbines have the potential to adversely affect analogue television reception through either physical blocking of the transmitted signal or, more commonly, by introducing multi-path interference where some of the signal is reflected through different routes. However, the Proposed Development is located in an area now served by a digital transmitter. Therefore, television reception is unlikely to be affected by the Proposed Development as digital signals are rarely affected. In the unlikely event that television signals are affected by the Proposed Development, reasonable mitigation measures would be considered by the Applicant.

Air Quality

13.2.1 The main source of impact on air quality would be increased traffic flows on local roads during construction and emissions from construction activities including exhaust fumes

and dust generated from disturbance to or tracking across unmade ground and access tracks in dry conditions.

13.2.2 It is considered that the air emissions associated with these activities would be transient, localised and highly unlikely to have a significant effect upon local air quality given the lack of sensitive receptors close enough to experience these effects. In addition, there are well established best practice measures applied to construction that would form an integral part of the development process (e.g., speed control, optimising deliveries to Site, dust control, restrictions on idling plant/vehicles, etc.). These controls and measures will form an integral part of the Construction Environmental Management Plan (CEMP).

13.2.3 There would be no emissions to air during operation, with the only source being occasional vehicles accessing the Site for maintenance purposes. For the reasons cited above, Air Quality was scoped out from further assessment.

Population and Human health

13.2.4 The Renewable UK Onshore Wind Health and Safety Guidelines (2015) note that wind turbine development and operation can give rise to a range of risks to public safety including:

- Traffic (especially lorries during construction, and abnormal loads for the transport of wind turbine components; including beyond the application boundary);
- Construction site hazards (particularly to any people entering the Site without the knowledge or consent of the site management);
- Effects of catastrophic wind turbine failures, which may on rare occasions result in blade throw, tower topple or fire; and
- Ice throw if the wind turbine is operated with ice build-up on the blades.

13.2.5 Potential impacts on human health during construction would be minimised with adherence to the Construction Design and Management (CDM) Regulations and the implementation of a CEMP and Construction Traffic Management Plan (CTMP). Once operational, properly designed and maintained wind turbines are a safe technology and the site design and in-built buffers from sensitive receptors would minimise any risk to human health. No adverse or significant effects are anticipated. Therefore, population and human health was scoped out of further assessment in the EIA.

Vulnerability of the Development to Risks of Major Accidents and/or Disasters (including Climate Change)

13.2.6 The vulnerability of the development to risks of major accidents and disasters are defined in IEMA guidance[1] as man-made or natural events with the potential to endanger human health or the environment (such as lightning strike and structural failures). In this case, this risk would be minimised through proper design of the Proposed Development and compliance with relevant legislation and best practice.

13.2.7 Other effects which could be deemed to trigger a major accident or disaster, such as peat slide risk and increased traffic movements, have been assessed elsewhere in this EIAR.

[1] IEMA (2020), Major Accidents and Disasters in EIA: A Primer.

13.2.8 Due to its geographic location, none of the following climate trends identified in UK Climate Projections (UKCP)[2] could affect the Proposed Development with the exception of increased windstorms:

- Increased temperature;
- Wildfire;
- Changes in the frequency, intensity, and distribution of rainfall events (e.g., an increase in the contribution to winter rainfall from heavy precipitation events and decreases in summer rainfall);
- Increased windstorms; and
- Sea level rise

13.2.9 However, braking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced, then the turbines would be shut down.

13.2.10 In addition, the nature of the proposal and remoteness of the Site means that there would be negligible risks on the factors identified by EIA Regulations. For example:

- **Population and human health** – the Site is remote with low population density and the required safety clearances around turbines has been factored into the design process;
- **Biodiversity** – receptors and resources would be unaffected as there would be little risk of polluting substances released or loss of habitat in a turbine failure scenario (highly unlikely);
- **Land, soil, water, air and** climate – there would be little risk of polluting substances released or loss of habitat in a turbine failure scenario (highly unlikely); and
- **Material assets, cultural heritage and the landscape** – there would be no adverse effects on these features in a turbine failure scenario (highly unlikely)
- Other effects which could be deemed to trigger a major accident or disaster, such as peat slide risk and increased traffic movements, have been assessed elsewhere in this EIAR.

13.2.11 It was considered unlikely that there would be any significant adverse effects, so this issue was scoped out from further assessment.

13.3 Shadow Flicker

13.3.1 Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. This intermittent shadow, particularly when the sun is low, is defined by the term 'shadow flicker'. The effects of shadow flicker can cause annoyance to local residences when shadows are cast over windows for a significant period of time throughout the year. However, there is only an issue under specific circumstances whereby a significant effect is produced for extended periods of time.

13.3.2 To address shadow flicker concerns, the design of the Proposed Development has evolved to avoid turbine placements within the Zone of Potential Shadow Flicker (ZPSF) (as per Scottish Government guidance[3]). The ZPSF defines the area within which

[2] Met Office (2019), UKCP18 Science Overview Report.

[3] Scottish Government (2014), web-based guide: Onshore wind turbines: planning advice.

Shadow Flicker effects can occur. It is common to use 10x the wind turbines rotor diameter as the maximum limit of the ZPSF from the turbine location, and 130º either side of north (as per Department of Environment and Climate Change studies[4]).

13.3.3 There are no properties within the Proposed Developments ZPSF (approximately 1.3 km from any turbines location) and therefore, an assessment of Shadow Flicker effects has been scoped out from further assessment.

13.4 Telecommunications

Introduction

13.4.1 This Section of the Chapter describes the existing environment with respect to telecommunications.

13.4.2 During construction and decommissioning, cranes have the potential to block or reflect radio signals, however, these impacts would be temporary minor adverse impacts so there would be **'No Significant'** effect.

13.4.3 During operation, a wind farm has the potential to cause an impact on telecommunications infrastructure by introducing new physical structures (turbines) into an area that can block and/or cause reflection of radio signals.

Consultation

Consultation was undertaken with the relevant telecommunication link operators to provide an understanding of the telecommunications links within the vicinity of the Site and to advise their position with respect to the Proposed Development. Further consultation with the relevant communications consultees was undertaken once the Proposed Development layout was finalised. A summary of the consultation is provided in **Table 13.1**.

[4] Department of Energy and Climate Change (2011), Update of UK Shadow Flicker Evidence Base.

Table 13.1: Link operator responses

Consultee	Response	Comment/action taken
Airwave	Airwave identified an existing Airwave Microwave Radio link or Tetra Radio Network Coverage installation would be impacted.	Further consultation was held to explore potential mitigation solutions
Arqiva	Arqiva have no objections to the Proposed Development.	No further action required.
British Telecommunications (BT)	BT have no objections to the Proposed Development.	No further action required.
Joint Radio Company (JRC)	JRC have no objections to the Proposed Development.	No further action required.
Virigin Media O2	Virgin Media O2 have no objections to the Proposed Development.	No further action required.
Vodafone	Vodafone have no objections to the Proposed Development	No further action required.
Telefonica	Vodafone have no objections to the Proposed Development	No further action required.

Baseline

13.4.4 Telecommunications link infrastructure was identified through consultation with the relevant telecommunications stakeholders. The search radius was, therefore, informed by the safeguarding criteria applied by each stakeholder. Only telecommunication links that crossed the Site were considered.

Assessment of Effects

Airwave Link

13.4.5 Discussions have been ongoing since 2022, and a mitigation solution has been identified. This led to Airwave withdrawing their holding objection.

13.4.6 No potential for cumulative effects has been identified based on the relevant links identified through the consultation.

13.4.7 In conclusion, based on the assessment of the identified infrastructure and consultation with link operators, the Proposed Development would have no significant effects on telecommunications links.

13.5 Climate change / Carbon Balance

13.5.1 A carbon balance assessment has been undertaken regarding the Proposed Development and is detailed in **Technical Appendix 13.4**. This assessment uses the Scottish Government's Carbon Calculator for wind farms on peat to assess the benefit of displacing electricity from fossil fuels with renewable generated electricity, compared to the emissions of carbon required for the construction and operation of the Proposed Development over its approximately 35-year lifetime, including losses of stored carbon from disturbed peatland and reduction of carbon fixing vegetation cover. The Carbon Calculator provides an estimate of the carbon payback time for the Proposed Development.

13.5.2 The results of the Carbon Calculator show that the Proposed Development is estimated to produce annual carbon savings of around 32,000 tonnes of CO_2e per year through the displacement of grid electricity, based on the current average grid mix.

13.5.3 The assessment of the Proposed Development estimates losses of around 64,000 tonnes of CO_2e, nearly all of which come from the lifecycle emissions of the turbines. Ecological site-based losses account for just over 10,000 tCO2e while restoration of areas of degraded bog are estimated to produce gains over the lifetime of the Proposed Development through blocking of drains and re-wetting of peat; these gains are estimated at nearly 16,000 tonnes of CO2e, which is greater than the ecological site-based losses.

13.5.4 The estimated payback time of the Proposed Development, using the Scottish Government Carbon Calculator, is 1.5 years, with a minimum/maximum range of 0.8[5] to 2.3 years. There are no current guidelines about what payback time constitutes a significant impact, but 1.5 years is only 4 % of the anticipated lifespan of the Proposed Development. The carbon intensity of the electricity produced by the Proposed Development is estimated at 0.019 $kgCO_2e/kWh$. This is well below the outcome indicator for maintaining the electricity grid carbon intensity below 0.05 $kgCO_2e/kWh$ required by the Scottish Government in the Climate Change Plan update and therefore the Proposed Development is evaluated to have an overall beneficial effect on the carbon balance.

13.6 Aviation

Introduction

13.6.1 This section considers the potential effects of the Proposed Development on existing and planned military and civil aviation activities, including those resulting from impacts to radar. Other potential effects result from the physical presence of the turbines as

[5] The reason that this negative result occurs is that the Carbon Calculator recognises that the infrastructure is planned on areas of shallow peat and therefore excavating the peat (estimated at approximately 31,500 m3) produces fewer GHG emissions than leaving it in situ (as indicated by the negative emissions). This is because peat bogs release both methane and carbon dioxide, as well as sequestering carbon, while excavated peat is assumed to decompose to just carbon dioxide. Since methane is a much more potent GHG, the emissions of a shallow peat deposit in situ are estimated to be higher.

obstacles, and effects on navigational aids ('Navaids') and radio communication stations. It includes a description of the assessment methodology that has been adopted, the consultations conducted, relevant policy and legislation, the overall baseline conditions and measures that will be taken to mitigate any significant effects. The chapter concludes with a summary of the impacts and mitigation requirements.

13.6.2 Radio waves are used in a variety of Navaids, radio communication systems and radar. Any large structure has the potential to interfere with their propagation and reception. Radars are designed to detect movement, hence a turbine's rotating blades can be interpreted as aircraft, with the potential to then affect air traffic management.

13.6.3 Wind turbines can also have an impact on flying simply due to their physical presence. In this respect they are no different to any other tall obstacles such as pylons or television masts, with recognised criteria for safeguarding the airspace around airfields. Away from airfields, such obstacles are a normal part of the aviation scenery and measures are in place to enable aircraft to safely navigate around them.

13.6.4 The potential effects are highly dependent on the location of the wind farm and on the positions of the individual turbines. In some cases, there are no significant consequences, and no mitigation is required, whilst in other cases the turbine specification or layout must be designed to accommodate local infrastructure. Mitigation is often available and appropriate to manage impacts.

Statutory and planning context

13.6.5 The relevant sections of key legislation, policy and guidance documents are described in the table below, which together place a responsibility on the decision maker and the Applicant to assess potential impacts on aviation.

Table 13.2: Legislation, Policy and Guidance relevant to Aviation

Document	Summary
Legislation	
None applicable	Legislation would only apply if the turbines were of height 150 m or more.
Planning Policy	
National Planning Framework 4 (February 2023)	NFP4 states, under Policy 11 concerning development proposals for all forms of renewables, that project design and mitigation will demonstrate how "impacts on aviation and defence interests and seismological recording" are addressed.
Scottish Onshore Wind Policy Statement (December 2022)	Under Chapter 6, Onshore Wind and Aviation Considerations, it is noted wind turbines have the potential to impact aviation operations, including, but not limited to, impact on aviation radar. The document recognises recent progress stating that bespoke solutions which alleviated specific, individual objections have been deployed successfully over the last decade or more, releasing significant volumes of renewable generation. However, the pace of deployment necessitated by the climate emergency means that a way to alleviate

Document	Summary
	these impacts in an effective, efficient and timely manner must be found. It is also important that solutions are cognisant of the cost of deploying renewable energy, particularly given the need to focus on both security of supply and low-cost generation, given the current international and economic situation. Beyond the above statement of need, the document sets out the structure and aims of Industry and Government groups set up to address the issues of radar impacts and aviation lighting; specifically, the Onshore Wind Aviation Radar Delivery 2030 group and the Aviation Lighting Working Group.
Planning Circular 2/03: Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas (revised March 2016)	This Circular summarises the Scottish Ministers' understanding of the general effect of the relevant primary or secondary legislation. It contains four annexes. Annexes 1 and 2 describe the formal process by which decision makers should consider safeguarding, including in relation to wind energy developments. Annex 3 lists officially safeguarded civil aerodromes and Annex 4 lists planning authority areas containing civil En-route technical sites for which separate official safeguarding maps have been issued (as of 27 January 2003). The Circular also refers planning authorities, statutory consultees, developers and others to CAA CAP 764 (CAA Policy and Guidance on Wind Turbines), which is discussed further under Guidance below, and The Meteorological Office (Met Office) guidelines.
Guidance	
CAP 764: CAA Policy and Guidance on Wind Turbines (Feb 2016)	CAA guidance within CAP 764, sets out recommended consultation and assessment criteria for the impacts of wind turbines on all aspects of civil aviation. The CAA involvement in the Wind Farm Pre-Planning Consultation Process ceased on 25 December 2010. CAP 764 now states that "developers are required to undertake their own pre- planning assessment of potential civil aviation related issues." Within CAP 764 the CAA provides a chapter describing the "wind turbine development planning process", within which the main civil aviation stakeholders and their interests are listed and described in brief. Table 1 within the guidance document provides an overview of considerations and the following paragraphs detail what developers will need to consider, conducting associated consultations as appropriate. The CAA observes in section 2.36 that impact on communications, navigation and surveillance infrastructure alone is not sufficient to support an objection; rather those impacts need to have a negative impact on the provision of an air traffic service. The CAA notes in section 5.25 of CAP 764 that "it is incumbent upon the developer to liaise with the appropriate aviation stakeholder to discuss – and hopefully resolve or

Document	Summary
	mitigate – aviation related concerns without requiring further CAA input. However, if these discussions break down or an impasse is reached, the CAA can be asked to provide objective comment". Section 5.26 of CAP 764 states that "the CAA will not provide comment on MoD objections or arguments unless such comments have been requested by the MoD."

Consultation undertaken

13.6.6 An initial scoping assessment identified those stakeholders potentially affected by the Proposed Development. **Table 13.3** below provides details of consultations undertaken with relevant regulatory bodies, together with action undertaken by the Applicant in response to consultation feedback.

Table 13.3: Consultees and responses

Consultee	Response	Comment/action taken
Scoping responses		
Highlands and Islands Airports Ltd (HIAL). Scoping response email to ECU their Ref: 2022/273/IYL	Highlands and Islands Airports Limited has no objections to the proposal.	No action required.
Ministry of Defence. Scoping response letter from DIO to ECU dated 2nd September 2022, their ref DIO10055930	Subject to the provision of appropriate lighting, the MOD has no concerns in relation to the proposal. As a minimum the MOD would require that the development be fitted with MOD accredited aviation safety lighting in accordance with the Air Navigation Order 2016.	No action required. The development will comply with the air navigation order (ANO) and will be fitted with MOD accredited aviation safety lighting if requested by the MOD.
NATS. Scoping response email to ECU dated 5th August 2022.	The Proposed Development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.	No action required.
Glasgow Airport. Scoping response email to ECU dated 22nd August 2022, their reference GLA4190	The scoping report submitted has been examined from an aerodrome safeguarding perspective and we would make the following observations: • The site is out with the obstacle limitation surfaces	No action required.

	and radar safeguarding area for Glasgow Airport. • It is within instrument flight procedures safeguarding area, however, only development over 300m above ground level in this area require further assessment or consultation.	
Aberdeen Airport. Scoping response email to ECU dated 8th August 2022	This proposal is located out with our consultation zone. As such we have no comment to make and need not be consulted further.	No action required.
Edinburgh Airport. Scoping response email to ECU dated 8th August 2022	In respect of the above, I can confirm the location of this development falls out with our Aerodrome Safeguarding zone for Edinburgh Airport therefore we have no objection/comment.	No action required.
Prestwick Airport. Scoping response email to ECU dated 29th August 2022	The proposed development lies out with the Airport's safeguarding area and as such Glasgow Prestwick Airport have no comment to make on the scoping consultation and would have no aviation grounds to object to this proposal should it come to a full Section 36 Planning Application.	No action required.

Approach to Assessment

13.6.7 The objective is for the Proposed Development to have no significant residual impacts on aviation infrastructure. This is addressed through consultation with all relevant stakeholders within the consenting process. The task of the Applicant is to independently assess the potential effects and, where significant effects may occur, to enter a dialogue with the affected stakeholders prior to submission as far as is possible. Whilst the aim of this pre-submission dialogue is to elicit the approval of all stakeholders, typically solutions are identified but do not reach full maturity at this stage in terms of the assessment by the stakeholders and the contracting of mitigation where required. The stakeholders consider dialogue a higher priority and more meaningful once design iterations are completed and a live application exists.

13.6.1 An initial scoping assessment identified those stakeholders potentially affected by the Proposed Development. The assessment process involves considering all military and civil aerodromes in the wider area out to approximately 60 km; all radar installations out to the limit of their range; all navigational aids; air-ground-air communications stations and low flying activities. A key sensitivity is the visibility of the Proposed Development to those radars potentially affected. Because of this, studies have been conducted prior to

submission to assess the visibility of the Proposed Development to all relevant radars in the area.

Existing Environment

13.6.2 No aviation issues are apparent.

13.6.3 The Proposed Development site lies in an area of uncontrolled airspace, approximately 10 km south-east of Oban Airport. There are no airspace routes (i.e., areas of controlled airspace used for onward routing air traffic) near the Site.

13.6.4 The Proposed Development will have no impacts on the key radar in the area; specifically the MoD air defence radar on Benbecula, the NATS En-route radars at Tiree and Lowther Hill, and the Glasgow Airport approach radar.

13.6.5 The site lies just beyond the limit of physical safeguarding zone for Oban Airport. It is also beyond the safeguarding limits for the airport's navigational aids.

13.6.6 The site is not in an area designated as high importance for low flying military training.

Predicted effects

13.6.7 Scoping responses have identified no aviation issues. This is in line with the findings from the initial scoping assessment.

Mitigation

13.6.8 No mitigation is required throughout the operational phase of the Proposed Development.

13.6.9 Whilst there are no expected aviation impacts, during the construction and decommissioning phases the usual lighting of the cranes and notification of their use, as tall structures, is required.

13.6.10 Details of the development will be provided to the CAA and the MOD, to allow accurate charting.

Summary of effects

13.6.11 No aviation impacts are anticipated

13.7 Forestry

Introduction

13.7.1 This section provides forestry information to support the EIA, including:

- a baseline forestry assessment;
- the effect of the Proposed Development on forestry plantations;
- information on the areas to be felled and associated timber volumes removed;
- how waste will be dealt with to minimise environmental impacts; and
- mitigation measures put in place, including compensatory planting.

13.7.2 The chapter is supported by the following figures:

- Figure 13.1 Wind Farm Felling and Restock Plan.

13.7.3 The chapter is also supported by the following technical appendices:

- Technical Appendix 13.1: Forestry Site Visit;
- Technical Appendix 13.2: Timber Volume Assessment; and
- Technical Appendix 13.3: Baseline Forestry Plans.

Legislation, Policies and Guidance

Policy on the Control of Woodland Removal (2009)

13.7.4 The Scottish Government's policy document on Control of Woodland Removal (CWR) Policy and accompanying Implementation Guidance (2019)[6] (Appendix A) provides guidance on the policy and process for managing the implementation of the CWR Policy in respect of forestry removal on development sites. In accordance with the CWR, woodland removal should only be permitted where it would achieve significant and clearly defined additional public benefits.

13.7.5 It is not considered that the Proposed Development would qualify for change of land use without compensatory planting, as it could not contribute significantly to any of the relevant criteria detailed in Appendix C of The Scottish Government's CWR policy.

13.7.6 However, the Proposed Development would meet the acceptability criteria for woodland removal as the change of land use with compensatory planting as it would contribute significantly to "*helping Scotland to adapt to climate change*" by providing facilities appropriate for the development of renewable energy projects and significantly reduce net greenhouse gas emissions.

13.7.7 The guidance also states the following in relation to wind farm developments:

"With regards to wind farm development, trees cleared for turbines bases, access roads and any other wind farm related infrastructure (infrastructure felling) should be considered as part of a planning application (under the Electricity Act 1989 or the Town and Country Planning Act 1997) and the felling should be consented with Compensation Planting requirements".

Scottish Land Use Strategy (2016)

13.7.8 The Scottish Land Use Strategy (SLUS) is a strategic framework for achieving the *"best"* use from Scotland's land resource. It 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. To increase its role in addressing the challenge Scotland faces from climate change, a target of 100,000 hectares (ha) of new woodland creation between 2012 - 2022 has been established. Regional Forestry and Woodland strategies developed by local authorities are identified as the delivery mechanism to promote good practice and multi benefit land use.

[6] Scottish Government (2019), Policy on Control of Woodland Removal : Implementation Guidance

UK Forestry Standard (2017)

13.7.9 The overarching document for forestry management is the UK Forestry Standard (revised 2017) (UKFS). It is the reference standard for sustainable forest management in the UK. UKFS outlines the context for forestry, sets out the approach of the UK governments to forestry, defines standards and requirements and provides a basis for regulation and monitoring – including national and international reporting. UKFS's 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 forests 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 50 centimetres (cm). In general, there is a strong presumption against woodland removal, and restocking of harvested forests is a normal condition of felling approval being granted.

Forestry and Land Management (Scotland) Act (2018)

13.7.10 The felling of trees is regulated under the Forestry and Land Management (Scotland) Act 2018, except in cases when woodland removal is associated with wind farm development. In such cases, any significant environmental effects of woodland removal are assessed by the Scottish Government or the Local Authority depending on the capacity of the development. In this case it is Argyll and Bute Council.

Scottish Forestry Strategy (2019)

13.7.11 The Scottish Forestry Strategy (SFS) is the Scottish Ministers' framework for taking forestry through the first half of this century and beyond. The SFS sets out the following commitments:

- To increase Scotland's woodland cover to 21 % by 2032;
    - 12,000 ha per year from 2020/2021;
    - 14,000 ha per year from 2022/2023; and
    - 15,000 ha per year from 2024/2025.
- Increase the contribution of forests and woodland to Scotland's sustainable and economic growth;
- Improve the resilience of Scotland's forests and woodlands and increase their contribution to a healthy and high-quality environment; and
- Increase the use of Scotland's Forest and woodland resources to enable more people to improve their health, wellbeing and life chances.

National Planning Policy 4 (2023)

13.7.12 The National Planning Framework 4 (NPF4) introduced in 2023 is a material policy consideration with the key intention of protection and expanding forests, woodland and trees with Policy 6 of the Framework stating that:

a) Development proposals that enhance, expand, and improve woodland and tree cover will be supported.

b) Development proposals will not be supported where they will result in:

- any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition;
- adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value, or identified for protection in the Forestry and Woodland Strategy;
- fragmenting or severing woodland habitats, unless appropriate mitigation measures are identified and implemented in line with the mitigation hierarchy
- conflict with Restocking Direction, Remedial Notice or Registered Notice to Comply issued by Scottish Forestry ;
- development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered; and
- development proposals on sites which include an area of existing woodland or land identified in the Forestry and Woodland Strategy as being suitable for woodland creation will only be supported where the enhancement and improvement of woodlands and the planting of new trees on the site in accordance with the Forestry and Woodland Strategy) are integrated into the design.

13.7.13 Policy 11 includes a presumption in favour of renewable development, however, it also states that:

"e) In addition, project design and mitigation will demonstrate how the following impacts are addressed:

- *impacts on trees, woods and forests."*

Consultation Undertaken

13.7.14 **Table 13.3** summarises the forestry related consultation undertaken in relation to the Proposed Development and how they have been addressed.

Table 13.4 Summary of consultation

Consultee	Response	Comment/action taken
Scottish Environment Protection Area (SEPA)	Key holing must be used wherever possible as large scale felling can result in large amounts of waste material and in a peak release of nutrients which can affect local water quality. Supporting information should refer to the current Forest Plan if one exists.	A map demarcating the areas subject to different felling techniques is provided (**Figure 13.1**). Photography of general timber condition in each area is provided (**Technical Appendix 13.4**). A table of approximate volumes of timber to be removed from site and volumes, size of chips or brash and depths that will be re-used is provided (**Technical Appendix 13.2**).

13.7.15 Although Scoping responses were limited to the above, the Applicant has prepared this assessment in line with the standard advice normally received from Scottish Forestry which includes:

- A description of the baseline conditions of the forest, including its ownership. This will include information on species composition, age class structure, yield class and other relevant crop information.
- An indication of the proposed areas of woodland for felling to accommodate new turbines, access roads and other infrastructure.
- A description of the changes to the forest structure, the woodland composition and the work programme;
    - Applicants are usually advised to prepare a long term forest plan, alongside their EIA report. The felling plan should clearly identify which areas are to be felled and when. The restocking plan should show which areas are to be replanted and when during the life of the wind farm. The plan should clearly identify and describe the restocking operations including changes to the species composition, age class structure, timber production and traffic movements; and
    - Trees cleared for turbine bases, access roads and any other wind farm related infrastructure must be replaced or replanted either onsite or in an alternative site (compensatory planting). The specifics of the proposed mitigation should be included in a Compensatory Planting Plan, appropriately described in the EIA Report.

Approach to the Assessment

Scope of the Assessment

13.7.16 Commercial forestry is not regarded as a receptor for EIA purposes. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as windblow, pests or diseases; and external factors, such as a wind farm development. Therefore, this assessment will not consider significance of effect. Potential impacts on other factors, such as biodiversity, resulting from changes to the forestry baseline have been assessed elsewhere in the EIA Report (**Chapter 6: Ecology**, **Chapter 7: Ornithology**, **Chapter 8: Hydrology, Geology and Hydrogeology**, **Chapter 10: Noise and Vibration**, and **the Climate Change section of this Chapter**).

13.7.17 This assessment will focus on addressing the comments raised by consultees and compliance with the legislative and planning requirements.

13.7.18 The key considerations for the assessment of potential impacts on existing forestry crops relating to the Proposed Development are as follows:

- permanent effects which predominantly relate to the permanent removal of trees from the Site to facilitate the Proposed Development;
- indirect effects, including the potential impact on adjoining crop areas removed for infrastructure construction which subsequently become unstable and susceptible to wind damage; and
- the removal of forestry materials from site.

Direct Impacts

13.7.19 The precise amount of felling required along the proposed access track will be determined at the detailed design stage, post-consent. For the purposes of the calculations of forestry removal along the proposed access track, the width of the access routes has been kept to the minimum required for new track and necessary track upgrades to facilitate the transportation of construction materials and abnormal loads (**Chapter 10: Traffic and Transport**). A swept path analysis was conducted, using a larger candidate turbine which provides a conservative estimate, to identify potential areas of oversail and overrun, and these have been considered in the identification of potential additional felling areas on bends (**Figure 13.1**)

Indirect Impacts

13.7.20 Any felling around the proposed access track could increase the risk of windthrow at new forestry edges. It might be required to fell an additional area back to a windfirm edge, or more likely the edge of a compartment/sub-compartment boundary. Areas of additional felling are shown on the proposed wind farm felling plan (**Figure 13.1**). Identification of areas for additional felling considered the age of affected compartments relative to the likely construction start date (2032) to determine risk from windthrow at new forestry edges. If a compartment is marked out for felling before the construction date then any restock is likely to be less susceptible to windthrow and so would not be considered for additional felling at this stage.

Timber Volume

13.7.21 SEPA guidance[7] states that the best practice for dealing with forest materials at development sites is as follows:

- Professional forester input to quantify the likely volume, markets and economic uses of trees to be exported from the site;
- Developer commitment to employ a professional forester to implement and maximise the removal of timber and forest residue on site;
- Quantify the likely volumes of material for which no economic off-site use can be found;
- Identify if there are valid uses on site for material for which no economic off-site use can be found.

13.7.22 The method of felling and utilisation at the Proposed Development site would be based on whole tree utilisation. All felled timber and branchwood would be removed from site so as to minimise waste left on site. The method is outlined as follows:

- A conventional harvester and forwarder will be used to fell and extract the timber from all felled areas. A forwarder will then be used to gather the branchwood. It will then be taken to roadside, chipped and loaded into lorries to deliver to customers;
- The round timber is likely to be sent to local timber markets for onward processing with the wood chip element being sold for biomass.

[7] SEPA (2014) Land Use Planning System, SEPA Guidance Note LUPS-GU27 – Use of Trees Cleared to Facilitate Development on Afforested Land.

Baseline Methodology

Desk Study

13.7.23 Desk-based studies were undertaken to review existing management plans, guidance and best practice. These assessments were conducted using the following sources:

- Canmore;
- Forestry Land Scotland's Taynuilt Land Management Plan;
- Google Maps;
- NatureScot Ancient Woodland Inventory;
- Scotland's Forestry Strategy 2019 – 2029
- Scottish Forestry Environmental Impact Assessment (Scotland) Regulations 2017;
- Scottish Forestry Map Viewer;
- Scottish Forestry Native Woodland Survey of Scotland;
- Scottish Government's Policy on the Control of Woodland Removal 2009
- SEPA (2017) Guidance WST-G-027 version 3 Management of Forestry Waste; and
- UK Forestry Standard 2017.

Field Surveys

13.7.24 Walkover surveys were undertaken with all inspections made from ground level. Locations of the Proposed Development infrastructure were interpreted using the Collector app powered by ArcGIS. Observations were made at, or as close as physically possible to the infrastructure locations. Baseline data, including site observations and photographs of timber quality is included in **Technical Appendix 13.2**.

Assessment Methodology

Felling Area

13.7.25 Impacts relating to effects on forestry cover are largely assessed using simple area analysis to gauge the scale of any crop removal as a consequence of the Proposed Development.

Timber Volume

13.7.26 In considering yield, where the Sitka Spruce (SS) in mixture was the dominant species, the Sitka spruce model was used.

13.7.27 Timber volumes are derived from using Forest Yield (Forest Research PC based yield model software for forest management in Britain) using the age of the tree crops and an average estimated Yield Class of General Yield Class for the relevant species across the felling range (Forestry Commission, 1981 and Forestry Commission, 2016).

13.7.28 The data have been derived from the information provided by the forest managers (updated as necessary) and Forestry Commission Yield Models. It is based on a number of assumptions including: accuracy of the yield class data provided by the forest managers and/or landowner; assumptions about yield class where no data was provided;

and assumptions about the proportions of each species in mixture. No measurements have been made to check yield class accuracy.

13.7.29 The default yield table used has been the Sitka spruce, non-thin, 2 m initial planting spacing model. This species was used as it forms the largest proportion of the conifer crops and due to the growth rates of Sitka spruce represents a worst case scenario. In mixtures, the proportion of the individual species is uncertain and therefore yield class has been adjusted based on assumption regarding the species proportions.

13.7.30 A conversion factor of 1.08 has been used to convert the net volume into tonnage. This conversion factor was used to determine the number of HGV lorry movements associated with the forestry aspect of the Proposed Development based on an average 25 tonne payload per HGV lorry.

Guidance

13.7.31 As there are no published criteria, guidance or methodologies in relation to the assessment of effects on forestry. The assessment is therefore based on professional judgement informed by available forestry plans (and supporting information), field work, local management experience and consultation.

13.7.32 The assessment has however taken account of statute, guidance and advice where applicable, including:

- Forestry Commission (1981), Yield Models for Forest Management;
- Forestry Commission (2016), A PC-based yield model for forest management in Britain;
- Forestry Commission (1996), Technical Paper 16: Design Forest Edges to Improve Wind Stability;
- Forestry Commission (2009), The Scottish Government's Policy on Control of Woodland Removal:
- Forestry Commission (2017), The UK Forestry Standard – The Government's Approach to Sustainable Forestry;
- Scottish Environment Protection Agency (2014), Land Use Planning System SEPA Guidance Note LUPS-GU27 – Use of Trees Cleared to Facilitate Development on Afforested Land;
- Scottish Forestry Strategy (2019);
- Scottish Government (2019), Scotland's Forestry Strategy 2019 – 2029;
- Scottish Land Use Strategy (2016);
- SEPA (2017), Guidance WST-G-027 version 3 Management of Forestry Waste;Argyll and Bute Local Development Plan and Supplementary Guidance; and
- UK Forestry Standard (2023).

Study Area

13.7.33 The Study Area relates to the existing forestry crops within the vicinity of the Application Boundary (refer to **Figure 13.1**), as any impact on the forestry crops as a result of the Proposed Development will be limited to this geographic area. The majority of the proposed access track is within the Fearnoch Forest North area of the wider Taynuilt

Land Management Plan[8] (outlined within **Technical Appendix 13.3**) with the remaining areas of felling along the Site Access within the Barguillean Estate.

Difficulties and Uncertainties

13.7.34 When tree crops are less than 20 years old there are no yield tables available. For the purposes of this assessment, professional judgement has been used to estimate approximate timber volumes for these tree crops. However, in most cases these trees would likely be too young to produce timber and would be put into wood chips. This approach has been taken in order to assess a worst case scenario.

13.7.35 Within the Site Access area, no base data regarding the planting year was available for specific compartments. In these instances, professional judgement has been used to estimate approximate timber volumes for areas of felling.

Existing Environment

Baseline Forest Plans

13.7.36 For forestry operations, including clear felling and restocking within Fearnoch Forest North, these are covered by the Taynuilt Land Management Plan (TLMP) (**Technical Appendix 13.3**), which was published in October 2020 and covers the felling, thinning and restocking measures proposed between 2020-2029. As the Proposed Development would not start construction until after the end of this period it is considered that the baseline conditions are those at the end of 2029. Although the TLMP includes long term objectives up to 2039, there is no detailed proposals for after the 2020-2029 period. The TLMP also covers three plantations, one of which is Fearnoch Forest, and information is typically aggregated across all three plantations. Where possible, baseline information is presented for Fearnoch Forest.

13.7.37 There is no existing forestry plan for the forestry within Barguillean Estate.

Baseline Conditions

Baseline Planting Year / Age Class Structure

Fearnoch Forest

13.7.38 The current age class structure of the woodlands within Fearnoch Forest is shown in **Table 13.5**.

13.7.39 Over half of Fearnoch north forest woodlands were planted between 1964 and 2003. The majority of the crops are therefore considered to be in the mid to late rotation phase.

13.7.40 In addition, the age class structure of Fearnoch Forest is relatively even aged as smaller areas of forestry remain from before 1964, and new forestry has continually been planted over the past 20 years.

[8] Forestry Land Scotland (2021), Taynuilt Land Management Plan. The full land management plan is available online. Key figures showing baseline conditions (current and future) are included within Technical Appendix 13.4.

Table 13.5 Fearnoch Forest Age Class Structure of current baseline forestry onsite

Age (years)	Area (ha)	Area (%)
0**	233.18	17.79
1 – 5	53.11	4.05
6 – 10	23.31	1.78
11 – 20	123.59	9.43
21 – 40	348.62	26.62
41 – 60	417.69	31.89
61+	110.32	8.42
Totals*	**1309.83**	**100**

* totals may not add up due to rounding

** including open ground, clear-felled compartments, and land awaiting restocking.

Barguillean Estate

13.7.41 There is no data available on the age of the forestry; however, on inspection during the forestry site visits undertaken In October 2022 and February 2023 reported in **Technical Appendix 13.1** it was established that the forestry comprised a combination of scrub and mature conifer plantation.

Baseline Species Composition

Fearnoch Forest

13.7.42 The current species composition of the woodlands within Fearnoch Forest is shown in **Table 13.6**. The main species are commercial conifers, principally Sitka Spruce, which account for approximately 60.3 % of the forest area. Other conifer woodland, covering a wide range of species from Larch to Scot's Pine, and broadleaves form very small components of the woodlands. Open ground accounts for 17.8 %.

Table 13.6 Fearnoch Forest species composition of current forestry onsite

Species	Area (ha)	Area (%)
Ash (AH)	17.96	1.37
Birch (BI)	76.96	5.88
Dougla Fir (DF)	12.43	0.95
European Larch (EL)	0.73	0.06
Grand Fir (GF)	2.75	0.21
Hybrid Larch (HL)	11.17	0.85
Japanese Larch (JL)	63.59	4.9
Lawson Cypress (LC)	0.32	0.02
Mixed Broadleaves (MB)	41.17	3.14

Species	Area (ha)	Area (%)
Mixed Conifer (MC)	0.35	0.03
Mountain Pine	0.22	0.02
Noble Fir (NF)	3.78	0.29
Norwegian Spruce (NS)	33.39	2.55
Western Red Cedar (RC)	1.47	0.11
Sessile Oak (SOK)	11.60	0.89
Scot's Pine (SP)	6.61	0.50
Sitka Spruce (SS)	791.78	60.39
Sycamore (SY)	1.38	0.11
Western Hemlock (WH)	2.04	0.16
clear felled/open ground	233.18	17.8
Totals*	**1309.83**	**100**

* totals may not add up due to rounding

Barguillean Estate

13.7.43 There is a combination of Ash and Silver Birch scrub and commercial Sitka Spruce plantation.

Baseline Felling Plan

13.7.44 The baseline felling plan (**Technical Appendix 13.3)** has been taken from the approved Forest Plan for Fearnoch Forest and represents the plan for felling and retention of the current forestry onsite within the temporal scope of the Forestry Plan, without the Proposed Development. The baseline felling plan is illustrated in **Table 13.7**.

Table 13.7 Fearnoch Forest baseline felling plan

Felling Phase	Area (ha)
Felled	97.19
Phase 1 (2020-2029)	187.72
Phase 2 (2025 – 2029)	84.51
Totals*	**369.42**

* totals may not add up due to rounding

Baseline Restocking Plan

13.7.45 The baseline restocking plan for Fearnoch Forest between 2020 and 2029 is shown in **Table 13.8.**

Table 13.8 Fearnoch Forest baseline restocking plan

Species	Area (ha)	Area (%)
Douglas Fir	8.11	2.23
Norwegian Spruce / Scot's Pine	44.35	12.21
Sitka Spruce	104.91	28.89
Upland Forestry (Native Broadleaved)	205.76	56.45
Totals*	**363.13**	**100**

* totals may not add up due to rounding

Timber

13.7.46 The mensuration data for each plantation can be found in **Technical Appendix 13.1**. This includes photographs of the general timber conditions. The quality of the timber is typical for plantations of these species and age. Most of the compartments and sub-compartments are reasonably productive.

Windblow Risk

13.7.47 Forest edges are important for the stability, visual impact and biodiversity of forests. Wind tunnel measurements suggest that trees at established forest edges are inherently more stable than trees within the forest because their form will have adapted to the increased wind exposure. On the other hand, recently exposed edge trees will be much more vulnerable because of their lack of adaptation.

13.7.48 The Windthrow Hazard Class (WHC) of the Fearnoch Forest and Barguillean Estate plantations averages WHC 5. There is a very small amount of windblow throughout the whole Study Area largely because the plantations are undergoing restructuring through felling and so areas that may have previously blown have been recently cleared.

13.7.49 In addition to this, due to climate change the indications are that in the future there will be an increased risk of windblow to plantations, due to the increased windiness, combined with an increase in winter rainfall.

Embedded Mitigation

Design Considerations

13.7.50 The Scottish Forestry guidance to staff on implementing CWR states that:

"Options to avoid or reduce the need for Compensation Planting should always be fully considered as part of the decision making process. Compensation Planting should be seen as the final option once all other solutions have been exhausted".

13.7.51 In relation to forestry, the key objective of the Proposed Development design has been to minimise the amount of tree felling required by utilising existing forestry tracks where possible. This will ensure compliance with the Scottish Government's Policy on CWR.

Best Practice Measure

13.7.52 The following measures would be adhered to in relation to potential forestry impacts:

- Timber harvesting will be conducted in accordance with the UK Woodland Assurance Standard[9], consideration would be given in regard to leaving forest residues in situ or in 'habitat piles' so long as this does then not create habitat for pest and diseases;
- All forestry plans and operations will fully comply with the UK Forestry Standard (2017); and

13.7.53 The extraction of the timber produce will be carried out after the access tracks have been installed, so as all the felled trees will be very close to the access tracks, most of the timber extraction will be carried out on the hard road and not over the bare ground. This will avoid/minimise any damage to the soil.

Predicted Effects

Felling Areas and Timber Volume

13.7.54 **Figure 13.1 and 13.2** shows the felling required for the Site Access. The total felling area would be 1.61 ha, of which 1.02 ha would be permanent and 0.59 ha would be temporary.

13.7.55 The total timber volume to be felled is estimated to be 393.27 m^3 which equates to 323.91 tonnes.

13.7.56 The full Timber Volume Assessment is provided in **Technical Appendix 13.2.**

Baseline Planting Year / Age Class Structure

13.7.57 Given the minor amount of permanent felling predicted, there would be a negligible impact on the long term age structure of the forestry on the Fearnoch Forest and Barguillean Estate plantations.

Baseline Species Composition

13.7.58 Given the minor amount of permanent felling predicted there would be a negligible impact on the long term species composition of the forestry on the Fearnoch Forest and Barguillean Estate plantations.

Wind Farm Forest Plans

13.7.59 Felling within Fearnoch Forest and Barguillean Estate would be undertaken early in the construction phase to enable delivery of turbine components to site and any restocking, which would be like-for-like, would be undertaken in the first available planting season afterwards.

13.7.60 There is no existing forestry plan for Barguillean Estate; however, a new forestry plan would be submitted to reflect the proposed felling and restocking as shown on **Figure 13.1**.

[9] United Kingdom Woodland Assurance Standard (Fourth Edition) (2018)

13.7.61 There is no detailed forestry plan for Fearnoch Forest covering the construction and operation period of the Proposed Development; however, it is assumed that the wind farm felling and restock plan (**Figure 13.1**) would be incorporated as required into a future land management plan.

Mitigation

Restocking

13.7.62 Areas of additional felling (i.e. as a result of potential indirect impacts), totalling 0.59 ha, would be restocked but it is proposed to keep new track and areas of overrun and oversail as permanent areas of open space to allow future abnormal load deliveries should this be required to replace turbine components.

Compensatory Planting and Biodiversity Enhancement

13.7.63 As per the CWR Policy, the maximum area of land that would be needed for compensatory planting (the SF default position) is an area equivalent to the area being felled and left unplanted (i.e. permanent felling), which in this case is estimated to be approximately 1.1 ha.

13.7.64 As part of the measures proposed in the Outline Biodiversity Enhancement and Habitat Management Plan (**Technical Appendix 6.10**), there is an objective to improve nature networks onsite and in the surrounding area through the planting of broadleaved riparian planting (including in target areas for riparian planting identified under the Forestry Grant Scheme). There would be approximately 14.4 km of additional native riparian woodland and nature networks in additional locations around the OBE-HMP Study Area to increase biodiversity and to create new native woodland nature networks between the Loch Awe and Loch Etive catchments. The intention is that the compensatory planting requirement would be met as part of this. There would be several ecological benefits to this planting and an increase in the overall forestry onsite.

Summary of Residual Effects

13.7.65 As noted above, commercial forestry is not a receptor in EIA terms therefore the potential impacts on the forestry resource is not considered in terms of significance. The residual effects instead relate to the changes to the forestry resource within the study area and compliance with the CWR Policy, for the consideration of relevant consultees.

13.7.66 Given the minor amount of permanent felling predicted, there would be a negligible impact on the long term age structure and species composition of the forestry on the Fearnoch Forest plantation.

13.7.67 There would be a minor amount of permanent felling on the Barguillean Estate plantations; however, the biodiversity enhancement and compensatory planting measures would result in a beneficial change to the species composition and age structure of the forestry within Barguillean Estate. This would be a net increase in the forestry onsite so would be a beneficial impact.

13.7.68 Overall, it is considered that the Proposed Development would comply with the CWR Policy.

13.8 Waste and Environmental Management

13.8.1 Suggestions on how to mitigate any negative impacts from the Proposed Development with regards to waste and environmental management are presented in EIA chapters where practicable. These are summarised in **Chapter 14: Statement of Environmental Commitments**.

13.8.2 A CEMP, which would be secured via planning condition, will provide a general overview on how waste and other environmental issues would be managed during the construction phase. The Peat Management Plan (**Technical Appendix 8.3**) also details how excavated peat is controlled, stored, re-used and disposed of during the construction phase of the Proposed Development.

13.8.3 It is expected that a site-specific waste management plan for the control and disposal of waste generated onsite would be required by condition, should the Proposed Development receive consent.

13.8.4 With the embedded mitigation provided by the CEMP and the Peat Management Plan there is no potential for significant impacts arising from Waste and Environmental Management.

13.9 References

Argyll and Bute Council, 2015. ‘Argyll and Bute Local Development Plan’.

Argyll and Bute Council, 2016. ‘Argyll and Bute Local Development Plan : Supplementary Guidance’.

Civil Aviation Authority, Feb 2016. ‘CAP 764: CAA Policy and Guidelines on Wind Turbines’.

Civil Aviation Authority, Feb 2021. ‘‘CAP 393: The Air Navigation Order 2016 (ANO) and Regulations’.

Department for Communities & Local Government, 2013. ‘Planning practice guidance for renewable and low carbon energy’.

Department of Energy and Climate Change, 2011. ‘Update of UK Shadow Flicker Evidence Base’.

Digest of UK Energy Statistics (DUKES), 2023. ‘Digest of UK Energy Statistics Annual data for UK, 2022’.

Forestry Commission, 1981. ‘Yield Models for Forest Management’.

Forestry Commission, 1996. ‘Technical Paper 16: Design Forest Edges to Improve Wind Stability’.

Forestry Commission, 2009. ‘The Scottish Government’s Policy on Control of Woodland Removal’.

Forestry Commission, 2017. ‘The UK Forestry Standard – The Government’s Approach to Sustainable Forestry’.

Forestry Commission, 2016. ‘A PC-based yield model for forest management in Britain’.

Forestry Land Scotland, 2021. ‘Taynuilt Land Management Plan’.

Günther, A., Barthelmes, A., Huth, V., Joosten, H., Jurasinki, G., Koebsch, F. and Couwenberg, J., 2020. ‘Prompt rewetting of drained peatlands reduces climate warming despite methane emissions. Nat Commun 11, 1644’.

IEMA, 2020. ‘Major Accidents and Disasters in EIA: A Primer’.

IEMA, 2022. ‘Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance’.

Met Office, 2019. ‘UKCP18 Science Overview Report’.

NatureScot, Scottish Renewables, 2019. ‘Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland and Historic Environment Scotland Good Practice during Wind Farm Construction, Fourth Edition’.

Nayak D.R., Miller D., Nolan A., Smith P., and Smith J, 2010). Calculating carbon budgets of wind farms on Scottish peatlands; Mires and Peat (Article 09), 4, 1-23’.

Nayak, D.R., Miller, D., Nolan, A., Smith, P., and Smith, J., 2008, revised 2010. ‘Calculating carbon savings from wind farms on Scottish peat lands: a new approach’.

Nordrhein-Westfalen, 2002. ‘Notes on the Identification and Evaluation of the Optical Emissions of Wind Turbines, States Committee for Pollution Control’.

Northern Ireland Department of the Environment., 2009. ‘Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’.

Parsons Brinckerhoff, 2011. ‘Update of UK Shadow Flicker Evidence Base. Report prepared for Department of Energy and Climate Change’.

Renewable UK, 2015. ‘Onshore Wind Health & Safety Guidelines’.

Sadhukan and Christensen, 2021. ‘An In-Depth Life Cycle Assessment (LCA) of Lithium-Ion Battery for Climate Impact Mitigation Strategies’.

Scottish Climate Change Plan (SCCP: 2018) Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3)’.

Scottish Forestry, 2019. ‘Scottish Forestry Strategy’.Accessed February 2024].

Scottish Government, 2014. ‘Web-based guide: Onshore wind turbines: planning advice’.

Scottish Government, 2019. ‘The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019’.

Scottish Government, 2022. ‘Carbon Calculator for Wind Farms on Scottish Peatlands: Factsheet’.

Scottish Government, Dec 2022. ‘‘Onshore wind: policy statement’’.

Scottish Government, Feb 2023. ‘‘National Planning Framework 4’.

Scottish Government, revised March 2016. ‘‘Planning Circular 2/03: Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas’

Scottish Government., 2001. ‘Planning Advice Note 62: Radio telecommunications’.

Scottish Government, 2009. ‘Policy on Control of Woodland Removal’.

Scottish Government, 2014. ‘Scottish Planning Policy’.

Scottish Government, 2018. ‘Forestry and Land Management (Scotland) Act 2018’.

Scottish Government, 2019) Scotland’s Forestry Strategy 2019 – 2029’.

Scottish Government, 2019. ‘Policy on Control of Woodland Removal: Implementation Guidance’.

Scottish Government, 2023. ‘National Planning Framework 4’.

Scottish Land Use Strategy, 2016)’.

Scottish Planning Policy, 2014. ‘Scottish Planning Policy’.

SEPA, 2016. ‘Guidance regarding Life Extension and Decommissioning of Onshore Windfarms’.

SEPA, 2014. ‘Land Use Planning System, SEPA Guidance Note LUPS-GU27 – Use of Trees Cleared to Facilitate Development on Afforested Land’.

SEPA, 2017. ‘Guidance WST-G-027 version 3 Management of Forestry Waste’.

SLR., 2015. ‘Wind Farm Impacts Study Review of the visual, shadow flicker and noise impacts of onshore wind farms’.

Smith, J.U., Graves, P., Nayak, D.R., Smith, P., Perks, M., Gardiner, B., Miller, D., Nolan, A., Morrice, J., Xenakis, G., Waldron, S., and Drew, S., 2011. ‘Carbon implications of windfarms located on peatlands – Update of the Scottish Government Carbon Calculator tool’.

United Nations Framework Convention on Climate Change, 2015. ‘Adoption of the Paris Agreement, 21st Conference of the Parties, Paris: United Nations’.

United Kingdom Woodland Assurance Standard (Fourth Edition), 2018.