Craig Watch Wind Farm

Environmental Impact Assessment Report

Volume 2: Main Report

June 2022

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Glossary of Terms

Term	Definition
Annex 1 species	Birds that are considered as threatened in Europe, under the Birds Directive (Chapter 8: Ornithology).
Assessment	Process by which information about effects of a proposed plan, project or intervention is collected, assessed and used to inform decision making
Baseline conditions	Environment as it appears (or would appear) immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project
Construction phase	Period during which the building or assembling of a proposed development and its infrastructure is undertaken
Consultation	Process by which those organisations or individuals with an interest in the area associated with the proposed scheme are identified and engaged as part of the EIA process
Consultation bodies	Organisations that the competent authority is required to consult by virtue of the EIA Regulations
Cumulative impact	Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. A cumulative impact may arise as the result of (a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project on a single receptor/ resource or (b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource.
Decommissioning	Period during which a development and its associated infrastructure are removed from active operation
Effect	Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact with the importance (or sensitivity) of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.
EIA regulations	Collective term for the various statutory instruments through which the directives on environmental assessment have been implemented in the UK
Electronic conspicuity (EC)	Equipment in an aircraft that broadcasts the aircraft's position, altitude and other information, enabling other aircraft and air traffic controllers to maintain separation between aircraft.
Environmental Impact Assessment report	Otherwise known as an EIA report. Document produced in accordance with the EIA directive (as transposed into UK law by the EIA regulations) that reports the outcomes of the EIA process
European site	Sites that make up the European ecological network (previously known as Natura 2000 sites). These include sites of community importance (scis), special protection areas (SPAs) and potential spas (pSPAs), special areas of conservation (SACs) and candidate or possible SACs (cSAC or pSAC), and Ramsar sites.
Feature	Defined individual environmental feature usually associated with population, fauna and flora with the potential to be affected by a project
Gap-filler radar	An additional radar used to provide surveillance of the airspace over a wind farm where the main radar's coverage has been blanked in order to eliminate adverse effects from wind turbines.
Habitats regulations	EC Council Directive 92/43/eec, known as the Habitats Directive, was translated into legal obligations in Scotland by the Conservation (natural

Term	Definition
	habitats) Regulations 1994 (most recently amended in 2019 as the EU Exit Regulations). This legislation is more commonly known as the Habitats Regulations. The Habitats Regulations cover requirements for sites that are internationally important for threatened habitats and species (e.g. European sites), species that require strict protection (e.g., European protected species), and other aspects of the Habitats Directive (which is still used as a reference under UK Law).
Habitats regulations appraisal	Assessment of the impacts of implementing a plan or policy on a European site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the site
ibidem	In the same source
Impact	Change that is caused by an action; for example, land clearing (action) during construction that results in habitat loss (impact)
Instrument Flight Rules (IFR)	An internationally-determined set of rules defining minimum equipment, minimum vertical separation from obstacles, cruising levels, flight plans and clearances for aircraft not flying in accordance with the Visual Flight Rules. Virtually all commercial air traffic, and the bulk of military air traffic, operates under the IFR.
Integrity	Maintenance of the conservation status of a habitat or population of a species at a specific location or geographical scale.
Light Detection and Ranging (Lidar)	A remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth
Mitigation	Measures intended to avoid, reduce and compensate adverse environmental effects
Monitoring	Continuing assessment of the performance of the project, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.
Non-Domestic Rates	A tax on the occupation of non-domestic property, lands and heritages.
Non-statutory consultee	Organisations and bodies that should be consulted on relevant planning applications
Operation	Functioning of a development on completion of construction
Pollution	Any increase of matter or energy to a level that is harmful to living organisms of their environment (when it becomes a pollutant)
Primary surveillance radar (PSR)	A device which transmits pulses of electromagnetic energy into a volume of airspace and detects reflections of that energy from objects such as aircraft and rainfall.
Proposed Development	The project that the applicant or promoter seeks to implement
Roosting Site (bats)	Place where bats rest or sleep.
Scanning telemetry	A radio control system in which a central station regularly interrogates outstations – for example, at electricity sub-stations or pipeline junctions – to monitor their status and to issue control commands.
Schedule 1 species	Birds listed under the Wildlife and Countryside Act 1981 (as amended), which protects their active nests, eggs and young under the normal obligations of the Act, but extends to also protect the birds against disturbance when nesting.
Scoping	Process of identifying the issues to be addressed by the environmental impact assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered not significant.
Scoping opinion	Opinion provided by a competent authority that indicates the issues an environmental impact assessment of a proposed development should consider
Secondary surveillance radar (SSR)	A device which transmits pulses of electromagnetic energy which trigger a coded response from any aircraft equipped with a transponder, enabling controllers to identify the aircraft.

Term	Definition
Shadow Flicker	**The effect of rotating turbine blades causing brightness levels to vary periodically at locations where they obstruct the Sun's rays**
Significance	See 'significance of effect'
Significance of effect	Measure of the importance or gravity of the environmental effect, defined by either generic significance criteria or criteria specific to the environmental topic
Sites of special scientific interest	Main national conservation site protection measure in Britain designated under the wildlife and countryside act 1981
Special area for conversation	Sites designated under EU Directive (82/43/ECC) for th conservation of natural habitats and wild fauna and flora.
Special Protection Area	Sites designated under EU Directive (79/409/EEC) for the conservation of birds.
Study Area	Spatial area within which environmental effects are assessed (i.e. extending a distance from the project footprint in which significant environmental effects are anticipated to occur). This may vary between the topic areas.
Visual Flight Rules (VFR)	An internationally-determined set of rules defining minimum visibility and distance from cloud for pilots flying by visual reference. VFR flights are predominantly those undertaken by light aircraft, gliders etc.

Abbreviations

Abbreviation	Expanded Term
AA	Appropriate assessment
AC	Aberdeenshire Council
ACAS	Aberdeenshire Council Archaeology Service
AD	Air defence
AESI	Adverse Effect on Site Integrity
AIL	Abnormal Indivisible Load
ALDP	Aberdeenshire Local Development Plan
AOD	Above Ordnance Datum
ASACS	Air Surveillance and Control System
ATC	Automatic Traffic Counter
ATS	Air Traffic Service
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BGS	British Geological Society
BNAL	Battery Energy Storage System Noise Assessment Location
BP	Borrow Pit
BoP	Balance of Plant
BT	British Telecom
CAA	Civil Aviation Authority
CAR	Controlled Activities Regulations
CBBPP	Construction Breeding Bird Protection Plan
CCC	Committee on Climate Change
CCP	Climate Change Plan
CDEMP	Construction Demolition Environmental Management Plan

Abbreviation	Expanded Term
CEMP	Construction Environmental Management Plan
CI	Confidence Intervals
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CLVIA	Cumulative Landscape Visual Impact Assessment
CMLI	Chartered Membership of the Landscape Institute
CNAL	Construction Noise Assessment Location
CNP/ CNPA	Cairngorms National Park/ Authority
CTMP	Construction Traffic Management Plan
dB	Decibels
DBIRCT	Deveron, Bogie and Isla Rivers Charitable Trust
DECC	Department of Energy and Climate Change
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DP9	Development Policy 9 (MLDP 2020)
DTD	Digital Terrain Model
DTM	Digital Terrain Model
DWPA	Drinking Water protected Area
EC	European Commission
EcIA	Ecological Impact Assessment
ECoW	Ecological/Environmental Clerk of Works
ECU	Energy Consents Unit
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report or EIA Report
EMP	Environmental Management Plan
EP3	Environment Policy 3 (MLDP 2020)
EU	European Union
FEH	Flood Estimation Handbook
FL	Flight Level
FML	Fixed Minimum Limit
FMP	Fisheries Management Plan
FTE	Full-time equivalent
GDL	Gardens and Designed Landscapes
GHG	Greenhouse Gas
Gigawatts	GW
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPG	Good Practice Guidance
GVA	Gross Value Addedd
GWDTE	Groundwater Dependent Terrestrial Ecosystem

Abbreviation	Expanded Term
HEPS	Historic Environment Policy for Scotland
HER	Historic Environment Record
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HMP	Habitat management plan, also OHMP – Outline Habitat management plan
HRA	Habitats Regulations assessment
HV	High Voltage
ibid	ibidem
IOA	Institute of Acoustics
ICAO	International Civil Aviation Organisation
IEA	International Energy Agency
IEMA	Institute of Environmental Management and Assessment
IFR	Instrument Flight Rules
IOA	Institute of Acoustics
JNCC	Joint Nature Conservation Committee
JRC	Joint Radio Company
km	Kilometres
LBAP	North East Scotland Local Biodiversity Action Plan
LCA	Landscape Character Assessments
LCT	Lancscape Character Types
LDP	Local Development Plan
LFA	Low Flying Area
LiDAR	Light Detection and Ranging
Lights	Light goods vehicles
LSE	Likely Significant Effect
LVIA	Landscape Visual Impact Assessment
m	Metre(s)
MAGIC	Multi-Agency Geographic Information for the Countryside
MBBS	Moorland Breeding Bird Survey
MC	Moray Council
MLDP	Moray Local Development Plan
MoD	Ministry of Defence
MOWE	Moray Onshore Wind Energy
MS	Monitoring Stations
MSS	Marine Scotland Sciences
mtoe	Tonnes of oil equivalent
MW	Megawatts
MWELCS	Moray Wind Energy Landscape Capacity Study
NAIZ	Non-Auto Initiation Zone
NAL	Noise Assessment Location

Abbreviation	Expanded Term
NATS	(formerly) National Air Traffic Services
NCAP	National Collection of Aerial Photography
NCR	National Cycle Route
NERL	NATS En Route plc
NESBReC	North East Scotland Biological Records Centre
NHZ	Natural Heritage Zone
NLS	National Library of Scotland
nm	nautical miles
NML	Noise Monitoring Location
NNR	National Nature Reserves
NP	National Park
NPF3	National Planning Framework 3 (2014)
NRHE	National Record of the Historic Environment
NRTF	National Road Traffic Forecast
NS	NatureScot
NSA	National Scenic Areas
NVC	National Vegetation Classification
OCEMP	Outline Construction Environmental Management Plan
OHMP	Outline Habitat Management Plan
OS	Ordnance Survey
OWENSG	Onshore Wind Energy Non-Statutory Guidance
PACR	Pre-Appliation Consultation Report
PLDP	Proposed Local Development Plan
PLHRA	Peat Landslide Hazard and Risk Assesment
PMP	Peat Management Plan
POI	Point of Interest
PRoW	Public Rights of Way
PSR	Primary surveillance radar
PWS	Private Water Supply
RBD	River Basin District
RD	Rotor diameters
RDDSFB	River Deveron District Salmon Fisheries Board
RDP	Radar data processing
RRH	Remote Radar Head
RSPB	Royal Society for Protection of Birds
RSR	Route Survey Report
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SDP	Strategic Development Plan

Abbreviation	Expanded Term
SEA	Stone Extraction Area
SEPA	Scottish Environment Protection Agency
SES	Scottish Energy Strategy
SFCC	Scottish Fisheries Co-ordination Centre
SGOWE	Supplementary Guidance: Onshore Wind Energy
SLA	Special Landscape Area
SLCAWE	Strategic Landscape Capacity Assessment for Wind Energy in Aberdeenshire
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSEN	Scottish and Southern Electricity Networks
SSP	Species Protection Plan
SSSI	Site of Special Scientific Interest
SuDS	Sustainabel Drainage System
SWA	Scottish Wildcat Action
TPO	Tress Protection Order
TSO	Transmission System Operator
UKBAP	UK Biodiversity Action Plan
VP	Vantage/ View Point
WFD	Water Framework Directive
WLA	Wild Land Area
WTW	Water Treatment Works
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

1 Introduction

1.1 Introduction

1.1.1 This Environmental Impact Assessment Report (EIAR) has been prepared by Ramboll UK Limited (Ramboll) on behalf of Craig Watch Wind Farm Limited ('the Applicant') in support of an application for consent[1] to construct and operate a wind farm and associated infrastructure with generation capacity of greater than 50 megawatts (MW). The project is to be referred to as Craig Watch Wind Farm ('the Proposed Development'). The Proposed Development would comprise of up to 11 turbines with maximum blade tip height of 200 m above ground level (agl) on a site located approximately 8 km south east of Dufftown, Moray in Scotland ('the Site'). Further details are provided within Chapter 2: Development Description, and the Site location and context with surrounding developments is shown in Figures 1.1 and 1.2.

1.1.2 The EIAR comprises five volumes:

- Volume 1: Non-Technical Summary (NTS);
- Volume 2: Main Report;
- Volume 3a: Figures;
- Volume 3b: Visualisations;
- Volume 4: Technical Appendices; and
- Volume 5: Confidential Information.

1.2 Purpose and Scope of the EIAR

1.2.1 The EIAR has been prepared to accompany an application to Scottish Ministers under Section 36 of the Electricity Act 1989[2]. The EIAR has been prepared in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (herein referred to as the 'EIA Regulations'). The EIAR has been prepared to meet the requirements of Schedule 4 of the EIA Regulations and the Institute of Environmental Management and Assessment (IEMA) Quality Mark Criteria.

1.2.2 The Proposed Development for which the Applicant is seeking consent is as follows:

"The erection and 33-year operation and maintenance of a wind farm development with an installed capacity of more than 50 Megawatts, comprising up to 11 wind turbines, each with a maximum overall height to vertical blade tip of 200 m, together with ancillary development including internal transformers and related switchgear at each turbine; associated turbine foundations and hardstanding areas; a meteorological mast; a network of new and upgraded access tracks with associated water crossings, passing places and turning heads; borrow pits; substation compound including energy storage units; temporary site construction compounds; network of electrical cables; concrete batching plant and new/ improved vehicular access from the A941 which runs along the Site's south western boundary."

[1] An application for consent for the Proposed Development will be made to the Scottish Ministers under section 36 of the Electricity Act 1989, along with a request for a direction that planning permission be deemed to be granted under section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended

[2] Electricity generation projects below 50 MW are authorised under the Town and Country Planning (Scotland) Act, 1997. Those over 50 MW are authorised under Section 36 of the Electricity Act, 1989

1.2.3 The electricity produced would be exported to the electricity network. The proposed point of connection to the wider electricity network is currently under assessment. The grid connection would be the responsibility of the Transmission System Operator (TSO), Scottish and Southern Electricity Networks (SSEN), and would be subject to a separate consenting process under Section 37 of the Electricity Act 1989. The exact route of the connection and the technology solution have not yet been determined. As such, the grid connection is not included within the scope of this EIAR.

1.3 Other Planning Documents

1.3.1 The Application is accompanied by the following documents that do not form part of the EIAR:

- Planning Statement;
- Design Statement; and
- Pre-Application Consultation Report (PACR).

1.4 Site History

1.4.1 The Site has not previously been developed and largely comprises semi-mature coniferous plantation woodland, which is currently used for commercial forestry.

1.5 The Applicant

1.5.1 Craig Watch Wind Farm Limited (the Applicant), is wholly owned by Statkraft UK Ltd. For further information about Statkraft in the UK visit https://www.statkraft.co.uk/.

1.5.2 Statkraft is Europe's largest renewable energy generator and is committed to building out at least 600 MW of onshore wind development in Scotland over the next five years. In Scotland, Statkraft has built and operates four onshore wind farms with a combined capacity of 198.7 MW, has one wind farm currently being commissioned and has consent for a further onshore wind farm. The Scotland team is based in offices in Glasgow.

1.6 EIA Process

1.6.1 EIA is a process that identifies the potential environmental effects (both beneficial and adverse) of a proposed development and proposes mitigation to avoid, reduce and offset any significant adverse environmental effects.

1.6.2 The Proposed Development is of a type listed in Schedule 2 of the EIA regulations (item (1) "a generating station"). On the basis that "*the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location*" an Environmental Impact Assessment (EIA) is required. In this case, the Applicant has volunteered to undertake an EIA rather than request a formal screening opinion.

1.6.3 The Applicant acknowledges the exceptional circumstances related to the COVID-19 pandemic. In this regard, some aspects of the scope of the EIA vary from normal practice in order to respond to constraints imposed as a result of the pandemic. All relevant assumptions made and limitations inherent to the EIA have been recorded with a view to demonstrating that the resulting EIA Report provides a robust basis upon which the competent authorities can make a planning determination.

1.6.4 The key stages in the EIA process adopted for the Proposed Development are summarised below.

Scoping

1.6.5 The Applicant submitted a request for a Scoping Opinion to Scottish Ministers on 20 November 2020. This request was accompanied by an EIA Scoping Report, prepared by the Applicant, which set out a summary of the proposals, identified the likely significant environmental effects, and summarised the proposed scope of the EIA.

1.6.6 A Scoping Opinion was received from the Energy Consents Unit (ECU) on 19 March 2021. The contents of this and other consultation responses received are summarised in Technical Appendix 1.1: Consultation Register, along with a list of all bodies consulted during the scoping exercise.

1.6.7 In addition to seeking a Scoping Opinion, the Applicant conducted virtual and in-person public exhibitions to seek the views of the local community in Moray and Aberdeenshire, as follows:

- 5 to 31 March 2021 (online only); and
- 4 to 26 November 2021, Dufftown and Glass (online and in-person).

1.6.8 A summary of the representations received during the public exhibitions is provided in the PACR which accompanies the submission.

1.6.9 Further detail on the key issues identified through the scoping and consultation process are described in Chapter 3: Design Evolution and Alternatives.

1.6.10 Following scoping and baseline characterisation the EIAR provides an impact assessment chapter for each of the following disciplines/ factors/ issues:

- Landscape and Visual Impacts;
- Ecology;
- Ornithology;
- Hydrology, Hydrogeology and Geology;
- Cultural Heritage;
- Traffic, Transport and Access;
- Noise and Vibration;
- Aviation and Telecommunications;
- Socioeconomics;
- Shadow Flicker; and
- Climate.

Non-significant Issues

1.6.11 During the scoping process several issues were identified as not being likely to cause significant effects on the environment as a result of the Proposed Development. These issues are described below.

AIR QUALITY

1.6.12 The Proposed Development is not considered likely to give rise to significant effects on air quality. There is potential for it to give rise to some localised and temporary construction-related air quality effects associated with dust (foundation construction, passage of vehicles along access tracks) and construction plant and traffic exhaust emissions. However, the nature of the construction activities is that they will be relatively short term, intermittent and

controllable through the application of good construction practice, and also at sufficient distance from sensitive receptors to be considered low/ negligible impact.

1.6.13 The potential for nuisance effects on residential or recreational amenity will be limited and will be strictly controlled in accordance with a detailed Construction Environmental Management Plan (CEMP). An Outline CEMP is included in Technical Appendix 2.1. On this basis that the Proposed Development would not generate emissions during operations and operational traffic would be limited to maintenance vehicles (likely to be up to two vehicles per week plus very occasional abnormal loads), there is no potential for significant construction or operational air quality effects and no Air Quality assessment has been undertaken as part of the EIAR.

ICE THROW

1.6.14 The maximum potential distance of ice falling from turbines can be approximated using the formula 1.5 x (rotor diameter + hub height)[3]. For the Proposed Development, the maximum distance from a turbine where ice could be expected to fall is therefore approximately 416.25 m. Through site design, the risk to public safety is considered to be very low because the distance from the turbines to the nearest public road, residential property or core path is greater than 416.25 m. In line with current guidance[4], a permanent warning sign at the Site's entrances is proposed to alert the public to the possibility of ice throw under certain weather conditions. Considering the above, no potential significant impacts as a result of ice throw from the Proposed Development are anticipated and no ice throw assessment is provided within this EIAR.

MAJOR ACCIDENTS AND DISASTERS

1.6.15 The EIA Regulations require the consideration of the potential risks to human health or the environment associated with the vulnerability of the Proposed Development to accidents and disasters. This requirement is interpreted as requiring the consideration of high consequence events (even if of low likelihood) which would result in serious harm or damage to environmental receptors.

1.6.16 Given the nature of the Proposed Development, the potential for effects related to the vulnerability to accidents and disasters is likely to be limited to those effects associated with extreme weather, mechanical failure or structural damage. Relevant types of accident/ disaster, given the predominantly rural context of the Proposed Development, include:

- severe weather events, including high winds, high rainfall leading to flooding, or extreme cold leading to heavy snow and ice loading;
- fire;
- traffic related accidents; and
- mass movement associated with ground instability.

1.6.17 In addition, the Site is located in a remote area, with few nearby receptors. A risk assessment process would be followed by the Principal Designer during the design stage as part of the requirements of the Construction (Design and Management) Regulations 2015.

1.6.18 Severe weather resilience will be a core component of the Proposed Development design, and includes consideration of flooding resilience and the ability to manage the Site remotely in the

[3] Seifert, H., Westerhellwg, A. and Kroning, J. (2003) Risk Analysis of Ice Throw from Wind Turbines. *Boreas,* 6.

[4] Scottish Renewables, Scottish Natural Heritage, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AECoW (2019) Good Practice During Wind Farm Construction, Version 4, URL Good Practice during wind farm construction - 4th Ed.pdf (NatureScot) [Accessed 26/01/22]

event that it is inaccessible due to hazardous weather conditions. The Proposed Development design will include consideration of designing out health and safety risks associated with construction, operation and decommissioning (including accidents and disasters associated with fire and traffic movements) in accordance with the duties under The Construction (Design and Management) Regulations 2015.

1.6.19 Potential risks and hazards associated with mass movement (peat instability) have been assessed and presented in Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment.

1.6.20 No other potential significant effects on human health or the environment associated with the vulnerability of the Proposed Development to accidents and disasters have been identified and therefore no specific Major Accidents and Disasters assessment has been included in the EIAR.

Baseline Characterisation

1.6.21 Baseline characterisation is the process by which the environmental conditions now and in the future (assuming no development on the Site) are established. The process has included a combination of desk research, Site survey and empirical study and projection.

1.6.22 The environmental baseline adopted for the purposes of the EIA is stated in each of the technical assessment chapters provided in the EIAR. The baseline is normally taken as the current character and condition of the Site and surrounds, and the likely significant environmental effects of the Proposed Development are then assessed in the context of the current conditions. However, potential future baseline scenarios are included within the assessments, where applicable.

Mitigation by Design and Consideration of Alternatives

1.6.23 Following the baseline characterisation, the information collected on environmental constraints was used to inform the consideration of design alternatives. An iterative process was followed, whereby the Applicant considered a range of turbine layouts, heights and access proposals. The aim of the design element of the EIA process was to develop an optimal solution which seeks to maximise potential renewable energy generation, within technical and environmental constraints, while avoiding likely significant environmental effects. Further details on the design process adopted are set out within Chapter 3: Design Evolution and Alternatives.

Impact Assessment

1.6.24 The next stage in the EIA process was to complete an impact assessment to determine the likely significant effects remaining following the implementation of mitigation by design. An assessment chapter has been provided for each issue where it is considered that there are likely significant effects associated with the construction, operation, decommissioning or restoration phases of the Proposed Development. Each assessment chapter considers primary, secondary, direct, indirect and cumulative effects and defines the assessment methodology used and the criteria by which a significant effect is defined.

Additional Mitigation

1.6.25 The impact assessment is used to identify where additional mitigation is required to address likely significant effects, where it has not been possible to avoid the effect through design of the turbine or infrastructure layout. Mitigation has been considered following a hierarchy of first seeking to avoid effects, followed by seeking a reduction in effects to a level not

considered significant, and finally where necessary and possible, offsetting or compensatory measures are considered.

1.6.26 If any additional mitigation measures are required, further to that already embedded into the Proposed Development throughout its evolution, these are proposed, and the Proposed Development is reassessed to ascertain the likely residual effects and the likely significant environmental effects. This is reported on within each technical assessment of the ES.

Cumulative Effects

1.6.27 The EIA Regulations require that, in assessing the effects of a particular development proposal, consideration is also given to the cumulative impacts and effects which might arise from the proposal in conjunction with other development proposals in the vicinity.

1.6.28 Spatial considerations and scale of development criteria has been developed based on professional judgement to determine whether cumulative schemes have the potential for cumulative effects when combined with the Proposed Development's effects.

1.6.29 Each technical assessment chapter assesses the cumulative effects of the Proposed Development. For the purposes of this EIAR, it is considered that only other wind farm developments will be of scale and nature such that they could potentially result in significant cumulative effects when in combination with the Proposed Development. As such, no other development types are present in the vicinity or are considered relevant for the assessment of cumulative effects and therefore these have been scoped out from the assessment.

1.6.30 The criteria applied to the other wind farm schemes considered in the assessment of cumulative effects (hereinafter referred to as 'cumulative wind farm schemes' or 'cumulative schemes') are those which:

- are operational, consented/ approved or are in planning;
- have a total height of equal to or greater than 50 m; and
- are located within 60 km of the Site (primarily for the landscape and visual impact assessment (LVIA) purposes, other technical assessment cumulative study areas are smaller).

1.6.31 A total area of 60 km was considered when conducting a search for cumulative schemes in line with LVIA guidance. Each technical assessor has reviewed the list of cumulative schemes and has included those which fall within each topic study area. Spatial considerations vary topic by topic and have been determined based relevant guidance and professional judgement.

1.6.32 As requested by Aberdeenshire Council, schemes at scoping stage within close proximity to the Site are considered within the LVIA. These have also been included within the Cultural Heritage assessment given the linkages between the two studies.

Statement of Competence

1.6.33 In accordance with regulation 5(5) of the EIA Regulations, by appointing Ramboll UK Limited the Applicant has ensured that the EIAR has been prepared by 'competent experts'. The EIAR has been compiled and approved by professional EIAR practitioners at Ramboll, holding relevant undergraduate and post-graduate degrees, membership of the Institute of Environmental Management and Assessment (IEMA) and Chartered Environmentalist status with the Society for the Environment. The EIAR meets the requirements of the IEMA EIA Quality Mark Scheme. This is a voluntary scheme operated by IEMA that allows organisations to make a commitment to excellence in EIA and to have this commitment independently reviewed on an annual basis.

1.6.34 The project team comprises the companies presented in Table 1.1 below. A compiled statement on the competence of the lead author of technical reports is included in Technical Appendix 1.2: Technical Team and each of the impact assessment chapters provides details of the relevant professional memberships of the author, code or practice followed and assessment methodology used.

Table 1.1: Project Team

Team Member	Roles & Responsibility
Statkraft UK Ltd	Project Developer and owner of Craig Watch Wind Farm Limited
Ramboll UK Limited	EIA Project Management Landscape and Visual Impact Assessment Hydrology, Hydrogeology, Geology Peat Socioeconomics Shadow Flicker Climate Engineering
Savills	Planning
Avian Ecology	Ecology Ornithology
AOC Archaeology	Cultural Heritage & Archaeology
TNEI	Noise
Pell Frischmann	Traffic & Transport
Aviatica	Aviation and Telecommunications
McKay Forestry	Forestry

1.7 Copies of the EIAR

1.7.1 Paper copies of the EIAR and other documentation are normally made available to view at publicly accessible locations.

1.7.2 The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 were laid in Scottish Parliament on the 14 April 2020. These regulations make temporary modifications to the usual requirements placed on developer companies to make physically available application and EIA documentation for public inspection in named places within the locality of proposed developments, with respect to applications made under section 36 or section 37 of the Electricity Act 1989. Given the current health emergency the modifications require that companies making applications, or submitting further environmental information in connection with a live application, instead provide that all required documentation is available electronically for public inspection.

1.7.3 The Amendment of the Electricity Generating Stations (Applications for Variation of Consent) (Scotland) Regulations 2013, section 4A states *"emergency period" means the period beginning on 24 April 2020 and ending on the date on which Part 1 of the Coronavirus (Scotland) Act 2020 expires in accordance with section 12 of that Act."* Therefore, in accordance with the Coronavirus (Scotland) Act 2020, subsequently amended by the Coronavirus (No.2) (Scotland) Act 2020, the 'emergency period' ends on 31 March 2022. This was extended in February 2022 for a further six months, to 24 September 2022.

1.7.4 The Applicant intends to submit an application to the Energy Consents Unit, under section 36 or the Electricity Act 1989, in Q2 2022.

1.7.5 The EIAR, including all figures, technical appendices and accompanying documents is also available to view on the project website (www.craigwatch.co.uk).

1.7.6 The application documents will be available via the Scottish Government energy consents portal (https://www.energyconsents.scot/Default.aspx).

1.7.7 For anyone who has difficulty accessing the documentation online, a USB copy can be made available for £20. Hard copies of the Non-Technical Summary can also be made available free of charge. A hard copy of the submission may be obtained at cost of printing and postage. Requests for copies of the application submission can be made by:

Email: ukprojects@statkraft.com

Phone: 0800 772 0668

Post: Freepost Statkraft

1.7.8 As noted above, no physical copies are available for public viewing at the point of submission due to the EIA Regulations and the Coronavirus Regulations. However, should this change during the consultation period and AC or MC request this, then public copies will be made available during the opening hours at AC and MC Council offices/ or, at locations that will be published on the project website.

1.8 Commenting on the Application

1.8.1 When the application for the Proposed Development is lodged with the Scottish Government the Applicant will advertise the application in accordance with legislation as follows:

- *a Local Newspaper* for two successive weeks (the Huntly Express, the Press & Journal, the Northern Scot, the Banffshire Journal, the Banffshire Herald and the Banffshire Advertiser);
- a national newspaper for one week (The Herald);
- the *Edinburgh Gazette* for one week; and
- on the Developer's application website at: www.craigwatch.co.uk.

1.8.2 The advertisement will provide details of the date by when representations should be made. The Scottish Government will invite formal representations on the Proposed Development, which will be taken into account before any decision is reached on the application.

1.8.3 Any representations in relation to the application should be made to the Energy Consents Unit mail box, at representations@gov.scot, via the Energy Consents website at www.energyconsents.scot or by post to The Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the proposed development and specifying the grounds for representation. Written or emailed representations should be dated, clearly stating the name (in block capitals), full return email and postal address of those making representations.

2 Development Description

2.1 Introduction

2.1.1 This chapter provides a description of the Proposed Development for the purposes of identifying and assessing likely significant effects. Information is provided on:

- the location of the Proposed Development;
- the physical characteristics of the Proposed Development, including, the land-use requirements during the construction and operational phases;
- the main characteristics of the construction and operational phase of the Proposed Development having regard to the type and quantity of expected residues and emissions; and
- typical activities associated with the decommissioning of the Proposed Development for those topics where this has been scoped into the assessment.

2.1.2 This chapter is supported by the following technical appendices which are presented in Volume 4: Technical Appendices:

- Technical Appendix 2.1: Outline Construction Environmental Management Plan (OCEMP);
- Technical Appendix 2.2: Borrow Pit Assessment;
- Technical Appendix 2.3: Peat Depth Survey Results;
- Technical Appendix 2.4: Draft Peat Management Plan;
- Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment;
- Technical Appendix 2.6: Forestry Impact Assessment;
- Technical Appendix 2.7: Scoping Report; and
- Technical Appendix 2.8: Scoping Opinion.

2.1.3 Figures 2.1 to 2.9 are presented in Volume 3a: Figures and are referred to in the text as appropriate. The figures are as follows:

- Figure 2.1: Site Layout;
- Figure 2.2: Typical Wind Turbine Elevations;
- Figure 2.3: Typical Turbine Foundations and Crane Hardstanding Dimensions;
- Figure 2.4: Typical Cable Trench Section;
- Figure 2.5: Typical Substation and Compound Layout;
- Figure 2.6: Typical Anemometer Mast[1];
- Figure 2.7: Typical Access Track Detail (Plan and Sections);
- Figure 2.8: Typical Temporary Construction Compound Layout; and
- Figure 2.9: Typical Energy Storage Unit Layout.

2.2 Site Location and Context

2.2.1 The Proposed Development Site ('the Site') covers an area of approximately 1,074 hectares (ha) and is located approximately 8 km south east of Dufftown, Moray in Scotland

[1] It should be noted that a temporary met mast application has been submitted by the Applicant and would be removed prior to the construction of the Proposed Development. Therefore, this temporary met mast does not form part of the EIAR.

(approximate OS Grid Reference for Site centre: NJ 37509 34022), as illustrated in Figure 1.1: Site Location.

2.2.2 Much of the Site is dominated by semi-mature coniferous plantation woodland, with some underlying marshy grassland and wet heath. Open areas of blanket bog and dry modified bog are located in the south western portion of the Site and around the slopes of Craig Watch. A mosaic of wet and dry heath, acid, improved and marshy grassland is located along the south western and south eastern corners of the Site. NatureScot's (previously referred to as Scottish Natural Heritage (SNH)) revised National Programme of Landscape Character Assessment (2019)[2] identifies the Site as being primarily within the following Landscape Character Types (LCT):

- 32 Farmed and Wooded River Valleys;
- 292 Open Upland; and
- 294 Upland Valleys – Moray and Nairn.

2.2.3 The statutory development plan for the Site comprises the:

- Moray Local Development Plan[3] (MLDP) (adopted July 2020);
- Aberdeen City and Shire Strategic Development Plan[4] (SDP) (approved March 2020); and
- Aberdeenshire Local Development Plan[5] (ALDP)[6] (adopted April 2017) and associated Supplementary Guidance.

2.2.4 Operational wind farms are an existing feature of the surrounding landscape. As illustrated on Figure 1.2: Site Context, Dorenell wind farm is located to the south west, Clashindarroch is located to the south east and Hill of Towie, Edintore, and Ardoch Farm are located directly to the north. Additionally, the Site is surrounded by numerous wind farms that are consented, in planning or at scoping such as: Clashindarroch II located east of the Site and Garbet located north of the Site are both in planning; and Glenfiddich, located west of the Site and Clashindarroch extension located south east of the Site, which are both currently at scoping.

2.2.5 The A941 runs along the Site's south western boundary. There is also a minor road stretching along and across the Site's eastern and south eastern boundary, in the River Deveron valley.

2.2.6 There are some residential properties within the Site's boundary to the south west and south east of the proposed turbine locations. Individual properties are located along the A941 to the south west and along a minor road to the south east of the Site respectively.

2.2.7 There are five statutory designated Sites for nature conservation within 10 km of the Site, the closest of which the River Spey, Special Area of Conservation (SAC), is located 50 m north west.

2.2.8 Three Scheduled Monuments (Craig Dorney Hillfort, Auchindoun Castle and fort and Battle Stone, Mortlachlie) are located within 5 km of the Site while a further eleven Scheduled Monuments lie within 5 to 10 km of the Site.

[2] Scottish National Heritage, Landscape Character Assessment 2019. URL: https://data.gov.uk/dataset/cce069c5-8a2b-4932-9fae-4f9023cd9d5b/snh-landscape-character-assessment-2019 [accessed 04.01.2021]

[3] URL: http://www.moray.gov.uk/moray_standard/page_122817.html [accessed 29.10.2020]

[4] Aberdeenshire Council, 2020. Aberdeen City and Shire Strategic Development Plan URL: abdnandshirestrategicdevplanfinal2020.pdf (aberdeenshire.gov.uk) [accessed 22.03.2022]

[5] URL: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/ [accessed 29.10.20]

[6] Aberdeenshire Local Development Plan 2022 is currently in the final phases of development. It is anticipated the plan would be adopted in Summer 2022. As the plan has yet to be adopted it is a non-material consideration.

2.3 Project Description

2.3.1 For the purposes of this EIAR, the Proposed Development would comprise up to 11 turbines of a maximum tip height of 200 m, along with associated infrastructure, arranged as illustrated on Figure 2.1: Site Layout. The Proposed Development would include the following key components:

- Up to 11 wind turbines, each up to a maximum tip height of 200 m (Figure 2.1: Site Layout and Figure 2.2: Typical Wind Turbine Elevations);
- Associated permanent turbine foundations and crane hardstanding (Figure 2.3: Typical Turbine Foundations and Crane Hardstanding Dimensions);
- A permanent free-standing meteorological mast including associated foundation and hardstanding (Figure 2.6: Typical Anemometer Mast);
- A total of approximately 9.4 km of on-site tracks with associated water crossings, passing place and turning heads (Figure 2.1: Site Layout), of which 2.18 km would be formed through upgrading existing tracks. Additionally, a total of approximately 760 m of on-site emergency access track (Figure 2.7: Typical Access Track) ;
- A main Site entrance for use during construction and operation, designed to accommodate abnormal indivisible loads required for turbine component delivery as well as to provide parking for component deliveries;
- A substation compound, including a battery energy storage unit (if required) and control building (if required) (Figure 2.5: Typical Substation and Control Building Layout and 2.9: Typical Energy Storage Unit Layout). In terms of appearance the energy storage unit would be comparable to the on-site substation. Any storage would fall within the substation area;
- Two temporary Site construction compounds (Figure 2.8: Typical Temporary Construction Compound Layout);
- A network of on-site buried electrical cables connecting the turbines to the on-site substation compound (Figure 2.4: Typical Cable Trench);
- A borrow pit search area;
- Engineering operations which include for example turbine foundations, access tracks, and peat excavation and restoration work; and
- Associated ancillary works, including:
  - Habitat management plan areas, forest felling and replanting;
  - Extraction of rock from borrow pits (if suitable); and
  - Concrete batching plant. This would be located within one of the temporary construction compounds or borrow pit search areas (Figure 2.1: Site Layout).

2.3.2 The locations of the proposed turbines and other infrastructure would be subject to 'micrositing'. This process allows for minor changes in turbine or infrastructure locations to respond to possible variations in ground conditions across the Site, which would only be confirmed following detailed Site investigation work carried out immediately prior to construction. This process also provides scope for further mitigation of localised potential environmental effects through avoidance of sensitive features. It is anticipated that the micrositing distance of 100 m would form a condition accompanying any consent. Any repositioning would not encroach into environmentally constrained areas and would be carried out under the supervision of an Ecological Clerk of Works (ECoW) and an appropriately experienced and qualified engineer. The proposed locations for all infrastructure including

wind turbines, tracks, construction compounds, the substation and borrow pits, are shown on Figure 2.1: Site Layout.

Wind Turbines and Turbine Layout

2.3.3 The turbine coordinates of the proposed turbines are set out in Table 2.1: Turbine and Met Mast Locations.

Table 2.1: Turbine and Met Mast Locations

Turbine Number	Easting	Northing
1	337646	834471
2	337964	834056
3	338322	834426
4	338385	835034
5	338763	834664
6	338723	835353
7	339154	835115
8	339062	835738
9	339476	835505
10	339393	836115
11	339779	836354
Met Mast	337633	833877

2.3.4 As described in paragraph 2.3.2 these locations would be subject to micrositing during the construction phase. The Construction Environmental Management Plan (CEMP) would include detailed guidance on the application of the proposed micrositing tolerance. An Outline CEMP (OCEMP) is included in Technical Appendix 2.1: OCEMP.

2.3.5 The wind turbines to be installed at the Proposed Development would be up to 200 m maximum tip height[7]. An example turbine for the Proposed Development is shown in Figure 2.2: Typical Wind Turbine Elevations.

2.3.6 Wind turbines are available in a variety of colours, the most common being white, off-white or light grey. The finish is normally semi-matt. The colour of the turbines would be agreed in consultation with Aberdeenshire Council (AC) and Moray Council (MC).

2.3.7 Based on current (2022) wind turbine generator technology the typical generation capacity for a turbine of the size and design proposed would be between 6 – 7 MW.

2.3.8 The Proposed Development would have a total maximum capacity of 100 MW consisting of approximately 72.6 MW turbine capacity and approximately 27.4 MW of BESS capacity.

Permanent Land Take

2.3.9 The Site area is approximately 1,074 ha (Figure 2.1: Site Layout). Within this area the permanent land take would be limited to the wind turbine hardstanding area, access tracks, permanent crane hardstanding, substation hardstanding which account collectively for approximately 0.52% of the total area within the Site.

2.3.10 The turbine foundation (Figure 2.3: Typical Turbine Foundations and Crane Hardstanding Dimensions) is made up of a central excavation of approximately 22 m diameter and an

[7] Hub height is specified in the EIAR for assessment purposes only.

approximate depth of 3 – 5 m subject to prevailing ground conditions. Sloping batters would increase the excavated area to approximately 32 m diameter at ground level.

2.3.11 Each turbine requires a crane hardstanding to facilitate construction and maintenance. At each turbine there would be a 2,220 m² permanent hardstanding (Figure 2.3: Typical Turbine Foundations and Crane Hardstanding Dimensions).

2.3.12 A 2 m wide maintenance hardstanding would be created around the base of each turbine. The foundation excavation would be backfilled and covered with soil leaving only the concrete plinth exposed at ground level to which the steel tower would be attached.

2.3.13 The Proposed Development would result in the construction of approximately 7.22 km of new track. The required running width of the track would be typically a minimum of 6 m on straight sections, with 12 m wide shoulders on each side. Tracks would be wider on bends. Typical access track details are presented on Figure 2.7: Typical Access Track Detail. The total permanent land take area for the new track would be approximately 46,820 m², which includes the hardstanding area for turning heads.

2.3.14 The Proposed Development would also include the upgrade of approximately 2.18 km of existing track. The total permanent land take area for the upgraded tracks would be approximately 13,894 m².

2.3.15 In addition to the new and upgraded track, the Proposed Development would result in the construction of approximately 760 m of emergency access track. The required running width would be typically a minimum of 2 m on straight sections, with 1 – 2 m wide shoulders on each side. Tracks would be wider on bends. Typical access track details are presented on Figure 2.7: Typical Access Track Detail. The total permanent land take area for the emergency access track would be approximately 1,512 m².

2.3.16 The substation compound would take up an area of approximately 8,500 m² (170 m x 50 m) (Figure 2.5: Typical Substation and Compound Layout). The substation compound would comprise a substation, the potential for an energy storage unit (if required) and control room building (if required), including basic welfare facilities (e.g. a toilet and parking area), and potentially some external electrical equipment and energy storage infrastructure. The building would accommodate all the equipment necessary for automatic remote control and monitoring of the Proposed Development in addition to the electrical switchgear, fault protection and metering equipment required to connect the Proposed Development to the electricity network. Depending on the nature of the connection, there may be external electrical infrastructure adjacent to the control building.

2.3.17 One meteorological mast is proposed and would take up an area of approximately 625 m², excluding the crane pad (Figure 2.6: Typical Anemometer Mast).

Temporary Land Take

2.3.18 An area of excavation would be required around each turbine and would be identified during detailed design once an accurate cut and fill profile has been identified. In addition to the permanent hardstanding, an additional 5,170 m² of temporary hardstanding for blade finger and secondary crane pads during the construction phase would be required (Figure 2.1: Site Layout).

2.3.19 There are two proposed temporary construction compound locations. Construction Compound B located in the northern section of the Site between turbine 8 and 9 and Construction Compound A within the southern section of the Site approximately 300 m south west of turbine 2 (Figure 2.1: Site Layout). Construction Compound A would require a hardstanding

area of approximately 5,000 m² (100 m x 50 m) and Construction Compound B would require a hardstanding area of approximately 2,500 m² (50 m x 50 m).

2.3.20 The temporary concrete batching plant would be located either within the footprint of one of the temporary construction compounds described above or within the borrow pit search area.

2.3.21 The potential borrow pit search area identified is square in shape with approximate parameters provided in section 2.3.44 below. The total potential search area from the borrow pit would be approximately 28,800 m², however the borrow pit would not use this entire search area. The total area of the borrow pit would be determined at a later date once the exact quantity of material required is known and further site investigations have been undertaken.

2.3.22 Ancillary excavation works and material storage around other parts of the Proposed Development, such as those for cable trenching, would have a negligible impact on environmental receptors due to the very minor scale of the excavation or duration of the works and are not considered further in this EIAR.

2.3.23 The area of approximate temporary and permanent land take associated with the Proposed Development is presented in Table 2.2: Summary of Approximate Temporary and Permanent Land Take.

Table 2.2: Summary of Approximate Temporary and Permanent Land Take

Energy Project Element		Temporary (m²)	Permanent (m²)
Turbines, Crane Pads and Laydown Areas		56,870	24,420
Met Mast		N/A	625
On-site Access Tracks (New)		0	46,820
Substation Compound*		0	8,500
Temporary Construction Compounds	A	5,000	0
	B	2,500	0
Borrow Pit Search Area		28,800	0
Total Land Take		93,170	80,365

*It should be noted that the substation compound could potentially require external electrical equipment and energy storage infrastructure.

Turbine Foundations and Hardstanding

2.3.24 Turbines are typically fixed to reinforced concrete foundations, approximately 22 m in diameter. The foundations would be formed in excavations approximately 3 - 5 m deep, depending upon ground conditions (Figure 2.3: Typical Turbine Foundations and Crane Hardstanding Dimensions).

2.3.25 Prior to excavation, topsoil and existing vegetation would be lifted and stored. After completion the foundation would be backfilled with suitable excavated or imported material and the original vegetation would be reinstated around the permanent hardstanding areas where possible.

2.3.26 Concrete for Site construction, including turbine foundations, would be batched on-site.

2.3.27 The turbines would be erected using mobile cranes. These require areas of hardstand adjacent to the turbine locations, which can support the load of the cranes on their outriggers. The permanent hardstands, approximately 2,220 m² and approximately 5,170 m² of temporary hardstands at each turbine, are formed by excavating soft ground, and infilling with compacted stone (Figure 2.3: Typical Turbine Foundations and Crane Hardstanding

Dimensions). Temporary hardstand areas would be required for laydown of turbine components and for a small support crane to assist the main erection crane.

Turbine Lighting

2.3.28 The Proposed Development would require visible aviation lighting under the current Civil Aviation Authority (CAA) policy statement[8]. A reduced lighting scheme has been submitted and approved by the CAA. As part of the reduced turbine lighting scheme T1, 2, 4, 5, 8, 9 and 11 would be illuminated, by a 2000 candela light on the nacelle. There would be no. 32 candela lights in the mid-tower positions. Further detail is provided in Chapter 12: Aviation and Telecommunications.

Electrical Cabling

2.3.29 Electrical connections from the wind turbines to the on-site electrical substation and control building would be made via underground cables. Cable trenching would have a negligible impact on environmental receptors due to the very minor scale of the excavation or duration of the works (Figure 2.4: Typical Cable Trench Section).

On-site Substation Compound

2.3.30 The substation compound would measure approximately 170 m x 50 m, is approximately 8,141 m², and would include a substation and control building (if required) and potentially some external electrical equipment and energy storage infrastructure.

2.3.31 The electrical cables would terminate at the substation and control building, which is likely to be approximately 500 m² in size. Located adjacent to the substation, the control building (if required) would measure approximately 25 m x 20 m with a pitched roof up to 10 m, containing switchgear, control equipment, basic welfare facilities including a toilet and parking area (Figure 2.5: Typical Substation Compound Layout). Located in the remaining space of the substation compound, would be energy storage infrastructure, which could comprise battery energy storage system, switchgear container, power conversion systems and security fencing.

Temporary Construction Compounds

2.3.32 Two temporary construction compounds would be required to enable construction of the Proposed Development. The compounds would be located as shown on Figure 2.1: Site Layout. Each compound area would include:

- access tracks and internal circulation routes for vehicles and pedestrians;
- lighting for security and safety during hours of darkness;
- surface water management measures;
- temporary office accommodation and welfare buildings (toilets, kitchen/ canteen, drying rooms);
- equipment storage;
- a receiving area for incoming vehicles;
- maintenance and refuelling facilities;
- waste, recycling and materials management facilities;
- general laydown areas and areas for batching plant; and
- parking.

[8] CAA Policy and Guidelines on Wind Turbines, CAP 764 (Draft June 2020)

2.3.33 Two temporary construction compounds are proposed and the approximate dimensions would be as follows:

- Option A: 5,000 m²
- Option B: 2,500 m²

2.3.34 The indicative layout of the temporary construction compounds are shown in Figure 2.8: Typical Temporary Construction Compound Layout.

Permanent Meteorological Mast

2.3.35 It is proposed that there would be one meteorological mast on-site measuring up to the turbine hub height (Figure 2.6: Typical Anemometer Mast). The meteorological mast would require a hardstanding area of approximately 625 m² (25 m x 25 m) and a crane pad of approximately 400 m² (20 m x 20 m). The location of the meteorological mast can be found on Figure 2.1: Site Layout.

Access and Site Tracks

2.3.36 Access to Site would be taken from an improved entrance off the A941 at Rhinturk. For more information on the delivery route to the Site see Chapter 10: Traffic, Transport and Access.

2.3.37 Approximately 9.4 km of new on-site access tracks; approximately 7.22 km of new track and approximately 2.18 km of upgraded track would be required to provide access to the wind turbines, permanent met mast, substation compound, borrow pit search area and construction compounds (Figure 2.1: Site Layout). Approximately 760 m of emergency access track would be required. Typical access track designs are shown in Figure 2.7: Typical Access Track Detail. This figure shows the use of typical cut and fill access tracks.

2.3.38 The majority of tracks would have a 6 m running width with appropriate shoulders and widening on bends, at junctions and passing places. Tracks which would only be accessed by light vehicles would be 4 m wide (including shoulders) (Figure 2.1: Site Layout). The access track would be provided with intervisible passing places, where required.

2.3.39 In areas where the peat and topsoil are consistently less than 1 m deep, the vegetation and soil would typically be stripped to a suitable subsoil layer and the track (approximately 500 mm thick) would be constructed on the subsoil. The upper topsoil layer, together with turf, would be stored temporarily for use in landscaping and revegetating the track shoulders and track side drainage, where possible.

2.3.40 Once the soil has been removed, as described above, to a suitable founding layer, the road and running surface would be constructed by tipping and compacting aggregate to the required shape and thickness. Cross-sections of the final road shape following reinstatement of the roadside slopes by replacing the layers of excavated material in the correct order are presented in Figure 2.7: Typical Access Track Detail.

2.3.41 Where it is not possible to avoid areas of deepest peat, floating tracks would be required to be constructed. Where peat depths of 1 m or greater are identified and suitable engineering criteria are met, for example shallow topography (below 5%), the Proposed Development would use floating road construction. The use of 'floating roads' in areas of deep peat eliminates the need for excavation and minimises effects on ecology and disruption to existing water paths and allows for some filtration. It is anticipated that an element of floating track would be required to minimise peat disturbance associated with the Proposed Development. The specific requirements for floating track would be confirmed once further detailed peat sampling has been undertaken.

2.3.42 The on-site track layout has been designed to minimise environmental disturbance and land take by wherever possible avoiding areas of deeper peat and steep slopes in excess of 12 degrees as well as, wherever possible, avoiding or minimising areas of identified environmental constraints.

2.3.43 The track layout has been carefully designed to minimise the number of watercourse crossings where possible, which are discussed in the section below.

Borrow Pits

2.3.44 A borrow pit search area has been identified covering a total of approximately 28,800 m² and approximately 160 m x 160 m, to supply material to construct the Proposed Development. The use of this borrow pit would provide a volume of rock for the construction of the Proposed Development but allows for the current uncertainty of the quality of the rock at this location. For the purposes of the EIAR the borrow pit search area will be assessed (Technical Appendix 2.2: Borrow Pit Assessment).

2.3.45 Stone would be required for various purposes, primarily track and hardstanding construction. If the stone on-site is found suitable then a proportion of this could be won from foundation excavation and the remainder would be sourced from an on-site borrow pit or from off-site quarries. For the purposes of this EIAR it has been assumed that 50% of the required material would be imported to the Site from the nearest suitable quarry (located to the east of Dufftown) to allow a robust assessment to take place.

Connection to Electricity Grid

2.3.46 The electricity produced would be exported to the electricity network. The proposed point of connection to the wider electricity network is currently under assessment. The grid connection would be the responsibility of the Transmission System Operator (TSO), Scottish and Southern Electricity Networks (SSEN), and would be subject to a separate consenting process under Section 37 of the Electricity Act 1989. As such the details of the grid connection route are unknown at this stage and not included within the assessment in this EIAR.

2.4 Construction Activities

Construction Programme

2.4.1 The estimated construction period of the Proposed Development is approximately 18 months. This period is indicative only and may be subject to variation as a result of factors which include, but are not limited to, weather restrictions, ground conditions encountered through detailed investigation, turbine component and material delivery, timing of grid connection works and public highway constraints. However, this is considered to represent a realistic case for the purposes of assessment.

2.4.2 Construction by the appointed main contractor would begin following agreement of the detailed design and approval of any pre-commencement conditions with the appropriate consenting authority. Key construction activities would involve:

- public road improvement and junction creation;
- construction of main Site access track
- forestry removal;
- construction of the temporary construction compounds and laydown areas;
- construction of all access tracks;
- design and construction of temporary and permanent drainage measures;

- installation of concrete batching plant;
- construction of turbine foundations, crane hardstanding and laydown areas;
- excavation of cable trenches;
- laying of electricity and communications cables in trenches;
- construction of substation and control building;
- delivery, installation, testing and commissioning of wind turbines and permanent meteorological masts and ancillary equipment;
- installation of internal/ external turbine transformers and switchgear in enclosed kiosks; and
- Site reinstatement and restoration in accordance with peat management plan, habitat management plan and forestry planting.

2.4.3 The works are likely to follow the order as detailed above, however many activities would be undertaken concurrently to minimise the overall construction programme. Site restoration would be undertaken as soon as possible in affected areas to minimise disruption to land use.

2.4.4 Further ground investigation surveys would be undertaken prior to the main construction works beginning on-site to determine the specific quality of rock and the rock head depth underlying the locations for Site infrastructure. Initial Site investigations have informed the design of the Site access roads.

2.4.5 The appointed contractor would develop the details of the Site design and construction methods in compliance with the Applicant's contract requirements and the EIAR.

2.4.6 The access tracks would be left in place following construction to provide permanent access for maintenance, repairs and eventual decommissioning of the Proposed Development. The construction works would be undertaken by a competent and experienced contractor in accordance with the project consent and any associated conditions and also in accordance with good industry practice. Prior to commencing construction, a more detailed construction and reinstatement programme would be submitted to the consenting authority.

2.4.7 Traffic movements associated with the construction of the Proposed Development including required Heavy Goods Vehicles (HGV) and heavy/ abnormal load movements are described in EIAR: Chapter 10: Traffic, Transport and Access.

2.4.8 An indicative construction programme is illustrated in Table 2.3: Indicative 18-Month Construction Programme below.

Table 2.3: Indicative 18-Month Construction Programme

	Month																	
Task*	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
1	■	■	■	■	■	■	■	■										
2	■	■	■	■	■	■	■											
3		■	■	■	■	■	■	■	■	■								
4								■	■	■	■							
5								■	■	■	■							
6										■	■	■	■					
7											■	■	■	■	■	■		
8													■	■	■	■	■	■

*Task:

1. Site investigation/ forestry felling
2. Site establishment/ plant deliveries
3. Borrow pit working, access track construction and hardstanding areas
4 Foundations
5. Substation construction
6. Cabling
7. Erection of turbines
8. Site reinstatement and restoration

Hours of Work

2.4.9 The normal working hours would be as follows:

- Monday to Friday 0700 to 1900;
- Saturday 0700 to 1300; and
- no working on Sundays or public holidays without prior written approval from AC and MC.

2.4.10 No audible works, with the exception of turbine delivery, the completion of turbine erection or emergency work, would take place outside these hours, and any such out-of-hours works would be subject to prior agreement with AC and MC. The requirement for out-of-hours work could arise, for example, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair weather windows for the erection of turbine blades and the erection and dismantling of cranes.

Construction Traffic and Plant

2.4.11 Vehicle movements associated with construction works would include:

- cars and minibuses for transporting construction personnel to the Site;
- HGVs for pre-construction delivery of Site offices, construction equipment and materials;
- HGV abnormal load vehicles for delivery of the turbine components and base rings;
- mobile road going cranes, used for the erection of the turbines; and
- standard HGVs for transporting electric cable, steel reinforcement for foundations, construction plant fuel and other items and equipment.

2.4.12 A Traffic Management Plan would be agreed in consultation with AC and MC and Transport Scotland. This would address the scheduling, routing and overall management of abnormal load movements along with the programming and management of all other HGV movements.

Watercourse Crossing Schedule

2.4.13 As noted above, the number of watercourse crossings has been minimised through Site design. Nevertheless, there is a requirement for two crossings of watercourses and two field drain crossings as identified on 1:25k mapping (Technical Appendix 9.1).

Standard Mitigation and Working Methods during Construction

Outline Construction Environmental Management Plan (OCEMP)

2.4.14 The assessment in this EIAR has been carried out on the basis that standard mitigation measures would be implemented during the construction work, including compliance with both project-wide and Site-specific environmental management procedures, which would be included in the OCEMP. An OCEMP is provided in Technical Appendix 2.1. A detailed CEMP, based on OCEMP, would be agreed with AC and MC and relevant statutory consultees prior to construction commencing. The CEMP would, as a minimum, include details of:

- construction methodologies;
- pollution prevention measures;
- public liaison provision;
- peat slide, erosion and compaction management;
- control of contamination/ pollution prevention;
- drainage management and sustainable drainage systems (SuDS);
- water quality monitoring;
- species and habitat protection measures;
- management of construction traffic;
- control of noise and vibration; and
- control of dust and other emissions to air.

2.4.15 Technical Appendix 2.1: OCEMP provides a list of generic mitigation measures that would be included in the CEMP and implemented during the construction and decommissioning of the Proposed Development. It would be a contractual requirement that the appointed contractor complies with the CEMP.

Watercourse Crossings

2.4.16 Technical Appendix 9.2: Water Crossings Assessment contains details of the watercourse crossings required as part of the Proposed Development and the proposed crossing type together with the relevant requirements in relation to The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended.

Private Water Supplies

2.4.17 A review of Private Water Supplies (PWS) has been undertaken for the Site and a 5 km buffer around the Site boundary (Technical Appendix 9.3). The assessment identified numerous PWS with 5 km of the Site and concluded that the risk of potential impact to PWS as a result of the Proposed Development would be unlikely.

2.4.18 Mitigation to prevent pollution impacts on any downstream PWS would be set out in a Water Management Plan which would form part of the CEMP, to ensure that the Proposed

Development would not lead to significant impact to water abstraction and other hydrological receptors. The contents of the CEMP and the Water Management Plan would be agreed with Moray and Aberdeenshire Council in consultation with the Scottish Environment Protection Agency (SEPA) prior to commencement of works.

2.4.19 The PWS assessment is presented in Technical Appendix 9.3.

Peat Management

2.4.20 Technical Appendix 2.4: Draft Peat Management Plan (PMP) outlines the proposed working methods where the excavation of peat would be required and provides further details on potential volumes of peat excavated and the likely requirements for reinstatement. This provides details of the predicted volumes of peat that would be excavated for the Proposed Development, the characteristics of the peat that would be excavated, and how the excavated peat would be reused and managed. This document would be updated during the detailed design stage and agreed with SEPA prior to construction and would be included in the final version of the CEMP.

2.4.21 The detailed peat surveys across the Site have identified that approximately 35,000 m³ of peat would be excavated as part of the construction activities associated with the Proposed Development. The PMP outlines how peat would be recovered, managed and reused within the Site.

Peat Slide Risk

2.4.22 Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment (PLHRA) provides further technical information on the likely risk and hazards associated with peat instability, and the proposed standard mitigation and working methods that would be implemented during construction to seek to avoid adverse effects associated with peat instability.

2.5 Operation Management and Maintenance

Life of the Proposed Development

2.5.1 The expected operational life of the Proposed Development is 33 years from the date of commissioning. Wind turbines and wind energy projects are designed to operate largely unattended. Each turbine at the Proposed Development would be fitted with an automatic system designed to supervise and control a number of parameters to ensure proper performance (e.g. start-up, shut-down, rotor direction, blade angles etc.) and to monitor condition (e.g. generator temperature). The control system would automatically shut the turbine down should the need arise. Sometimes the turbines would re-start automatically (if the shut-down had been for high winds, or if the grid voltage had fluctuated out of range), but other shut-downs (e.g. generator over temperature) would require investigation and manual restart.

Operational Residues and Emissions

2.5.2 The EIA Regulations require that the EIAR provides an estimate, by type and quantity, of expected residues and emissions (such as water, air and soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced) resulting from the construction and operation of the Proposed Development. In most cases, the effects during decommissioning would be similar to those during construction.

2.5.3 Table 2.4: Residues and Emissions provides a summary of the anticipated residues and emissions.

Table 2.4: Residues and Emissions	
Topic	**Potential Residue/ Emission**
Water	Construction: Surface water runoff and discharge is likely during construction. In addition, occasional and low quantity discharges could arise from pumping, or over-pumping in order to dewater foundation excavations. Pollution sources could arise as a result of soil erosion or from oil/ fuel or chemical storage and use. All works in and around watercourses will follow best practice guidance and the Outline CEMP (Technical Appendix 2.1). Further details of the assessment are presented in Chapter 9: Hydrology, Hydrogeology and Geology. All discharges would be managed in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended by The Water Environment (Miscellaneous) (Scotland) Regulations 2017. The proposals for water the control and management of water quality and quantity from the Proposed Development are presented in Technical Appendix 2.1: OCEMP. Operation: Full details of the assessment are presented in Chapter 9: Hydrology, Hydrogeology and Geology.
Air	Construction: The construction phase would require the transport of people and materials by road, with associated emissions to the atmosphere. There are no air quality management areas within the vicinity of the Proposed Development. Overall, the quantity of air emissions is expected to be low relative to the general background air emissions from road traffic. No significant air emissions are anticipated. Operation: Due to the nature of the Proposed Development no significant point source or diffuse air emissions would be produced during its operation. The Proposed Development would contribute to providing renewable electricity, in turn displacing emissions associated with fossil fuel-based electricity generation elsewhere. The construction of the proposed infrastructure, and subsequent operation and decommissioning of the Proposed Development would include activities that either directly or indirectly result in CO_2 emissions. Technical Appendix 15.1: Carbon Balance Assessment calculates the greenhouse gas emissions and carbon payback times for wind farm developments in Scottish peatlands and concludes that the Proposed Development would 'pay back' the carbon emissions associated with its construction, operation and decommissioning in a 2.5-year period.
Soil and Subsoil	Construction: Soil and subsoil excavation, handling and storage would be required during construction. All soil and subsoil would be stored temporarily for use in reinstatement, such that there would be no residue (surplus) remaining following the construction work. Further details on peat management are provided in Technical Appendix 2.4: Draft Peat Management Plan. Operation: No requirement for soil or subsoil excavation or handling during the operation phase has been identified. No pollution sources have been identified for the operational phase.
Noise and Vibration	Construction: Noise sources during the construction phase would include increased traffic flows and noise from construction plant. Further details are provided in Chapter 11: Noise and Vibration. Operation: The wind turbines would generate noise during operation, and the noise levels would vary according to the wind speed. The location of residential receptors in relation to the Proposed Development was a consideration in the design development process and the predicted noise levels are within acceptable limits. Full details of the noise impact assessment are present in Chapter 11: Noise and Vibration.
Light	Construction: Technical Appendix 2.1: OCEMP notes that temporary lighting would be required at the temporary construction compounds for security purposes and to ensure that a safe working environment is provided to construction staff. In addition, temporary lighting could be required to ensure safe working conditions at infrastructure locations during construction. All temporary lighting installations would be downward facing and all lights would be switched off during daylight hours and out with working hours. Operation: It is proposed to install infrared lighting on the turbines in a pattern that would be acceptable to the Ministry of Defence (MoD) for aviation visibility purposes. The lighting proposed would not be visible to the naked eye. The substation buildings are likely to be equipped with passive infrared controlled security lighting. These would illuminate the substation compound area when activated. Any effect

Table 2.4: Residues and Emissions	
Topic	**Potential Residue/ Emission**
	would be temporary and not expected to be significant during normal operation of the Proposed Development.
Heat and Radiation	No significant sources of heat and radiation have been identified during either the construction or operation phase of the Proposed Development.
Waste	Construction: Technical Appendix 2.1: OCEMP provides details on pollution prevention control and Site waste management that would be implemented during construction. A Site Waste Management Plan would be designed to follow the principles of: Avoidance; Minimisation; Separable; Recyclable. Operation: The power generation aspect of the Proposed Development would not produce any waste emissions or pollutants. The general operation and maintenance of the Proposed Development has the potential to produce a small amount of waste. This is likely to be restricted to waste associated with the control building from employees and visiting contractors and the storage of oils and lubricants.

2.6 Decommissioning

2.6.1 At the end of the Proposed Development's operational life, a decision would be made as to whether to refurbish, remove, or replace the turbines. If refurbishment or replacement were to be chosen, relevant consent applications would be made. If a decision were to be taken to decommission the Proposed Development, this would entail the removal of all the turbine components, transformers, the substation and associated buildings. Access tracks and underground cables would be left in place and foundations removed to a depth of 0.5 m below ground level to avoid environmental effects from removal. A Decommissioning Plan would set out environmental protection measures and restoration principles which would be implemented. This plan would be agreed with AC and MC and currently these plans do not form part of this proposal. It is anticipated this would be secured by an appropriately worded planning application.

2.6.2 An assessment of the decommissioning of the Proposed Development has been undertaken where relevant within each of the technical chapters. In some instances an assessment of decommissioning has not been undertaken as part of the EIA as: i) the future baseline conditions (environmental and other developments) cannot be predicted accurately at this stage, and ii) the proposals for refurbishment/ decommissioning are not known at this stage. However, an outline decommissioning strategy is included in the OCEMP (Technical Appendix 2.1: OCEMP).

3 Design Evolution and Alternatives

3.1 Introduction

3.1.1 This chapter provides a description of the reasonable alternatives studied by the Applicant, which are relevant to the Proposed Development and its specific characteristics, in accordance with regulation 5(2)(d) and schedule 4 (paragraph 2) of the EIA regulations. The chapter provides a description of the main reasons for selecting the chosen option for the Proposed Development, taking into account the effects of the Proposed Development on the environment.

3.1.2 This chapter is supported by Technical Appendix 3.1: Selected Design Appraisal and Wirelines.

3.1.3 Chapter 4: Energy and Planning Legislation and Policy of this EIAR describes the legislative and policy background relevant to the Proposed Development. Where specific aspects of the legislative or policy context are relevant to the consideration of Site selection, alternatives and the main reasons for selecting the chosen option, they have been referenced in this chapter.

3.1.4 This chapter is structured to provide the following:

- A review of the Site selection considerations, including a review of the planning history of the Site, Site context, policy relevant to the Site selection and the Site feasibility assessment;
- An overview of the design objectives for this Site;
- A description of the reasonable alternatives studied (noting that this is limited to those which are considered relevant to the Proposed Development); and
- A description of the main reasons for selecting the final Proposed Development.

3.2 Site Selection Considerations

3.2.1 Statkraft UK Ltd. has a publicly stated objective to deploy 600 megawatts (MW) of onshore wind power generation in the UK by 2025 and a further 600 MW in the pipeline beyond 2025. As part of delivering on this objective, Statkraft is actively pursuing potential wind farm developments throughout Scotland. This section provides a description of the factors that led to the selection of the Site as a suitable location for wind farm development.

Planning History

3.2.2 The majority of the Site has not previously been developed and as such there are limited planning history records of the Site. The Site boundary contains five long-standing residential properties, and as such the planning records for these are not available online.

Current Land Use and Site Context

3.2.3 The Site is located in an area primarily consisting of semi-mature coniferous commercial woodland plantation, with some underlying marshy grassland and wet heath. Open areas of blanket bog and dry modified bog are located in the south western portion of the Site and around the slopes of Craig Watch. A mosaic of wet and dry heath, acid, improved and marshy grassland is located along the south western and south eastern corners of the Site.

NatureScot's (previously referred to as Scottish Natural Heritage (SNH[1])) revised National Programme of Landscape Character Assessment (2019)[2] identifies the Site as being primarily within the following Landscape Character Types (LCT):

- 32 Farmed and Wooded River Valleys;
- 292 Open Upland; and
- 294 Upland Valleys – Moray and Nairn.

3.2.4 The Ben Rinnes Special Landscape Area (SLA) is adjacent to the western Site boundary, however the nearest turbine to this designation is located approximately 4 km to the east. Cairngorms National Park is located approximately 13 km south west of the Site.

3.2.5 There are five statutory designated Sites for nature conservation within 10 km of the Site:

- River Spey Special Area of Conservation (SAC), located 50 m north west;
- Craigs of Succoth Site of Special Scientific Interest (SSSI), located 2.4 km east;
- Hill of Towanreef SAC, located 5.7 km south east;
- Hill of Towanreef SSSI, located 5.7 km south east; and
- Den of Pitlurg SSSI, located 8.8 km north east.

3.2.6 Within 1 km of the Site boundary, there are two notable cultural heritage assets: Scheduled hillfort on Craig Dorney north east of the Site; and the Category C listed Blackwater Bridge to the south of the Site. Three Scheduled Monuments (Craig Dorney Hill Fort, Auchindoun Castle and fort and Battle Stone, Mortlach) lie within 5 km of the Site, while a further 11 Scheduled Monuments lie within 5 km to 10 km of the Site.

3.2.7 The A941 runs along the Site's south western boundary. There is also a minor road stretching along and across the Site's eastern and south eastern boundary, in the River Deveron valley.

3.2.8 There are some residential properties within the Site's boundary to the south west and south east of the proposed turbine locations. Individual properties are located along the A941 as well as the minor road located to the south west and south east of the Site.

3.2.9 Operational wind farms are an existing feature of the surrounding landscape. Clashindarroch wind farm is located approximately 3 km to the south east, Dorenell is located approximately 3.5 km to the south west, and Hill of Towie, Edintore, and Ardoch Farm are located beyond 10 km directly to the north. Additionally, Garbet located adjacent to the north of the Site and Clashindarroch II located approximately 4 km east of the Site are both in planning; and Glenfiddich located west of the Site and Clashindarroch extension located south east of the Site are both at scoping.

Relevant Planning Policy

3.2.10 As described in Chapter 4: Energy and Planning Policy, Scottish Planning Policy, 2020[3] (SPP) provides development planning guidance for onshore wind. It specifically includes reference to the need for planning authorities to set out in their development plans a Spatial Framework identifying those areas that are likely to be most appropriate for onshore wind farms.

[1] Please note that SNH has recently changed its name to NatureScot and that documents written under the name of SNH will be referenced with the organisation's name at the time of publishing

[2] Based on SNH Landscape Character Assessment 2019, available at https://data.gov.uk/dataset/cce069c5-8a2b-4932-9fae-4f9023cd9d5b/snh-landscape-character-assessment-2019.

[3] The Scottish Government (2020) Scottish Planning Policy, The Scottish Government, Edinburgh, December 2020.

3.2.11 The spatial framework for Moray is set out in Map 2 of the Local Development Plan (LDP) and it shows the Site is within an area defined as having potential for wind farm development. Similarly, the spatial framework for Aberdeenshire relating to wind turbines is set out in the Strategic Landscape Capacity Assessment for wind turbines[4].

3.2.12 The Proposed Development is located within an area categorised as suitable for large typology wind turbines[5] within the Moray Wind Energy Landscape Capacity Study.

3.2.13 This EIAR does not make any judgements regarding the 'acceptability' of the Proposed Development. A separate Planning Statement is provided which presents an appraisal of the Proposed Development with reference to the energy and planning policy framework and other relevant material planning considerations.

Site Feasibility

3.2.14 An assessment by the Applicant considered the feasibility of developing a large wind farm, consisting of up to 18 turbines on the Site. The Site was considered by the Applicant to be suitable for wind farm development for the following reasons:

- The Site is situated amidst a cluster of wind farm developments, including Clashindarroch wind farm to the south east of the Site and Dorenell wind farm to the south west of the Site and as such there is the precedent for this type of development already in the area.
- The Site does not have the potential for significant direct effects on geographic areas protected under national or international statutory designations for nature conservation for the following:
  - SAC;
  - SSSI;
  - Ramsar sites;
  - National parks;
  - National Nature Reserves (NNR); and
  - National Scenic Areas (NSA).
- The Site is not located in an area subject to landscape designation. The Site abuts a small part of the Ben Rinnes SLA, however the nearest turbine to this designation is located approximately 4 km to the east. There are no other landscape designations within 10 km of the Site.
- The Site has suitable access for both construction traffic and abnormal indivisible loads.
- The Site has high anticipated wind speeds based on desktop analysis.

3.2.15 The Site would make a significant contribution to meeting national energy policy and climate emergency policy related goals of achieving net-zero emissions by 2045.

3.3 Design Process

3.3.1 The Applicant appointed a team of specialist consultants to work alongside Statkraft UK Ltd in designing and developing a wind farm proposal. Consistent with renewable energy policy, as outlined in Chapter 4: Energy and Planning Legislation and Policy, the key overall objective is to maximise the energy generation potential of the Site, whilst having regard to the protection

[4] Aberdeenshire Council, 2014.. Strategic Landscape Capacity Assessment for wind turbines. Online. Available at: Microsoft Word - Aberdeen Cumulative Report Final March 2014 (aberdeenshire.gov.uk).

[5] The large typology includes turbines measuring between 130 m and 150 m in height (to tip).

of sensitive environmental receptors. A design process was agreed with the team that included the following parameters:

Relevant design guidance will be derived from:

- Good practice publications and industry standards (e.g. SNH (2017) Siting and Design of Wind Farms in the Landscape (Version 3a)[6]);
- Planning policy documents (e.g. Moray Local Development Plan and Aberdeenshire Local Development Plan); and
- Consultation responses received through the pre-application consultation, EIA scoping and the Gatecheck process.

3.3.2 A design brief was agreed with the Applicant to set out key parameters for the Proposed Development. The design brief subsequently set the scope for constraint mapping. The brief included:

- a preliminary scoping turbine layout provided by Statkraft UK Ltd;
- details of land available (illustrated by the application Site boundary); and
- requirements for Site construction compounds, substation, laydown areas, access track geometry and crane hardstanding geometry.

3.3.3 The Applicant would be responsible for defining minimum acceptable turbine spacing and acceptable slope/ gradient for tracks. Design guidance from the Applicant confirmed the following requirements for Site infrastructure:

- road running width to be between 4.5 m and 7 m depending on gradient and bends;
- road to have vertical grade no higher than 15%;
- the road has to be straight for 40 m before and after a bridge or culvert; and
- turning areas to be provided allowing loaded or unloaded blade transports (as required).

3.3.4 Following agreement of the design brief, the team was instructed to undertake all necessary desktop studies and field work to identify key environmental receptors and constraints (including cumulative constraints) of relevance to the design and assessment of the Proposed Development.

3.3.5 Further analysis was completed to categorise design constraints as either 'hard constraints' or 'soft constraints'. Hard constraints were defined as those features with formal protection as defined in legislation or adopted planning/ industry guidance, whereas soft constraints were characterised as having potential to constrain the development but, subject to careful design consideration and/ or mitigation measures, the Proposed Development could be accommodated.

3.3.6 The Proposed Development layouts considered throughout the design evolution process are presented in Figure 3.1a: Design Evolution – Layouts Scoping to C and Figure 3.1b Design Evolution – Layouts D to F. A summary of the constraints analysis is illustrated in a 'heat map' (see Figure 3.2: Heat Map and Figure 3.3: Phase 2 Peat Probing Depth that has the following typology:

- red: Hard Constraints; and
- amber: Soft Constraints.

[6] Scottish National Heritage, 2017. Siting and Designing Wind Farms in the Landscape (Version 3a). Online. Available at: Appendix 1 (nature.scot)

3.4 Environmental Issues and Design Constraints

3.4.1 Following a baseline characterisation of the Site, the key environmental issues for consideration in the design process were identified. A summary of the key design considerations is provided in Table 3.1.

3.4.2 Issues were considered through design with the aim of 'designing out' significant effects. Where it is not possible to mitigate by design, the issues have been considered further as part of the EIAR.

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
Landscape and Visual: LDP and Capacity Study	The Proposed Development turbines are located within landscape character type (LCT) 12b – Open Uplands with settled Glens.	LCT 12b is considered to be of high sensitivity to very large typology (>130 m). There may be some very limited opportunities for larger typologies (turbines >50 m) to be accommodated in this landscape character type. These are more likely to comprise very small extensions to some existing wind farm developments or single/ small groups of turbines rather than new wind farms due principally to the cumulative effects that would occur with the Dorenell and Clashindarroch wind farms. The setting of surrounding smaller scale and more settled landscapes (including the scenic Deveron valley and the setting of Auchindoun Castle) is an additional constraint and any further turbines should be sited so as not to significantly intrude on immediate skylines above these areas. Single/ small groups of turbines would be likely to be more acceptable if their height was towards the lower height band of the large typology (80 m to130 m) or within the medium typology (50 m to 80 m) range in order to minimise effects on more sensitive valleys. Turbines should also be set well away from the landmark hill of The Buck and not be located on prominent hill tops close to the A941. Potential search areas for development are indicated on the map at the front of this assessment. There is some limited opportunity to site smaller typologies (turbines <50 m) on lower hill slopes at the transition between the upland ridges and the farmed land, along gentle slopes. There are likely to be greater opportunities to accommodate the small typology (20 m to 35 m) as they could be sited closer to the farmed lowlands of the glens and Cabrach basin but also because they would limit cumulative effects with nearby operational and consented wind farms in the upland areas.
Landscape and Visual: Landscape Fabric	The Site is located on gently undulating hills within an area typified by forestry and areas of open moorland. Surrounding the hills are low lying glen landscapes characterised by more intensive farming activity. Wind farms are an existing element within the landscape surrounding the Site. The Proposed Development is situated amidst a cluster of wind farm developments, including Clashindarroch Wind Farm south east of the Site and Dorenell Wind Farm to the south west of the Site. The emergent pattern of development (existing and consented wind farms) would be examined in the baseline appraisal of the Landscape and Visual Impact Assessment (LVIA), along with other proposed developments (i.e., developments subject to a formal planning	Key design guidance at the Site relating to minimising effects on landscape fabric includes: • Using the simple landform, expansive scale and uniform land cover of coniferous forestry within the Site and more widely within the area to help accommodate larger typologies of turbines and, ancillary elements without significant effects on characteristic landforms and landcover at the Site. • Preferential use of existing forest as a partial basis for Site infrastructure for the Proposed Development, thereby reducing the extent of disturbance and loss of characteristic topography and landcover at the Site.

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
	application, appeal or further planning procedure) within the cumulative assessment.	• Use of a smaller number of larger turbines, in part, to reduce the footprint and land take of the Proposed Development whilst achieving the commercial and energy outputs anticipated/ required.
Landscape and Visual: Character and Designations	From the production of initial Zone of Theoretical Visibility (ZTV), the following designations/ landscape classifications would be assessed within the LVIA: • National Parks: Cairngorms National Park, 13 km south west. • National Scenic Areas: Cairngorm Mountains, 32.7 km south west. • Special Landscape Areas, Moray: – Ben Rinnes, adjacent to western Site boundary, the nearest turbine to this designation is located approximately 4 km to the east; – Spey valley; 11.6 km north west; – Pluscarden Valley, 30.5 km north west; – Findhorn Valley and the Wooded Estates, 38 km north west; and – Deveron Valley, 16 km north east. • Special Landscape Areas, Aberdeenshire Council: – Deveron Valley, 3.7 km north east; – Benachie, 18 km south east; and – Upper Don Valley, 18 km south east. • Special Landscape Areas, Highland Council: Drynachan, Lochindorb and Dava Moors, 25.7 km west. • Wild Land Areas: – Cairngorms, 30 km south; and – Lochnager – Mount Keen, 39 km south. • Landscape Character Types (LCT) within the Site: – 32 Farmed and Wooded River Valleys; – 292 Open Upland; and – 294 Upland Valleys – Moray and Nairn.	The critical design issue in relation to landscape character would be its position within a landscape characterised by wind farm development, and the emergent pattern of development that provides opportunities for the development to be located as 'infill' development and to avoid the geographical expansion of effects associated with existing and consented developments. The potential for the Proposed Development to increase the level of cumulative effects on landscape character would be considered, focussed on the three character types on the Site. Consideration would be given to the potential for cumulative effects and would be assessed within the EIAR.

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
Landscape and Visual: Visual Amenity	The LVIA would consider the visual impacts on settlements. Significant impacts to visual amenity are unlikely to occur beyond 20 km, therefore settlement beyond this has been scoped out. Dufftown is the only key settlement within theoretical visibility of the Proposed Development. There are several key transport routes within the study area that would be subject to potential views of the Proposed Development including the A941, the A920, the A96, the A95 and a small number of local roads in the vicinity of the Site. In addition to roads, the rail links within the study area would also be considered. Any paths within 10 km of the proposed turbines, which have theoretical visibility of the Proposed Development, would be included within the LVIA, of which there are a number of core paths. A detailed survey of residential properties would be undertaken for dwellings within 2 km of the Proposed Development.	The key issues in respect of visual amenity will relate to: • impacts on residential visual amenity of properties within 3 km of the Proposed Development's turbines; • effects on the amenity and character of key routes such as the A941; and • effects on the amenity of recreational routes, including the Speyside Way, the Dava Way and the Moray Coast Trail, cycleways and core paths; as well as key summits used by hill walkers. The landscape preferred development area ensures sufficient separation distance from the closest properties of at least 1 km.
Cultural Heritage and Archaeology: Non-designated heritage assets on-site	There are over 80 designated and non-designated heritage assets within the Site and up to 1 km from the Site including a number of prehistoric and post-medieval settlement and boundary features, as recorded from the Aberdeenshire and Moray Historic Environment Record, map regressions, ariel photographs and walkover surveys. These have the potential to be subject to direct physical impacts as a result of the Proposed Development. Impacts would relate to the removal (partial or whole) of these heritage assets through ground breaking works and construction activities on-site.	Turbines and Site infrastructure should be sited to avoid impacts upon known remains. Where infrastructure will be located in close proximity to known assets but will not directly impact upon it mitigation measures such as the fencing of assets to prevent inadvertent damage by plant movement during the construction phase may be required. Where assets cannot be avoided this is likely to require mitigation through preservation by record undertaken through archaeological watching brief or trial trench evaluation.
Cultural Heritage and Archaeology: Designated heritage assets and non-designated heritage assets of national importance beyond the Site boundary	The key consideration centres around impacts upon the scheduled Craig Dorney Fort (SM13746) located approximately 1 km north, north east, Auchindoun Castle (SM 90024) located approximately 2.3 km to the north and the scheduled Battle Stone, Mortlach (SM 350), located approximately 4 km to the north, north west of the Site boundary. The Scheduled hillfort, Tap o'Noth (List No. SM63), which represents an asset type that tends to be of high sensitivity to changes to their setting, is located approximately 8.8 km to the south east of the Site. Most of the Scheduled Monuments within 10 km of the Site relate to remains of cup marked boulders, hut circles, cairns, henges, townships and field systems dating from the prehistoric to the post-medieval periods. However, two Scheduled castles, Balvenie Castle (SM 90028) and Cauddwell Castle (SM 2505) are also located within the Study Area.	Where possible turbines should be sited to minimise impacts upon the setting of designated heritage assets and non-designated heritage assets of national importance, both creating separation through turbine siting for views from the assets.

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm		
Topic	**Analysis**	**Design Guidance**
	There are three Listed Buildings within 5 km of the Site boundary: • Blackwater Bridge (Category C) (LB 2252) (578 m SW); • Beldorney Castle (Category A) (LB 9164) (2 km E-NE); and • Mortlack Parish Church (Category A) (LB 15864) (3.9 km NW).	
Ecology	The Site is dominated by semi-mature coniferous plantation woodland, which is considered to be of negligible nature conservation value. Key considerations include: • The River Spey SAC and the fish within the river – afforded protection in legislation under Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); • Bats – A European protected species – Bats identified on-site include the common pipistrelle; soprano pipistrelle; brown long-eared bat; Myotis spp; and Nyctalus spp - afforded protection in legislation under Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Using the criteria set out in Table 3a of NatureScot guidance (2019)[7], the project area is considered to most closely fit the description of a 'low/ moderate' site risk for bats; • Localised areas of priority habitats present (specified in UK Biodiversity Action Plan, Annex I of the Habitats Directive, or the Scottish Biodiversity List, including European dry heath H10 H12 H18; Alpine heath H13; Active raised bogs and blanket bog M17 M19 M20; North Atlantic wet heaths with Erica tetralix M15; Valley mire M23; Mesotrophic grassland MG6 MG9; Swamp S4; Tall-herb OV25 U16; and Acid grassland U4 U5 U6. • Other constraints from protected species include water voles, red squirrel, otter and badger (although badger are unlikely to be present).	A 100 m buffer between works and infrastructure and the River Spey SAC tributaries should be incorporated into the design to avoid impacts on the SAC and the fish within the river. Crossings over the SAC should be minimised or avoided where possible. A 50 m buffer from blade tip to woodland edge should be incorporated into the design to avoid impacts on bats – this equates to a 96 m buffer around each turbine (for 200 m tip) to woodland edge and a 68 m buffer from watercourses. Buffers on watercourses for bats and for pollution prevention (a minimum of 50 m) would avoid any significant effects for other protected species, including otter, water vole and fish. Infrastructure, turbines, and works should avoid Annex 1 habitats and potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs) (where possible) in order to minimise impacts.
Ornithology	The key consideration in relation to ornithology is the Tips of Corsemaul and Tom Mor Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) which is located approximately 1.28 km north of the Site and supports Breeding Common Gull.	The design should incorporate the following buffers from turbines: • A 1 km buffer from turbines and a 500 m buffer from infrastructure to common gull habitat (Kelman Hill) to protect breeding common gull.

[7] NatureScot (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation, URL: https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation [accessed 27/3/2020]

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
	Kelman Hill, located within the south east of the Site has been identified as a common gull flight corridor. Several black grouse leks have been identified within and surrounding the Site. A hen harrier nest site was located within 1 km of the Proposed Development.	• A 500 m buffer surrounding the SPA and SSSI from works during the breeding season. • A 500 m buffer either side of flight corridor down the east side of the Site to Kelman Hill (and an offset of turbines from Kelman Hill given the high gull activity identified). • A 500 m buffer around lek sites from works and turbines. • A 500 m buffer around hen harrier nests (to be identified during a pre-construction survey). Appropriate buffers to be applied surrounding active breeding wader nests, which would be identified during pre-construction surveys.
Hydrology and Hydrogeology	In respect of hydrology and hydrogeology, the following has been identified on-site: • The potential for three high and moderate Groundwater Dependent Terrestrial Ecosystems (GWDTE) areas within the Priest's Well area in the eastern part of the Site; • Seven Moray Council Private Water Supply (PWS) sources on; and • Seven Moray Council PWS users. The following hydrology and hydrogeology assets are present within 1 km of the Site: • Aberdeenshire Council PWS; • Aberdeenshire Council PWS users; • Moray Council PWS; and • Moray Council PWS users.	The design should avoid placing turbines, and crane hardstanding within 50 m of natural watercourses. The design should aim to minimise the number of direct interactions with the water environment by designing out watercourse crossings where possible and minimising interactions with the SAC in particular. In line with SEPA consultation, the hardstanding area of T7 has been located to avoid areas of deep peat and is situated within the 50 m watercourse buffer of two small tributaries of the Linn Burn. A minimum buffer of approximately 14 m is maintained to the north of the hardstand and a small stream/ forest drain and a minimum buffer of 24 m is maintained to the stream south of the hardstand location. It is noted that turbines located within 50 m of identified artificial drainage channels may require additional runoff mitigation and pollution control measures in recognition of the potential pathway-receptor connectivity. Detailed risk assessment would be required for any PWS abstractions identified within 250 m of the proposed infrastructure (as would be classified under SEPA LUPG31[8]). SEPA guidance is that 250 m/ 100 m buffers are needed for high and moderate GWDTEs respectively. Potential high GWDTEs should be considered, however where the habitats are clearly linked to either rain-fed systems or surface watercourses/ features, they should not be treated as a design constraint.

[8] Scottish Environment Protection Agency (SEPA), 2017. Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Online. Available at: lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf (sepa.org.uk) [accessed 28/01/2021]

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
Peat	A review of the SNH Carbon Rich Soil, Deep Peat and Peatlands Habitat Map (2016) and peat probing confirms that areas of peat and organic material are present across the Site. Most of the Site contains peat depths between 0 m and 0.5 m (0 m to 0.1 m = no peat). Pockets of peat between 0.5 m and 1.0 m have been identified with one area of peatland habitat located to the west of the Site contains peat at depths greater than 1 m with areas of peat instability. A large proportion of the Site is covered with coniferous plantation woodland, some of which is over what would have been 'priority peatland habitat' prior to afforestation; however due to ploughing for forestry and extensive artificial drainage the peat present is likely to be highly modified.	One significant area of priority peatland habitat has been identified. This area should be avoided. The design should avoid siting turbines and infrastructure in areas of peat, particularly deep peat (>1 m depth); however, it is noted that peat under forestry is likely to be highly modified. Highly modified peat is considered to be of lower ecological value in its present state (relative to unmodified peat forming habitat), but opportunities may exist to limit forest replanting on areas of deeper peat where there is the opportunity to seek to restore peat forming habitat.
Forestry	The north east section of the Site contains approximately 250 ha of upland productive conifer plantations. The north west of the Site contains the Ben Main woodland. Within Ben Main, 1.43 ha of forestry is classified under the Ancient Woodland Inventory (Scotland)[9] as pole-stage native pinewood.	The design should seek to minimise woodland loss, ensure any "stand-off" distance is justified and minimised (e.g. for ecology (bat) mitigation). Compensatory planting would be required for permanent loss of all infrastructure including tracks (where not required as a forest road). The design should consider possible opportunity for "forest to bog restoration".
Traffic and Transport	The main transport impacts would be associated with the movement of general HGV traffic travelling to and from the Site during the construction phase of the Proposed Development. Each turbine is likely to require between 11 and 13 abnormal loads to deliver the components to Site. The components would be delivered on extendable trailers which would then be retracted to the size of a standard HGV for the return journey.	In terms of Site design, it is proposed that access is taken from the A941 at Rhinturk to the south west of the Site.
Noise	The Site is located within a rural location where background noise levels are relatively low. The predominant noise sources in the area are wind induced noise (wind passing through vegetation and around buildings), local watercourses, agricultural noise and birdsong. At some receptors the soundscape is affected by local road traffic noise. There are a number of scattered residential properties around the Site.	IOA GPG guidance state 'If the proposed wind farm produces noise levels within 10 dB of any existing wind farm/s at the same receptor location, then a cumulative noise impact assessment is necessary'. Due to the proximity of neighbouring schemes a cumulative assessment would be undertaken. The key design criteria for the Site should ensure that the 'Total ETSU-R-97 Noise Limits' are not exceeded by the cumulative operation of all turbines in the area. To enable wind farm noise for individual developments to be controlled 'Site Specific Noise Limits' must be set

[9] https://data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm

Topic	Analysis	Design Guidance
	ETSU-R-97[10] and the Institute of Acoustics (IOA) Good Practice Guidance[11] (GPG) make it clear that background noise levels should be established in the absence of noise from wind turbines.	which take account of the proportion of the Total ETSU-R-97 Noise Limit which has been given to, or could realistically be used by other schemes.
Aviation	The Site is located in uncontrolled airspace from ground level to Flight Level 195 (approximately 19,500 feet above sea level). Above that level is the Class C controlled airspace of the Scottish Upper Airspace Control Area, within which air traffic services are provided by the NATS En Route (NERL) Prestwick Centre. Radars used to provide these services in the vicinity of the Site include those at Perwinnes Hill, 57 km east, south east of the Site, and Allanshill, 56 km north east of the Site. These radars are also used to provide air traffic services to aircraft inbound to and outbound from Aberdeen Airport. RAF Lossiemouth is located 38 km north west of the Site. It operates a primary surveillance radar located on the airfield. RAF Lossiemouth provides a Lower Airspace Radar Service to aircraft operating below controlled airspace in the vicinity of the Site. The Remote Radar Head (RRH) at Buchan, 71 km east of the Site, is an air defence primary surveillance radar. A primary surveillance radar is operated at Inverness Airport, 62 km north west of the Site. There are no airports, airfields or landing sites within 25 km of the Site, and no secondary surveillance radars or aeronautical radio navigation aids within 20 km of the Site. The Site is located within Low Flying Area (LFA) 14, where military aircraft are permitted to fly as low as 250 feet above ground level. The Site is wholly located within a part of LFA 14, which has been designated by the MoD as a "low priority military low flying area less likely to raise concerns".	The radar effects on RAF Lossiemouth and RRH Buchan would be mitigated against, the strategy for which would be discussed in the EIAR and should be agreed with Lossiemouth and Buchan airports. Since the proposed turbines are >150 m in height to blade tips, they would trigger a requirement for visible spectrum obstruction lighting. The EIAR will explore the potential for a reduced lighting scheme for submission to the Civil Aviation Authority (CAA) for approval. Radar-activated lighting systems would also be evaluated.
Telecommunications	The Ofcom Spectrum Information Portal identifies two fixed telecommunications links within 3 km of the Site. These are Airwave microwave links running from Ardwell, south of the Site, to Succoth, then north to Glass.	The two Airwave microwave links to the south and east of the Site would be at least 1.5 km from all turbines in the Proposed Development. Since this eliminates the possibility of potential significant effects, no further assessment of those assets will be conducted.

[10] URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/49869/ETSU_Full_copy__Searchable_.pdf [accessed 03/11/2020]

[11] URL: https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf [accessed 03/11/2020]

Table 3.1: Preliminary Site and Design Guidance for Craig Watch Wind Farm		
Topic	**Analysis**	**Design Guidance**
	Atkins and the JRC have confirmed that there are no water or energy industry scanning telemetry links in the vicinity of the Site. Terrestrial television signals in the area are provided from three transmitters: Knockmore (16 km north west of the Site); Durris (59 km south, south east of the Site); and Gartly Moor (15 km east of the Site).	There are no scanning telemetry systems in the vicinity with the potential to be affected. The potential for significant effects on television reception quality is minimal and therefore no mitigation is proposed.

3.5 Design Evolution and Alternative Layouts

3.5.1 Figures 3.1a and b summarises the Proposed Development design evolution from scoping stage to the design freeze layout. During the design evolution process numerous design iterations and revisions were produced. The following paragraphs explain the changes made through the seven main design iterations.

3.5.2 Appendix 3.1 presents a selected set of wirelines from three of the Landscape and Visual Impact Assessment (LVIA)/ Cultural Heritage viewpoints which illustrate the layout evolution of the Proposed Development turbines. The viewpoints selected are:

- LVIA Viewpoint 1: Minor Road, Deveron Valley;
- LVIA Viewpoint 6: Ben Rinnes; and
- Cultural Heritage Viewpoint CH1: Auchindoun Castle.

3.5.3 These viewpoints were selected as they provide views from sensitive receptors in relative proximity to the Site and are located at varying elevations (i.e., from summits and within glens).

Turbine Numbering

3.5.4 Throughout the design evolution process, the removal of turbines resulted in the need to renumber turbines. For the purposes of consistency Scoping Layout and Layout A-E used the same turbine numbering (the 'original turbine numbering'). Turbines were renumbered in the Layout F, the final layout ('amended turbine numbering). A summary of turbine numbering is shown in Table 3.2.

Table 3.2: Summary of Turbine Numbering

Original Turbine Numbering	Amended Turbine Numbering
1	Removed
2	Removed
3	1
4	2
5	Removed
6	3
7	4
8	5
9	6
10	7
11	8
12	Removed
13	9
14	10
15	Removed
16	11
17	Removed
18	Removed

Scoping Layout (18 Turbines)

3.5.5 The scoping layout represented the original turbine layout proposed by the Applicant based on an initial desk-based constraints review and with consideration of findings of the ornithology and ecology surveys.

3.5.6 At this stage in the Site's design, it was considered that the Site could theoretically accommodate up to 18 turbines up to a 200 m maximum tip height. The Scoping Layout formed the basis for which initial environmental considerations would be reviewed against.

Layout A: Wind Optimised Layout (16 Turbines)

3.5.7 Layout A represents the wind optimised layout produced by the Applicant within known constraints at the time, using available wind data for the Site. This involved a review of a number of design layouts, for a variety of turbine models and at different tip heights, to identify turbine locations which would provide optimised energy yield.

3.5.8 Layout A took consideration of the initial environmental constraints which were then categorised as red (development only in exceptional circumstances), amber (constraints to be avoided or which would require mitigation) and green (negligible or no constraints) and were presented on 'heat mapping'. The constraints considered included nationally designated sites, water buffers, areas of peat, radar visibility for aviation, proximity of residential properties and local topography. An initial area recommended by the landscape architects as having potential for turbine development (the 'landscape and visual developable area') was also taken into consideration.

3.5.9 In order to reduce the potential landscape and visual effects and indirect cultural heritage (setting) effects of the Proposed Development, turbines 3 and 14 were removed from the Scoping Layout and therefore Layout A consisted of 16 turbines up to a 200 m maximum tip height. Following the removal of turbines 3 and 14 from the Scoping Layout, the turbines in Layout A were re-numbered from 1 to 16.

Layout B: Landscape and Visual Analysis Layout (11 Turbines)

3.5.10 Layout B was developed prior to design workshop 1 and represents a revised layout based on a further landscape and visual analysis. Wirelines and visualisations were produced for key viewpoints, summarised below, resulting in significant layout alterations.

3.5.11 The following considerations fed into the turbine design evolution:

Key landscape views, designations, and classifications:

- Cairngorms National Park;
- Cairngorm Mountains NSA;
- Cairngorm Wild Land Area (WLA); and
- Glen Deveron.

Key cultural heritage (setting) views:

- Craig Dorney Fort;
- Auchindoun Castle; and
- Tap o'Noth Fort.

Direct effects upon known heritage assets:

- Known assets including a number of prehistoric and post-medieval settlement and boundary features, which have been recorded from the Aberdeenshire and Moray Historic

Environment Records (HER) map regression, aerial photographs, and walkover survey; and

- Given the known assets on-site, the potential for hitherto unrecorded buried archaeological remains.

Key views from transportation routes:

- A941; and
- A920.

Key views from residential receptors and settlements which includes settlements and scattered dwellings within 3 km of the Proposed Development.

3.5.12 As a result of a review of the constraints outlined above, the following five turbines were removed:

Turbine 1 (T1)

3.5.13 T1 was removed to reduce impacts on the A941 corridor, A920, and residential properties and amenity areas within 3 km. T1 could been seen prominently from the A920 by Dufftown and Hill of Talnmouth. Due to its removal, the visual impact was significantly reduced. Whilst turbines can still be seen from A920 by Hill of Talnmouth, the removal of T1 would result in less turbine stacking and clustering and therefore provides a clear visual improvement. Additionally, views from the southern section of the A941 travelling north towards Dufftown were improved. The remaining turbine towers were then screened by Kelman Hill.

3.5.14 The removal of T1 also reduced the width of the view from Glen Deveron reducing the prominence, clustering, and stacking of turbines whilst increasing the appearance of turbine spacing. The result was an improvement in the perceived proximity of the scheme. The view from Auchindoun Castle was also significantly improved.

Turbine 2 (T2)

3.5.15 T2 was removed to improve views from A920 by Hill of Talnmouth. The removal of T2 resulted in less stacking and clustering of turbines from that view. Whilst turbines are still visible from the A920 by Hill of Talnmouth, the removal of T2 provided a clear improvement.

3.5.16 The width of turbine views from Glen Deveron was also reduced and as a result, the visual impact was improved due to the reduction in prominence, clustering, stacking and increasing perceived turbine spacing.

3.5.17 Additionally, views from the southern section of the A941 travelling north towards Dufftown were improved. The remaining turbine towers were then screened by Kelman Hill.

Turbine 5 (T5)

3.5.18 Views from Tomnaven, Glen Deveron and Auchindoun Castle were improved by the removal of T5 due to the reduction in prominence, clustering, stacking and increasing perceived turbine spacing.

3.5.19 In addition, T5 was situated within an area of deep peat (peat >2 m) and was therefore removed to prevent disruption to the peat.

Turbine 12 (T12)

3.5.20 The removal of T12 improved clustering and stacking of turbines at views from A920 by Hill of Talnmouth.

3.5.21 T12 could be viewed from the base to tip from Glen Deveron. Therefore, removing T12 increased the distance from and reduced the prominence of the Proposed Development within the Glen Deveron valley, such that the turbines are observed as being located on top of the hill, rather than within the valley itself.

Turbine 15 (T15)

3.5.22 The removal of T15 improved clustering and stacking of turbines at views from A920 by Hill of Talnmouth and at Glen Markie it resulted in a reduction of prominence and penetration of the view between turbines.

3.5.23 T15 could be seen from base to tip from Glen Deveron. Therefore, the removal of T15 created greater perceived turbine separation, reducing prominence, clustering and stacking. Additionally, the removal of T15 represented improvement in views from Craig Dorney.

3.5.24 Layout B reduced the number of turbines from 16 to 11, with a 200 m tip height still remaining.

Layout C: Post Design Workshop 1 Layout (11 Turbines)

3.5.25 Layout B was amended following design workshop 1 in response to environmental constraints presented by technical specialists, the resulting configuration formed Layout C. Layout C considered the following environmental constraints and mitigation by design:

- Ecology: Bat feeding corridors; potential bat roosts; annex 1 Habitats; GWDTE; water vole buffers; the River Spey SAC, and watercourse buffers.
- Ornithology: Tips of Corsemaul and Tom Mor SPA and SSSI for breeding common gull; designated sites; common gull flight corridor and high activity area (Kelman Hill); black grouse lek sites, hen harrier nests, and breeding waders.
- Forestry: Woodland removal and associated compensatory planting and ancient woodland inventory.
- Hydrology, Hydrogeology and Geology: Surface water resources; PWS and GWDTE.
- Peat: Class 1 and 2 areas of peat; phase 1 peat probing data (peat depth); peat restoration areas; and peat instability features.
- Noise: Site-specific noise limits.
- Aviation: RAF Lossiemouth radar visibility and RAF Buchan radar visibility.

3.5.26 As such, turbines were microsited up to 50 m of their positions in Layout B.

Layout D: Design Chill Layout (11 Turbines)

3.5.27 Layout D represents an updated layout to account for engineering micrositing of turbines. All movements are within 50 m of the of the locations in Layout C. The following considerations and subsequent amendments were made by the civil engineering team which resulted in the infrastructure arrangement in Layout D:

- Locations within the Site for construction compounds, substation and energy storage locations were identified as an alternative to the forested area which was initially considered;
- The addition of two energy storage options was included;
- Consideration was given to five potential access options. The preferred option taken forward resulted in the least environmental impact by utilising existing tracks as much as possible; and

- The Site entrance along the A941 was updated to allow a bell curve layout to accommodate for turbine deliveries.

Layout E: Gatecheck Layout (11 Turbines)

3.5.28 Layout E amended Layout D following design workshop 2, in which relevant technical specialists presented environmental constraints, and following a consultation response from SEPA. Layout E considered the results of the phase 2 peat probing as well as a number of infrastructure considerations. As a result, infrastructure was adjusted as follows:

- T9 was moved slightly south east further out of forested areas;
- T10 was moved south east and rotated to avoid as much deeper peat as possible following consultation responses from SEPA, whilst also minimising encroachment into the watercourse buffer. The access track was also shortened;
- T11 and T13 were raised slightly from ground level to reduce the volume of cut and fill required and hence to reduce the volume of material to be excavated;
- T13 was also rotated to avoid the need for an extensive bridge over watercourse for the access track;
- The borrow pit search area was identified in liaison with environmental specialists;
- T13 and T16 were moved slightly east to increase turbine separation distances;
- Refinement of the separation distance between turbines; and
- The substation compound was extended along the proposed new road, allowing more opportunities for power management infrastructure.

Layout F: Design Freeze Layout (11 Turbines)

3.5.29 Layout F represents the finalised design freeze layout of the Proposed Development. Principally, for purposes of the assessment turbines are renumbered from 1 to 11.

3.5.30 The infrastructure was adjusted as follows:

- T8 and T9 hardstands and adjoining roads re-aligned to better align with the local topography, thereby reducing the amount of cut and fill required and volume of material to be excavated;
- Turning head revisions were undertaken as well as additions near T1, T6 and T7 to improve movement options for vehicles and reduce turbine delivery risks; and
- Revision of the proposed new road alignment near to the substation to straighten this section and reduce the land take of this section of track.

3.6 Summary of Preferred Option

3.6.1 The preferred option taken forward for assessment is the Layout F: Design Freeze Layout as presented in Chapter 2: Development Description and shown in Figure 2.1: Site Layout.

3.6.2 By following the design guidance described in Table 3.1, the number of turbines was reduced from 18 to 11, microsited to reduce potential impacts to landscape, views and heritage features, the infrastructure footprint has been optimised to minimise overall track length and the number of watercourse crossings. Likely significant effects have been avoided or minimised as far as reasonably practicable through the design process.

4 Energy and Planning Legislation and Policy

4.1 Introduction

4.1.1 This chapter of the EIAR describes the legislative and policy background relevant to the Proposed Development. It refers to energy and planning policy at an international, national and local level. Policy specific to technical disciplines is included within the relevant technical assessments of this EIAR. This chapter does not include an assessment of the accordance of the Proposed Development with reference to planning policy: a separate Planning Statement has been prepared to support the application and should be referred to for a detailed planning policy appraisal.

4.1.2 This chapter has been written by Simon Herriot MRTPI, Director at Savills. Simon has 25 years' experience of planning and development matters and is a specialist in renewables and onshore wind planning.

4.2 The Legislative Framework

The Electricity Act 1989

4.2.1 The Proposed Development will have an overall installed capacity of over 50 Megawatts (MW). In Scotland, electricity generating developments that have capacity to generate over 50 MW require consent from the Scottish Ministers under the Electricity Act 1989[1] (the Electricity Act). In such cases the Planning Authority is a statutory consultee not the decision maker.

4.2.2 In the case of an application under Section 36 of the Electricity Act 1989 the Development Plan does not have primacy in the decision making process. Furthermore, the provisions of Schedule 9 of the Electricity Act are relevant to the assessment of the Proposed Development.

4.2.3 Schedule 9 sub-paragraph 3(1) of the Electricity Act advises that a license holder (or person authorised by exemption):

"(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and

(b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

4.2.4 Under sub-paragraph 3(2), in considering proposals, the Scottish Ministers are to have regard to:

"(a) the desirability of the matters mentioned in paragraph (a) of sub-paragraph (1) above; and

(b) the extent to which the person by whom the proposals were formulated has complied with his duty under paragraph (b) of the sub-paragraph."

[1] Scottish Ministers. Electricity Act 1989. Online. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents [accessed 08/02/2022]

4.2.5 Sub-paragraph 3(3) states that, without prejudice to the above provisions, a licence holder and the Scottish Ministers "*shall avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters*."

4.2.6 The provisions of Schedule 9 of the Electricity Act, as afore outlined in paragraph 4.2.3 and 4.2.4, sets out a number of features to which regard must be had and such features have been addressed in the EIA process.

The Town and Country Planning (Scotland) Act 1997

4.2.7 The principal planning statute in Scotland is the Town and Country Planning Act (Scotland) 1997[2] (the Planning Act) as amended by The Planning etc. (Scotland) Act 2006. The provisions of the Planning (Scotland) Act 2019 are also starting to come into force.

4.2.8 Section 57(2) of the Planning Act provides:

"On granting a consent under section 36 or 37 of the Electricity Act 1989 in respect of any operation or change of use that constitutes development, the Scottish Ministers may direct that planning permission for that development and any ancillary development shall be deemed to be granted, subject to any conditions (if any) as may be specified in the direction".

4.2.9 Section 25 of the Planning Act states that:

"Where, in making any determination under the planning Acts, regard is to be had to the development plan, the determination shall be made in accordance with the plan unless material considerations indicate otherwise".

4.2.10 Section 57(2) of the Planning Act makes no reference to the provisions of section 25 which requires regard to be had to the provisions of the Development Plan, and the courts have confirmed that section 57(2) does not operate so as to apply section 25 to a decision to make a direction to grant deemed planning permission pursuant to section 57(2).

4.2.11 The Scottish Ministers will determine the application having regard to Schedules 8 and 9[3] of the Electricity Act, so far as relevant, and any other relevant material considerations, one of which will be relevant aspects of the statutory Development Plan.

4.3 International Climate Change and Energy Policy

4.3.1 As of 31 January 2020, the UK stopped being a member of the European Union (EU). A transitional period was in place until the end of 2020, during which time the UK remained bound by EU rules, including the renewable targets noted in the following paragraphs. Following the end of the transitional period, Section 2 of the European Union (Withdrawal) Act 2018[4] (as amended) provides that all EU derived domestic legislation continues to have effect after exit day.

4.3.2 EU energy legislation and policy, like that in the UK, is driven by international co-operation to cut the emission of greenhouse gas emissions, as a means of combating climate change. This

[2] Scottish Ministers. Town and Country Planning (Scotland) Act 1997. Online. Available at: https://www.legislation.gov.uk/ukpga/1997/8/contents [accessed 08/02/2022]

[3] Schedule 8 relates to the procedural requirements for the Section 36 application, e.g. dealing with objections and public enquiries. Whilst schedule 9 sets out the environmental considerations under the Act.

[4] UK Government. European Union (Withdrawal) Act 2018. Online. Available at: http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted [accessed 08/02/2022]

includes the 'Paris Agreement' (United Nations, 2015)[5], established through the 21st session of the Conference of Parties ('COP 21'). Ratified in the UK on 17 November 2016, the Paris Agreement sets out the ambition of holding the increase of global average temperature to "*well below 2°C*" and pursuing efforts to limit temperature increase to 1.5°C. The COP26 'Glasgow Climate Pact'[6] published in 2021 reaffirms the Paris Agreement temperature goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

4.3.3 The United Nations Emissions Gap Report 2021[7] is the twelfth in a series of reports comparing where greenhouse gas emissions are heading against where they need to be and highlighting the ways to close the gap. This latest report shows that new national climate pledges combined with other mitigation measures put the world on track for a global temperature rise of 2.7°C by the end of the century. That is well above the goals of the Paris Agreement and the Glasgow Climate Pact and would lead to catastrophic changes in the Earth's climate. To keep global warming below 1.5°C this century, the aspirational goal of the Paris Agreement, this report states that the world needs to halve annual greenhouse gas emissions in the next eight years.

4.4 UK Climate Change and Energy Legislation and Policy

4.4.1 Energy policy in Scotland is a matter that is reserved to the UK Parliament. This section summarises the UK specific policy and legislation which is distinct from Scottish policy and legislation which is dealt with in section 4.5.

Climate Change Act 2008

4.4.2 The Climate Change Act became law on 26 November 2008 and introduced a legally binding target for the UK to reduce CO_2 emissions by at least 80% by 2050, relative to 1990 levels.

4.4.3 In June 2019, the UK Government passed the draft Climate Change Act 2008 (2050 Target Amendment) Order 2019[8] to amend the Climate Change Act 2008, by introducing a target for at least a 100% reduction of greenhouse gas emissions in the UK, compared to 1990 levels. This Order follows on from the recommendations presented by the Committee on Climate Change (CCC) publication '*Net Zero, The UKs contribution to stopping global warming*[9]*'*.

4.4.4 Efforts to reduce greenhouse gas emissions in Scotland would contribute to achievement of UK wide targets, as well as meeting Scotland's specific targets as discussed below.

[5] United Nations. The Paris Agreement. Online. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement [accessed 08/02/2022]

[6] United Nations. The Glasgow Climate Pact – Key Outcomes from COP26. Online. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact-key-outcomes-from-cop26 [accessed 08/02/2022]

[7] United Nations, Environment Programme. Emissions Gap Report 2021. Online. Available at: https://www.unep.org/resources/emissions-gap-report-2021 [accessed 08/02/2022]

[8] UK Government. The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Online. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111187654 [accessed 08/02/2022]

[9] Climate Change Committee. Net Zero – The UK's Contribution to Stopping Global Warming. Online. Available at: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/ [accessed 08/02/2022]

Committee on Climate Change – The Sixth Carbon Budget, The UK's Path to Net Zero

4.4.5 In December 2020 the CCC published 'The Sixth Carbon Budget'[10] which comprises three documents: 'The UK's Path to Net Zero'; 'Methodology Report'; and 'Policies for the Sixth Carbon Budget and Net Zero'. The 2020 CCC Report describes what the potential path options to net-zero look like and what steps must be taken to achieve this. A key recommendation of the Report is that the UK Government requires a reduction in UK greenhouse gas emissions of 78% by 2035 relative to 1990 and that this should be coupled with a pledge by 2030 to reduce emissions by at least 68% from 1990 levels.

4.4.6 The Foreword by Lord Deben highlights the importance of taking decisive action in the 2020s, noting that if efforts are not scaled up in this '*decisive decade*' then the UK will not deliver net zero by 2050. The Foreword notes that that "*utmost focus is required from government over the next ten years*" and that policy now needs to be "*scaled up across every sector*" to deliver net-zero.

4.4.7 The Report recognises that reducing emissions from electricity generation to near-zero will require significant expansion of low-carbon generation. Emphasis is also placed on the increasing demand for electricity through the electrification of the economy. Wind power is highlighted in the 2020 Report as the backbone of renewable energy production, stating that the deployment of 3 Gigawatts (GW) per year of new wind capacity is required, plus repowering of existing sites.

Progress in Reducing Emissions and Progress in Adapting to Climate Change – 2021 Progress Reports to Parliament

4.4.8 The above reports were published in June 2021 by the CCC[11]. The Executive Summaries within the respective reports state that, "In assessing the UK's progress in the last year, we acknowledge the increase in the scale of Government's efforts. But progress is not yet in step with the urgency of the challenge' and 'Climate change impacts are increasing, but the UK Government's National Adaptation Programme has not delivered the necessary improved resilience to the changing climate as was intended under the UK Climate Change Act."

4.4.9 The Progress in reducing emissions report also states that "Projections for renewable deployment are being revised upwards, but investment needs to scale up faster. More than 80% of new electricity capacity added in 2020 came from renewable sources. The International Energy Agency (IEA) recently increased their forecast for capacity installations for wind and solar electricity generation over the coming years by around 40% relative to a year ago."

Energy White Paper – Powering our Net Zero Future

4.4.10 The UK Government published the Energy White Paper: Powering our net zero future in December 2020[12] which sets out the approach to be taken to tackling the challenge of climate change. Recognising the world-leading UK net-zero target, the Foreword states that this will

[10] Climate Change Committee, December 2020. Sixth Carbon Budget. Online. Available at: https://www.theccc.org.uk/publication/sixth-carbon-budget/ [accessed 08/02/2022]

[11] Climate Change Committee, June 2021. Progress Report to Parliament. Online. Available at: https://www.theccc.org.uk/publication/2021-progress-report-to-parliament/ [accessed 08/02/2022]

[12] UK Government, December 2020. Energy White Paper – Powering out Net Zero Future. Online. Available at: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future [accessed 08/02/2022]

require decisive global action and significant investment to open up opportunities for economic growth and job creation.

4.4.11 The various actions set out in the White Paper are described as "a strong signal to project developers and the wider investor community about the government's commitment to delivering clean electricity". In the Section 'Our Key Commitments', the White Paper notes that "onshore wind and solar will be key building blocks for the future generation mix, along with offshore wind". The White Paper continues and states that "we will need sustained growth in the capacity of these sectors in the next decade to ensure that we are on a pathway that allows us to meet net-zero emissions in all demand scenarios".

4.4.12 The White Paper further underlines the need for fast and decisive action on climate change and confirms the important role that the continued development of renewable energy generation projects will play in delivering net zero.

British Energy Security Strategy – Secure, Clean and Affordable British Energy for the Long Term

4.4.13 In April 2022, the UK Government published its strategy for secure, clean and affordable British energy for the long term[13], primarily in response to rising global energy prices. A key aim of the Strategy is to reduce the dependence on imported oil and gas and to help decarbonise the energy sector, achieving net zero by 2050.

4.4.14 The Strategy discusses a range of technologies including offshore and onshore wind, solar, hydrogen and nuclear. It recognises that 'onshore wind is one of the cheapest forms of renewable power' and that there is a 'strong pipeline of future projects in Scotland'.

Intergovernmental Panel on Climate Change (IPCC) – AR6 Climate Change 2022: Mitigation of Climate Change

4.4.15 The IPCC Working Group III report Climate Change 2022: Mitigation of Climate Change[14] was published on 4 April 2022. It is the third instalment of the IPCC's Sixth Assessment Report (AR6), which will be completed this year. The report focuses on climate change mitigation, assessing methods for reducing GHG emissions, and removing GHG from the atmosphere. It explains developments in emission reduction and mitigation efforts, assessing the impact of national climate pledges in relation to long-term emissions goals.

4.4.16 It states that that "Reducing GHG emissions across the full energy sector requires major transitions, including a substantial reduction in overall fossil fuel use, the deployment of low-emission energy sources, switching to alternative energy carriers, and energy efficiency and conservation".

[13] UK Government, 2022. British Energy Security Strategy – Secure, Clean and Affordable British Energy for the Long Term. Online. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy [accessed 26/04/2022]

[14] IPCC, 2022. Climate Change 2022: Mitigation of Climate Change. Online. Available at: https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/ [accessed 26/04/2022]

4.5 Scottish Climate Change and Energy Legislation and Policy

4.5.1 The Scottish Government has published several of its own energy policy and strategy documents that apply to Scotland only and these are material to the determination of this application.

4.5.2 Like the UK Government, Scotland has legislated to achieve net-zero carbon emissions. The Scottish Government has published a number of climate change and energy policy documents and its own targets. The most relevant Scottish publications include:

- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[15];
- The Climate Change (Scotland) Act 2009[16];
- The Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland'[17];
- The Progress in Reducing Emissions in Scotland 2021 Report to Parliament[18];
- The Scottish Climate Change Plan[19];
- Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on a Path to Net Zero[20];
- The Scottish Energy Strategy[21];
- Scotland's Energy Strategy Position Statement[22];
- The Onshore Wind Policy Statement[23]; and
- The 'Onshore Wind Policy Statement Refresh 2021: Consultative Draft'[24].

Climate Change (Emissions Reduction Targets) (Scotland) Act (2019)

4.5.3 In October 2019, The Climate Change (Emissions Reduction Targets) (Scotland) Bill received Royal Assent. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 builds

[15] UK Government. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. Online. Available at: https://www.legislation.gov.uk/asp/2019/15/enacted [accessed 08/02/2022]

[16] UK Government. The Climate Change (Scotland) Act 2009. Online. Available at: https://www.legislation.gov.uk/asp/2009/12/contents [accessed 08/02/2022]

[17] Scottish Ministers. The Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland, 2021. Online. Available at:. https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/ [accessed 08/02/2022]

[18] Committee on Climate Change, 2021. The 'Progress in Reducing Emissions in Scotland 2021 Report to Parliament'. Online. Available at: https://www.theccc.org.uk/publication/progress-reducing-emissions-in-scotland-2021-report-to-parliament/ [accessed 08/02/2022]

[19] Scottish Ministers, 2018. The Scottish Climate Change Plan. Online. Available at: https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/ [accessed 08/02/2022]

[20] Scottish Ministers, 2020. Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on a Path to Net Zero. Online. Available at: https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/ [accessed 08/02/2022]

[21] Scottish Ministers, 2017. The Scottish Energy Strategy. Online. Available at: https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/ [accessed 08/02/2022]

[22] Scottish Ministers, 2019. Scotland's Energy Strategy Position Statement. Online. Available at: https://www.gov.scot/publications/scotlands-energy-strategy-position-statement/ [accessed 08/02/2022]

[23] Scottish Ministers, 2017. Onshore Wind Policy Statement. Online. Available at: https://www.gov.scot/publications/onshore-wind-policy-statement-9781788515283/ [accessed 08/02/2022]

[24] Scottish Ministers, 2021. Onshore Wind Policy Statement Refresh 2021: Consultative Draft'. Online. Available at: https://www.gov.scot/publications/onshore-wind-policy-statement-refresh-2021-consultative-draft/ [accessed 08/02/2022]

on a number of energy policy documents that recognise the Scottish Government's commitment to tackling climate change and promoting the growth of renewable energy.

4.5.4 The Climate Change (Emissions Reduction Targets) Act 2019 (Climate Change Act 2019) requires that "The Scottish Ministers must ensure that the net Scottish emissions account for the net-zero emissions target year is at least 100% lower than the baseline (the target is known as the "net-zero emissions target")." The target year is 2045 and the Act also sets out challenging interim targets. The Climate Change Act 2019 states that the Scottish Ministers must ensure that the net Scottish emissions account for the year:

- 2020 is at least 56% lower than the baseline;
- 2030 is at least 75% lower than the baseline; and
- 2040 is at least 90% lower than the baseline.

4.5.5 It is important to note that these targets are minimum targets, they are not maximums or aspirations. The targets legally bind the Scottish Ministers and have largely been legislated to set the framework for Scotland's response to the Climate Emergency.

4.5.6 The Proposed Development relates to the generation of electricity from renewable energy sources and comes as a direct response to national planning and energy policy objectives.

4.5.7 Detailed reference to the Proposed Developments contribution to the attainment of emissions reduction, renewable energy and electricity targets at both the Scottish and UK levels is provided in the Planning Statement.

The Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland'

4.5.8 On 7 September 2021, the Scottish Government published its 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland.' The Programme was introduced amidst the ongoing process to lead the country out of the COVID-19 pandemic and much of the focus of the Programme is on the response to the challenges presented by this. The Introduction from the First Minister within the Programme states that, "*In the year of COP26 – being hosted in our great city of Glasgow – we will rise to the other global challenge we face, taking the necessary action to stem climate change. We will do so in a way which ensures we grasp the opportunities to put a net-zero Scotland at the heart of our economic prosperity.*"

4.5.9 The Programme goes on to state that the Scottish Government is committed to securing between 8 and 12 GW of installed onshore wind by 2030, recognising the vital role that this technology has to play in delivery the net zero commitment. The Programme also confirms that Scotland is leading the way in new forms of clean energy and states that in 2020 almost 100% of gross electricity consumption came from renewable sources. The Scottish Government's aim is that by 2030 50% of Scotland's overall energy consumption will come from renewable sources, which will pave the way for decarbonising the country's energy system almost completely by 2050. The Programme recognises that "*Development of renewable energy presents an immense opportunity for Scotland to lead by example – showing how a clean energy future is possible at home, and as a net exporter of renewable energy, attracting further investment and ensuring our progress to net zero is environmentally and economically beneficial*" (page 64).

4.5.10 As well as focussing on the delivery of net zero in relation to tackling climate change, the Programme also recognises the importance of renewable energy to the economic recovery

post-COVID. "*A just transition to net zero requires a robust, diversified economy where businesses can make investments with confidence – domestically and globally – and will ensure Scotland is a world-leader, showcasing our strengths including in green and renewable technologies. That isn't just a moral obligation in meeting our ambitious targets to end Scotland's contribution to climate change, it is an economic opportunity to be grasped: benefiting businesses by leveraging public and private sector finance to create new markets and business opportunities, and benefiting people by protecting existing jobs, and creating new skills, training and employment opportunities*" (Page 78).

Progress in Reducing Emissions in Scotland – 2021 Progress Report to the Scottish Parliament (2021)

4.5.11 Published on 7 December 2021, the 2021 Progress Report to the Scottish Parliament (Committee on Climate Change, December 2021) assesses Scotland's overall progress in achieving its legislated targets to reduce greenhouse gas emissions. This is the tenth annual Progress Report to the Scottish Parliament as required by the Climate Change (Scotland) Act 2009. This latest report shows that, in 2019, Scotland's greenhouse emissions fell by 2% compared to 2018, and are now 44% below 1990 levels. The reductions were largely driven by the manufacturing and construction, and fuel supply sectors, with electricity generation remaining the biggest driver of emissions cuts over the past decade (2009-2019).

4.5.12 There are a number of key messages from this report including a recognition that the annual targets set for the 2020s will be very difficult to meet, even with strong climate policy support. Climate policy in Scotland must focus on the transition required to net zero in order to make rapid progress by 2030 and the focus must also be on implementation and delivery of real-world progress.

4.5.13 The report makes a number of recommendations including for the Scottish Government to "Set out an updated assessment of how much renewable and low-carbon electricity generation will be required to meet Net Zero in Scotland and contribute cost-effectively to Net Zero in the UK, with a clear trajectory to 2045", as well as to "Complete the definition and enforcement of a planning and consenting scheme for onshore wind and other low carbon generation in a manner that is consistent with other policies on land use, supporting repowering and life extension of existing wind power in Scotland, and aligning with adaptation priorities under the Scottish Climate Change Adaptation Programme."

Climate Change Plan (2018)

4.5.14 The vision of the Climate Change Plan (Scottish Government, 2018) (CCP) sets out that "By 2032, Scotland's electricity system will supply a growing share of Scotland's energy needs and by 2030, 50% of all Scotland's energy needs will come from renewables".

4.5.15 The CCP includes two specific policy outcomes in relation to electricity generation, as follows:

- Policy outcome 1: From 2020 onwards, Scotland's electricity grid intensity will be below 50 grams of carbon dioxide per kilowatt hour. The system will be powered by a high penetration of renewables, aided by a range of flexible and responsive technologies; and
- Policy outcome 2: Scotland's energy supply is secure and flexible, with a system robust against fluctuations and interruptions to supply.

4.5.16 Implementation indicators for policy outcomes 1 and 2 are:

- increase amount of electricity generated from renewable sources in Scotland;

- increase the installed capacity of sites generating electricity from renewable sources in Scotland. By 2030, it is expected that the installed capacity of renewable electricity generation sources will be between 12 GW and 17 GW;
- increase total community and locally owned renewable energy capacity operational, and in development, in Scotland;
- increase total renewable capacity in Scotland by planning stage; and
- increase the share of electricity generated from renewable sources, as a proportion of total electricity generated in Scotland.

Update to the Climate Change Plan 2018-2032: Securing a Green Recovery on a Path to Net Zero

4.5.17 In December 2020, the 'Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on the Path to Net Zero' (CCP Update) (Scottish Government, 2020) was published. Building on the policy outcomes identified in the 2018 CCP, the CCP Update sets the Scottish Government's legislative commitment to reducing emissions by 75% by 2030 (compared with 1990) and to net-zero by 2045 in the context of a post-COVID green recovery.

4.5.18 The CCP Update highlights that a key part of the green recovery is a co-ordinated approach across sectors. For example, the development of renewable energy supports the decarbonisation of numerous sectors, including industry and agriculture. The CCP Update emphasises the growth and success to date of Scotland's renewable energy generation as well as strongly stating the determination that this growth must continue. Page 78 of the Update states that *"Planning has been, and will remain, a critical enabler of rapid renewables deployment in Scotland"*. Referring particularly to onshore wind generation, on page 84 it is noted that there is a motivation to reduce determination periods for applications so as to enable projects to be awarded consent to be developed more quickly.

Scottish Energy Strategy (2017)

4.5.19 In December 2017, the Scottish Energy Strategy (SES) (Scottish Government, 2017) was published by the Scottish Government alongside the then Draft CCP and the Onshore Wind Policy Statement.

4.5.20 A key goal within the strategy is that Scotland will become a world leader in renewable and low carbon technologies and services. The Strategy sets out a target for Scotland to achieve almost complete decarbonisation of energy and sets a 2030 *'all energy'* target for the equivalent of 50% of Scotland's heat, transport and electricity consumption to be supplied from renewable sources. This vision is also included in the Climate Change Plan (February, 2018), which is discussed above.

4.5.21 The SES sets out on page 35 that "Scottish Government analysis underpinning this target shows that renewable electricity – which has already outperformed our interim 2015 target of 50% – could rise to over 140% of Scottish electricity consumption, ensuring its contribution to the wider renewable energy target for 2030', and that 'This assumes a considerably higher market penetration of renewable electricity than today – requiring in the region of 17 GW of installed capacity in 2030 (compared to 9.5 GW in June 2017) – with greater interconnection with parts of continental Europe providing an expanded market for our electricity".

4.5.22 In general terms, onshore wind is also recognised as a key opportunity. The SES sets out that "Onshore wind is now amongst the lowest cost forms of power generation of any kind, and is a vital component of the huge industrial opportunity that renewables create for Scotland. The sector supports an estimated 7,500 jobs in Scotland, and generated more than £3 billion in turnover in 2015".

Scotland's Energy Strategy Position Statement (2021)

4.5.23 On 16 March 2021 the Scottish Government published its position statement in relation to the SES document. The Energy Strategy Position Statement provides an overview of the key priorities for the short to medium-term in ensuring a green economic recovery, whilst remaining aligned to the net zero ambitions.

4.5.24 The Position Statement confirms that Scotland continues to make progress in areas such as renewable electricity generation and that this progress reflects the strides that have been made over the last couple of decades in onshore wind deployment. However, it is also recognised that there remains potential for much more development of renewable energy infrastructure across Scotland, both in the established forms, such as onshore wind, as well as other forms of technology.

4.5.25 Within the section relating to support for the renewable energy sector, the Position Statement notes that "The Scottish Government is committed to supporting the increase of onshore wind in the right places to help meet the target of Net Zero. In 2019, onshore wind investment in Scotland generated over £2 billion in turnover and directly supported approximately 2,900 full-time equivalent jobs across the country. We continued to make good progress last year, with Scotland's renewable electricity generation having grown to such an extent that it was able to meet the equivalent of 90% of Scotland's gross electricity consumption – making 2019 another record breaking year for the sector."

Onshore Wind Policy Statement (2017)

4.5.26 The Onshore Wind Policy Statement (Scottish Government, 2017) along with the SES was published in December 2017, providing specific national policy with regards to onshore wind. The Ministerial Foreword sets out that *"There is no question that onshore wind is a vital component of the huge industrial opportunity that renewables more generally create for Scotland. The sector supports an estimated 7,500 jobs in Scotland, or 58% of the total for onshore wind across the UK, and generated more than £3 billion in turnover in 2015. Developers are increasingly managing international onshore wind projects from their bases in Scotland"*.

4.5.27 It further adds that "Our energy and climate change goals mean that onshore wind will continue to play a vital role in Scotland's future – helping to substantively decarbonise our electricity supplies, heat and transport systems, thereby boosting our economy, and meeting local and national demand. This important role means we must support development in the right places, and – increasingly – the extension and replacement of existing sites, where acceptable, with new and larger turbines, based on an appropriate, case by case assessment of their effects and impacts".

4.5.28 The section of the report 'Route to Market' sets out that "In order for onshore wind to play its vital role in meeting Scotland's energy needs, and a material role in growing our economy, its contribution must continue to grow. Onshore wind generation will remain crucial in terms of our goals for a decarbonised energy system, helping to meet the greater demand from our heat and transport sectors, as well as making further progress towards the ambitious renewable targets which the Scottish Government has set' and 'This means that Scotland will

continue to need more onshore wind development and capacity, in locations across our landscapes where it can be accommodated".

Onshore Wind - Policy Statement Refresh 2021: Consultative Draft (2021)

4.5.29 The above document was published in October 2021 and the period of consultation ran until the end of January 2022. The report seeks views on a range of issues, including the Scottish Government's ambition to secure an additional 8 to 12 GW of installed onshore wind capacity by 2030; how to tackle the barriers to deployment of more onshore wind; and how to secure maximum economic benefit from these developments.

4.5.30 The Ministerial Foreword notes that onshore wind remains vital to Scotland's future energy mix and recognise that 'we will need much more' as we move towards net zero. Chapter 2 notes that *"a consistently higher rate of onshore wind and other renewables capacity will be required year on year"*. Coupled with this, there is recognition in Chapter 4 that the need for more onshore wind and the developments in wind turbine technology mean that Scotland's landscape will change.

4.6 Scottish Planning Policy and Advice

4.6.1 National planning policy of relevance to the determination of the Proposed Development currently comprises the National Planning Framework for Scotland 3[25] and Scottish Planning Policy[26]. In addition, a Draft National Planning Framework 4[27] was published for consultation in November 2021. At the time of writing this document has yet to be approved by the Scottish Government.

The National Planning Framework for Scotland 3

4.6.2 The third National Planning Framework 3 for Scotland (NPF3) (Scottish Government, 2014), published in June 2014, represents a spatial expression of the Scottish Government's aspirations for sustainable economic growth in Scotland over the next 20-30 years. It sets out at the national level, the Scottish Government's strategy for the Country's development, in terms of how to develop the environment and includes development proposals identified as schemes of national importance. NPF3 is a material consideration of relevance to the Proposed Development.

4.6.3 Part of the vision is of Scotland as a low carbon place, where the opportunities arising from the ambition to be a world leader in low carbon energy generation have been seized. NPF3 is informed by, and aims to help achieve, the Scottish Government's climate change and renewable energy targets.

4.6.4 The development of onshore wind is supported in NPF3. Paragraph 3.23 highlights wind energy's continued role in contributing towards a low carbon economy and states, *"onshore wind will continue to make a significant contribution to diversification of energy supplies".* In

[25] Scottish Ministers, 2014. National Planning Framework for Scotland 3. Online. Available at: https://www.gov.scot/publications/national-planning-framework-3/ [accessed 08/02/2022]

[26] Scottish Ministers, 2014. Scottish Planning Policy. Online. Available at: https://www.gov.scot/publications/scottish-planning-policy/ [accessed 08/02/2022]

[27] Scottish Ministers, 2021. Draft National Planning Framework 4. Online. Available at: https://consult.gov.scot/local-government-and-communities/draft-national-planning-framework-4/ [accessed 08/02/2022]

addition, paragraph 3.7 recognises that onshore wind development can be an opportunity to improve the long-term resilience of rural communities.

Draft National Planning Framework 4

4.6.5 In November 2021, the Scottish Government published its Draft Fourth National Planning Framework (Draft NPF4). Only limited weight can be given to the polices in the Draft NPF4 at this stage, given it is at consultation and has not been formally adopted. When adopted, the NPF4 will replace both NPF3 and Scottish Planning Policy and will form part of the statutory Development Plan.

4.6.6 The opening paragraphs of Draft NPF4 (page 3) state "We have set a target of net zero emissions by 2045, and must make significant progress towards this by 2030. This will require new development and infrastructure across Scotland."

4.6.7 The Draft NPF4 continues to set a positive context for renewable energy developments embedded in NPF3 that will help achieve the legally binding net zero greenhouse gas emissions target by 2045 (with associated interim targets, including a 75% reduction by 2030 compared to 1990 levels). Various parts of the Draft NPF4 are relevant to the Proposed Development:-

- Part 2 – National Developments. National Development 12 'Strategic Renewable Electricity Generation and Transmission Infrastructure' sets out a list of developments that would have national status including "Electricity generation, including electricity storage, from renewables of or exceeding 50 megawatts capacity". National development status means that "the principle of the development does not need to be agreed later in the consenting process, providing more certainty for communities, business and investors"
- Part 3 – National Planning Policy. Within this section various draft policies would apply to the Proposed Development including Policy 2 – Climate Emergency, Policy 3 – Nature Crisis, Policy 19 – Green Energy, Policy 28 – Historic Assets and Places and Policy 32 – Natural Places.

4.6.8 These draft policies are discussed further in the accompanying Planning Statement. Policy 19: Green Energy, is of most relevance to the Proposed Development. The pre-amble to the Policy states, "*We want our places to support continued expansion of low-carbon and net zero energy technologies as a key contributor to net zero emissions by 2045".* Part (d) of the Policy states that outwith National Parks and National Scenic Areas "*development proposals for new wind farms should be supported unless the impacts identified are unacceptable"*.

Scottish Planning Policy

4.6.9 Scottish Planning Policy (SPP) was published in June 2014 (Scottish Government, 2014) and is a statement of Scottish Government policy on land use planning. SPP emphasises the importance of tackling climate change and, in particular, the need to reduce greenhouse gas emissions. SPP is a material consideration of relevance to the Proposed Development. The following paragraphs set out the policy issues which are most relevant to the Proposed Development.

Scottish Planning Policy (SPP) - Sustainable Development and Climate

4.6.10 One of the over-arching aims of SPP is to achieve Sustainable Development. SPP emphasises as a 'policy principle' that there is a presumption in favour of development that contributes towards sustainable development (the presumption). In considering whether the SPP 'presumption' applies, SPP paragraph 29 sets out a series of sustainable development

principles against which proposals are to be assessed. The accompanying Planning Statement considers the Proposed Development against these principles.

4.6.11 In relation to climate change and delivering Outcome 2 of SPP 'A Low Carbon Place', paragraph 19 notes that the planning system can play a key role in supporting "*the transformational change required to meet emission reduction targets and influence climate change"*.

Scottish Planning Policy (SPP) - Renewable Energy

4.6.12 Paragraph 154 states that the planning system should "support the transformational change to a low carbon economy, consistent with national objectives and targets".

4.6.13 Paragraph 154 goes on to state that the planning system "should support the development of a diverse range of electricity generation from renewable energy technologies – including the expansion of renewable energy generation capacity...".

4.6.14 In order to achieve this, paragraph 155 states that Development Plans "should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved, in line with national climate change targets, giving due regard to relevant environmental, community and cumulative impact considerations".

4.6.15 In relation to onshore wind, SPP Table 1 'Spatial Frameworks', provides locational guidance for onshore wind developments, as follows:

- Group 1: Areas where wind farms will not be acceptable (National Parks and National Scenic Areas);
- Group 2: Areas of Significant Protection (National and international designations, other nationally important mapped environment interests including areas of wild land) and a 2 km community separation distance for consideration of visual impact; and
- Group 3: Areas with potential for wind farm development.

4.6.16 The Site is located mostly located within a Group 2 and partly within a Group 3 area. The sole Group 2 interest is the mapped presence of carbon rich soils and deep peat based upon the Scottish Natural Heritage Carbon and Peatland Map 2016[28]. The Scottish Natural Heritage Publication 'Spatial Planning for Onshore Wind Turbines – natural heritage considerations'[29] (Scottish Natural Heritage, 2015) notes in Section 1.1.1 that the map is provided to inform the spatial framework for onshore wind turbines and that it only '*indicates'* where these resources are likely to be found. In Section 3.2, the 2015 Publication states that "*the map cannot (and should not) be used in isolation to determine the impacts of a specific development proposal on peat. This should be based on a detailed, site specific survey of peatland habitats and peat depths across the site using existing methods*".

4.6.17 The key SPP test for wind farm developments in Group 2 areas is whether it can be demonstrated that "*any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation*". There is no policy requirement for developments to avoid impacts altogether, but to "*substantially overcome"* any significant effects, additionally the 2015 Scottish Natural Heritage Publication states that " '*the location*

[28] https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map

[29] https://www.nature.scot/doc/guidance-spatial-planning-onshore-wind-turbines-natural-heritage-considerations-june-2015

of a proposal in the mapped area does not, in itself, mean that the proposal is unacceptable, or that carbon rich soils, deep peat and priority peatland habitat will be adversely affected".

4.6.18 The SPP stipulates that proposals for energy infrastructure should always take account of spatial frameworks for wind farms and sets out a range of development management criteria for the consideration of energy infrastructure proposals including socio-economic impacts, scale of contribution to renewable energy targets, cumulative impacts, and many technical and environmental impacts to be considered, for example, landscape, historic environment and natural heritage. These issues are considered in greater depth in the accompanying Planning Statement.

Scottish Planning Policy (SPP) - Valuing the Natural Environment

4.6.19 The policy principles for this subject matter are set out in paragraph 194 of the SPP. This states that the planning system should *"facilitate positive change while maintaining and enhancing distinctive landscape character…conserve and enhance protected sites and species, taking account of the need to maintain healthy ecosystems and work with the natural processes which provide important services to communities".*

4.6.20 It also states that "Buffer zones should not be established around areas designated for their natural heritage importance. ……. The level of protection given to local designations should not be as high as that given to international or national designations".

Scottish Planning Policy (SPP) – Valuing the Historic Environment

4.6.21 Paragraph 135 states that "Planning has an important role to play in maintaining and enhancing the distinctive and high-quality, irreplaceable historic places which enrich our lives, contribute to our sense of identity and are an important resource for our tourism and leisure". Paragraph 137 goes on to state that the planning system should, 'promote the care and protection of the designated and non-designated historic environment (including individual assets, related settings and the wider cultural landscape) and its contribution to sense of place, cultural identity, social well-being, economic growth, civic participation and lifelong learning".

Scottish Planning Policy (SPP) - Community Benefit

4.6.22 The SPP realises the benefits of developer contributions to local communities and states in paragraph 173 that "Where a proposal is acceptable in land use terms, and consent is being granted, local authorities may wish to engage in negotiations to secure community benefit in line with the Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments".

4.7 Development Plan

Current Development Plan

4.7.1 The Proposed Development lies partly within the administrative boundary of Moray Council and partly within that of Aberdeenshire Council. As such, the Development Plan for both Council areas is relevant. The statutory Development Plan for the Site comprises the following:-

- Moray Local Development Plan (MLDP)[30];

[30] Moray Council, 2020. Moray Local Development Plan. Online. Available at: http://www.moray.gov.uk/moray_standard/page_122817.html [accessed 08/02/2022]

- MLDP Supplementary Guidance: Onshore Wind Energy 2017 (adopted 2017) (SGOWE)[31]. The Moray Wind Energy Landscape Capacity Study 2017[32] is a technical appendix to the SGOWE;
- Aberdeen City and Shire Strategic Development Plan (SDP) (approved August 2020)[33]; and
- Aberdeenshire Local Development Plan (ALDP) (adopted April 2017)[34] and associated Supplementary Guidance.

4.7.2 Also of relevance is the Strategic Landscape Capacity Assessment for Wind Energy in Aberdeenshire[35] (SLCAWE) prepared by Ironside Farrar for Aberdeenshire Council in 2014,and the Moray Onshore Wind Energy Non-Statutory Guidance (OWENSG) 2020 (adopted October 2020). The OWENSG is supported by the Moray Wind Energy Landscape Capacity Study 2017. These documents do not form part of the development plan and are considered under section 4.9 of this chapter.

Emerging Development Plan

4.7.3 Aberdeenshire Council has been going through the process of preparing the next local development plan for Aberdeenshire. The Aberdeenshire Proposed Local Development Plan 2020 (PLDP)[36] was submitted to the Scottish Ministers for examination in June 2021 and it is anticipated that the Aberdeenshire Local Development Plan 2 will be adopted during 2022. As the PLDP has reached an advanced stage in its preparation, it is also a relevant consideration in respect of the Proposed Development.

4.8 Review of Development Plan Policy

Aberdeen City and Shire Strategic Development Plan 2020

4.8.1 The Aberdeen City and Shire Strategic Development Plan (SDP) was approved by Scottish Ministers in August 2020. Section 6 of the SDP focusses on the natural resources of Aberdeenshire. Within the context of sustainable development and climate change the SDP states, *"Delivering sustainable development and responding to climate change are some of the most serious challenges we will face over the period covered by this Plan".* The SDP goes on to state that "*We will also need to tackle the supply of energy during the Plan period. This will involve increasing the supply of heat and power from renewable sources…."*

[31] Moray Council, 2017. Moray Local Development Plan Supplementary Guidance: Onshore Wind Energy (SGOWE). Online. Available at: http://www.moray.gov.uk/downloads/file118604.pdf [accessed 08/02/2022]

[32] Moray Council, 2017. Moray Local Development Plan Supplementary Guidance: Onshore Wind Energy (SGOWE). Technical Appendix: The Moray Wind Energy Landscape Capacity Study 2017. Online. Available at: http://www.moray.gov.uk/downloads/file114216.pdf [accessed 08/02/2022]

[33] Aberdeen City and Shire, 2020. Aberdeen City and Shire Strategic Development Plan (SDP). Online. Available at: http://www.aberdeencityandshire-sdpa.gov.uk/AboutUs/Publications.aspx [accessed 08/02/2022]

[34] Aberdeenshire Council, 2017. Aberdeenshire Local Development Plan (ALDP). Online. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/ [accessed 08/02/2022]

[35] Ironside Farrar for Aberdeenshire Council, 2014. Strategic Landscape Capacity Assessment for Wind Energy in Aberdeenshire. Online. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/the-strategic-landscape-capacity-for-windfarms/ [accessed 08/02/2022]

[36] Aberdeenshire Council, 2020. Aberdeenshire Proposed Local Development Plan. Online. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2022/ [accessed 08/02/2022]

Local Development Plan Policy

4.8.2 This section identifies MLDP and ALDP policies which will be potentially relevant in the determination of the application. Policies are arranged by theme and reflect chapter divisions within the EIA Report where possible. Table 4.1 below identifies potentially relevant adopted Development Plan policies:-

Table 4.1: Adopted Relevant Local Development Plan Policies

Development Plan	Policy Number and Name
Moray Local Development Plan 2020	PP2 Sustainable Economic Growth
	PP3 Infrastructure and Services
	DP1 Development Principles
	DP9 Renewable Energy
	EP1 Natural Heritage Designations
	EP3 Special Landscape Areas and Landscape Character
	EP7 Forestry, Woodlands and Trees
	EP8 Historic Environment
	EP10 Listed Buildings
	EP11 Battlefields, Gardens and Designed Landscapes
	EP12 Management and Enhancement of the Water Environment
	EP14 Pollution, Contamination & Hazards
	EP16 Geodiversity and Soil Resources
Aberdeenshire Local Development Plan 2017	E1 Natural Heritage
	E2 Landscape
	HE1 Protecting Historic Buildings, Sites and Monuments
	HE2 Protecting Historic and Cultural areas
	PR1 Protecting Important Resources
	C2 Renewable Energy
	C3 Carbon Sinks and Stores
	C4 Flooding
	RD1 Providing Suitable Services
	RD2 Developers' Obligations

Renewable Energy

4.8.3 Policy DP9 Renewable Energy of the MLDP and Policy C2 Renewable Energy of the ALDP are the two most relevant policies to the Proposed Development.

4.8.4 Policy DP9 of the MLDP states:

a) "All Renewable Energy Proposals

All renewable energy proposals will be considered favourably where they meet the following criteria:

i) They are compliant with policies to safeguard and enhance the built and natural environment;

ii) They do not result in the permanent loss or permanent damage of prime agricultural land;

iii) They avoid or address any unacceptable significant adverse impacts including:

- Landscape and visual impacts.
- Noise impacts.
- Air quality impacts.
- Electromagnetic disturbance.
- Impact on water environment.
- Impact on carbon rich soils and peat land hydrology.
- Impact on woodland and forestry interests.
- Traffic impact - mitigation during both construction and operation.
- Ecological Impact.
- Impact on tourism and recreational interests.

In addition to the above criteria, detailed assessment of impact will include consideration of the extent to which the proposal contributes to renewable energy generation targets, its effect on greenhouse gas emissions and net economic impact, including socio-economic benefits such as employment.

b) Onshore wind turbines

In addition to the assessment of the impacts outlined in part a) above, the following considerations will apply:

i) The Spatial Framework Areas of Significant Protection (Map 2): where the Council will apply significant protection and proposals may be appropriate in circumstances where any significant effects on the qualities of these areas can be substantially overcome by siting, design and other mitigation. Areas with Potential (Map 1): where proposals are likely to be acceptable subject to Detailed Consideration.

ii) Detailed Consideration: The proposal will be determined through sites-pecific consideration of the following on which further guidance will be set out in supplementary guidance and as informed by the landscape capacity study:

Landscape and visual impact:

- the landscape is capable of accommodating the development without unacceptable significant adverse impact on landscape character or visual amenity.
- the proposal is appropriate to the scale and character of its setting, respects the main features of the site and the wider environment and addresses the potential for mitigation.

Cumulative impact

- unacceptable significant adverse impact from two or more wind energy developments and the potential for mitigation is addressed.

Impact on local communities

- the proposal addresses unacceptable significant adverse impact on communities and local amenity including the impacts of noise, shadow flicker, visual dominance and the potential for associated mitigation.

Other

- the proposal addresses unacceptable significant adverse impacts arising from the location within an area subject to potential aviation and defence constraints including flight paths and aircraft radar.
- the proposal avoids or adequately resolves other impacts including on the natural and historic environment, cultural heritage, biodiversity, forest and woodlands and tourism and recreational interests - core paths, visitor centres, tourist trails and key scenic routes.
- the proposal addresses any physical site constraints and appropriate provision for decommissioning and restoration."

4.8.5 Policy C2 of the ALDP states:

"We will approve wind energy developments in appropriate locations taking into account the spatial framework mapping on page 63. The more detailed guidance set out in the Strategic Landscape Capacity Assessment for wind turbines and the associated mapping on page 63 under the heading Additional Locational Guidance is also a relevant consideration. The areas shown in orange hatching have been assessed as having strategic capacity for turbines over 15 metres when local landscape considerations are taken into account.

All windfarms must be appropriately sited and designed and avoid unacceptable environmental effects taking into account the cumulative effects of existing and consented wind turbines. Turbines must not compromise health and safety or adversely affect aircraft or airfields (including radar and air traffic control systems, flight paths and ministry of defence low flying areas) and/or telecommunications. Unacceptable significant adverse effects on the amenity of dwelling houses or tourism and recreation interests including core paths and other established routes used for public walking, riding or cycling should also be avoided……

… In all cases, conditions, bonds, or other legal agreements may be imposed to remove visible renewable energy structures whenever the consent expires or the project ceases to operate for a specified period."

Sustainable Design

4.8.6 Policy DP1 'Development Principles' of the MLDP applies to all development proposals and includes design criteria such as integrating development with its surrounding landscape and demonstrating how the development will conserve and enhance the natural and built environment.

4.8.7 Policy PP3 'Infrastructure and Services' of the MLDP requires that "development must be planned and co-ordinated with infrastructure to ensure that places function properly and proposals are adequately served by infrastructure and services".

4.8.8 Policy RD1 'Providing Suitable Services' of the ALDP requires that all development provides adequate road, waste management, water or waste water facilities and connections as appropriate.

Landscape

4.8.9 Policy EP3 'Special Landscape Areas and Landscape Character' of the MLDP contains criteria relating to development proposals within Special Landscape Areas. Policy EP3 also states that

"*new developments must be designed to reflect the landscape characteristics identified in the Landscape Character Assessment of the area in which they are proposed".*

4.8.10 Policy E2 'Landscape' of the ALDP states that development proposals that cause unacceptable effects through scale, location, or design on key natural landscape elements will not be permitted. Policy E2 goes on to state that such effects will be considered either alone or cumulatively with other development.

Hydrology, Hydrogeology, Geology and Soils

4.8.11 Policy EP16 'Geodiversity and Soil Resources' of the MLDP states that "where peat and other carbon rich soils are present disturbance to them may lead to the release of carbon dioxide contributing to the greenhouse gas emissions. Applications should minimise this release and must be accompanied by an assessment of the likely effects associated with any development work and aim to mitigate any adverse impacts arising. For major developments, minerals and large scale (over 20 MW) renewable energy proposals, development will only be permitted where it has been demonstrated that unnecessary disturbance of soils, geological interests, peat and any associated vegetation is avoided."

4.8.12 Policy PR1 'Protecting Important Resources' of the ALDP states that "we will not approve developments that have a negative effect on important environmental resources associated with the water environment, important mineral deposits, prime agricultural land, peat and other carbon rich soils. In all cases development which impacts on any of these features will only be permitted when public economic or social benefits clearly outweigh the value of the site to the local community, and there are no reasonable alternative sites". Policy C3 'Carbon Sinks and Stores' states that protection will be given to high-carbon peat rich soils and that development resulting in loss of peat will only be permitted if the results of the Carbon Calculator demonstrate that the development will have no net effect on CO_2 within its lifetime.

4.8.13 Policy EP12 'Management and Enhancement of the Water Environment' of the MLDP and Policy C4 'Flooding' of the ALDP both require that any new development at risk of flooding be accompanied by a flood risk assessment and that surface water from development must be dealt with in a sustainable way.

Socio-Economics, Recreation and Tourism

4.8.14 Policy PP2 'Sustainable Economic Growth' of the MLDP states that support will be given to development proposals that support the Moray Economic Strategy to deliver sustainable economic growth, whilst balancing the need to safeguard the natural and built environment. Both renewable energy policies of the MLDP (Policy DP9) and the ALDP (Policy C2) require that there are no unacceptable impacts upon tourism and recreational interests.

Noise, Air and Light

4.8.15 Policy EP14 'Pollution, Contamination & Hazards' of the MLDP requires that any development proposals that may give rise to significant air, noise or light pollution should be accompanied by detailed assessments of these matters. Policy P4 'Hazardous and Potentially Polluting Developments and Contaminated Land' of the ALDP states that permission will not be granted where a development could cause significant pollution or nuisance to the public or the environment.

Ecology and Ornithology

4.8.16 Policy EP1 'Natural Heritage Designations' of the MLDP states that only in exceptional circumstances will proposals that will likely have a significant effect on a European Site be approved. Policy EP1 also contains criteria that must be met if a development is likely to have a significant adverse effect on a local nature or wildlife designation, for example benefits to the public, a specific locational need or satisfactory mitigation is proposed. Under Policy EP1 proposals adversely affecting European Protected Species will not be approved unless there is no alternative and that the development will not be detrimental to the maintenance of the favourable conservation of the species. Other protected species of birds and animals likely to be affected by a development will require the submission of a Species Protection Plan.

4.8.17 Policy E1 'Natural Heritage' of the ALDP takes a similar stance to the MLDP policy, requiring the protection of internationally and nationally designated sites, as well as satisfactory mitigation measures. Policy EP1 requires that development should seek to avoid detrimental impact on protected species. Baseline ecological survey data should be prepared for all major developments.

Cultural Heritage

4.8.18 The MLDP contains several policies that require to be considered in respect of cultural heritage matters. Policy EP8 'Historic Environment' states, *"development proposals will be refused where they adversely affect the integrity of the setting of Scheduled Monuments and unscheduled archaeological sites of potential national importance unless the developer proves that any significant adverse effects are clearly outweighed by exceptional circumstances, including social or economic benefits of national importance".* Policy EP10 'Listed Buildings' sets out that development proposals will be refused where the effect on the character, integrity or setting of a listed building is detrimentally affected. Similarly Policy EP11 'Battlefields, Gardens and Designed Landscapes' aims to protect these designated sites and their settings from adverse effects caused by development.

4.8.19 Policy HE1 'Protecting Historic Buildings, Sites and Monuments' of the ALDP states, "we will not allow development that would have a negative effect on the character, integrity or setting of listed buildings, or scheduled monuments, or other archaeological sites". Policy HE2 'Protecting Historic and Cultural Areas' states, "we will not allow development, including change of use or demolition, that would not preserve or enhance the character or appearance of a conservation area. This applies both to developments within the conservation area and proposals outwith that would affect its setting".

Traffic and Transport

4.8.20 Policy DP1 'Development Principles' of the MLDP requires that development proposals have safe entry and exit and that any impacts identified through Transport Assessments be mitigated. Policy RD1 'Providing Suitable Services' of the ALDP states, "*when development requires the formation of new accesses, these should be designed to an agreed standard, and must be resource-efficient, safe……. Any new private access onto a public road must be designed to the satisfaction of Aberdeenshire Council's Road Development department and, in the case of a trunk road, Transport Scotland".*

Forestry

4.8.21 Under Policy 'EP7 Forestry, Woodlands and Trees' of the MLDP, proposals should retain healthy trees and incorporate them within the development unless technically unfeasible. In this event, compensatory planting will be required. Policy PR1 'Protecting Important Resources'

of the ALDP similarly requires justification for the removal of trees and, in such circumstances, compensatory planting would be needed.

Aberdeenshire Proposed Local Development Plan 2020

4.8.22 The Aberdeenshire Proposed Local Development Plan 2020 (APLDP) was submitted to the Directorate of Planning and Environmental Appeals for examination in March 2021. Aberdeenshire Council anticipates receiving the Report of Examination in early 2022. The key policies outlined above from the ALDP do not differ materially in the APLDP. Therefore the relevant policies from the APLDP have not been summarised here. The Planning Statement to accompany the submission will appraise both the relevant ALDP and APLDP policies, highlighting any changes.

Supplementary Guidance

Moray Onshore Wind Energy Supplementary Guidance 2017

4.8.23 The Moray Onshore Wind Energy Supplementary Guidance was adopted in 2017. This Supplementary Guidance sets out a range of issues the Council will consider when determining wind energy applications. It also includes the Council's spatial strategy for wind turbine development. This document builds on the MLDP renewable energy policy and provides guidance on a number of matters relating to landscape, transportation, peat, cultural heritage and aviation, amongst others.

Moray Wind Energy Landscape Capacity Study 2017

4.8.24 The Moray Wind Energy Landscape Capacity Study 2017 forms an appendix to the Moray Onshore Wind Energy Supplementary Guidance. The Capacity Study aims to set clear spatial principles for wind energy development and identifies the capacity of various landscape character types to accommodate wind turbine development.

Aberdeenshire Supplementary Guidance

4.8.25 Although Aberdeenshire Council does not have supplementary guidance relating specifically to wind energy development, there are a number of other supplementary guidance documents relevant to the Proposed Development. These include various guidance documents relating to Local Nature Conservation Sites, Special Landscape Areas and Developer obligations. These documents are considered, where relevant, in the accompanying Planning Statement and appropriate technical assessments.

4.9 Other Material Considerations

Strategic Landscape Capacity for Wind Energy in Aberdeenshire 2014

4.9.1 Prepared by Ironside Farrar for Aberdeenshire Council in 2014 the Strategic Landscape Capacity for Wind Energy in Aberdeenshire[35] considers the capacity of the Aberdeenshire landscape to accommodate onshore wind energy development. This study assesses this capacity within the various landscape character types and provides conclusions on their ability to accommodate further wind energy development.

Moray Onshore Wind Energy Non-Statutory Guidance 2020

4.9.2 The Moray Onshore Wind Energy Non-Statutory Guidance 2020[37] updates the adopted Moray Onshore Wind Energy Supplementary Guidance 2017, although it has not been adopted as part of the Development Plan, and so is a material consideration rather than a statutory document. As with the Moray Onshore Wind Energy Supplementary Guidance 2017, this document builds on the MLDP renewable energy policy and provides guidance on a number of related technical and environmental matters.

Planning Advice Notes

4.9.3 Relevant Planning Advice Notes (PANs)[38] and Specific Advice Sheets set out detailed advice from the Scottish Government in relation to a number of planning issues. Relevant PANs and Specific Advice Sheets relevant to the Proposed Development are summarised in Table 4.2 below.

Table 4.2: Relevant PANs

Title	Summary of Document
PAN 1/2013 Environmental Impact Assessment	Provides information on the role local authorities and consultees play as part of the EIA process, and how the EIA can inform development management.
PAN 60 (2000) Planning for Natural Heritage	Advises developers on the importance of discussing their proposals with the planning authority and NatureScot and use of the EIA process to identify the environmental effects of development proposals and seek to prevent, reduce and offset any adverse effects in ecology and biodiversity.
PAN 61 (2001) Sustainable Urban Drainage Systems	Good practice drainage guidance.
PAN 68 (2003) Design Statements	This PAN covers the importance of design statements, and provides flexible guidance on their preparation, structure, and content. The PAN also outlines the principles underpinning the production of design statements, as expected by the Scottish Government.
PAN 75 (2005) Planning for Transport	The objective of PAN 75 is to integrate development plans and transport strategies to optimise opportunities for sustainable development and create successful transport outcomes.
PAN 3/2010 Community Engagement	This document provides advice on how to engage with local communities through the planning process.
PAN 1/2011 Planning and Noise	This PAN provides advice on the role of the planning system in helping to prevent and/ or mitigate any potential adverse effects of noise. It promotes the principles of good acoustic design and promotes a sensitive approach to the location of new development.
PAN 2/2011 Planning and Archaeology	The PAN is intended to inform local authorities and other organisations of how to process any archaeological scope of works within the planning process.
Online Renewables Planning Advice - Onshore Wind Turbines (updated 2014)	This Specific Advice Sheet provides an overview of the use of the carbon calculator in estimating the carbon savings resulting from wind farm developments. NB: Please note that this Specific Advice Sheet pre-dates SPP, so the areas covered therein in relation to 'spatial framework', 'spatial planning' and 'areas of search' are no longer relevant.
PAN 51 Planning, Environmental Protection and Regulation (Revised 2006)	Details the role of the planning system in relation to the environmental protection regimes.

[37] Moray Council, 2020. Moray Onshore Wind Energy Non-Statutory Guidance. Online. Available at: http://www.moray.gov.uk/downloads/file134377.pdf [accessed 08/02/2022]

[38] Scottish Ministers. Relevant Planning Advice Notes (PANS) https://www.gov.scot/collections/planning-advice-notes-pans/ [accessed 08/02/2022]

4.10 Summary

4.10.1 This chapter has set out the legislative background, a summary of the renewable energy policy framework, and the international, national and local planning policies and guidance relevant to the consideration of the Proposed Development. It provides an objective summary of the energy and planning policy considerations that have been taken into account in the preparation of the EIAR in order to ensure that it provides the appropriate information for the consideration of the planning application.

4.10.2 The policy appraisal for the Proposed Development is contained in a separate Planning Statement.

5 Landscape and Visual Amenity

5.1 Introduction

5.1.1 This chapter addresses the potential landscape and visual effects associated with the Proposed Development as described in Chapter 2: Development Description, and comprises the following:

- a description of the existing landscape and visual baseline;
- details of the assessment methodology and significance criteria utilised in completing the assessment;
- a discussion of potential effects, including direct, indirect and cumulative effects;
- a description of the mitigation measures proposed to address likely significant effects; and
- an assessment of the residual effects (including cumulative effects) taking into account proposed mitigation measures.

5.1.2 The assessment has been carried out by Alexandra Gardiner CMLI, with technical review by Robert Bainsfair CMLI of Ramboll UK Limited. Alexandra has over 12 years' experience managing and preparing Landscape and Visual Impact Assessments (LVIA) and Cumulative assessments (CLVIA) across a wide range of sectors including renewable energy. Bob has over 20 years' of experience in the management and preparation of LVIA and CLVIA, including providing expert witness evidence for wind farm developments throughout Scotland (further detail on professional competency is provided in Technical Appendix 1.2).

5.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures:
  - Figure 5.1 – Topography;
  - Figure 5.2 – Land Use;
  - Figure 5.3a – Landscape Character Types;
  - Figure 5.3b – Landscape Character Types with Zone of Theoretical Visibility (ZTV);
  - Figure 5.4a – Landscape Designations and Classifications;
  - Figure 5.4b – Landscape Designations and Classifications with ZTV;
  - Figure 5.5a – Transportation routes and recreational routes;
  - Figure 5.5b – Transportation routes and recreational routes with ZTV;
  - Figure 5.6a – Blade Tip ZTV;
  - Figure 5.6b – Blade Tip ZTV (20 km zoom);
  - Figure 5.6c – Blade Tip and Hub Height ZTV Comparison;
  - Figure 5.7a – Cumulative Context;
  - Figures 5.7b - 5.7z – Cumulative ZTVs; and
  - Figure 5.8 – Viewpoint Location Plan.
- Volume 3b: Visualisations:
  - Figures 5.9a - 5.9f – Viewpoint 1: Minor Road, Deveron Valley;
  - Figures 5.10a – 5.10f – Viewpoint 2: Haugh of Glass;
  - Figures 5.11a – 5.11f – Viewpoint 3: Corsemaul Drive, Dufftown;
  - Figures 5.12a – 5.12f – Viewpoint 4: A941 north of Dufftown;
  - Figures 5.13a – 5.13f – Viewpoint 5: Ben Aigan;
  - Figures 5.14a – 5.14j – Viewpoint 6: Ben Rinnes;
  - Figures 5.15a – 5.15h – Viewpoint 7: Corryhabbie Hill;

- Figures 5.16a – 5.16h – Viewpoint 8: Little Geal Charn;
- Figures 5.17a – 5.17f – Viewpoint 9: The Buck;
- Figures 5.18a – 5.18f – Viewpoint 10: Tap o'Noth;
- Figures 5.19a – 5.19f – Viewpoint 11: Meikle Balloch Hill;
- Figures 5.20a – 5.20f – Viewpoint 12: B9016 at Aultmore;
- Figures 5.21a – 5.21h – Viewpoint 13: A920 near Wester Bodylair;
- Figures 5.22a – 5.22f – Viewpoint 14: Mither Tap View Point;
- Figures 5.23a – 5.23f – Viewpoint 15: Clashmach Hill;
- Figures 5.24a – 5.24f – Viewpoint 16: A941 near The Grouse Inn Public House;
- Figures 5.25a – 5.25f – Viewpoint 17: Cromdale Hills;
- Figures 5.26a – 5.26f – Viewpoint 18: Auchindoun Castle; and
- Figures 5.27a – 5.27f – Viewpoint 19: A941 near Cabrach.

- Volume 4: Technical Appendices:
  - Technical Appendix 5.1 – Glossary;
  - Technical Appendix 5.2 – Landscape Character Type Descriptions;
  - Technical Appendix 5.3 – Descriptions of Designated and Classified Landscapes;
  - Technical Appendix 5.4 – Residual Effects on Landscape Character Types;
  - Technical Appendix 5.5 – Residual Effects on Designated and Classified Landscapes;
  - Technical Appendix 5.6 – Viewpoint Assessment;
  - Technical Appendix 5.7 – Residential Visual Amenity Assessment; and
  - Technical Appendix 5.8 – Lighting Impact Assessment.

5.1.4 Figures and technical appendices are referenced in the text where relevant. A list of abbreviations used in this assessment is presented in Section 5.10 of this chapter.

5.2 Assessment Methodology and Significance Criteria

Scope of Assessment

5.2.1 The study area of the Landscape and Visual Impact Assessment (LVIA) comprises a 45 km radius extending from the outermost turbines of the Proposed Development. This study area is presented on Figures 5.1 to 5.8. The extent of the study area was agreed following production of a preliminary Zone of Theoretical Visibility (ZTV) based on an initial layout for the turbines and in consultations with the Energy Consents Unit (ECU), Moray Council (MC), Aberdeenshire Council (AC), and NatureScot (NS). The study area is consistent with current guidance, as set out in NS guidance on the visual representation of wind farm developments[1].

5.2.2 This chapter considers effects on:

- landscape fabric, caused by changes to the physical form of the landscape and its elements as a result of the Proposed Development;
- landscape character, designations and classifications, caused by changes in the key characteristics and qualities of the landscape as a result of the Proposed Development; and
- visual amenity caused by changes in the views of the landscape and the overall effects on visual amenity as a result of the Proposed Development.

5.2.3 Effects on landscape fabric occur when there is physical change to physical constituents of the landscape such as the landform and/ or land cover. Effects on landscape character arise when there is change to the key characteristics of the landscape and its associated distinct and

[1] NatureScot (2017) Visual Representation of Wind Farms Guidance (Version 2.2)

recognisable pattern of elements. Visual effects are a subset of landscape effects and comprise changes in views of the landscape and the overall effects on visual amenity.

5.2.4 Landscape and visual effects can have implications for cultural heritage facets of the landscape, specifically on the setting of Gardens and Designed Landscapes (GDLs) and on listed buildings and ancient monuments. The LVIA considers potential effects on GDLs from the perspective of visitor amenity and landscape character, whilst effects on the archaeological or cultural heritage resource, including the setting of artefacts/ features are considered in Chapter 6: Cultural Heritage.

5.2.5 This chapter also assesses cumulative effects as arising from the addition of the Proposed Development to the baseline of existing and consented wind farms, and in the context of other wind farms that are subject to a formal planning application. Whilst schemes that are at pre-application stages (e.g. Scoping) are not usually considered in LVIAs because of the degree of uncertainty that they represent, the Clashindarroch Extension and Glenfiddich have been included in the assessment due to their proximity to the Proposed Development and potential to contribute to significant cumulative effects.

5.2.6 A search was also undertaken to ascertain whether any other development might give rise to cumulative effects when considered in conjunction with the Proposed Development, such as proposed transmission infrastructure, new road corridors etc. No developments were identified that were of a similar character, size or scale in proximity to the Proposed Development which could lead to significant cumulative effects.

5.2.7 The scope of this assessment has been informed by consultation responses summarised in Table 5.1 and the following guidelines/ policies:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA3[2]);
- Landscape Character Assessment[3];
- Techniques for Judging Capacity and Sensitivity[4];
- Siting and Designing Wind Farms in the Landscape[5];
- Assessing Effects on Wild Land[6]; and
- Guidance: Cumulative Effects of Wind Farms[7].

Consultation

5.2.8 Table 5.1 summarises the consultation responses received regarding Landscape and Visual matters and provides information on where and/ or how they have been addressed in this assessment.

5.2.9 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

[2] Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidance for Landscape and Visual Impact Assessment – Third Edition.
[3] The Countryside Agency and NatureScot (2002) Landscape Character Assessment.
[4] NatureScot and the Countryside Agency (2002) Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.
[5] NatureScot (2017) Siting and Designing Wind Farms in the Landscape – Version 3a.
[6] NatureScot (2017) Consultation on draft guidance: Assessing impacts on Wild Land Areas – technical guidance consultation on draft guidance: Assessing impacts on Wild Land Areas – technical guidance.
[7] NatureScot (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
Aberdeenshire Council (22 January 2021)	Scoping	The proposed study area of 45 km from the outermost turbines of the development is in line with standard practice and is acceptable. The approach indicated within the scoping report also seems appropriate.	Noted.
	Scoping	ZTVs should be included within the EIAR including the ZTV for the development on its own with a separate ZTV showing the development along with other wind energy developments within the study area to demonstrate cumulative impacts.	Noted. Hub height and tip height ZTVs for the Proposed Development are included in Figures 5.6a, 5.6b and 5.6c of the LVIA. Cumulative ZTVs are presented in Figures 5.7a to 5.7za.
	Scoping	Recommend that ZTVs showing previous design iterations be included within the EIAR to demonstrate how the progression of the design phase has altered the anticipated impacts.	Recommendation is noted. Given the nature of ZTV modelling, it is unlikely that any notable differences in ZTV coverage would be discernible. Instead, a suite of wirelines has been prepared to illustrate the improvements made during the design process (see Figures 3.1.1a – 3.1.3f in Technical Appendix 3.1).
	Scoping	The study area includes various landscape designations as noted within the Scoping Report. It is encouraged that viewpoints should be identified from areas throughout these designations where the ZTVs indicates a potential impact.	Noted. Viewpoints selected represent a wide range of receptors, including designated landscapes where the ZTV indicates extensive visibility, or visibility from sensitive areas of that landscape. Viewpoints were agreed with Moray Council, Aberdeenshire Council and NatureScot prior to the assessment being undertaken.
	Scoping	The proposal to discount the North Aberdeenshire Coast Special Landscape Area (SLA) from the LVIA is acceptable for the reasons stated within the scoping report. If there is no visibility from the Howe of Cromar SLA, Dee Valley SLA and Clachnaben and Forest of Birse SLA as suggested it is appropriate to discount these from the LVIA. In the 'effects scoped out' section of the EIAR LVIA chapter (5) for clarity an explanation for their exclusion should be provided. Should the design iteration change from what is proposed, this should be re-assessed.	Noted and rationale for omission has been included in Section 5.2 of Chapter 5: LVIA. The reason for the scoping out of certain landscape character types/ designated landscapes is provided in Technical Appendices 5.2 and 5.3.
	Scoping	The approach regarding the assessment of visual receptors is acceptable. The precautionary approach to include properties within 5 km of the Proposed Development Site is welcomed should it be considered that there is a potential for overbearing effects. It is encouraged that a commentary of the assessment of the houses considered should be included within the RVAA for clarity.	Noted. Included within Technical Appendix 5.7: Residential Visual Amenity Assessment.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
	Scoping	The preliminary VPs included within the scoping report appear acceptable at this time and include a variety of receptors. It is reminded that VPs should be taken from the various landscape designations within the study area.	Noted. Viewpoints selected represent a wide variety of receptors, including designated landscapes where the ZTV indicates extensive visibility, or visibility from sensitive areas of that landscape. Viewpoints were agreed with MC, AC and NatureScot during a pre-assessment consultation meeting held prior to the assessment being undertaken (see last entry in this table).
	Scoping	A comprehensive study of any proposed borrow pits be included within the landscape and visual impact assessment. The EIAR should include details of the location, area, depth, extraction volume, method of extraction and sections of the borrow pits. The extent of the borrow pit should also be included on photomontages of the development. Without these images and details, it is unlikely that a full assessment of the potential impacts can be taken.	Noted. At this stage, the detailed design of the borrow pit is not known as detailed Site investigations have not yet been carried out. The LVIA has taken into account the impact of a borrow pit within the proposed area of search. This area is shown on Figure 2.1: Site Layout and is also shown on the visualisations.
Moray Council (19 February 2021)	Scoping	In terms of the CLVIA, all developments in planning, including those at scoping stage, should be included. There is a cluster of developments forming in this area, such as the Clashindarroch development (including extensions) and Garbet and so this should be considered with the potential for all developments to take place. It is recommended that where there are various developments proposed in close proximity to one another, some level of co-ordination should be taken to ensure the scale/ layouts of the developments minimise potential adverse cumulative visual effects.	Noted. Developments in planning, including those in proximity to the Site which are at scoping stage, have been included within the CLVIA. Chapter 3: Design Evolution and Alternatives sets out the rationale behind the design of the Proposed Development, including the design decisions made to seek to achieve consistency with cumulative development in proximity to the Site.
	Scoping	The Scoping Report dated November 2020 sets out the methodology and scope of the Landscape and Visual Impact Assessment (LVIA). The Council agrees in general with the methodology to be adopted for the LVIA and with the Study Area being defined as 45 km from the proposal.	Noted.
	Scoping	Detailed consideration should be given to the landscape and visual effects of felling and restocking proposals (both adverse and beneficial) in the LVIA and mitigation and landscape enhancement should be optimised design of any Wind Farm Forest Plan and/ or compensatory planting.	Noted. The LVIA team have worked with the forestry consultant to understand implications of felling. These implications are included in the LVIA where appropriate. Forestry felling has been included within photomontages. The LVIA photomontages can be found in Figures 5.9a to 5.27f.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
	Scoping	Proposed forest felling areas should be shown in relevant visualisations from nearby viewpoints.	Forestry felling has been included within photomontages. The LVIA photomontages can be found in Figures 5.9a to 5.27f.
	Scoping	Please note that within the current non-statutory Moray Onshore Wind Energy Supplementary Guidance, the A941 passing the Site is classed an identified scenic route into Moray.	Noted. The A941 is considered as part of the assessment of effects on transport routes, presented in Section 5.7 of the LVIA.
	Scoping	Mitigation of visible aviation lighting should be thoroughly considered in the EIAR.	Noted. A Lighting Assessment has been prepared (see Technical Appendix 5.8: Lighting Assessment). Lighting mitigation is also presented within Chapter 12: Aviation and Telecommunications.
	Scoping	All the proposed turbines (within Moray) are located within an area with potential for wind farm development of turbines over 35 metres to tip height, with no upper height limit identified (Moray Local Development Plan (MLDP) 2020).	Noted. A policy review is presented in Section 5.3.
	Scoping	The Moray Onshore Wind Energy (MOWE) Non-Statutory Guidance 2020 identifies areas of strategic capacity for wind farms with the greatest potential for development - nine of the 11 turbines are located within an area of greatest potential for Very Large Turbines, Extensions and Repowering.	Noted. A policy review is presented in Section 5.3.
	Scoping	MOWE Non-Statutory Guidance 2020 and Moray Wind Energy Landscape Capacity Study 2017 are material considerations for development management purposes. The Guidance identifies five typologies of wind turbine, including "Very Large 130 m to 150 m" (to blade tip), and highlights that there is very limited scope to accommodate further large scale wind turbine developments in Moray in landscape and visual terms.	Noted. The proposed design has considered how 200 m turbine would compare to the guidance set out for Very Large wind turbine typologies in the MEWLCS. The design of the wind farm has also taken into account the cumulative and the emerging pattern of wind farm development within the area surrounding the Site. These conclusions are presented in Chapter 3: Design Evolution and Alternatives.
	Scoping	The Proposed Development is located within the Open Uplands with Settled Glens [12b] Landscape Character Type (LCT) as defined in the Guidance and Landscape Capacity Study. LCT12b is assessed as having a High sensitivity to the very large typology (turbines >130 m), with no scope to accommodate additional turbines of this scale in this landscape due to the limited extent of remaining uplands without operational and consented wind farms and the presence of significant landscape and visual constraints associated with the remaining undeveloped area.	An assessment of effects on Landscape Character is presented in Technical Appendix 5.4: Residual Effects on Landscape Character. Findings of this assessment are summarised in Section 5.7 of this chapter. This assessment also considers the cumulative effects arising from the Proposed Development in addition to, and in combination with other operational, consented, in planning and Scoping

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		The operational Dorenell, Clashindarroch and Kildrummy Wind Farms lie within and close-by this landscape and this increases sensitivity in relation to potential cumulative landscape and visual effects.	developments on the character of the LCTs.
	Scoping	The Moray Council are currently undertaking an update of the Landscape Capacity Study 2017 in accordance with NatureScot's guidance on Landscape Sensitivity Studies.	No information has been released with regards to this assessment. Therefore the LVIA presented in this chapter has taken account of the 2017 Moray Wind Energy Landscape Capacity Study.
	Scoping	There are concerns regarding the number, siting and heights of the proposed turbines which has the potential to have significant adverse landscape and visual impacts, in addition to cumulative impact.	EIAR Chapter 3: Design Evolution and Alternatives presents a commentary on the design reviews which were carried out to ensure the Proposed Development is the best fit for the Site. This includes commentary on reducing the number of proposed turbines from 18 to 11. An 'in-combination' and 'in-addition' cumulative landscape and visual effects assessment is presented in Technical Appendices 5.4, 5.5 and 5.6 and summarised in Section 5.7 of this chapter.
	Scoping	The Council agrees with the general scope of the LVIA although we recommend that the assessment of effects on landscape character should be more focussed than set out in the Scoping Report to provide detailed consideration of effects on LCTs lying within approximately 20 km of the Site. We would prefer to see a more thorough assessment where effects are most likely to be significant than a lengthy and more cursory assessment of a great many LCTs.	The Landscape Character Assessment is presented in Technical Appendix 5.4 of this chapter. The assessment has focussed on those LCTs where there is considered likelihood for significant effects. Where LCTs have been scoped out of the assessment, a justification for this is provided.
	Scoping	We note that it is proposed in the Scoping Report to use both the NatureScot online landscape character classification and the landscape character classification used in the 2018 Moray Wind Energy Landscape Capacity Study (MWELCS) for the landscape character assessment. We would advise that the assessment of effects on landscape character within Moray should be based only on the detailed classification in the MWELCS, particularly given the context of a more focussed assessment as advised above.	Noted. Further consultation undertaken with MC following the receipt of the Scoping Opinion set out the more detailed approach to the assessment of effects on LCTs. The agreed approach entailed: • use of NatureScot LCTs, supplemented with information from the 2017 MWELCS due to: • NatureScot's LCTs providing the most up to date classifications and descriptions; and • NatureScot's LCTs covering the full LVIA study area.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
			This approach will be supplemented by info in the 2017 MWELCS. The boundaries for NatureScot's LCTs and MWELCS are largely the same, with some slight differences in the south of the Moray administrative area, and to the naming of LCTs. Where units are defined, these have also been described (e.g. the NatureScot LCT covering the Site is Open Moorland LCT which is divided into Open Moorland with 12b. Steep Slopes and Open Moorland with Settled Glens in the 2017 MWELCS). The assessment of effects on LCT will focus on those LCTs which have potential for significant effects. The process of selecting these LCTs has been set out in Technical Appendix 5.3 to ensure transparency.
	Scoping	The assessment of effects on valued landscapes in Moray should be focussed on the Deveron Valley and Ben Rinnes Special Landscape Areas. While there may be some visibility of the proposal from the Pluscarden SLA this is unlikely to incur significant adverse effects on its character and special qualities given that it lies >30 km distance from the proposal. The SLA assessment should consider potential effects on character as well as the special qualities of these designated landscapes.	Noted. The assessment of effects on designated landscapes is presented in Technical Appendix 5.5 of the LVIA. The findings are summarised in Section 5.7 of this chapter.
	Scoping	The Ben Rinnes, Spey Valley and Deveron Valley SLAs lie closest to the Site. In addition, the ZTV identifies impacts on the Burghead to Lossiemouth Coast, Culbin to Burghead Coast, Lossiemouth to Portgordon Coast, Pluscarden Valley, Portgordon to Cullen Coast, Spynie and Quarrelwood SLAs. There are also SLAs in the Aberdeenshire Council area which should also be taken account of, in particular the Deveron Valley.	The Landscape Designation and Classification Assessment is presented in Technical Appendix 5.5 of this chapter. The assessment has focussed on those landscape designation and classifications where there is considered likelihood for significant effects. Where designations have been scoped out of the assessment, a justification for this is provided.
	Scoping	The Ben Rinnes SLA identifies wind farm development in adjacent upland areas as a potential threat to the sensitivity of the landscape. This could adversely affect views and the character of the secluded Glen Rinnes and Glen Livet, particularly where turbines would be seen on containing skylines.	Noted. Effects on the character and qualities of the Ben Rinnes SLA is presented in Technical Appendix 5.5: Landscape Designations and Classifications. The findings are summarised in Section 5.7 of this chapter.
	Scoping	Proposals, including those outwith SLAs, will only be permitted where they do not prejudice the special qualities of the designated area set out in the Moray Local Landscape Designation Review (www.moray.gov.uk/moray_standard/p	Noted.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		age_121575.html), adopt the highest standards of design and minimises adverse impacts on the landscape and visual qualities that the area is important for.	
	Scoping	The Deveron Valley SLA (Moray) also identifies wind energy development sited in adjacent upland areas and visible on prominent skylines as a potential threat. Such development would affect views and the intimate scale and sense of seclusion associated with this valley.	Noted. Effects on the character and qualities of the Deveron Valley SLA is presented in Technical Appendix 5.5: Residual Effects on Landscape Designations and Classifications. The findings are summarised in Section 5.7 of this chapter.
	Scoping	Proposals should also take account of the special qualities of the Cairngorm National Park and developers should consult with the Park Authority and NatureScot as appropriate.	Consultation was undertaken with CNPA and Nature Scot as part of the LVIA process. The outcome of that consultation is described in this table. Effects on the special landscape qualities of the CNP are presented in Technical Appendix 5.5: Residual Effects on Landscape Designations and Classifications. The findings are summarised in Section 5.7 of this chapter.
	Scoping	A detailed ZTV should be provided in the EIAR based on an OS 1:50,000 scale map base within 15-20 km of the proposal to allow more accurate appraisal of potential visibility in the local area.	Please refer to Figure 5.6b.
	Scoping	The viewpoints listed in Table 3.2 of the Scoping Report are likely to provide a good range of representative views although it is requested that the following additional viewpoints should be included:	Noted.
		• Auchindoun Castle – it is appreciated that visualisations will be produced from this important feature within the Cultural Heritage section of the EIAR but as it is a popular visitor attraction we would wish to see effects on views also considered in the LVIA. The castle lies within the Ben Rinnes SLA and the assessment of effects on views should additionally inform the assessment on this valued landscape.	Noted. This viewpoint has been included - see Viewpoint 18 in Figures 5.26a – 5.26f.
		• The A941 close to Upper Howbog near Cabrach – we would wish to see this VP included because of the importance of this approach to Moray and to allow consideration of cumulative effects with the operational Dorenell and proposed Clashindarroch extension wind farms.	Noted. This viewpoint has been included - see Viewpoint 19 in Figures 5.27a to 5.27f.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		• Wish to see an additional night-time viewpoint from Ben Rinnes. The night-time viewpoint proposed from Viewpoint 12 should be substituted with one from Viewpoint 13 on the A920 as this is closer and it would be more useful in terms of considering cumulative effects with the application-stage Garbet Hill wind farm which will also require visible aviation lighting.	Noted. This viewpoint has been included - see Figure 5.14j: VP 6 Ben Rinnes which has been used to inform the assessment in Appendix 5.8: Lighting Assessment.
		• Lighting effects should be assessed from each of the representative VPs and not just from the VPs selected to illustrate night-time effects.	The lighting assessment has considered the effects of turbine lighting on all VPs selected for the LVIA. Visualisations have been presented for three of these VPs - see Figures 5.14j, 5.16h, and 5.21h which support Technical Appendix 5.8: Lighting Assessment.
	Scoping	While the character of the landscape is not readily discernible during hours of darkness, lighting can affect perceptual qualities associated with some LCTs and SLAs and it is recommended that the effect on the sense of seclusion and naturalness (due to existing relatively low lighting levels in the local area) are considered in the LVIA.	The lighting assessment has considered the effects of turbine lighting on the perceptual qualities of the landscape. See Technical Appendix 5.8: Lighting Assessment.
	Scoping	Cumulative effects of lighting with the application-stage Garbet Hill wind farm should be assessed.	Noted. The lighting assessment includes consideration of the potential for cumulative lighting effects in combination with the proposed Garbet Wind Farm. See Technical Appendix 5.8: Lighting Assessment.
	Scoping	Table 2.2 of the Scoping Report lists wind farms lying within 20 km of the Site which will be considered in the cumulative landscape and visual assessment. It should be noted that the Garbet Hill wind farm is now at application-stage and in addition the proposed Edintore II development is at scoping-stage. Any other application-stage proposed wind farm developments to be considered in the cumulative LVIA should be confirmed with Moray Council once an assessment cut-off date has been established.	Noted. A full list of wind farms which were included in the cumulative assessment in the LVIA is presented in Table 5.11 in Section 5.4. This list was included in the Gate Check report submitted to the ECU in December of 2021. MC were consulted on this report.
NatureScot (14 January 2021)	Scoping	NatureScot guidance should be followed to ensure methodologies are appropriate. NatureScot is happy to agree to a finalised list of viewpoints in due course but note that the list of viewpoints provided in the scoping report seem suitable.	Noted. A full list of guidance is included in Section 5.2 and 5.3 of this chapter. Viewpoints were agreed with NatureScot, MC and AC during a consultation meeting in June 2021 (see below).

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		NatureScot request that the Cairngorms National Park boundary is displayed on all relevant figures and that the EIAR includes an assessment of the effects of the CNP's special landscape qualities that have potential to be influenced.	Effects on the special landscape qualities of the CNP have been assessed in the LVIA as part of the designated landscape assessment (see Technical Appendix 5.5: Residual Effects on Landscape Designations and Classifications). The CNP boundary is displayed on all relevant figures within the EIAR.
Cairngorms National Park Authority (8 December 2020)	Scoping	The Proposed Development is located approximately 11 km outwith the National Park boundary. Policy 3.3a of the current Cairngorms National Park Partnership Plan (2017 to 2022) is therefore relevant in relation to the potential for effects on the Special Landscape Qualities and landscape character of the National Park from wind farm development outwith the National Park.	Noted. Consultation has been undertaken with NatureScot with regards to effects on the National Park. The Special Qualities of the CNP which have potential to be affected by the Proposed Development, and have therefore been assessed within the LVIA, were agreed with NatureScot prior to assessment work commencing. Effects on these special landscape qualities are assessed in the LVIA as part of the designated landscape assessment (see Technical Appendix 5.5).
	Scoping	In accordance with our working protocol with NatureScot, NatureScot provides advice on the potential effects of development outwith the National Park on the Special Landscape Qualities and landscape character of the National Park. We therefore have no other comments to make at this stage and refer you and the applicant to their advice.	
	Scoping	For CNPA internal report and presentation to the committee on the application, it is helpful for the Site location, layout and ZTV figures to have the National Park boundary clearly marked on them and for the LVIA figures to include a combined cumulative ZTV figure showing the proposed wind farm along with existing and consented wind farms, so that members can see what the addition of the new wind farm has on the existing (operational and consented) pattern of visibility in the National Park - supported by visualisations (photomontages, wirelines) from appropriate viewpoints. Quite often the cumulative ZTV is split into different figures showing different combinations, so I have to request a single cumulative ZTV, which is not ideal at that stage in the process. This figure should only show the Proposed Development ZTV overlaid with a ZTV for other consented/ operational development (not including other proposed 'in planning' development). Other consultees will have other needs though, so normal LVIA guidance should be followed for in planning stage	Noted. A figure showing the requested information is included as Figure 5.7b.

Table 5.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		proposals and other ZTVs and visualisations.	
Moray Council, Aberdeenshire Council and NatureScot Consultation Meeting			
	LVIA Consultation Meeting This meeting followed a consultation paper issued by Ramboll on 12/05/2021 to NatureScot, Moray Council, Aberdeenshire Council and Cairngorms National Park Authority (CNPA)	A meeting was held, via teleconference, with Ramboll and representatives from Moray Council, Aberdeenshire Council, and NatureScot to discuss the detailed approach to the LVIA. Prior to the meeting, a technical note was circulated to all attendees (including CNPA) to set out the detailed approach to the LVIA. This included: • Approach to the Landscape Character Assessment; • Approach to the Landscape Designation Assessment (including a list of those designated and classified landscapes to be assessed, as well as the special qualities of the CNP which would be assessed); • Approach to the Viewpoint Assessment, including a list of final viewpoints taking account of comments received in the Scoping Opinion; • Approach to the Cumulative Assessment including a preliminary list of cumulative wind farms; • Approach to the Lighting Assessment; and • Approach to the RVAA.	During the meeting, attendees discussed and agreed on the proposed way forward for the LVIA, as presented in the Technical Note. A formal minute of the meeting was circulated for comment, and then finalised. The LVIA has been taken forward in accordance with the information presented in the Technical Note.

Potential Effects Scoped Out

5.2.10 In order to keep the LVIA proportionate, a number of landscape and visual receptors been scoped out of this assessment on the basis of:

- Limited or no theoretical visibility of the Proposed Development;
- Limited or no actual visibility confirmed during field reconnaissance;
- Substantial distance from the Proposed Development with consequent mitigating effects, meaning that significant effects are improbable; and
- Landscape and visual characteristics and/ or special qualities that are not susceptible to the type of development proposed.

5.2.11 Technical Appendix 5.2: Landscape Character Types Descriptions, and Technical Appendix 5.3: Landscape Designations and Classifications Descriptions sets out each of the landscape receptors considered within the 45 km study area, and where applicable, identifies the reason for their omission.

5.2.12 In addition, the visual receptors which have been scoped out of the LVIA are:

- Settlements outwith 20 km of the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted;
- Roads outwith 20 km from the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted; and
- Core Paths outwith 10 km from the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted.

5.2.13 Effects related to the decommissioning of the Proposed Development were not assessed within the LVIA as such effects are anticipated to be equivalent to, or possibly less than, those expected to occur during its construction.

Method of Baseline Characterisation

DESK STUDY

5.2.14 Initially, a desk study was undertaken to establish the baseline context of the Proposed Development. This considered physical components of the landscape (i.e., landscape fabric) as well as the distinctive recognisable patterns of elements that form the landscape character of the area and of designated and classified landscapes. Visual elements and receptors/ receptor locations were also identified including settlements, transportation corridors and recreational trails and summits, as well as specific landscape character types and designated areas.

5.2.15 LCTs considered in the baseline and subsequent assessment are derived from the following Landscape Character Assessments (LCAs):

- NatureScot (2019) Scotland Landscape Character Assessment[8];
- Moray Council (2017) Moray Wind Energy Landscape Capacity Study[9]; and
- Aberdeenshire Council (2014) Strategic Landscape Capacity for Windfarms[10].

5.2.16 The description of landscape designations and classifications contained in the LVIA are derived from the following publications:

- Moray Council (2018) Moray Local Landscape Designation Review[11];
- Aberdeenshire Council (2016) Local Development Plan Supplementary Guidance – Special Landscape Areas[12];
- Historic Environment Scotland Gardens and Designed Landscape Inventory[13]; and
- NatureScot Wild Land Area descriptions[14].

5.2.17 Other datasets utilised in the preparation of the LVIA included:

- Ordnance Survey 1:50,000 and 1:250,000 mapping;
- Ordnance Survey 5 m and 50 m Digital Terrain Model;

8 NatureScot (2019) Scotland Landscape Character Assessment - Online map and datasheets - https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions [accessed 14/12/2021]
9 http://www.moray.gov.uk/moray_standard/page_107096.html [accessed 14/12/2021]
10 https://www.aberdeenshire.gov.uk/planning/plans-and-policies/the-strategic-landscape-capacity-for-windfarms/ [accessed 14/12/2021]
11 http://www.moray.gov.uk/moray_standard/page_121575.html [accessed 14/12/2021]
12 https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/ldp-sg9-special-landscape-areas/ [accessed 28/10/2021]
13 https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/gardens-and-designed-landscapes/search-for-a-garden-or-landscape/ [accessed 28/10/2021]
14 https://www.nature.scot/doc/wild-land-areas-map-and-descriptions-2014 [accessed 14/02/2022]

- Scottish Landscape Character Assessment data - NatureScot data sets (2019);
- Gardens and Designed Landscapes - Historic Environment Scotland datasets;
- National Scenic Areas - Scottish Government data sets;
- Wild Land Areas - NatureScot data sets;
- Road network - Meridian 2 data; and
- Cumulative data (Ramboll's own dataset).

FIELD SURVEY

5.2.18 Desktop findings were verified and augmented by targeted field reconnaissance during which time key sensitive receptor locations were visited. During the field reconnaissance draft wirelines, mapping, data collection systems and augmented reality tools were utilised to verify theoretical visibility (including cumulative visibility).

ILLUSTRATIVE MATERIALS

5.2.19 The LVIA is illustrated by a range of tools including ZTV plans, photographs, wirelines, and photomontages. All outputs have been prepared in accordance with current best practice comprising:

- NatureScot (2017) Visual Representation of Wind Farm - Guidance Version 2.2; and
- Landscape Institute (2019) Technical Guidance Note 06/19 – Visual Representation of Development Proposals.

5.2.20 ZTVs have been prepared to assist in the identification of areas from where there is potential visibility of the Proposed Development, illustrated on Figure 5.6a: Blade Tip ZTV. ZTVs are based on Ordnance Survey (OS) digital terrain data supplied as gridded height data at 5 m and 50 m interval resolution. This data does not reflect the screening effect of vegetation or built structures and so the visibility shown on the ZTVs is more extensive than actual visibility on the ground.

5.2.21 The accompanying visibility analysis provides details of the number of visible turbines and which aspects of the turbines would be visible (i.e., tower, hub, blades).

5.2.22 In order to establish the cumulative theoretical visibility, ZTVs were prepared for all operational, under construction, consented and application stage wind farm projects within 45 km of the Proposed Development using 5 m DTM. The cumulative ZTVs are included in Figures 5.7a to 5.7za.

Criteria for the Assessment of Effects

5.2.23 The aim of the LVIA is to identify, predict and evaluate potential significant effects arising from the Proposed Development. Wherever possible, impacts are quantified, but the nature of such assessments requires interpretation by professional judgement. In order to provide a level of consistency to the assessment, landscape sensitivity to change, the prediction of magnitude of impact and assessment of significance of the residual effects has been based on pre-defined criteria, the level of effects being determined by a comparison of the sensitivity of receptors and the magnitude of impact arising from the Proposed Development.

5.2.24 The LVIA considers landscape and visual effects on designated landscapes in the study area, including a National Park (NP), and National Scenic Area (NSA) and SLAs. Additionally, whilst not landscape designations, a number of sensitive landscape classifications have been assessed, including Wild Land Areas (WLAs) and GDLs.

5.2.25 In order to assist in evaluating the potential landscape and visual effects arising from the Proposed Development, ZTVs were generated to identify the potential extent of its visibility over the study area (see Figures 5.6a, 5.6b and 5.6c). An assessment of the predicted visibility of the Proposed Development from each of the LCTs, designated and sensitive non-designated landscapes in the study area has been carried out by analysing the ZTVs and verifying the findings during field reconnaissance. The visibility assessment has concentrated on the publicly accessible areas including outdoor recreational areas, cycle routes, roads, and the public footpath network.

5.2.26 Mitigation measures which have been incorporated into the final design and layout of the Proposed Development are described, together with a summary of the design optimisation process carried out in parallel with the LVIA. Further details of the constraints which were identified, and the design process are described in Chapter 3: Design Evolution and Alternatives.

5.2.27 A selection of viewpoints was chosen in consultation with ECU, MC, AC and NS. These viewpoints are considered to be representative of the main sensitive receptors in the study area. The viewpoints have also been checked against the cumulative ZTVs for existing/ consented and proposed wind farms within the study area in order to ensure that they provide representative coverage of potential cumulative visibility and related effects. Viewpoint locations are detailed in Technical Appendix 5.6 and their locations are illustrated in Figure 5.8.

5.2.28 Analysis of the potential effects on landscape and visual amenity arising from the Proposed Development at each of these viewpoints has been carried out. This analysis has involved the production of computer-generated wirelines and/or photomontages to predict the operational views of the Proposed Development from each of the agreed viewpoints. The existing and predicted views from each of these viewpoints have been analysed to identify the magnitude of impact and the residual effects on landscape character and visual amenity at each viewpoint location.

CRITERIA FOR ASSESSING THE SENSITIVITY OF RECEPTORS

5.2.29 The sensitivity of the landscape to change is defined as high, medium or low based on professional interpretation of a combination of its susceptibility to change associated with the type of development proposed, and the value attributed to the landscape. The following parameters were therefore applied in determining the susceptibility of the landscapes within the study area:

- landscape quality;
- existing land-use;
- the pattern and scale of the landscape;
- visual enclosure/openness of views and distribution of visual receptors;
- the scope for mitigation, which would be in character with the existing landscape; and
- the degree to which the particular element or characteristic contribution to the landscape character can be replaced or substituted.

5.2.30 In determining value the LVIA uses, as its primary indicator, formal landscape designations. It also uses the criteria set out within Paragraphs 5.19 to 5.31 and 6.37 of GLVIA3. Where other clearly defined indicators were identified, these have also been referred to.

5.2.31 Visual receptor sensitivity is also defined as high, medium or low based on an interpretation of a combination of parameters, and also relates to the susceptibility and value ascribed to

visual receptors or receptor locations. The following criteria were utilised in determining viewpoint sensitivity:

- the land use or main activity at the viewpoint/receptor location;
- the frequency and duration of use of receptor location; and
- the landscape character and quality of the intervening landscape.

5.2.32 In relation to land use at the viewpoint, visual sensitivity is defined in Table 5.2, below.

Table 5.2: Sensitivity in Relation to Receptor Type and Activity

Sensitivity	Receptor Type and Activity
High	• Tourists and those engaged in outdoor recreational activities for which the landscape and views form a key part of their experience, including hill walkers and visitors to formal vantage points; • Passengers and tourists travelling on key routes; • Passengers on trains and ferries where visual amenity and scenic qualities form an integral part of receptors experience and expectations; • Walkers on strategic recreational footpaths or on hills, cycle routes or rights of way; • Visitors to landscapes/ sites that have a strong physical, cultural or historic connection with the landscape or a particular view; and • Residential receptors at individual dwellings and within settlements.
Medium	• Local road users/ commuters who are generally travelling alone and /or are focused on the road rather than the adjoining landscape.
Low	• People engaged in outdoor sports or recreation (other than appreciation of the landscape); and • Receptors located in commercial buildings, industrial complexes, and other locations where people's attention may be focused on their work or activity.

CRITERIA FOR ASSESSING THE MAGNITUDE OF CHANGE

5.2.33 The magnitude of impact arising from the Proposed Development may be described as Substantial, Moderate, Slight, Negligible or None based on the interpretation of a combination of largely quantifiable parameters, as follows:

- the distance of receptors from the Proposed Development;
- the duration of the predicted change and whether it is reversible;
- the size and scale of the change anticipated;
- the geographical extent of the study area, landscape character unit, designation or route that would be affected;
- the angle of view in relation to main receptor activity;
- the degree of contrast;
- the background context to the Proposed Development; and
- the extent and nature of other built development visible, including vertical elements.

5.2.34 Table 5.3, below, provides a brief definition for different magnitudes of impact.

Table 5.3: Magnitude of Impact

Magnitude	Definition
Substantial	Total loss or considerable alteration/interruption of key elements, features or characteristics of the landscape character and/or composition of views resulting in a substantial change to the baseline conditions.
Moderate	Partial loss or alteration to one or more key features or characteristics of the baseline, resulting in a prominent, but localised change within a broader unaltered context.

Table 5.3: Magnitude of Impact	
Magnitude	**Definition**
Slight	Discernible loss or alteration to one or more key elements, features or characteristics of the baseline conditions. Change arising from the loss/ alteration would be discernible but underlying landscape character or view composition would be broadly consistent with the baseline.
Negligible	Very limited or imperceptible loss or alteration to one or more key elements/ characteristics of the baseline. Change may be barely discernible.
None	No aspect of the Proposed Development would be discernible. The Proposed Development would result in no appreciable change to the landscape resource or view.

CRITERIA FOR ASSESSING CUMULATIVE EFFECTS

5.2.35 In assessing potential cumulative landscape and visual effects, consideration has been given to cumulative effects arising from combined and/ or consecutive (concurrent) visibility (where the observer is able to see two or more developments from one viewpoint location), and sequential effects (where a number of similar developments would be visible individually or simultaneously over a sequence of connected viewpoints, such as would be found along a road or footpath). This is in accordance with current NS guidance.

5.2.36 Consideration has also been given to the additional effects attributable specifically to the Proposed Development, as well as its 'in combination' effect, where the combined effect of the Proposed Development and other cumulative schemes are taken into account.

5.2.37 Table 5.4 provides a brief definition for different magnitudes of cumulative impact which have been used as a guide in this assessment.

Table 5.4: Magnitude of Cumulative Impact	
Magnitude	**Definition**
Substantial	In Addition Impact: The Proposed Development would represent a considerable increase in the influence of wind energy development on the character of the landscape and/ or the composition of views. In Combination Impact: The baseline or emerging cumulative context, coupled with the Proposed Development, is such that wind energy development would become a key, if not 'the', defining characteristic of the landscape or views.
Moderate	In Addition Impact: The Proposed Development would represent a notable increase in the influence of wind energy development on the character of the landscape and/or the composition of views. Moderate cumulative change equates to a localised change within an otherwise unaltered context. In Combination Impact: The baseline or emerging cumulative context, coupled with the Proposed Development, is such that wind energy development would become a notable characteristic of the landscape or views.
Slight	In Addition Impact: The Proposed Development would represent a minor addition to the influence of wind energy development on the character of the landscape and/ or the composition of views. The change would be discernible, but the baseline and/ or proposed cumulative condition would be largely unaltered. In Combination Impact: The baseline or emerging cumulative context, coupled with the Proposed Development, is such that wind energy development is becoming a characteristic element in the landscape or views.
Negligible	In Addition Impact: The Proposed Development would represent a barely discernible addition to influence of wind energy development on the character of the landscape and/ or the composition of views. The baseline and/ or proposed cumulative condition of the landscape or view would, for all intents and purposes, be unaffected. In Combination Impact: The baseline or emerging cumulative context, coupled with the Proposed Development would constitute a barely discernible characteristic of the landscape or views.
None	No cumulative context and therefore no in addition or in combination impact.

5.2.38 In accordance with current NS and Scottish Government policy, projects which are at scoping stage are generally not included in the detailed assessment as they may undergo substantial change before a formal planning application is submitted and may not progress to an application at all. However, Clashindarroch Extension and Glenfiddich wind farms, which were at scoping at the time of this assessment, were included in the cumulative assessment (for LVIA purposes only) at the request of statutory consultees due to their proximity to the Proposed Development. The final list of cumulative developments for consideration was derived from Ramboll's internal datasets which have been compiled using information from relevant EIA Reports and 'as built' coordinates of wind farm developments within the study area. The cumulative developments are presented in Table 5.11 in Section 5.4 of this chapter and on Figure 5.7a.

Criteria for Assessing Significance

5.2.39 Table 5.5 illustrates how residual effects are determined by comparing the sensitivity of receptors with the magnitude of predicted change. For the purposes of this assessment significant effects are **Major** or **Major/Moderate**.

Table 5.5: Residual Effects

Landscape and Visual Sensitivity	Magnitude of Impact				
	Substantial	**Moderate**	**Slight**	**Negligible**	**None**
High	Major	Major/ Moderate	Moderate	Moderate/ Minor	None
Medium	Major/ Moderate	Moderate	Moderate/ Minor	Minor	None
Low	Moderate	Moderate/ Minor	Minor	Minor/ None	None

5.2.40 In line with the recommendations in the GLVIA the matrix is not used as a prescriptive tool or arithmetically, and the methodology and analysis of potential effects at any particular location must allow for the exercise of professional judgement. Descriptions of residual effects, especially those considered significant, are described in narrative text.

5.2.41 Landscape and visual effects can be adverse (i.e., having a detrimental effect on the physical elements, character and visual amenity of the area) or beneficial (i.e., having a positive effect on the landscape and visual amenity of the area through strengthening or augmentation of baseline conditions and/ or improvement of the existing landscape or views). For the purposes of this assessment residual effects are assumed to be adverse, unless stated otherwise.

LIMITATIONS AND ASSUMPTIONS

5.2.42 The LVIA focuses upon receptor locations that may be deemed in the public interest, in line with current planning legislation. Whilst potentially a matter of private interest, the visual amenity of individual properties within 3.5 km has been assessed (using a search area of 5 km) (see Technical Appendix 5.7: Residential Visual Amenity Assessment). Where assessment of individual residential properties has been undertaken this was completed from publicly accessible locations.

5.2.43 The data utilised in completion of the LVIA has a number of inherent limitations related to data tolerances and levels of accuracy. However, these have been taken into account in the assessment and is noted where appropriate.

5.3 Policy Context

5.3.1 A desk study of the relevant national, regional and local planning guidance and landscape planning policy context was carried out and the findings are summarised in the following paragraphs.

National Policy

5.3.2 The Scottish Government's planning guidance on renewable developments is set out in the National Planning Framework (NPF3)[15] and in the Scottish Planning Policy (SPP)[16] published in 2014. It must be noted, however, that the forthcoming revision to the NPF (NPF4) was published in draft form in November 2021 and consultations on this policy document closed on the 31 of March 2022. When adopted, NPF4 will set out the Scottish Governments priorities and policies for the planning system up to 2045 with particular regard to how planning and development will help to achieve a net zero, sustainable Scotland by 2045. NPF4 differs from previous NPFs in two ways. It incorporates Scottish Planning Policy and the NPF into a single document and will form a part of the statutory development plan.

5.3.3 Much of the relevant material in the extant SPP in regard to onshore wind farm development relates to the development of spatial frameworks. Paragraph 161 of the SPP states that:

"Planning authorities should set out in the development plan a spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms as a guide for developers and communities, following the approach set out below in Table 1 (page 39 of the SPP). Development plans should indicate the minimum scale of onshore wind development that their spatial framework is intended to apply to. Development plans should also set out the criteria that will be considered in deciding all applications for wind farms of different scales - including extensions and re-powering - taking account of the considerations set out at paragraph 169 of the SPP."

5.3.4 These criteria refer to a number of environmental factors. Those of relevance to the LVIA include:

- cumulative impacts;
- landscape and visual impacts, including effects on Wild Land;
- impacts on long distance walking and cycle routes and scenic routes identified in NPF3; and
- impacts on tourism and recreation.

5.3.5 SPP categories used in spatial frameworks comprise:

- Group 1 Areas: Where wind farms will not be acceptable such as in National Parks (NPs) or NSAs.
- Group 2 Areas: Areas designated/ classified for their international or national heritage value, outwith NPs and NSAs including:
  - National and international designations including World Heritage Sites, Natura 200 and RAMSAR sites and Sites of Special Scientific Interest (principally those relating to cultural heritage and/ or ecological value);
  - Sites included in the inventory of GDLs;
  - Other nationally important mapped environmental interests such as Wild Land Areas (WLAs);

[15] The Scottish Government, Edinburgh, 2014, Scotland's Third National Planning Framework
[16] The Scottish Government (June 2014) Scottish Planning Policy

  - Community separation for consideration of visual impact (i.e., an area not exceeding 2 km around cities, towns and villages identified on the local plan.
- Group 3 Areas: Areas with potential for wind farm development, subject to detailed consideration against policy criteria.

5.3.6 In addition to matters pertaining to spatial frameworks, the SPP provides guidance on the preparation of development plans. Paragraph 196 of the SPP states that:

"International, national and locally designated areas and sites should be identified and afforded the appropriate level of protection in development plans. Reasons for local designation should be clearly explained and their function and continuing relevance considered when preparing plans. Buffer zones should not be established around areas designated for their natural heritage importance. Plans should set out the factors which will be taken into account in development management. The level of protection given to local designations should not be as high as that given to international or national designations."

5.3.7 Paragraph 196 of SPP goes on to state that:

"Reasons for local designation should be clearly explained and their function and continuing relevance considered when preparing plans. Plans should set out the factors which will be taken into account in development management. The level of protection given to local designations should not be as high as that given to international or national designations."

5.3.8 Paragraph 197 of SPP goes on to state that the purpose of areas of local landscape value should be to:

- "safeguard and enhance the character and quality of a landscape which is important or particularly valued locally or regionally; or
- promote understanding and awareness of the distinctive character and special qualities of local landscapes; or
- safeguard and promote important local settings for outdoor recreation and tourism."

5.3.9 Paragraph 202 of the SPP provides guidance regarding the siting and design of wind farms and states that:

"The siting and design of development should take account of local landscape character. Development management decisions should take account of potential effects on landscape and the natural and water environment, including cumulative effects. Developers should seek to minimise adverse impacts through careful planning and design, considering the services that the natural environment is providing and maximising the potential for enhancement."

5.3.10 Paragraph 203 of SPP goes on to state that:

"Planning permission should be refused where the nature or scale of proposed development would have an unacceptable impact on the natural environment. Direct or indirect effects on statutorily protected sites will be an important consideration, but designation does not impose an automatic prohibition on development."

5.3.11 Paragraph 203 of SPP goes on to state that:

"Planning authorities should apply the precautionary principle where the impacts of a proposed development on nationally or internationally significant landscape or natural heritage resources are uncertain but there is sound evidence indicating that significant irreversible damage could occur. The precautionary principle should not be used to impede development without justification. If there is any likelihood that significant irreversible damage could occur, modifications to the proposal to eliminate the risk of such damage

should be considered. If there is uncertainty, the potential for research, surveys or assessments to remove or reduce uncertainty should be considered."

Regional and Local Policy

5.3.12 The Proposed Development would be located across the border of the Moray and Aberdeenshire administrative areas. Therefore, the relevant planning context is contained in:

- Moray Local Development Plan, July 2020[17] (MLDP);
- Aberdeenshire Local Development Plan, April 2017[18] (ALDP); and
- Aberdeenshire Council Supplementary Guidance: Special Landscape Areas (9a, 9b and 9c)[19].

5.3.13 The relevant non-statutory guidance consists of the following:

- Moray Local Development Plan (2020) Moray Onshore Wind Energy Non-Statutory Guidance October 2020[20];
- Moray Local Development Plan (2020) Moray Wind Energy Landscape Capacity Study May 2017[21];
- Aberdeenshire Council (2014) Strategic Landscape Capacity for Windfarms[22];
- Aberdeenshire Council (2005) Planning Advice 1/2005 Use of Wind Energy in Aberdeenshire Guidance for Developers[23]; and
- Aberdeenshire Council (2005) Planning Advice 2/2005 Use of Wind Energy in Aberdeenshire Guidance for Assessing Wind Energy Developments[24]

MORAY LOCAL DEVELOPMENT PLAN (MLDP), JULY 2020

5.3.14 Formally adopted on 27 July 2020, the Moray Local Development Plan (MLDP) 2020 sets how the Council sees the MLDP area developing over the next 10 years and beyond and covers the administrative area of MC (with the exception of the area covered by the Cairngorms National Park boundary).

5.3.15 Following the methodology set out in SPP, the MLDP contains a spatial framework for wind energy developments, identifying areas that are likely to be "acceptable" for onshore wind development, subject to detailed consideration with regards to landscape and visual impact, cumulative impacts and impacts on local communities (as defined in Table 5.6). Map 2 of the LDP identified areas where the Council will apply significant protection. Proposals in these areas may still be appropriate in circumstances where any significant effects on the qualities of these areas can be substantially overcome by siting, design and other mitigation.

5.3.16 According to Map 1, the proposed Site lies predominantly within an area identified as acceptable for onshore wind development, where proposals are likely to be acceptable subject to detailed consideration.

5.3.17 A small extent of the western edge of the Site Boundary lies adjacent to the Ben Rinnes SLA. The nearest proposed turbine to this SLA is located approximately 3.9 km to the east.

[17] Moray Local Development Plan (2020), Volume 1 - Policies
[18] Aberdeenshire Local Development Plan (2017), Part 1 and Part 2
[19] https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/
[20] http://www.moray.gov.uk/moray_standard/page_80938.html [retrieved 14/12/2020]
[21] http://www.moray.gov.uk/moray_standard/page_107096.html [retrieved 14/12/2020]
[22] https://www.aberdeenshire.gov.uk/planning/plans-and-policies/the-strategic-landscape-capacity-for-windfarms/ [retrieved 14/12/2020]
[23] https://www.aberdeenshire.gov.uk/media/8108/2005_1winddevelopers06.pdf
[24] https://www.aberdeenshire.gov.uk/media/8107/2005_2windassessing06.pdf

5.3.18 Policies from the MLDP that are relevant to the Proposed Development and the landscape and visual resource are summarised in Table 5.6, below.

Table 5.6: Moray Local Development Plan Policies

Policy	Policy Content (of relevance to the LVIA[25])
DP9 – Renewable Energy	a) All Renewable Energy Proposals All renewable energy proposals will be considered favourably where they meet the following criteria: i) They are compliant with policies to safeguard and enhance the built and natural environment; ii) They do not result in the permanent loss or permanent damage of prime agricultural land; iii) They avoid or address any unacceptable significant adverse impacts including: • Landscape and visual impacts. • Impact on woodland and forestry interests. • Impact on tourism and recreational interests. b) Onshore wind turbines In addition to the assessment of the impacts outlined in part a) above, the following considerations will apply: i) The Spatial Framework Areas of Significant Protection (Map 2): where the Council will apply significant protection and proposals may be appropriate in circumstances where any significant effects on the qualities of these areas can be substantially overcome by siting, design and other mitigation. Areas with Potential (Map 1): where proposals are likely to be acceptable subject to Detailed Consideration. ii) Detailed Consideration The proposal will be determined through site specific consideration of the following on which further guidance will be set out in supplementary guidance and as informed by the landscape capacity study: Landscape and visual impact: • the landscape is capable of accommodating the development without unacceptable significant adverse impact on landscape character or visual amenity. • the proposal is appropriate to the scale and character of its setting, respects the main features of the site and the wider environment and addresses the potential for mitigation. Cumulative impact • unacceptable significant adverse impact from two or more wind energy developments and the potential for mitigation is addressed. Impact on local communities • the proposal addresses unacceptable significant adverse impact on communities and local amenity including the impacts of noise, shadow flicker, visual dominance and the potential for associated mitigation.
EP3 – Special Landscape Areas and Landscape Character	(i) Special Landscape Areas (SLA's) Development proposals within SLA's will only be permitted where they do not prejudice the special qualities of the designated area set out in the Moray Local Landscape Designation Review, adopt the highest standards of design in accordance with Policy DP1 and other relevant policies, minimises adverse impacts on the landscape and visual qualities the area is important for, and are for one of the following uses; a) In rural areas (outwith defined settlement and rural grouping boundaries); i) Where the proposal involves an appropriate extension or change of use to existing buildings, or ii) For uses directly related to distilling, agriculture, forestry and fishing which have a clear locational need and demonstrate that there is no alternative location, or iii) For nationally significant infrastructure developments identified in the National Planning Framework. b) In urban areas (within defined settlement, rural grouping boundaries and LONG designations);

[25] Where policy text is not applicable to the LVIA, this has been omitted in Table 4.6.

Table 5.6: Moray Local Development Plan Policies	
Policy	**Policy Content (of relevance to the LVIA[25])**
	i) Where proposals conform with the requirements of the settlement statements, Policies PP1, DP1 and DP3 as appropriate and all other policy requirements, and ii) Proposals reflect the traditional settlement character in terms of siting and design. c) The Coastal (Culbin to Burghead, Burghead to Lossiemouth, Lossiemouth to Portgordon, Portgordon to Cullen Coast), Cluny Hill, Spynie, Quarrywood and Pluscarden SLA's are classed as "sensitive" in terms of Policy DP4 and no new housing in the open countryside will be permitted within these SLA's. Proposals for new housing within other SLA's not specified in the preceding para will be considered against the criteria set out above and the criteria of Policy DP5. d) Where a proposal is covered by both an SLA and CAT or ENV policy/designation, the CAT policy or ENV policy/designation will take precedence. (ii) Landscape Character New developments must be designed to reflect the landscape characteristics identified in the Landscape Character Assessment of the area in which they are proposed. Proposals for new roads and hill tracks associated with rural development must ensure that their alignment and use minimises visual impact, avoids sensitive natural heritage and historic environment features, including areas protected for nature conservation, carbon rich soils and protected species, avoids adverse impacts upon the local hydrology and takes account of recreational use of the track and links to the wider network.
EP7 – Forestry, Woodlands and Trees	a) Moray Forestry and Woodland Strategy Proposals which support the economic, social and environmental objectives and projects identified in the Moray Forestry and Woodlands Strategy will be supported where they meet the requirements of other relevant Local Development Plan policies. The council will consult Scottish Forestry on proposals which are considered to adversely affect forests and woodland. Development proposals must give consideration to the relationship with existing woodland and trees including shading, leaf/ needle cast, branch cast, wind blow, water table impacts and commercial forestry operations. b) Tree Retention and Survey Proposals must retain healthy trees and incorporate them within the proposal unless it is technically unfeasible to retain these. Where trees exist on or bordering a development site, a tree survey, tree protection plan and mitigation plan must be provided with the planning application if the trees or trees bordering the site (or their roots) have the potential to be affected by development and construction activity. Proposals must identify a safeguarding distance to ensure construction works, including access and drainage arrangements, will not damage or interfere with the root systems in the short or longer term. A landscaped buffer may be required where the council considers that this is required to maintain an appropriate long-term relationship between Proposed Development and existing trees and woodland. Where it is technically unfeasible to retain trees, compensatory planting on a one for one basis must be provided in accordance with (e) below. c) Control of Woodland Removal In support of the Scottish Government's Control of Woodland Removal Policy, Woodland removal within native woodlands identified as a feature of sites protected under Policy EP1 or woodland identified as Ancient Woodland will not be supported. In all other woodlands development which involves permanent woodland removal will only be permitted where it would achieve significant and clearly defined additional public benefits (excluding housing) and where removal will not result in unacceptable adverse effects on the amenity, landscape, biodiversity, economic or recreational value of the woodland or prejudice the management of the woodland. Where it is proposed to remove woodland, compensatory planting at least equal to the area to be felled must be provided in accordance with e) below. d) Tree Preservation Orders and Conservation Areas The council will serve Tree Preservation Orders (TPOs) on potentially vulnerable trees which are of significant amenity value to the community as whole, trees that contribute to the distinctiveness of a place or trees of significant biodiversity value. Within Conservation Areas, the council will only agree to the felling of dead, dying, or dangerous trees. Trees felled within Conservation Areas or subject to TPO must be replaced, unless otherwise agreed by the council.

Table 5.6: Moray Local Development Plan Policies	
Policy	**Policy Content (of relevance to the LVIA[25])**
	e) Compensatory Planting Where trees or woodland are removed in association with development, developers must provide compensatory planting to be agreed with the planning authority either on-site, or an alternative site in Moray which is in the applicant's control or through a commuted payment to the planning authority to deliver compensatory planting and recreational greenspace.
EP 11 – Battlefields, Gardens and Designed Landscapes	Development proposals which adversely affect nationally designated Battlefields or Gardens and Designed Landscapes or their setting will be refused unless; a) The overall character and reasons for the designation will not be compromised, or b) Any significant adverse effects can be satisfactorily mitigated and are clearly outweighed by social, environmental, economic or strategic benefits. The Council will consult Historic Environment Scotland and the Regional Archaeologist on any proposals which may affect Inventory Sites.

MORAY ONSHORE WIND ENERGY NON-STATUTORY GUIDANCE, OCTOBER 2020

5.3.19 This non-statutory guidance sets out the MC's approach to considering and determining planning applications for wind energy development, the information requirements and issues which are to be addressed at pre-application and application stages; the overall strategy for wind turbine development (including spatial framework and detailed policy guidance maps) and provides links to the suite of guidance which should also be referred to by developers. The guidance provides further detail on the criteria against which all small, medium and large-scale wind energy proposals will be assessed, underpinning policy DP9 – Renewable Energy of the MLDP.

5.3.20 The Proposed Development (as it lies within the Moray administrative area) is largely located within an area identified by the Spatial Framework as being Group 3 – Areas with Potential for Wind Farm Development (see Map 1 of the LDP). These are areas with no national or internationally important designations, nationally important mapped constraints, and fall outwith adopted community separations. In Group 3 areas, proposals are likely to be acceptable, subject to detailed consideration against identified policy criteria. However discrete areas of peatland habitat within the development boundary are classified as Group 2, requiring significant protection. None of the proposed turbines are located within these Group 2 areas.

5.3.21 Further detailed policy guidance maps have been prepared for the Supplementary Guidance to identify areas of greatest potential for wind farm development for Small/ Medium, Medium, Large and Very Large typologies. At 200 m to tip, the Proposed Development would be larger than the parameters for the Very Large turbine typology (130 m to 150 m)[26].

5.3.22 Supplementary Guidance Map 4: Landscape Capacity for Potential Opportunities for Very Large Turbines, Extensions and Repowering shows that all turbines located within the MC administrative area would be sited within a Potential Development Area which has some *limited scope*[27] to accommodate the Large/ Very Large scale development typology. Section 5 of the Supplementary Guidance suggests that if proposed turbines exceed the height thresholds of the Very Large typology, the Applicant is required to "*demonstrate how the impacts of the proposal on the key constraints and any significant effects can be mitigated in an effort to show a proposal can be supported*". Chapter 3 of the EIAR presents a description of the design iterations that have been explored to reduce the environmental effects of the

[26] The Very Large typology includes turbines measuring between 130 m and 150 m in height (to tip). The Proposed Development is proposed to measure 200 m to tip, and is therefore larger than the typology height limit.
[27] Moray council (2020) Moray onshore wind energy non-statutory guidance, October 2020: map 4 - http://www.moray.gov.uk/downloads/file134366.pdf

Proposed Development. Section 5.6 of this chapter sets out the committed mitigation measures which have been/ will be implemented to minimise the potential landscape and visual effects during the construction and operational stages of the Proposed Development.

5.3.23 Section 7 of the SG sets out the key Landscape and Visual Impact considerations, noting that Moray's high quality and diverse landscape is widely recognised and is a major contributor to the local economy and the quality of life enjoyed by residents. Much of the area is covered by 13 designated SLAs and a number of GDLs. A part of the Cairngorm NSA is also within Moray, although out-with the area covered by the MLDP and the guidance. The Proposed Development is not located within a designated landscape.

5.3.24 The SG requires a full LVIA to be submitted for medium and large scale proposals. The LVIA should take account of the Moray Wind Energy Landscape Capacity Study.

THE MORAY WIND ENERGY LANDSCAPE CAPACITY STUDY (2017)

5.3.25 The Moray Wind Energy Landscape Capacity Study (MWELCS) aims to support strategic spatial planning for wind energy developments and to provide guidance on the appraisal of individual wind farm and wind turbine proposals.

5.3.26 This study considers the ability of landscape character types to accommodate wind turbines as a landscape characteristic which can be repeatedly and consistently accommodated across each landscape character type. The recommendations and guidance on capacity for each character type reflect the potential of the landscape to accommodate turbines as a landscape characteristic, either as multiple single features or multiple groups within the landscape character type.

5.3.27 The proposed turbines (as it lies within the Moray administrative area) are located within LCT 12b – Open Uplands with Settled Glens. The Capacity Study draws a number of conclusions regarding the relative sensitivity of this LCT, within which the Proposed Development would be located, as summarised in Table 5.7, below.

Table 5.7: Capacity Study Findings

Landscape Character Type	Summary of Sensitivity[28]
Open Uplands with Settled Glens (LCT12b)	High sensitivity to the Very Large typology (>130 m)
	The Capacity Study concludes that: *"The extensive sweeping scale of this landscape, the generally smooth landform, often with gentle gradients, as well as the overall extent of the uplands and simple land cover all combine to reduce sensitivity to wind farm development. However, the consented Dorenell and operational Clashindarroch and Kildrummy wind farms lie within and close-by this landscape and this increases sensitivity in relation to potential cumulative landscape and visual effects. Scope to accommodate additional larger turbine typologies is further limited by the relatively small extent of remaining undeveloped upland areas (once the consented Dorenell wind farm is constructed) and the closer proximity of these areas to settled and smaller scale areas and roads."* Potential Cumulative Issues The consented Dorenell wind farm will occupy a large proportion of the uplands of this landscape. The operational Clashindarroch and Kildrummy wind farms are also located close to the boundary of this landscape character type. Key cumulative landscape and visual issues include: • Potential sequential and simultaneous views of multiple developments along the skyline around the 360 degree bowl of the Cabrach seen from the A941.

[28] Text taken directly from the MWELCS 2017 and refers to Dorenell Wind Farm as consented. At the time of preparing this assessment, Dorenell Wind Farm is operational.

Table 5.7: Capacity Study Findings	
Landscape Character Type	**Summary of Sensitivity[28]**
	• Cumulative effects on views from the adjacent smaller scale and settled Narrow Farmed Valleys (13), the Deveron valley within neighbouring Aberdeenshire and on the setting of landmark historic features such as Auchindoun Castle. • Visual confusion and an absence of rationale which could occur between large turbines sited in simple and more expansive upland areas and the same size of turbine also located within the more settled valleys and basins of this landscape. • Variations in the type and size of single and small groups of small turbines which may be proposed within the landscape character type. Constraints • The shallow farmed and settled basin of the Cabrach where the scale of the landscape is reduced by a more distinct land cover pattern and by small farms and houses. • The hills on the outer edges of this character type which backdrop the more sensitive settled and smaller scale landscapes lying to the south-east of the Fiddich and the Narrow Farmed Valley (13) of the Deveron Valley. • The visual prominence and setting of The Buck, a landmark hill and cumulative effects from its summit where the consented Dorenell, Clashindarroch and Kildrummy wind farms are/will be visible in relatively close proximity. • The setting of the historically important Auchindoun Castle which lies close to the southern edge of this character type. • The 'sense of arrival' associated with panoramic views from elevated sections of the A941 and A920 when crossing into Moray. • Cumulative effects with the consented Dorenell wind farm which will occupy an extensive part of this character type and with the operational Clashindarroch wind farm in neighbouring Aberdeenshire, principally impacting on views from the A941. • The proximity of the Cairngorms National Park and the setting of the Ladder Hills and Glen Buchat to the south of this character type. Opportunities • The simple, gently graded landform and expansive scale of the long undulating ridges and shallow contained bowls to be found within the upland areas of this character type. Guidance for development No scope has been identified for additional very large turbines (turbines >130 m) to be accommodated in this landscape due to the limited extent of remaining uplands without operational and consented wind farms and the presence of significant landscape and visual constraints associated with the remaining undeveloped area. This assessment assumes that the revised 53 turbine Dorenell proposal with turbines 125 m/150 m will be consented. There may be some very limited opportunities for larger typologies (turbines >50 m) to be accommodated in this landscape character type. These are more likely to comprise very small extensions to some existing wind farm developments or single/ small groups of turbines rather than new wind farms due principally to the cumulative effects that would occur with the Dorenell and Clashindarroch wind farms. The setting of surrounding smaller scale and more settled landscapes (including the scenic Deveron valley and the setting of Auchindoun Castle) is an additional constraint and any further turbines should be sited so as not to significantly intrude on immediate skylines above these areas. Single/ small groups of turbines would be likely to be more acceptable if their height was towards the lower height band of the large typology (80 m to 130 m) or within the medium typology (50 m to 80 m) range in order to minimise effects on more sensitive valleys. Turbines should also be set well away from the landmark hill of The Buck and not be located on prominent hill tops close to the A941. Potential search areas for development are indicated on the map at the front of this assessment. There is some limited opportunity to site smaller typologies (turbines <50 m) on lower hill slopes at the transition between the upland ridges and the farmed land, along gentle slopes. There are likely to be greater opportunities to accommodate the small typology (20 m to 35 m) as they could be sited closer to the farmed lowlands of the glens and Cabrach basin but also because they would limit cumulative effects with nearby operational and consented wind farms in the upland areas.

5.3.28 The MWELCS considers four turbine typologies: Small, Small-Medium, Medium and Large (turbines 80 m to 130 m high). At 200 m to tip, the Proposed Development would be larger than the parameters of the Large Turbine typology.

5.3.29 However, Section 4 of the capacity study also considers opportunities for accommodating Very Large Turbines (>130 m high to blade tip) within Moray. The appraisal focuses on landscape character types where some scope for the large typology (turbines 80 m to 130 m high) was identified in the capacity study's sensitivity assessment. This includes the Open Uplands with Settled Glens LCT (LCT 12b) where the Proposed Development would be located.

5.3.30 It should be noted that this appraisal was focussed on the repowering of operational and consented wind farm developments only but provides some insight into the perceived capacity of the LCT to accommodate the Proposed Development.

5.3.31 The analysis concluded that "*turbines towards (and over) 200 m high to blade tip would be too large to accommodate given the relatively limited extent of uplands within Moray (and the presence of significant landscape and visual constraints within these upland landscapes such as the presence of 'landmark' hills or areas of more complex land form) with significant effects likely to be more widespread and unacceptable on adjacent settled smaller scale landscapes"*.

5.3.32 It is important to note that this publication represents a strategic appraisal and one based upon a 'snapshot' in time of the 2017 baseline context. Whilst material to the consideration of applications, it provides a high-level assessment which does not necessarily reflect the current status of wind energy development or technology. Detailed consideration of individual proposals and sites is therefore necessary.

5.3.33 The assessment findings indicate that, due to the character of the landscape, significant effects are likely within the area immediately surrounding the Site (i.e., within approximately 5 km) before reducing to not significant across the incised glens and river valleys which characterise landscapes in the intermediate distance. Effects increase in significance across elevated summits, where the Proposed Development would be viewed in the context of other existing, consented and proposed wind energy development.

ABERDEENSHIRE LOCAL DEVELOPMENT PLAN (2017)

5.3.34 The Aberdeenshire Local Development Plan (ALDP) 2017 sets out the policies AC will use for assessing planning applications. It sets out exactly where development is expected to take place over the next five years, and beyond up to 2026 (with the exception of the area covered by the Cairngorms National Park boundary).

5.3.35 Policies from the ALDP that are relevant to the Proposed Development and the landscape and visual resource are set out in Table 5.8, below.

Table 5.8: Aberdeenshire Local Development Plan Policies

Policy	Policy Content (of relevance to the LVIA[29])
E2 – Landscape	We will refuse development that causes unacceptable effects through its scale, location or design on key natural landscape elements, historic features or the composition or quality of the landscape character. These impacts can be either alone or cumulatively with other recent developments. Development should not otherwise significantly erode the characteristics of landscapes as defined in the Landscape Character Assessments produced by Scottish Natural Heritage [NatureScot] or have been identified as Special Landscape Areas of local importance. Boundaries and qualifying criteria for Special Landscape Areas are identified in the supplementary guidance Aberdeenshire Special Landscape Areas. Developments located within Special Landscape Areas will only be permitted if the qualifying interests are not being adversely affected or effects of the development are clearly outweighed by social, environmental or economic benefits of at least local importance.

[29] Where policy text is not applicable to the LVIA, this has been omitted in Table 4.7.

Table 5.8: Aberdeenshire Local Development Plan Policies	
Policy	**Policy Content (of relevance to the LVIA[29])**
C2 – Renewable Energy	We will approve wind energy developments in appropriate locations taking into account the spatial framework mapping on page 74. The more detailed guidance set out in the Strategic Landscape Capacity Assessment for wind turbines and the associated mapping on page 74 under the heading Additional Locational Guidance is also a relevant consideration. The areas shown in orange hatching have been assessed as having strategic capacity for turbines over 15 m when local landscape considerations are taken into account. All wind farms must be appropriately sited and designed and avoid unacceptable environmental effects taking into account the cumulative effects of existing and consented wind turbines. Turbines must not compromise health and safety or adversely affect aircraft or airfields (including radar and air traffic control systems, flight paths and Ministry of Defence low flying areas) and/ or telecommunications. Unacceptable significant adverse effects on the amenity of dwelling houses or tourism and recreation interests including core paths and other established routes used for public walking, riding or cycling should also be avoided. In all cases, conditions, bonds, or other legal agreements may be imposed to remove visible renewable energy structures whenever the consent expires or the project ceases to operate for a specified period.

ABERDEENSHIRE SUPPLEMENTARY GUIDANCE: SPECIAL LANDSCAPE AREAS (9A, 9B AND 9C)

5.3.36 The purpose of the Supplementary Guidance is to support Policy E2 "Landscape" of the ALDP. Policy E2 outlines the Council's approach to development which may affect the landscape of Aberdeenshire. The Supplementary Guidance provides:

- Guidance to developers, land managers and decision makers on appropriate actions to ensure the qualifying criteria for each SLA is recognised for appropriate protection, management or enhancement; and
- Guidance to the Council with regard to decision making on proposals that may affect the special characteristics of these areas, commenting on land management proposals, and monitoring landscape change.

5.3.37 AC note that the landscape is a significant asset in terms of environmental, social and economic activity across the region. The SG has been produced to introduce a local landscape designation into the Aberdeenshire local development plan area. Ten SLAs have been identified across Aberdeenshire's landscape.

5.3.38 In order for the Supplementary Guidance to be clear regarding the policy approach of Aberdeenshire Council with regard to decisions affecting local landscape designations it is necessary to set out supplementary policies. Three policies below allow for:

- Definition of the SLA and their boundaries;
- Ensure that the Statement of Importance can be used as a material consideration within SLAs to better evidence relevant development management decisions; and
- To help inform decisions on conservation and enhancement measures for management of the SLA.

5.3.39 The Proposed Development is not located within an SLA. The nearest Aberdeenshire SLA to the Proposed Development boundary is the Deveron Valley SLA, located approximately 3.14 km to the north north east of the Proposed Development. A description of each SLA found within the Study Area is presented in Technical Appendix 5.3: Descriptions of Designated and Classified Landscapes. Effects on SLAs as a result of the Proposed Development are described and assessed in Technical Appendix 5.5: Residual Effects on Designated and Classified Landscapes, which is summarised in Section 5.7 of this LVIA.

ABERDEENSHIRE STRATEGIC LANDSCAPE CAPACITY FOR WIND FARMS (2014)[30]

5.3.40 The 2014 Capacity Study considers the capacity of the Aberdeenshire landscape to accommodate onshore wind energy development. The landscape capacity assessment is based on an assessment of landscape sensitivity and value of the different landscape character types and areas in Aberdeenshire together with the evolving wind energy development scenario in Aberdeenshire and a surrounding 30 km buffer area.

5.3.41 The Capacity Study identifies that, as it lies within the Aberdeenshire administrative area, the Proposed Development turbines are located within:

- Grampian Outliers LCA which forms part of the Moorland Plateaux LCT (LCA22(i)); and
- The Deveron and Bogie Straths LCA of the Straths and Valleys LCT (LCA25(i)).

5.3.42 As mentioned previously for the MWLECS, it is important to note that this publication represents a strategic appraisal and one based upon a 'snapshot' in time of the baseline context, and that detailed consideration of individual proposals and sites is therefore necessary.

5.3.43 Additionally, given its publication in 2014, and the subsequent changes in the baseline wind energy context, more up to date descriptions of the landscape character published by NS in 2019 have been used[31]. However, the assessment of sensitivity presented in Technical Appendix 5.2: Landscape Character Types Descriptions has been informed by the 2014 Capacity Study.

ABERDEENSHIRE COUNCIL PLANNING ADVICE NOTES 1/2005 AND 2/2005 (USE OF WIND ENERGY IN ABERDEENSHIRE[32]

5.3.44 Planning Advice 1/2005: Use of Wind Energy in Aberdeenshire Guidance for Developers, and 2/2005: Use of Wind Energy in Aberdeenshire Guidance for Assessing Wind Energy Developments were published as supplementary guidance for a previous Aberdeenshire Local Plan. Following publication of more recent LDPs, the guidance has been rebranded by Aberdeenshire Council as 'Planning Advice'. Planning Advice does not have material weight in deciding planning applications, however it provides best practice guidance on how to meet the requirements of the Local Development Plan and its associated supplementary guidance.

5.3.45 Planning Advice 1/2005 sets out guidance for developers who are seeking to construct and operate a commercial wind farm development.

5.3.46 Planning Advice 2/2005 provides guidance on how issues relating to wind energy developments will be assessed and the weight that Aberdeenshire Council will lend to each issue. The document includes sections on the assessment of landscape impacts, visual impacts, people and settlements, townscape impacts and impacts on Countryside Access. It sets out the approach to determining sensitivity of receptors and determining the magnitude of the effect.

5.3.47 It should be noted that these documents were published in 2005. Since this time, a number of more recent publications (i.e., GLVIA) have been published which provide an up to date and industry approved methodology for preparation of LVIA. The Planning Advice described above has therefore been used as a reference only.

[30] Ironside Farrar (March 2014) Strategic Landscape Capacity Assessment for Wind Energy in Aberdeenshire. Aberdeenshire Council, NatureScot.
[31] Retrieved from: https://www.arcgis.com/apps/webappviewer/index.html?id=e3b4fbb9fc504cc4abd04e1ebc891d4e&extent=-2030551.0017%2C6851563.2052%2C1100309.6769%2C8923312.4198%2C102100
[32] Retrieved from: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/planning-advice/

5.4 Baseline

Landscape Baseline

LANDFORM AND HYDROLOGY

5.4.1 Figure 5.1 illustrates the topography within the study area.

5.4.2 The Proposed Development is located on an area of upland landscape, situated 30 km south of the Moray and northern Aberdeenshire coastline. It is located within an area of transitional upland landscape set between the sea and the Cairngorm massif, which rises approximately 30-40 km to the southwest of the Site. Topographical extremes within the study area vary between sea level and 1,197 m Above Ordnance Datum (AOD). There are a variety of landscapes within the study area, ranging from the seascapes of the coast in the north to the high, remote peaks of the Cairngorm Mountains which comprise vast plateaux and rounded domes dissected by corries. Topographic features include a mosaic of mountains, hills, upland moorland, agricultural farmland, sea cliffs and coastal landscapes interwoven by a network of valleys, basins and glens.

5.4.3 The topography of the Site is varied. The Site access extends north from the A941 at an existing access point for Rinturk Farm. It routes up steep topography, climbing across the southern slopes of Garbet Hill before extending across a band of upland hills which forms a broad ridge of upland landscape. The Site boundary includes/lies adjacent to the high points of Kelman Hill, Craig Dorney and Craig Watch.

5.4.4 To the east and west of the Site, the topography descends into steep valleys. To the west is the valley of the Markie Water, a burn which forms a tributary to the River Deveron near Haugh of Glass. To the east is the River Deveron valley, a well contained glen which contains the meandering upper reaches of the water body.

5.4.5 The upland landscape extends to the south and south west of the Site, transitioning to the large mountain massifs of the Cairngorms National Park, the boundary of which lies approximately 13.4 km to the south of the Site. Prominent hills and distinctive outcrops sited along the upland ridges provide local landmarks within the surrounding low-lying farmland. The uplands are incised by steep and deep glens, such as Glen Rinnes and the valley of Black Water, as well as broader glens such as Glen Livet and Strath Avon. Strath Spey is located to the west of the Site and forms a notable valley though the study area.

5.4.6 To the south east of the Site area is the elevated shallow bowl of the Cabrach. This landform is contained by an arc of hills to the west, south and east. Further east, the topography is gentler in profile, descending towards the coast and intersected by landmark hills, such as Tap o'Noth and Bennachie, which form prominent features in wider views.

5.4.7 To the north and north east large areas of gently undulating agricultural farmland extend to the varied coastal landscapes of the northern coast. Echoing the distinctive shape of the coastline, these low-lying rolling hills and undulating landscapes extend approximately 5 – 10 km inland from the northern coast, and 50 km inland from the eastern coat, dominating the north eastern part of the study area. They are interrupted by large river basins and valleys that have their headwaters in the Cairngorms. Rounded hills contain the strath floors which are generally flat and broad, with occasional rocky gorges. There are several smaller rivers that form tributaries to the key rivers, as well as numerous smaller burns and streams which fall from the hills and mountains within the study area and flow to the sea. It is along these river valleys and aligned to the open coastal plain where transportation routes and settlement is generally focused.

5.4.8 The Moray Coast alternates beaches, dunes and links, and cliffs and rocky coastlines which reflect the underlying geology: areas of beaches, dunes and links overlie sandstone bedrock, whereas the cliffs and rocky coastlines correspond to schists (metamorphic).

5.4.9 The geology of the study area is mainly metamorphic rocks of varying types and ages. Bands of sandstone is present along the coast. Further inland there are patches of igneous rock, mainly granite or similar acid igneous rocks, but some areas of dolerite or other basic igneous rocks are found to the east. These generally correspond to areas of higher elevations, such as Ben Rinnes (841 mAOD).

5.4.10 There are a number of key rivers within the study area. The headwaters of the River Deveron rise to the south east of the Site, flowing in a generally north easterly direction, through the upper Deveron Valley, which lies to the east of the Site. The river follows a meandering path between upland hills before it passes through areas of rolling lowlands and agricultural farmland. As the river passes through Huntly, it is joined by the River Bogie, one of its main tributaries. The River Isla connects with the Deveron at a location to the northwest of Huntly. From this point on the Deveron becomes a mature river, passing through Turriff where the winding river valley is relatively shallow and surrounded by broad rolling hills, before entering the Moray Firth between the towns of Banff and Macduff.

5.4.11 The headwaters of the River Spey are located to the southwest of the Cairngorms, flowing in a south west to north east direction. The path of the River Spey breaks up the uplands with its broad undulating valley and often steep-sided hills which provide a high degree of containment.

5.4.12 The River Don commences to the southwest of the Site within the Cairngorms and flows eastwards towards the coast while the River Dee rises near Ben Macdui in the Cairngorms and flows eastwards towards the coast. The upper section of the River Don and the mid-section of the River Dee have formed large glens flowing down from the Cairngorms within the study area.

LANDCOVER, LAND-USE AND LANDSCAPE ELEMENTS

5.4.13 The Site comprises a mix of land uses including improved pasture and areas of rough grazing on lower elevations, with a mosaic of open moorland and coniferous forestry across the upper slopes and summits.

5.4.14 Heather moorland dominates the upland landscapes, patterned by burnt strips associated with grouse shooting. Burns run off the hill tops into glens are flanked by tussocky grass and reeds in some areas. At lower elevations, as the burns flow into more protected valleys, riparian native woodland is found, with larger woodland areas and conifer plantations also present. Fields occur where topography allows. Farms are scattered along roads at the edges of the valley floor.

5.4.15 Between the upland landscapes to the coastal plain are rolling hills. Rivers and burns meander through the landscape to the sea, passing through broad valleys with riparian native woodland edges. There is a mix of farmland and conifer plantations and woodland, creating a medium scale landscape. Roads meander alongside rivers and burns and following the undulating landscape. Farms, estates, historic buildings and ruins are scattered across the area.

5.4.16 The mountain massifs which lie to the south west of the study area are largely wild and remote, with few formalised land uses. Open rocky summits descend into deep corries and glens, some of which contain historic roads and trails. Whisky distilleries are located near the edges of the Cairngorms National Park, through Glenlivet and Strathspey and also slightly

further afield at Dufftown, associated with burns that pass through the low lying glen landscapes.

5.4.17 North and east of the upland landscapes, rolling agricultural landscapes contain a mosaic of plantation forestry, woodland, agricultural farmland and riparian planting, interspersed with scattered properties and satellite towns such as Huntly, Keith and Turriff. Further towards the coast, rounded widely spaced hills are extensively covered in conifer plantations. Heather moorland is interspersed between the large geometric plantations which are at various stages in the forestry cycle, many areas have been deforested or recently replanted.

5.4.18 The landscape becomes open plains closer to the coast. Pockets of woodland and forestry plantations are found on hilltops, and ribbons of native mixed woodland along field margins and roads break up the irregular shaped arable and pasture fields. Farmsteads are dispersed along an extensive network of rural roads.

5.4.19 The coastal plains comprise large areas of mainly arable fields. Patches of forestry break up the field pattern, generally located in basins or on hillsides. Apart from this tree cover, there are few trees except close to settlements and occasionally along roadsides. Farms are distributed throughout, connected by rural roads, forming a dense pattern.

5.4.20 Roads are generally located within the low-lying glens. Key roads within 10 km of the Site include the A941, which enters Moray across the high pass of the Cabrach to the south of the Site, continuing in a north-westerly direction through Dufftown, then on towards Elgin; the A920 which passes in a generally east-west direction to the north of the Site, connecting Dufftown with Huntly. The B9009 follows the broader valley of Dullan Water, connecting Glenlivet and Dufftown.

5.4.21 Commercial scale wind energy development is present across areas of upland landscape to the west, south west and east of the Site (see Figure 5.7a). Dorenell Wind Farm and Clashindarroch Wind Farm are the closest developments to the Site.

LANDSCAPE CHARACTER TYPES

5.4.22 The following publications were consulted with a view to determining the existing character of the Site and wider study area:

- NatureScot (2019) Scotland Landscape Character Assessment[33];
- Moray Council (2017) Moray Wind Energy Landscape Capacity Study[34]; and
- Aberdeenshire Council (2014) Strategic Landscape Capacity for Windfarms[35].

5.4.23 For the purposes of this assessment, the LCTs described in the NS Landscape Character Assessment have been used to inform the landscape categorisation, baseline description and assessment of effects for the full study area. Where these LCTs overlap with those set out in the MWELCS, these LCTs have also been assessed simultaneously (see Technical Appendix 5.4).

5.4.24 Figure 5.3a and 5.3b reflects the mapping of the NS landscape character assessments, showing the location and extent of landscape character types found within the study area. The findings of these studies were verified during field reconnaissance and have been taken

[33] NatureScot (2019) Scotland Landscape Character Assessment - Online map and datasheets - https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions [retrieved 14/12/2020]
[34] http://www.moray.gov.uk/moray_standard/page_107096.html [retrieved 14/12/2020]
[35] https://www.aberdeenshire.gov.uk/planning/plans-and-policies/the-strategic-landscape-capacity-for-windfarms/ [retrieved 14/12/2020]

to represent a suitable baseline context for the assessment. Due to copyright restrictions, the MWELCS LCTs have not been mapped.

5.4.25 The Site itself lies across two LCTs - the Open Upland LCT (LCT 292) and the Farmed and Wooded River Valleys LCT (LCT 32). Within the Open Upland LCT lie two of the Moray Wind Energy Landscape Capacity Study LCTs – 12a. Open Upland with Steep Slopes and 12b. Open Upland with Settled Glens. The Site is located within LCT 12b Open Upland with Settled Glens.

5.4.26 Additionally, the LCTs and constituent units within the study area which are subject to potential significant indirect effects of the Proposed Development include the following:

- Low Hills and Basins (LCT 18) - 22.3 km north east;
- Farmed Rolling Ridges and Hills (LCT 19) - 7.4 km south east;
- Farmed Moorland Edge - Aberdeenshire (LCT 27) - 3.14 km north north east;
- Outlying Hills and Ridges (LCT 28) - 1.4 km east;
- Smooth Rounded Hills - Cairngorms (LCT 123) – 13.5 km south south west;
- Upland Farmland (LCT 288) - 8.3 km north;
- Upland Farmed Valleys (LCT 289) - 4 km north west;
- Upland Moorland and Forestry (LCT 290) - 14.5 km north west;
- Open Rolling Upland (LCT 291) - 21.4 km west north west;
- Low Forested Hills (LCT 293) - 16.2 km north north west; and
- Upland Valleys (LCT 294) - host LCT (red line boundary only – no infrastructure).

5.4.27 Technical Appendix 5.2: Landscape Character Type Descriptions provides detailed descriptions of these LCTs along with an assessment of their sensitivity to the type of development proposed based on pre-defined criteria. The assessment of potential residual effects on these LCTs is summarised in Technical Appendix 5.4: Residual Effects on Landscape Character Types.

5.4.28 Other LCTs which fall within the theoretical viewshed of the Proposed Development, but that have been omitted from the assessment, are listed in Technical Appendix 5.2: Landscape Character Type Descriptions, along with the justification for their omission.

LANDSCAPE DESIGNATIONS

5.4.29 The location and geographical extent of landscape designations and classifications within the study area are shown on Figures 5.4a and 5.4b.

5.4.30 Table 5.3.1 in Technical Appendix 5.3: Descriptions of Landscape Designations and Classifications provides a list of the landscape designations and classifications which are located within the 45 km study area and identifies which of these have been taken forward for assessment. The table also provides justification for the omission of those landscape designations and classifications which have not been taken forward into the assessment. Omission is largely a result of/ a combination of no or marginal visibility of the Proposed Development, increased distance of the designated area to the Proposed Development (where distance would notably reduce the overall impact of the development) and presence of intervening landscape features such as woodland or built development which would effectively screen view to the Site.

5.4.31 Table 5.3.2 in Technical Appendix 5.3 Designated and Classified Landscapes provides detailed descriptions of those landscape designations and classifications which have been taken account of in this assessment. The assessment of potential residual effects on these

designations/ classifications is summarised in Technical Appendix 5.5: Residual Effects on Landscape Character Types.

5.4.32 All landscape designations/classifications included in the assessment have a high sensitivity to the type of development proposed, by virtue of the designation/ classification.

5.4.33 The Site itself is not subject to a landscape designation. Those designated landscapes within the study area which have been taken account of in this assessment are:

National Parks (NPs)

- Cairngorms National Park, located approximately 13.14 km south of the Proposed Development

Special Landscape Areas (SLA)

- Moray:
  - Ben Rinnes, adjacent to the western boundary of the Site, approximately 3.9 km west of the nearest turbine;
  - Spey Valley, located approximately 11.5 km north west of the nearest turbine; and
  - Deveron Valley, located approximately 16.5 km north east of the nearest turbine.
- Aberdeenshire:
  - Deveron Valley, located approximately 3.14 km north north east of the nearest turbine;
  - Bennachie, located approximately 18.4 km east of the nearest turbine; and
  - Upper Don Valley, located approximately 17.1 km south east of the nearest turbine.

LANDSCAPE CLASSIFICATIONS

5.4.34 There are two Wild Land Areas (WLA) located within the study area.

- The Cairngorms WLA, located approximately 31.3 km south south west of the Site; and
- The Lochnagar and Mount Keen WLA, located approximately 40 km south of the Proposed Development.

5.4.35 Given the distances between the WLAs and the Proposed Development, and the marginal/no blade tip visibility shown on the ZTV, it is considered unlikely that the Proposed Development would result in significant effects on the physical attributes and perceptual responses that contribute to the qualities of these WLAs. This is supported by the NS guidance 'Assessing Impacts on Wild Land Areas – technical guidance' which states:

"This guidance should only be applied to proposals whose nature, siting, scale or design are likely to result in a significant effect on the qualities of a WLA. Given this, assessments are more likely for proposals within a WLA, and are less likely for proposals outwith the WLA."

5.4.36 From locations within the Lochnager - Mount Keen WLA where the Proposed Development would be visible, the turbines would form a barely perceptible element in long distance views from the highest summits within the WLA. It would not obstruct or interrupt intervisibility between mountain ranges nor would it alter the perceived size, scale or experience of the corries and gorges which are found within the WLA. It would not alter the perceived awe or naturalness experienced. It would not impact upon a walker's experience of the wild land attributes and qualities.

5.4.37 From the Cairngorms WLA, the Proposed Development would be viewed from the highest summits at distances of over 30 km from the WLA boundary within a landscape which is characterised by forestry, settlement, wind energy developments and other contemporary land uses. Given this distance, it would not impact upon the strong sense of sanctuary or

solitude experienced within the classified area. It would not alter the perceived size, scale or experience of the mountain massifs found within the WLA, nor obstruct or interrupt panoramic views from these summits. The Proposed Development would not be visible from within the incised glens and therefore would not alter the perceived size, scale or experience of the corries and gorges which are found within the WLA. It would not alter the perceived naturalness experienced.

5.4.38 While the Proposed Development would be theoretically visible to hill walkers reaching the summits of some of the highest peaks within the WLA, proposed turbines would be viewed at distance and within expansive landscape views. Given this distance, and the mosaic of land cover and land uses in the intervening landscape, the Proposed Development would not significantly impact upon a walker's experience of the wild land attributes and qualities.

5.4.39 Therefore, a Wild Land Impact Assessment has not been prepared.

Visual Baseline

5.4.40 Visual receptors are individuals or defined groups of people whose visual amenity or viewing experience may be affected by development, and include:

- residents and visitors to settlements;
- road users;
- walkers on long range recreational trails and Core Paths;
- cyclists on national cycleways; and
- hill walkers at summits.

SETTLEMENTS

5.4.41 Views from residential properties within settlements are generally static as the same view is seen daily. The value attached to these views is considered high and the susceptibility of receptors to the type of development proposed is judged to be high. The sensitivity of all residential receptors within settlements is therefore regarded as high.

5.4.42 Within the study area there are numerous towns, villages and scattered settlements. The ZTV indicates that the only town or main settlement within 20 km of the Proposed Development with theoretical visibility of a turbine(s) would be Dufftown. The Scoping Report identified that significant visual effects on settlement were unlikely to occur outwith 20 km, and therefore settlement beyond this has been scoped out of the assessment.

5.4.43 Settlement within 5 km of the Proposed Development, where ZTV coverage is largely contiguous, is generally comprised of dispersed rural properties located along the A941, the A920 and the unclassified road which routes through the upper Deveron Valley to the east of the Site. Properties are principally farmhouses with associated sheds and outbuildings. The Residential Visual Amenity Assessment presented in Appendix 5.7 provides a detailed description of these properties, including their key views and aspect.

5.4.44 A small cluster of properties is located at Haugh of Glass, approximately 2.5 km north of the Proposed Development. Other small clusters of properties include those at Bridgend and Inverharroch to the south of the Proposed Development, Tomnaven and Succoth, located within the Deveron Valley to the east of the Site, and dispersed properties at Ballochford at Rinturk on the A941 located approximately 1.5 km to the south west of the nearest turbine. Across the wider study area, properties are scattered across areas of farmland to the north and northeast of the Site.

5.4.45 Dufftown is located 6.9 km north west of the nearest turbine, and is the only key settlement within 20 km of the Proposed Development with theoretical visibility of the Proposed Development's turbines. The town lies to the west of the confluence of the River Fiddich and Dullan Water, across the north eastern toe slopes of Little Conval Hill.

5.4.46 Settlement is also present at the junction of the A941, the A920 and the B9009. The A941 passes through the town in a generally north-south direction. The B9009 extends from the town centre to the west, linking with the B9009 north of Tomnavoulin. The A920 extends east from the town centre.

5.4.47 A clock tower is located within the centre of the town. Shops with upper flats, and public houses surround the clock tower north and east with a limited section to the west. The hospital, school and church are sited outside this original envelope. A mixture of one and two storey terraced buildings are oriented onto the main road in the centre of the settlement. This pattern continues along narrower secondary streets forming small grid system northwards. Pavements line both sides of the streets throughout the town creating an open streetscape and clearly delineated public realm. Traditional Scottish granite buildings create a distinctive historic centre.

5.4.48 New streets have been added surrounding the historic centre, largely to the north. These continue with the grid system but also include a number of cul-de-sacs. The built form is reminiscent of the historic centre, but buildings are harled, pebble-dashed or rendered and have front gardens and occasionally driveways. Outwith the dense historic centre, these newer buildings are generally detached or semi-detached. There is a distinct settlement envelope.

5.4.49 A number of whisky distilleries lie to the north of the town envelope, along the western bank of the River Fiddich. These distilleries extend across a large area of land to the east of the A941, and comprise a mix of traditional stone buildings and modern warehouse buildings. They sit low in the landscape and are surrounded by areas of woodland which reduce the overall influence of these buildings on the wider area.

TRANSPORT ROUTES

5.4.50 Figure 5.5a and 5.5b shows the location of all transport routes which have been considered in this LVIA.

5.4.51 There are a number of roads which pass through the LVIA Study Area. In order to keep the assessment proportionate, only those roads with theoretical visibility within 20 km of the Proposed Development have been taken forward in the LVIA. This is because at distances greater than this, the ZTV coverage across roads is highly intermittent. The Proposed Development would form a minor feature in long distance, fleeting views from the road, where local changes in topography and landscape features, such as woodland or roadside vegetation, are likely to screen or filter actual views. It is considered unlikely that significant effects would be experienced beyond this distance for road users.

5.4.52 The value and susceptibility of receptors on key transportation routes varies from medium (in respect of general commuter road users who may be travelling alone and concentrating on the road rather than the adjoining landscape) to high (in respect of tourists who are more likely to carry passengers, and who are likely to focus on the landscape).

5.4.53 Roads which have been considered in this assessment are described in Table 5.9 below.

Table 5.9: Description of Transport Routes

Road	Description
A920	The A920 connects Dufftown and Huntly, routing in an east-west direction. From Huntly, the road passes west across the Deveron flood plain, crossing the river at Cairnford Bridge and climbing onto the lower slopes of Hill of Milleath. The road follows the path of the River Deveron for approximately 5 km before diverging from this water feature and continuing west across an area of sweeping farmland. It weaves between a number of minor hills before descending into the shallow valley of a tributary to the River Fiddich. The road meets the river at the base of this valley, and passes along the northern bank before crossing the water at Milltown of Auchindoun, aligning with the southern bank of the river until it connects with the B9009 on the south eastern boundary of Dufftown. The area of the A920 between Corsemaul Croft and Dufftown is identified in the Moray Onshore Wind Energy Non-Statutory Guidance[36] as a "Scenic Approach" (see MOWESG Map 7). A "Scenic Approach" is described in the guidance as "*key scenic approaches into Moray, which have distinctive features*". At its closest point, the road is located approximately 3.7 km to the north of the nearest turbine.
A941	The A941 routes in a north west/south easterly direction between Rhynie and Craigellachie. The road extends south east from Craigellachie, routing to the north of Blue Hill before following the western edge of the River Fiddich valley north of Dufftown. The road passes through Dufftown, before routing east then south. The road passes through the valley of a tributary to the River Fiddich, before briefly descending into and across Glen Fiddich. The A941 then turns south west, passing across low lying topography bordered by upland hills before routing into the valley of Burn Treble, a tributary of the River Deveron. The road follows this valley until its confluence with the Deveron, then routes through the narrow and windy valley of the Deveron headwaters. At Cabrach, the A941 then routes east around the edges of upland hills to Rhynie, where it drops into the valley of the Water of Bogie and connects to the A97. The area of the A941 between Glackhead and Cabrach is identified in the Moray Onshore Wind Energy Non-Statutory Guidance[37] as a "Scenic Approach" (see MOWESG Map 7). At its closest point, the road is located approximately 1.5 km to the south west of the nearest turbine.
A96	The A96 connects Aberdeen with Inverness. It passes through the study area in a north east/ south west orientation between Kintore and Forres. The road routes through a number of landscape types, from the wooded estates on the eastern edge of the study area, through farmed basins and rolling hills southeast of Huntly, across the Deveron Valley and through areas of upland landscapes south of Keith. It then nears the coast, passing through low forested hills before routing through coastal farmlands at Elgin and onto Forres. It is dualled as it exits/ enters Kintore to the west however as it passes through the study area, the road is largely a single carriageway. At its closest point, the road is located approximately11 km to the north east of the nearest turbine.
A95	The A95 routes in a generally south west/north eastern direction between the A9 at Aviemore and the A98, near Banff on the north Aberdeenshire coast. From the A9, the road generally aligns with the River Spey, through Strath Spey to Craigellachie, where it continues on a north eastern direction through the minor valley of the Burn of Aldernie, passing along the base of Ben Aigan. The road then routes east, through the valley of the canalised Loan Burn to the north of Hill of Towie, through Keith and then along the northern edge of the River Isla valley. The A95 then turns north east, through areas of upland farmland, low hills and basins before connecting to the A98 to the east of the Burn of Boyne. At its closest point, the road is located approximately12.3 km to the north west of the nearest turbine.
B9009	The B9009 connects the towns of Dufftown and Glenlivet, routing in a north east/south west direction through Glen Rinnes and Glen Tervie. The road passes along low lying topography until it nears Dufftown, where it gains elevation across the toe slopes of Little Conval. At its closest point, the road is located approximately 7.8 km to the north west of the nearest turbine.
Local road to east of Site	This local road extends north from the A941 at Bridgend, passing along the base of Kelman Hill, and extending along the River Deveron valley, slightly elevated above the valley floor. It passes through areas of improved pasture located on upland hills, providing access to properties. The road

[36] Moray Council (2020) Moray Onshore Wind Energy Non-Statutory Guidance (Moray Local Development Plan). Retrieved from: http://www.moray.gov.uk/downloads/file134377.pdf

[37] Moray Council (2020) Moray Onshore Wind Energy Non-Statutory Guidance (Moray Local Development Plan). Retrieved from: http://www.moray.gov.uk/downloads/file134377.pdf

Table 5.9: Description of Transport Routes	
Road	**Description**
(unnamed Deveron Valley Road)	is low lying, and winds between local hills before connecting with the A920 to the east of Markey Hill. At its closest point, the road is located approximately 1 km to the south east of the nearest turbine.

RECREATIONAL ROUTES

5.4.54 Figures 5.5a and 5.5b shows the location of all recreational routes that have been considered in this LVIA.

5.4.55 There are several long-distance routes, cycleways and core paths within the 45 km study area. However, not all of these have theoretical visibility of the Proposed Development.

5.4.56 There are three key long-distance routes within the LVIA study area. These are:

- The Speyside Way;
- The Dava Way; and
- The Moray Coastal Trail.

5.4.57 All of these routes have been scoped out of the assessment due to no or very limited long-distance visibility of the Proposed Development.

5.4.58 There are no National Cycle Network (NCN) Routes within 25 km of the Proposed Development. NCN 1 routes along the north coast of Aberdeenshire and Moray as it passes through the study area. Some small areas of theoretical visibility are present in discrete sections of the route to the east of Elgin and as it passes through Cuminestown. These locations are over 30 km to the north and 40 km north east of the Proposed Development. It is considered that actual views of the proposed turbines would be largely screened in views and therefore no assessment has been undertaken.

5.4.59 There are 16 Core Paths within 10 km of the Proposed Development. Of these, 11 have theoretical visibility of the Proposed Development. A number of these paths are directly linked and where this occurs, they will be assessed as a single connected route.

5.4.60 Table 5.10 presents a description of the core paths which will be assessed in the LVIA.

Table 5.10: Description of Core Paths	
Core Path	**Description**
SP30	The Core Path extends from the Cairngorms National Park Boundary at Black Burn, and routes north east/ east across the upland hills of Blackwater Forest. The core path ascends the western slopes of Carn na Bruar, before entering Dorenell Wind Farm and following a wind farm track into the Black Water valley. The path continues east, climbing out of the valley floor and across the summit of Dead Wife's Hillock to Aldivalloch, where it connects with a local road. The path follows the road along the base of Tornichelt Hill and joins to the A941 north of Cabrach.
SP05, SP04 and SP11	SP05 routes along a local road at the base of a local hill to the south of Dufftown. It follows that path of a tributary to the Dullan Water, bordered by broadleaved woodland. As it meets the B9009, it passes through woodland associated with Glenrinnes Lodge. SP05 connects with SP04 as it turns onto the B9009 routing on a slightly elevated area of topography at the base of Hillside Wood/ Little Conval. The path then routes through a local reserve where it connects with SP11 to pass through Princess Royal Park, through an area of woodland before following local tracks down into the Dullan Water Valley and connecting to a local road providing access to the south of Dufftown.
SP03 and SP10	SP10 extends from SP04 to the north of the local reserve on the B9009, routing north across farmland at Hillside Farm. The path then joins SP03 and routes north west along the base of Hillside Wood and Burnhead Wood, following forestry tracks. The path routes through Green Moss, an area of forestry across Knock of Gownie and Blue Hill before descending into Strathspey, and ending at Charlestown of Aberlour.

Table 5.10: Description of Core Paths	
Core Path	**Description**
IW02, IW03 and IW04	IW02 extends to the north of Dufftown, through an area of broadleaved woodland adjacent to the B9014 and the River Fiddich. The path routes along the eastern slopes of the unnamed hill to the north of the town, before running north west to meet Balvenie Castle. From here, at the B975, IW02 meets IW03 which routes north along the B road before joining the A941. IW03 follows the A941 until it deviates off onto a spur of the Speyside Way and becomes IW04. The path then routes along the western edge of the River Fiddich, though areas of distillery infrastructure and then riverside woodland.
SP09 and IW01	SP09 and IW01 follow the route of Conval and Fife Streets through the central built-up area of Dufftown. There would be no actual view from this core path and therefore it is not considered further.

5.4.61 It should be noted that in addition to these routes, the study area contains opportunities for access to the countryside of the Southern Uplands under the terms of the Land Reform (Scotland) Act 2013. A key part of this access is hill walking and the study area contains a number of notable summits, including Ben Rinnes (840 mAOD) and The Buck (721 mAOD).

5.4.62 For the purposes of this LVIA, a number of summits have therefore been included in Technical Appendix 5.6: Viewpoint Assessment. The summits selected for assessment are considered to provide a reasonable and proportionate coverage with which to assess effects on the amenity of hill walkers and the character of the hills.

Cumulative Context

5.4.63 The cumulative context for the Proposed Development is complex. There are a large number of wind farm developments located within the 45 km study area and as such, it has been necessary to identify those wind farms which are likely to contribute to significant cumulative effects when the Proposed Development is introduced.

5.4.64 The cumulative assessment largely focuses on those large-scale[38] cumulative developments within 45 km of the Proposed Development, with particular attention to developments within 10 -15 km of the Craig Watch Wind Farm. Where Requests for a Scoping Opinion have been made for developments adjacent to, or in close proximity to the Proposed Development, these have been considered in the assessment[39].

5.4.65 Table 5.11, below, summarises the cumulative context within 45 km of the Proposed Development at the time that this LVIA was completed in March 2022. The location of these developments is indicated in Figure 5.7a.

Table 5.11: Cumulative Wind Farm Context[40]

Status	Wind Farm	No of Turbines	Height of Turbines to Blade Tip (m)	Direction from the Proposed Development	Approximate Distance from the Proposed Development (km)
Individual Wind Farms within 45 km of the Proposed Development					
Operational	Backhill of Yonderton	2	100	ENE	40.5
	Balnamoon Crossroads	1	70	NNE	20.8

[38] Turbines greater than 50 m in height to tip.
[39] As far as practicable using the information that is publicly available at the time of the assessment.
[40] This list and planning status of cumulative schemes was correct at the time that the list was frozen (in April 2022) in order to allow sufficient time to complete the LVIA for submission.

Table 5.11: Cumulative Wind Farm Context[40]

Status	Wind Farm	No of Turbines	Height of Turbines to Blade Tip (m)	Direction from the Proposed Development	Approximate Distance from the Proposed Development (km)
	Berry Burn	29	100	WNW	28.8
	Bognie Farm	1	67	NW	34.7
	Boyndie Airfield Extension	1	101	NE	36.3
	Boynide Airfield	7	101	NE	35.2
	Cairnborrow	5	100	NE	8.5
	Cairnhill	3	84	ENE	41.3
	Cairnmore	3	81	SE	15.3
	Cairnton	1	98	NE	34.8
	Castle of Auchry Farm	3	74	ENE	40.8
	Clashindarroch	18	110	SE	4.5
	Cluny Farm	1	61	WNW	34.9
	Courtstone Methlick	1	94	E	44.6
	Culvie Hill	1	80	NE	25.7
	Deuchries Huntly	3	100	NE	30.5
	Dorenell	59	126	SW	5.4
	Dummuie	7	75	E	16.4
	Easter Tolmauds	2	80	SE	36.5
	Edintore Wind Farm	6	125	NNE	10.4
	Gawnsmoss Cluster	2	80	NE	32.4
	Gawnsmoss Cluster (at Cairnhill Banff)	1	80	NE	33.9
	Glens of Foudland	20	78	E	20.5
	Gordonstown Hill	5	100	E	31.7
	Greenmyres Drumblade Huntly	1	84	E	16.9
	Haddo	2	74	E	34.9
	Hill of Easterton	2	75	E	36.8
	Hill of Glaschyle	12	100	WNW	36.2
	Hill of Tillymorgan	3	100	E	25.2
	Hill of Towie	21	100	NNW	10.2
	Kellas	4	110	NW	26.2
	Kildrummy	8	93	S	13.6
	Mains of Hatton	3	80	ENE	30.2
	Meikle Camaloun	1	74	E	35.1
	Midtown of Glass	1	79	NNE	5.9

Table 5.11: Cumulative Wind Farm Context[40]

Status	Wind Farm	No of Turbines	Height of Turbines to Blade Tip (m)	Direction from the Proposed Development	Approximate Distance from the Proposed Development (km)
	Milton of Fisherie	2	100	ENE	42.2
	Muirake	2	100	NE	26.6
	Myreton	3	74	NNE	22.9
	Netherton of Windyhills	2	93	NNE	22.8
	Paul's Hill	28	100	W	25.7
	Riverstone Kinnoir Huntly	1	54	ENE	18.5
	Rothes I	24		NW	24.2
	Rothes II	18	125	WNW	24.5
	Shielburn Farm	3	98	ENE	29.1
	St Johns Wells	3	79	E	39.9
	St Johns Wells Extension	3	80	E	40.2
	St Katherines, Denhill	1	94	E	39.5
	Strath of Brydock	2	100	NE	34.8
	Strath of Brydock Extension	1	100	NE	34.9
	Upper Wheedlemont Farm	2	81	SE	12.2
Consented	Ardoch Farm	1	67	NNW	13.1
	Aultmore	13	110	NNE	23.1
	Bailiesward Farm	1	80	ENE	7.4
	Berry Burn Extension	9	150	WNW	28.8
	Brackenhills Farm (resubmission)	1	100	NE	30.0
	Cornabo	3	74	SE	30.4
	Deuchries Windfarm Aberchirder (extension)	2	119	NE	30.3
	Followsters Newmill	1	77	N	18.7
	Garralhill Newmill	1	74	NNE	20.1
	Hill of Carlincraig	2	100	ENE	29.8
	Hill of Petty	4	67	E	34.4
	Hill of Towie II	16	125	NNW	9.2
	Hunthill	3	67	NW	18.4

Table 5.11: Cumulative Wind Farm Context[40]					
Status	**Wind Farm**	**No of Turbines**	**Height of Turbines to Blade Tip (m)**	**Direction from the Proposed Development**	**Approximate Distance from the Proposed Development (km)**
	Land to the north west of Hill of Petty	4	67	E	34.4
	Lurg Hill	5	130	NNE	24.4
	Meikle Hill	9	127	WNW	27.0
	Meikleton of Arnold	1	135	NE	8.9
	Netherton Fisherford Inverurie	1	77	E	27.6
	Paul's Hill II	7	134 - 149.9	WNW	24.8
In Planning	Cairn Duhie	16	110	W	40.0
	Clash Gour	48	130 - 176	WNW	27.1
	Clashindarroch ll	14	180	ESE	4.8
	Garbet	7	190	NW	0.7
	Rothes lll	29	225	NW	19.6
Scoping	Clashindarroch Extension	28	200	SSE	3.4
	Glenfiddich Wind Farm	11	200	WSW	2.8

5.4.66 The emergent pattern of wind farm development in the study area is complex both in respect of the spatial arrangement of developments and the turbine typologies/ geometries utilised, reflecting the length of time over which wind energy development has formed a constituent part of the area's landscape, and the changing technology adopted. However, it is apparent that most of the larger scale wind farms occupy upland locations across the Open Upland (Dorenell), Outlying Hills and Ridges (Clashindarroch, Kildrummy), Upland Moorland and Forest (Rothes I & II), Upland Farmed Valleys (Hill of Towie, Hill of Towie II) and Open Rolling Upland (Berry Burn, Berry Burn Extension, Pauls Hill, Pauls Hill Extension) landscape character types (LCTs) in the central, eastern and south western extents of the study area (and outwith the CNP). Smaller scale developments comprising small clusters of turbines extend across the lower lying agricultural farming landscapes to the north east and east of the study area. A notable concentration of wind farms is situated immediately to the south east/ south west of the Proposed Development, with another large concentration located further east of the Proposed Development, above Strathspey.

Future Baseline

5.4.67 In the absence of the Proposed Development, and without dramatic changes to policy or economic drivers in the area, the established trends in respect of land use/ landcover and the baseline landscape and visual context are likely to remain largely consistent with the scenario described. However, it is anticipated that there would be continued interest in the Open Uplands LCT for wind farm development, whether it is in the form of smaller scale separate developments or larger scale, single schemes such as that proposed.

5.4.68 Characteristic commercial forestry operations across the Site and adjoining areas are expected to continue in line with National Forestry targets and outwith the immediate Site area. The

greatest changes apparent are likely to relate to introduction of further wind farms and the expansion of power transmission infrastructure. It is also not unreasonable to anticipate expansion of local settlements and improvements to road infrastructure.

Summary of Sensitive Receptors

SCOPED OUT RECEPTORS

5.4.69 Landscape Character Types scoped out of this LVIA are detailed in Technical Appendix 5.2 and summarised as follows:

- NS 10: Cliffs and Rocky Coast – Aberdeenshire;
- NS 14: Gently Undulating Coastal Farmland;
- NS 17: Coastal Agricultural Plain – Aberdeenshire;
- NS 20: Undulating Agricultural Heartland;
- NS 23: Farmed Basin – Aberdeenshire;
- NS 25: Farmed Strath – Aberdeenshire;
- NS 26: Wooded Estates – Aberdeenshire;
- NS 29: Summits and Plateaux – Aberdeenshire;
- NS 30: Narrow Winding Farmed Valley;
- NS 33: Broad Wooded Valley with Estates;
- NS 122: Mountain Massif – Cairngorms
- NS 125: Rolling Uplands – Cairngorms;
- NS 126: Upland Glen – Cairngorms;
- NS 127: Upland Strath;
- NS 128: Forested Upland Fringe;
- NS 129: Broad Glen with Estates;
- NS 130: Farmed Basin – Cairngorms;
- NS 131: Upland Basin – Cairngorms;
- NS 132: Undulating Wooded Farmland;
- NS 133: Farmed Straths and Glens;
- NS 281: Beaches, Dunes and Links – Moray and Nairn;
- NS 282: Cliffs and Rocky Coast – Moray and Nairn;
- NS 283: Coastal Forest;
- NS 284: Coastal Farmlands – Moray and Nairn;
- NS 285: Rolling Farmland and Forests – Moray and Nairn;
- NS 286: Narrow Wooded Valley – Moray and Nairn; and
- NS 287: Broad Farmed Valley.

5.4.70 Landscape designations and classifications scoped-out of this LVIA due to lack of or very limited/ distant theoretical visibility as detailed in Technical Appendix 5.3 are:

- Cairngorm Mountains National Scenic Area (NSA);
- Deeside and Lochnagar NSA;
- Cairngorms Wild Land Area (WLA) (WLA 15);
- Lochnager – Mount Keen WLA (WLA 16);

- Innes House Garden and Designed Landscape (GDL);
- Craigievar Castle GDL;
- Forglen GDL;
- Hatton Castle GDL;
- Keith Hall GDL;
- Leith Hall GDL;
- Kildrummy Castle GDL;
- Gordon Castle (Bog of Gight) GDL;
- Candacraig House GDL;
- Williamston House GDL
- Tillypronie GDL;
- Blackhills House GDL;
- Newton House (Aberdeenshire) GDL;
- Castle Forbes GDL;
- Cullen House GDL;
- Castle Grant GDL;
- Pluscarden Abbey GDL;
- Monymusk GDL;
- Fyvie Castle GDL;
- Duff House GDL;
- Cluny Castle GDL;
- Aultmore GDL;
- Castle Fraser GDL;
- Glen Tanar GDL;
- Relugas GDL;
- Darnaway Castle GDL;
- Grant Park and Cluny Hill GDL;
- Balmoral Castle GDL;
- Dunecht House GDL;
- Haddo House GDL; and
- Invercauld GDL.

MORAY COUNCIL SPECIAL LANDSCAPE AREAS

- Pluscarden Valley SLA;
- Findhorn Valley and the Wooded Estates SLA;
- Cublin to Burghead Coast SLA;
- Cluny Hill SLA;
- Burghead to Lossiemouth Coast SLA;
- Quarrelwood SLA;
- Spynie SLA;
- Lossiemouth to Portgordon Coast SLA;
- Lower Spey and Gordon Castle Policies SLA;

- Portgordon to Cullen Coast SLA;

ABERDEENSHIRE COUNCIL SPECIAL LANDSCAPE AREAS;

- North Aberdeenshire Coast SLA;
- Howe of Cromar SLA;
- Dee Valley SLA; and
- Clachaben + Forest of Birse SLA.

THE HIGHLAND COUNCIL SPECIAL LANDSCAPE AREAS

- Drynachan, Lochindorb and Dava Moors SLA.

5.4.71 The visual receptors scoped out of the LVIA are:

- Settlement outwith 20 km of the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted.
- Roads outwith 20 km from the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted; and
- Core Paths outwith 10 km from the Proposed Development, or with no theoretical visibility of the Proposed Development, as these would not be significantly impacted.

SCOPED-IN RECEPTORS

5.4.72 Table 5.12 provides a summary of the sensitive receptors scoped-in to the detailed assessment.

Table 5.12: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Designations and Classified Landscapes		
Cairngorms National Park	High	Nationally designated landscape
Ben Rinnes SLA (Moray)	High	Regionally designated landscape
Spey Valley SLA (Moray)	High	Regionally designated landscape
Deveron Valley SLA (Moray)	High	Regionally designated landscape
Deveron Valley SLA (Aberdeenshire)	High	Regionally designated landscape
Bennachie SLA (Aberdeenshire)	High	Regionally designated landscape
Upper Don Valley SLA (Aberdeenshire)	High	Regionally designated landscape
Landscape Character Types		
LCT 18 Low Hills and Basins	Medium/ High	Noted for its scenic quality. A small area of landscape which forms a transition between inland landscapes and the coastal landscapes. Not found elsewhere in the LVIA study area. Knock Hill is a key landscape feature which is identifiable as a landmark from outwith the LCT.
LCT 19 Farmed Rolling Ridges and Hills	Medium	Broad, simple landscape with long views and a rhythmic quality.
LCT 27 Farmed Moorland Edge – Aberdeenshire	Medium	Part of setting and backdrop to Huntly and Keith. Rich mosaic of textures and features which create intricate landscape pattern. Coniferous plantations are a large-scale feature and reduce landscape integrity and quality.
LCT 28 Outlying Hills and Ridges	High	Occasional dramatic rocky outcrops are distinctive and integral to landscape identity of Aberdeenshire.

Table 5.12: Summary of Receptor Sensitivity		
Receptor	**Sensitivity**	**Justification**
		Forms setting to many towns and villages and provides the foreground to the Cairngorm massif.
LCT 32 Farmed and Wooded River Valleys	High	Attractive, well maintained landscape which forms a distinctive backdrop to some settlements. Small to medium scale river valley landscape with a high degree of intactness and integrity.
LCT 123 Smooth Rounded Hills – Cairngorms	High	Broad open, large scale landscape with a strong sense of remoteness and sparsity of settlement. Large scale, dramatic landscape with wildness characteristics.
LCT 288 Upland Farmland Contains MWELCS LCT 8. Upland Farmland	Medium	Landscape has little influence on the adjoining landscapes. Well settled, transitional landscape with a simple land cover pattern.
LCT 289 Upland Farmed Valleys Contains MWELCS: LCT 9. Rolling Forested Hills LCT 13. Narrow Farmed Valley	High	Part of the Ben Rinnes SLA. Valleys form a small to medium scale landscape with strong containment by steep wooded and farmed slopes. Hills are prominent and distinctive.
LCT 290 Upland Moorland and Forestry Contains MWELCS LCT 10. Upland Moorland and Forestry	Medium	Extensive areas of forestry, with associated access tracks present within the landscape. Simple land cover. Defined hills within LCT provide a landmark backdrop to settlements in the wider area.
LCT 291 Open Rolling Upland Contains MWELCS LCT 11. Open Rolling Upland	Medium	Expansive and open large-scale landscape with some smaller scale valleys and prominent hills.
LCT292 Open Upland Contains MWELCS: LCT 12a Open Upland with Steep Slopes LCT 12b Open Upland with Settled Glens	High	Sense of remoteness in upper hills. Smooth, gently rolling upland landscape with occasional forestry. Extensive sweeping scale, gentle gradients and simple landcover. Steeper slopes and areas of more complex landscape occur in the west of the LCT.
LCT 293 Low Forested Hills Contains MWELCS LCT 8a. Broad Forested Hills with Upland Farmland	High	Simple landform of gentle slopes, broad indistinct summits and rounded ridges. Contains landmark hills. Perception of remoteness.
LCT 294 Upland Valleys – Moray and Nairn Contains MWELCS LCT 13. Narrow Farmed Valley	High	Part of the Ben Rinnes SLA, and the route of the Speyside Way long distance Path. Valleys are narrow and of a small to medium scale. Strongly contained by steep slopes with adjacent uplands forming immediate skyline ridges.
Transport and Recreational Routes		
A920	High	Tourists where passengers' focus may be on views of the adjoining landscape
	Medium	Local road users/ commuters generally travelling alone and/ or focused on road rather than adjoining landscape.
A941	High	Tourists where passengers' focus may be on views of the adjoining landscape
	Medium	Local road users/ commuters generally travelling alone and/ or focused on road rather than adjoining landscape.
A96	High	Tourists where passengers' focus may be on views of the adjoining landscape
	Medium	Local road users/ commuters generally travelling alone and/ or focused on road rather than adjoining landscape.

Table 5.12: Summary of Receptor Sensitivity		
Receptor	**Sensitivity**	**Justification**
A95	High	Tourists where passengers' focus may be on views of the adjoining landscape
	Medium	Local road users/ commuters generally travelling alone and /or focused on road rather than adjoining landscape.
B9009	High	Tourists where passengers' focus may be on views of the adjoining landscape
	Medium	Local road users/ commuters generally travelling alone and/ or focused on road rather than adjoining landscape.
Local road to east of Site (unnamed Deveron Valley Road)	Medium	Local road users/ commuters generally travelling alone and/ or focused on road rather than adjoining landscape.
Core Path SP30	High	Recreational footpath
Core Path SP05, SP04 and SP11	High	Recreational footpath
Core Path SP03 and SP10	High	Recreational footpath
Core Path IW02, IW03 and IW04	High	Recreational footpath
Core Path SP09 and IW01	High	Recreational footpath
Settlements		
Dufftown	High	Residential receptors

5.5 Assessment of Likely Effects

5.5.1 The layout and design of the Proposed Development are described in Chapter 2: Development Description, and illustrated in Figures 2.1 to 2.9.

5.5.2 The key components of the Proposed Development with the potential to affect the landscape and visual resource of the study area include those related to the construction, operational and decommissioning stages of the Proposed Development.

Potential Construction Effects

5.5.3 During construction (18-month period) the following elements have the potential to result in effects on the landscape fabric within the Site, as well as the landscape character and/ or visual amenity of the Site and wider study area:

- construction of new site access tracks;
- construction and subsequent reinstatement of a temporary site compound incorporating site offices;
- construction of site infrastructure, including tracks between turbine locations;
- construction and subsequent reinstatement of temporary laydown areas;
- construction of crane pads;
- construction of substations and control room;
- excavation and construction of turbine foundations;
- erection of turbines;
- undergrounding of cables connecting turbines to the substation;
- excavation and subsequent restoration of the temporary borrow pit;

- HGV and abnormal load deliveries to the Site and movement of vehicles on-site; and
- establishment of habitat management areas, and establishment of replacement forest planting.

5.5.4 Most of the effects occurring during this phase relate to disturbance of existing landcover at the Site and potential for long term change or loss of characteristic vegetation with consequent effects on the character and amenity of the Site and the adjoining area. However, a large proportion of the construction effects would be managed through adoption of good practice and careful construction management and monitoring regimes (such as those presented in the Outline Construction and Environmental Management Plan (CEMP) (Technical Appendix 2.1). The proposed replacement planting of forest cover across an extent of the Site would, as the planting matures, result in gradual reversal of construction impacts related to the removal of forestry (Technical Appendix 2.6: Forestry Impact Assessment).

5.5.5 Despite the phased manner of the felling and construction activities of the Proposed Development, short term significant effects are possible but would be confined to the interior of the Site and would affect part of the Open Upland and the Farmed and Wooded River Valleys LCTs. These would primarily be associated with the scale of felling activities and consequent temporary loss of characteristic vegetation cover. Such activities are not uncharacteristic in the Open Upland or Farmed and Wooded Valley LCTs (and areas directly adjacent) and would be largely reversible through restocking of forested areas.

Potential Operational Effects

5.5.6 The operational life of the Proposed Development would be up to 33 years. The operational elements with the potential to affect the landscape and visual amenity of the study area are:

- 11 wind turbine generators and transformers;
- on-site access tracks and hardstanding areas;
- bell mouth and site access improvements established during the construction phase of the Proposed Development;
- substation/ site control building and energy storage units;
- the restored borrow pit; and
- gradual maturation of replacement forest cover.

5.5.7 Effects arising during the operational period of the Proposed Development would mainly arise from the wind turbines, which represent the most visible and prominent aspects of the operational development.

Potential Decommissioning Effects

5.5.8 Effects arising from the process of decommissioning have been scoped out of the LVIA since they would occur after cessation of the operational phase of the Proposed Development at which stage the related processes and restoration procedures may have changed from those currently deployed. The decommissioning procedures are likely to be of a similar nature to construction activities, but of a shorter duration, and to result in at least a partial reversal of operational effects.

5.6 Mitigation

5.6.1 The siting and design of the Proposed Development has been influenced by relevant sources of guidance, including:

- Scottish Planning Policy (SPP); and

- NS's current guidance on the siting and design of wind farms (NS Guidance)[41].

5.6.2 Cognisance has also been taken of constraints and strategies presented in the Moray Council Onshore Wind Energy Non-Statutory Guidance and the Landscape Capacity Studies for both Moray and Aberdeenshire. Planning Advice 1/2005 and 2/2005, published by Aberdeenshire Council with regards to wind energy development, has also been reviewed.

SPP

5.6.3 As described in Section 5.3 of this Chapter, SPP provides a hierarchy of categories for use in spatial frameworks to aid the direction of development to the most appropriate locations. The key considerations, in spatial planning terms are:

- avoidance of locations within Group 1 Areas that are subject to nationally important designations such as NPs or NSAs;
- avoidance, where possible, of Group 2 Areas which are designated/ classified for their international or national heritage value, outwith NPs and NSAs, sites included in the inventory of GDLs, other nationally important mapped environmental interests such as WLAs and locations within 2 km of cities, towns and villages identified on the local plan; and
- preferential use of Group 3 Areas which are not constrained by landscape designation or classification, which are considered to have potential for wind farm development, subject to detailed consideration against policy criteria.

NS Guidance

5.6.4 Paragraph 1.15 of the NS Guidance states that

"Wind farms should be sited and designed so that adverse effects on landscape and visual amenity are minimised and so that landscapes which are highly valued are given due protection."

5.6.5 Paragraph 2.15 states that

"Choice of turbine size is an integral part of the design process. Identification of the key landscape characteristics, their sensitivity and capacity to accommodate change will inform this. Generally speaking, large wind turbines will appear out of scale and visually dominant in lowland, settled, or smaller-scale landscapes, which are often characterised by the relatively 'human scale' of buildings and features. They are best suited to more extensive, upland areas, and set back from more sensitive upland fringes. This can reduce effects on settled and smaller-scale valleys and lowland landscapes."

5.6.6 Paragraph 2.16 states that

"turbine size is also a key issue in upland landscapes, where they are viewed against, or from, landscapes of a more intricate scale and pattern; or where it is otherwise difficult to discern the landscape scale and distance. By illustrating the scale of an upland landscape, wind turbines may seem to conflict with the expansive nature of these areas."

5.6.7 Paragraph 2.20 goes on to propose that

"ancillary elements for a wind farm development should be designed so they relate to the key characteristics of a landscape. It is important that these elements do not confuse the simplicity of the wind farm design, or act as a scale indicator for the turbines themselves. Undergrounding power lines within the wind farm, using transformers contained within tower

[41] NatureScot (2017) Siting and Design of Wind Farms in the Landscape – Version 3a

bases (where possible), and careful siting of substations, transmission lines, access tracks, control buildings and anemometer masts will all help to achieve a coherent wind farm design. Simplicity of appearance and use of local, high quality materials will further enhance this."

5.6.8 Paragraph 2.25 addresses the layout of turbines and suggests that

"turbines can be arranged in many different layouts. The layout should relate to the specific characteristics of the landscape - this means that the most suitable layout for every development will be different."

5.6.9 Paragraph 3.23 discusses design responses to terrain, stating that

"landform is a key landscape characteristic, whether it is rugged, flat, undulating or rolling, upland or lowland. In flat landscapes, any undulations tend to become accentuated so that even low hills appear substantial."

5.6.10 Paragraph 3.24 goes on to state that

"it is generally preferable for wind turbines to be grouped on the most level part of a site, so the development appears more cohesive, rather than as a poorly related group of turbines."

5.6.11 The guidance identifies skylines to be of critical importance and posits that the design should avoid detracting from or overwhelming the character of distinctive skylines, as well as avoiding variable heights or overlapping turbines.

5.6.12 A further design objective discussed in the guidance is the appropriate scale for the wind farm that is in keeping with that of the landscape. NatureScot suggests that the Proposed Development should form an element of:

- "Minor vertical scale in relation to the other key features of the landscape;
- Minor horizontal scale in relation to the key features of the landscape (where the wind farm is surrounded by a much larger proportion of open space than occupied by the development); and
- Minor size compared to other key features and foci within the landscape; or separated from these by a sufficiently large area of open space (either horizontally or vertically) so that direct scale comparison does not occur."

5.6.13 The guidance also discusses the relationship between wind farms. A key factor determining the cumulative impact of wind farms is the distinct identity of each development. This relates to their degree of separation and similarity of design between wind farms. This applies whether they are part of a single development, a wind farm extension, or a separate wind farm in a wider group. A wind farm, if located close to another of similar design, may appear as an extension. However, if it appears at least slightly separate and of different design, it may conflict with the other development.

Mitigation during Construction

GENERAL CONSTRUCTION MITIGATION MEASURES

5.6.14 The location and management of construction elements has been carefully considered to minimise environmental effects including potential landscape and visual effects during the construction stage. Additionally, the following general precautionary measures would be adopted in order to minimise landscape and visual effects:

- all working areas would be restricted as far as practicable to the specified areas and demarcated to keep affected areas to a minimum and prevent incursion of Site plant into non-construction locations;

- material storage/temporary stockpiles would be retained for the shortest duration practicable and would be sited to avoid visual intrusion to neighbouring receptor locations, with particular regard to avoidance of sky-lining such features in views from neighbouring low-lying receptor locations such as the valley landscape to the south of the Site (the route of the A941), or the sensitive landscapes of Glen Rinnes, Glen Fiddich and the Deveron Valley;
- peat materials would be placed directly, wherever practicable, to avoid double handling, reduce vehicle movements, and to reduce potential drying and oxidisation of the peat. Where this is not possible the peat would be stored in accordance with the Technical Appendix 2.4: Draft Peat Management Plan;
- temporary Site compounds and the temporary stone extraction area (SEA) would be reinstated prior to the commencement of the operational phase of the Site to avoid the necessity of retaining restoration materials on-Site over the operational period and to avoid sustained effects on landscape fabric character and visual amenity;
- the surface of lay-down areas would be reinstated to replicate the appearance of adjoining land; and
- excavations for turbines foundations, laydown areas and underground cables would be reinstated prior to commencement of the operational phase of the Proposed Development; and
- all track sides would be reinstated with suitable material to ensure they would blend in with the adjoining ground at the Site.

TEMPORARY CONSTRUCTION COMPOUNDS

5.6.15 The use of two temporary compounds is intended:

- 1 – located to the south west of Turbine 2; and
- 2 – located at the north eastern end of the Site, near Turbine 9.

5.6.16 Their location was considered to minimise the effects on the character and visual amenity of neighbouring receptor locations, including scattered residential properties and communities.

5.6.17 It is intended that the temporary compounds would be returned to a condition consistent with that of the adjoining landscape during final construction works at the Site.

CONCRETE FOR TURBINE BASES

5.6.18 It is the intention that concrete required for the construction of turbine foundations would be produced at batching plant to be established within the two main temporary construction compound or within the borrow pit search area. This would be screened from a large proportion of external receptor locations along key transportation routes and settlements. In any event, this would be a temporary element and would be removed and ground cover restored to tie-in with the surrounding land cover during final construction works at the Site.

STONE EXTRACTION AREAS (SEAS)

5.6.19 It is proposed that aggregate for new tracks would be won from a borrow pit at the Site. Currently a borrow pit search area has been identified to the south of Turbine 11 (Figure 2.2). This location was selected to minimise the visibility of these elements from external receptor locations. Their position was also selected to avoid prominent exposed slopes or ridgelines or highly distinctive topographical forms that might make sympathetic restoration difficult.

5.6.20 It is intended that the size of any excavation would be limited as far as possible to avoid formation of large-scale unsightly excavations that might prove onerous to restore. Detailed

designs and restoration proposals for the borrow pit would be provided to MC, AC and NS but are anticipated to comprise a partially backfilled void topped with selected soils/ peat materials and translocated turf (as set out in Technical Appendix 2.1: Outline CEMP and Technical Appendix 2.4: Draft Peat Management Plan). The profile of the final excavation void would also be carefully considered to avoid unsightly exposed faces and the formation of a steeply graded rim.

CRANE PADS AND LAYDOWN AREAS

5.6.21 These elements of the Proposed Development would be kept to a minimum size and would be surfaced to match the track construction. Laydown areas not potentially required for future maintenance could be removed at the end of the construction phase of the Proposed Development and the ground reinstated to match adjoining ground. Alternatively, the surface of the laydown areas could be reinstated to match adjoining land whilst a firm sub-base is retained for future use if required.

SUBSTATION COMPOUND

5.6.22 There would be a single substation compound, located along the access track to the south west of Turbine 2. The substation compound would contain the substation and control building, and the energy storage unit (if required). The substation site was selected to take advantage of a small plateau to the south east of Garbet Hill, making use of the enclosure provided by the surrounding topography.

5.6.23 The substation buildings would be designed to complement the local vernacular, taking precedence from the style of outbuildings found within the surrounding area. The final building design would be agreed with MC and AC prior to construction commencing.

Mitigation during Operation

5.6.24 The design of any onshore wind farm is a matter of balance between commercial, technical and environmental constraints and opportunities. Chapter 3: Design Evolution and Alternatives provides a summary of the key design drivers and decisions made during the course of the design of the Proposed Development.

5.6.25 It is clear from the description of the design process that landscape and visual considerations, such as the existing landscape and visual baseline context as well as published guidance, were key to the design development. Those pertaining to the siting and design of the Proposed Development are summarised below.

SITING

5.6.26 The Site location evolved to ensure that the Proposed Development would be located:

- outwith areas defined as Group 1 or 2 on landscape and visual grounds in the spatial framework set out in the Moray Council Onshore Wind Energy Non-Statutory Supplementary Guidance 2020;
- outwith areas subject to landscape designations or classifications such as WLA, and away from settlements and other concentrations of sensitive receptors;
- in larger scale upland moorland and forested locations that are more capable of accommodating wind turbines than smaller scale landscapes;
- in a landscape that is already subject to ongoing modification or change and which contains existing or consented wind farm developments and/or other forms of large-scale development;

- away from distinctive landscape features, the scale and form of which could be compromised;
- to avoid, wherever possible, interrupting views of key landmark landscape features such as Ben Rinnes; and
- to reduce the visibility and prominence of the Proposed Development from key sensitive receptor locations, including main settlements, glens and key transportation and tourist/scenic routes and recreational routes in the study area.

LAYOUT AND DESIGN

5.6.27 Priority considerations in respect of the design from a landscape and visual perspective included:

- adoption of turbine sizes that would maximise yield whilst simultaneously minimising the Proposed Development's footprint and infrastructure requirements, thereby reducing impacts on the landscape fabric of the Site;
- the preference for turbines of a size that would be consistent with that of the proposed Garbet and Clashindarroch II wind farm developments, thereby limiting any incongruity between these closest schemes and the Proposed Development;
- preferential use of existing tracks on Site to minimise effects associated with this aspect of the Proposed Development;
- minimisation of the amount of Site infrastructure and ancillary elements required, and careful positioning and design to ensure that such elements are screened from the majority of external receptor locations; and
- careful siting and design of proposed substation to minimise visibility from external receptor locations.

5.6.28 In addition, the aviation lighting of turbines would be carried out in accordance with mitigation set out in Section 1.5 of Technical Appendix 5.8: Lighting Assessment.

Mitigation during Decommissioning

5.6.29 The decommissioning phase of the Proposed Development would be of a shorter duration than that of the construction phase, with the dismantling of all above ground structures and reinstatement of disturbed ground, subject to a hydrological assessment. Below ground structures would be left in place to avoid further disturbance. There would therefore be a temporary impact from the activities on Site to remove structures, but this would be of relatively short duration.

5.6.30 As noted in Section 5.2, effects related to the decommissioning of the Proposed Development were not assessed within the LVIA as such effects are anticipated to be equivalent to, or possibly less than, those expected to occur during its construction. Accordingly, the decommissioning phase is considered likely to have a minimal effect on the landscape and visual amenity of the locality, and ultimately resulting in the reversal of a number of effects associated with the operational wind farm. Mitigation measures associated with decommissioning would be agreed during the preparation of the final decommissioning plan, that would require approval of MC and AC and other statutory consultees.

5.7 Assessment of Residual Effects

Residual Construction Effects

RESIDUAL EFFECTS ON LANDSCAPE FABRIC DURING CONSTRUCTION

5.7.1 Chapter 2: Development Description provides details of the land take associated with different aspects of the construction of the Proposed Development. This indicates that, including temporary disturbance, the Proposed Development would cause disturbance or change to around 17.3 ha of the Site. However, of that, around 9.3 ha would comprise temporary disturbance associated with the establishment of temporary compounds, crane pads, and laydown areas. The remaining 8 ha of the Site would be subject to long term alteration associated with turbine bases, crane pads, a meteorological mast, the substation and its compound, and Site access tracks.

5.7.2 The sensitivity of the Site is Medium. Currently, the Site is partially used for forestry operations, with large areas to the north of the Site boundary covered with mature coniferous plantations. Elsewhere it is in agricultural use, with more intensive activity occurring across lower lying areas to the southwest of the Site boundary.

5.7.3 The key change to the fabric of the landscape within the Site would relate to some minor localised changes to Site topography and mainly temporary losses of characteristic landcover, namely excavation of an approximate 160 m x 30 m x 7.4 m (LxWxH) borrow pit and felling of approximately 93.5 ha of commercial forest as a result of the construction requirements.

5.7.4 Approximately 61.1 ha of forestry would be replanted within 2 years of construction being completed. Approximately 32.4 ha of forestry would be permanently lost to construct and operate the Proposed Development. At least 32.36 ha of appropriate compensatory planting would be implemented. The Applicant has sought agreement with the landowners for sufficient indicative areas within the Site.

5.7.5 On this basis, the Proposed Development is considered to result in comparatively limited change to this large-scale landscape. The magnitude of impact would be Moderate, resulting in a Moderate residual effect which would not be significant. Whilst the proposed felling would necessitate large scale felling, this is not uncharacteristic in itself for a commercial forestry.

RESIDUAL EFFECTS ON LANDSCAPE CHARACTER DURING CONSTRUCTION

5.7.6 The effect of construction at the Site would be localised to construction locations and would be of relatively short duration and much of the disturbance associated with construction activities would be ameliorated or removed during subsequent reinstatement activities. The sensitivity of the Open Upland LCT and the Farmed and Wooded River Valleys LCT, within which the Site is located, is considered to be High. The effect of construction operations is considered to represent a Slight magnitude of impact and Moderate residual effect on landscape character either within or in the adjacent landscape which would not be significant.

RESIDUAL EFFECTS ON DESIGNATED LANDSCAPES DURING CONSTRUCTION

5.7.7 As with predicted effects on LCTs, effects on designated landscapes (high sensitivity) within the study area are also not anticipated to be significant during construction, until the majority of turbines are constructed, thereby approaching the operational appearance of the Proposed Development. The Proposed Development would occur outwith designated areas and would therefore have no direct effect on designated landscapes. Whilst indirect effects are likely, primarily as a result of the operation of cranes and erection of turbines, such effects would be localised and would be of a short duration. The magnitude of impact would be Slight.

Consequently, the residual effect would be Moderate, which is not considered to represent significant residual effects on adjacent designated landscapes.

RESIDUAL EFFECTS ON VISUAL AMENITY DURING CONSTRUCTION

5.7.8 Construction operations would be confined to locations within the Site and screened from the majority of key external receptor locations, including settlements, transportation routes and the majority of recreational routes as defined in Section 5.4 (of high sensitivity), the exception to this being the operation of site cranes and erection of turbines. However, even these aspects of the construction operations would be of relatively short duration. In this context, the magnitude of impact on visual amenity would be Slight. The residual construction effects on visual amenity are considered to be Moderate and would not be significant.

RESIDUAL CUMULATIVE EFFECTS DURING CONSTRUCTION

5.7.9 Whilst there is potential that construction operations at a number of developments, such as proposed Clashindarroch II, could coincide, there is little certainty of the actual timing or duration of the construction of such developments. It is also the case that the duration of construction operations at these sites would be relatively short and geographically confined, and therefore unlikely to provide a basis for significant cumulative effects.

Residual Operational Effects

EFFECTS ON LANDSCAPE FABRIC DURING OPERATION

5.7.10 No additional effects on landscape fabric would occur during the operational life of the Proposed Development. Replanted coniferous plantation at the Site would gradually mature, re-establishing the characteristic land cover and productive use of the Site. The magnitude of impact would be None. The residual effect would be None.

EFFECTS ON LANDSCAPE CHARACTER DURING OPERATION

5.7.11 Technical Appendix 5.2: Landscape Character Types Descriptions contains a description of the characteristic elements of LCTs within the study area that would be subject to views of the Proposed Development, and Technical Appendix 5.4: Residual Effects on Landscape Character Types contains a prediction of likely residual effects. LCTs predicted to be subject to potentially significant effects include:

- LCT 292 – Open Upland (including the Open Upland with Settled Glens LCT from the MWELCS) (High sensitivity);
- LCT 32 – Farmed and Wooded River Valleys (High sensitivity);
- LCT 27 – Farmed Moorland Edge (Medium sensitivity);
- LCT 28 – Outlying Hills and Ridges (High sensitivity);
- LCT 289 – Upland Farmed Valleys (High sensitivity); and
- LCT 294 – Upland Valleys (High sensitivity).

5.7.12 Significant in-combination cumulative effects are also predicted on the following LCTs:

- LCT 123 – Smooth Rounded Hills; and
- LCT 291 – Open Rolling Upland.

LCT 292 Open Upland

5.7.13 Significant effects would occur within the landscape of the Site and in the area surrounding the Proposed Development where ZTV coverage is almost continuous. Significant effects would, however, reduce to the south of the LCT where the presence of Dorenell Wind Farm

forms a key influence on the landscape, and where distance reduces the prominence of the Proposed Development. The introduction of the Proposed Development would significantly increase the prominence of wind energy developments in the north east of the LCT (including 12b Open Upland with Settled Glens from the MWELCS) but would serve to consolidate the pattern of existing development at Dorenell and Clashindarroch, in-filling an area of landscape between these two developments.

5.7.14 Across the western area of the LCT, which coincides with MWELCS 12a Open Upland with Steep Slopes, the Proposed Development would pose no significant effect on the role of the LCT unit as a backdrop/ setting to Glen Rinnes and Strath Spey. It would not detract from the perceived size or scale of Ben Rinnes from within the LCT or from the adjacent valley landscapes. When viewed from elevated areas, the Proposed Development would be viewed in an expansive landscape view, in the context of a high degree of existing/ consented wind farm development.

5.7.15 Consequently, the magnitude of impact on the Open Upland LCT would be Substantial at the Site, reducing with distance to Moderate across the LCT in areas where it coincides with the 12b Open Upland with Settled Glens. At greater distances, as the LCT extends west (coinciding with the 12a Open Upland with Steep Slopes) the magnitude of impact would be Slight. On this basis the residual effect on this LCT would range from **Major** (Significant) to Moderate (not significant), with significant effects occurring at the Site and across areas of the LCT which coincide with the LCT 12b Open Upland with Settled Glens. Outwith these areas, effects would not be significant.

5.7.16 If other in-planning wind farms in the study area are taken into account, alongside the baseline of existing and consented developments, the residual in-addition cumulative effect would also be **Major/ Moderate** (significant). The in-combination effect would also be **Major/ Moderate** (significant).

5.7.17 If schemes at Scoping (Glenfiddich and Clashindarroch Extension) are taken into account, in-addition effects attributable to the Proposed Development would reduce to Moderate (Not significant). In combination effects would increase to **Major** (Significant).

LCT 32 – Farmed and Wooded River Valleys

5.7.18 The Proposed Development would represent a considerable alteration to the skyline to the south west of the LCT, within approximately 7 km of the Site. It would introduce movement and large scale prominent engineered structures to the edge of a landscape where elements of the size proposed are currently not a feature. The Proposed Development would notably alter the composition of the landscape in views from roads, properties and recreational routes within the LCT.

5.7.19 Further east, visibility would reduce substantially and views of the Proposed Development from within the interior of the valley landscape would not be provided. Long distance views from upper elevations on the edge of the valley, such as to the north of Kinnoir, would include the Proposed Development. However, at distances of over 7 km it would be viewed in the context of other wind energy development and range of land uses that the influence on the character of the landscape would be lessened. The magnitude of impact would be Substantial in the area immediately north of the Proposed Development out to approximately 5 km (see VP1 and VP2 in Figures 5.9a to 5.9f and 5.10a to 5.10f in Volume 3b) reducing to Slight/ None in all other areas of the LCT. The residual effect would be **Major** (Significant), reducing to Moderate or Moderate/ Minor (not significant) as distance increases from the Site with consequent reductions in the perceived prominence of the Proposed Development and increased screening by intervening topography.

5.7.20 If proposed wind farms within or theoretically visible from this LCT are considered, the addition of the Proposed Development would pose a Moderate magnitude of impact and **Major/ Moderate** (significant) effect immediately north of the Proposed Development. The magnitude of cumulative in-addition impact would reduce to Slight or None in all other areas of the LCT, resulting in a Moderate (not significant) effect or less. The in-combination magnitude of cumulative impact would be Substantial in the south western extent of the LCT, reducing to Slight or None across the wider LCT. The effect would be **Major** (Significant), reducing to Moderate or None (not significant). These effects would not change following the introduction of schemes at Scoping.

5.7.21 Key cumulative effects would be experienced in the south western extent of the LCT, where the emerging pattern of development would result in a large cluster of wind energy development outcropping above the Deveron Valley in the area of the Site. Across the full LCT, this influence would reduce with distance. This large cluster of development, along with that at Berry Burn/ Pauls Hill/ Rothes I and II etc. would be viewed from elevated locations within the LCT only, seen at distance across upland landscapes which form the background to views. While discernible, their influence on the overall character of the LCT would be minimal.

LCT 27 – Farmed Moorland Edge

5.7.22 This LCT is present in three discrete units within the 45 km Study Area (see Figure 5.3a and 5.3b). The ZTV indicates that visibility would be most extensive across the northernmost unit of the LCT, while the southern units would have marginal theoretical visibility at distances of over 15 km.

5.7.23 The Proposed Development would notably influence the character of the LCT in the area of Easter and Wester Bodylair on the A920, along the south western edge of the LCT as it transitions to the Farmed and Wooded River Valleys LCT. The landscape is of a small scale in this area, contained by broad, open upland hills which form the background to the view. Across the skyline two clusters of wind turbines are present, with turbines at Clashindarroch and Dorenell Wind Farms visible in the background of the view (see VP13: A920 near Wester Bodylair in Figure 5.21a to 5.21h in Volume 3b).

5.7.24 In this transitional area, the Proposed Development would introduce a new cluster of wind turbines across a prominent skyline. Turbines would appear prominent and, while set back from the edge of the valley, would affect the form and scale of the landscape. The landscape is influenced by existing wind farm development and therefore the Proposed Development would not introduce a new or unfamiliar feature into the landscape. However, due to the size and scale of the development and its proximity to the LCT, the Proposed Development would have more influence on the character of the landscape in this part of the LCT.

5.7.25 Further north east, distance would reduce the influence of the Proposed Development across the majority of this unit of the LCT. To the east of the A96, visibility largely coincides with areas of forestry across The Bin and Meikle Balloch Hill where the Proposed Development would largely be viewed from open summits. It would sit within the context of existing wind energy development including that which is present within the LCT and in adjacent landscapes.

5.7.26 The magnitude of impact across the northernmost unit would be Substantial, reducing to Slight or None with distance across the LCT unit. The magnitude of impact on the southern two units of the LCT overall would be Negligible or None. The residual effect would be **Major/ Moderate** (Significant) in the area of Easter and Wester Bodylair on the south western edge of the northern unit, and reducing to Moderate/ Minor or None (Not significant) across the

wider northern LCT unit. Residual effects would range from Minor to None (and not significant) across the southern units of the LCT.

5.7.27 The addition of the Proposed Development to other operational, consented and in planning wind farms would result in significant in-addition cumulative effects. The Proposed Development would introduce a new, large scale wind energy development in closer proximity to the LCT than currently exists. Turbines would appear prominent and would form a notable feature in the adjacent landscape. The addition of the Proposed Development would pose a Substantial in-addition magnitude of cumulative impact and a **Major/ Moderate** (significant) residual effect across the south western extent of the LCT, reducing to Slight with a Moderate/ Minor residual effect (not significant) across the northern unit of the LCT. The magnitude of impact would reduce to Negligible across the full LCT where distance combined with screening by topography and intervening woodland/ vegetation reduce the overall influence of the Proposed Development, and the effect would be Minor (not significant). There would be no visibility of the Proposed Development from other units of the LCT, and therefore these areas would not be affected. The inclusion of schemes at Scoping would not alter the in-addition assessment. The magnitude of cumulative impact would be Substantial, reducing to Slight across the northernmost unit of the LCT. This would reduce to Negligible across the full LCT where distance combined with screening by topography and intervening woodland/ vegetation reduce the overall influence of the Proposed Development. The residual in-addition effect would be **Major/ Moderate** (significant) across the northern LCT unit, reducing to Minor across the remainder of the LCT.

5.7.28 In combination with other wind energy developments, the Proposed Development would contribute to an emerging pattern of development where the LCT forms a transitional landscape between the smaller scale development present within/ to the north and east of the LCT, and larger scale commercial development located to the south and west of the LCT. Wind energy development would become a characteristic element both within the LCT, and in views from the LCT. These effects however are not considered to be significant. The in-combination magnitude of impact would be Moderate (not significant). These effects would not change following the introduction of schemes at Scoping.

LCT 28 – Outlying Hills and Ridges

5.7.29 There are seven areas of the Outlying Hills and Ridges LCT within the Study Area. For the purposes of this assessment, these are referred to, as follows;

- Unit 1 – West of Huntly;
- Unit 2 – Gartly Moor;
- Unit 3 – Coreen Hills/ Bennachie/ Pitfitchie Forest;
- Unit 4 – Coiliochbhar Hill area;
- Unit 5 – Frosty Hill area;
- Unit 6 – Hill of Coulls area; and
- Unit 7 – Hill of Fare.

5.7.30 Influence of the Proposed Development across the landscape would be most notable across Units 1, 2 and 3 of the LCT, which lie within 20 km of the Proposed Development.

5.7.31 The greatest impacts on the character of the LCT would be experienced at the western edge of Unit 1, as the landscape transitions into the Farmed and Wooded River Valleys LCT of the upper Deveron Valley. This unit of the LCT is influenced by wind turbines at Clashindarroch, Kildrummy and Bailiesward Farm, however the Proposed Development would appear as a large scale new feature on the edge of the valley, and of a greater size and scale than existing

development. Views from the west facing hills above the valley would be open and the Proposed Development would form a prominent new feature above the valley and its influence on the character across this part of the unit would be considerable. The influence would reduce further to the south/ east as elevation rises and visibility becomes intermittent. The Proposed Development would become part of a broader pattern of wind energy development present in the LCT and in adjacent landscapes.

5.7.32 Across Units 2 and 3, the Proposed Development would increase the level of wind energy development present in distant landscapes which form the background of views from the LCT. The Proposed Development would alter a small proportion of the landscape in the overall view and would form a minor element. The change would be discernible but would not notably influence or alter the underlying character of the Outlying Hills and Ridges LCT.

5.7.33 Across Units 4 - 7, visibility would be restricted to the most elevated parts of the LCT, where the Proposed Development would be seen in long distance, expansive views behind/ directly adjacent to existing development at Clashindarroch and within the context of a broad spread of wind energy development present within the upland landscape.

5.7.34 The magnitude of impact would range from Substantial across the west of Unit 1, to Slight across the wider LCT unit, resulting in a **Major** (Significant) or Moderate (not significant) residual effect. For the other units (Units 2 – 7), the magnitude of impact would range from Slight to Negligible, resulting in residual effects of Moderate or Minor which would not be significant.

5.7.35 Significant cumulative effects (in addition and in combination) would be experienced across Unit 1 of the LCT due to the proximity to the Proposed Development, and the emerging pattern of development present within and directly adjacent to this LCT.

5.7.36 Taking account of other operational, consented and in-planning wind energy developments, the magnitude of in-addition cumulative impact would be locally Moderate in the west of the Unit, reducing to Slight across the wider Unit 1 area. This would result in effects which are **Major/ Moderate** (Significant) in the west of Unit 1, and reducing to Moderate (not significant) in the wider area of Unit 1 where there is visibility of the Proposed Development. In Units 2-7, the magnitude of impact would range from Slight to Negligible or None and residual effects would be Moderate or less and not significant.

5.7.37 Should schemes at Scoping be included, the addition of the Proposed Development would result in a minor addition to the influence of wind energy development across Unit 1 of the LCT. Development at Clashindarroch, Clashindarroch II and Clashindarroch Extension, alongside the operational Dorenell, the Proposed Development at Garbet and Glenfiddich (Scoping) would substantially alter the character of the LCT unit. The addition of the Proposed Development would contribute a discernible addition to the influence of wind energy development on the landscape, but the emerging baseline condition would be largely unaltered. This influence would also reduce with increased distance from the Site. While the Proposed Development would increase the number of wind turbines within adjacent landscapes, it would not alter or affect the defining characteristics of the LCT overall. The magnitude of impact would be Slight or Negligible across all LCTs units. The residual in-addition effect would be Moderate, Minor or None and not significant.

5.7.38 The magnitude of impact for in-combination effects would be locally Substantial in the west of Unit 1 (taking account of the Proposed Development in conjunction with other operational, consented and in planning schemes), reducing to Slight across the wider LCT unit. Across Units 2 – 7, the magnitude of impact would be Moderate or Slight. The residual effect would

be locally **Major** (Significant) in Unit 1, and **Major/ Moderate** (Significant) across areas of Unit 2. The residual effect would reduce to Moderate (not significant) across the LCT Units 3 to 7 as the cluster of wind turbines in the area of the Site is viewed within the broader landscape context, set upon upland landscapes in the background of the view. There would be no alteration to the assessment findings should schemes at Scoping be taken into account.

LCT 123 – Smooth Rounded Hills

5.7.39 Significant in-combination cumulative effects are predicted on LCT 123 – Smooth Rounded Hills. Existing clusters of operational and consented development present across adjacent upland landscapes would become larger and more complex following the inclusion of the Proposed Development and other wind energy development currently in planning. The pattern of development would remain consistent with the baseline, where groups of wind farms are clustered across areas of upland landscape distant to the LCT. The increase in numbers of turbines (and the overall size of turbine clusters) would result in wind energy development becoming a notable characteristic of landscapes in the wider area, as viewed from within the LCT. The magnitude of cumulative impact would be Moderate, resulting in a **Major/ Moderate** in-combination effect (Significant).

5.7.40 The inclusion of schemes at Scoping would further contribute to the emerging pattern of development, increasing the spread of wind turbines across upland landscapes to the north of the LCT. The magnitude of cumulative impact would be Moderate, resulting in a **Major/ Moderate** (Significant) residual in-combination effect.

LCT 289 – Upland Farmed Valleys

5.7.41 The Proposed Development would be theoretically visible to varying degrees across elevated summits and ridges of the LCT. No views are available from within lower lying areas such as the Dullan Water and River Isla valleys, or the unnamed glen to the east of Craigellachie, along which routes the A95. The Proposed Development would not affect the smaller scale, intimate character of the valleys which run through the LCT.

5.7.42 The magnitude of impact would be Moderate. The residual effect would be **Major/ Moderate** (significant) across the more elevated parts of the LCT, where existing development influences the character of views. The Proposed Development would increase the level of development visible in the middle distance of these expansive views and would add complexity given the larger size and scale of the turbines. Across the remainder, and majority, of the LCT, residual effects would be Minor or None, and would not be significant.

5.7.43 In addition to other operational, consented, and in planning schemes, the Proposed Development would increase the level of development in this area of upland landscape adjacent to the LCT, forming a minor addition to the array of turbines. The change would be discernible but would remain consistent with the baseline condition. The magnitude of impact would be Slight. The residual effect would be Moderate (not significant). This would not change following inclusion of Scoping schemes in the assessment.

5.7.44 In-combination with other operational, consented, and in planning wind farms, the Proposed Development would contribute to an emerging pattern of large scale wind energy development across upland landscapes to the south and west of the LCT. Turbines would be a feature in views out from the LCT in most directions. The magnitude of cumulative impact would be Moderate, and the residual effect would be **Major/ Moderate** (significant). The inclusion of schemes at Scoping would further intensify the level of development across the upland landscape, reinforcing the pattern of development. The magnitude of in-combination

cumulative impact would be Moderate, and the residual effect would be **Major/ Moderate** (Significant).

LCT 291 – Open Rolling Upland

5.7.45 There would be significant in-combination cumulative effects on the Open Rolling Upland LCT. The emerging cumulative context, coupled with the Proposed Development, is such that wind energy development would become a key, if not 'the', defining characteristic of the LCT. This is primarily due to development which lies within the LCT including operational, consented and proposed developments at Tom nan Clach, Cairn Duhie, Clash Gour, Berry Burn, Berry Burn Extension, Pauls Hill and Pauls Hill Extension, as well as those directly adjacent - Rothes I, II, and III, Hunthill and Meikle Hill and Hill of Glaschyle. Other operational, consented and in planning development located at greater distances to the east, including the Proposed Development, reinforce the pattern of development across upland landscapes within the wider area. The magnitude of cumulative impact would be Substantial. The residual in-combination effect would be **Major** (Significant). Inclusion of schemes at Scoping would further increase the level and pattern of development in views to the east. The in-combination cumulative effect would remain **Major** (Significant).

LCT 294 – Upland Valleys

5.7.46 There are two areas of the Upland Valleys LCT within the Study Area. For the purposes of this assessment, these are referred to as follows;

- Unit 1 - Deveron Unit; and
- Unit 2 - Glen Rinnes Unit.

5.7.47 The Proposed Development would form a prominent feature across the edge of the valley landscape in Unit 1, introducing large vertical and moving structures above the low lying valley floor and altering the perception of this small scale and intimate landscape unit. Clashindarroch Wind Farm, whilst visible from within the valley, is set further back and away from the valley edge. The Proposed Development would considerably alter a key skyline/the edge of the valley landscape which would result in a considerable change to the baseline condition. The magnitude of impact on Unit 1 would be Substantial. The residual effect would be **Major** (Significant) on Unit 1: Deveron Unit.

5.7.48 The Proposed Development would have minimal visibility from within Unit 2 of the Upland Valleys LCT. Key characteristics of the LCT are associated with the incised and enclosed glen landscapes, which have a backdrop of open slopes. The Proposed Development would not impact upon these characteristics. The magnitude of impact would be Negligible or None. The residual effect would be Minor or None and not significant.

5.7.49 There would be significant in-addition and in-combination cumulative effects on Unit 1 of the Upland Valleys LCT. This is due to the introduction of large scale wind energy development across the valley edges, which would alter the perceived size and scale of the small scale, intimate landscape within the LCT.

5.7.50 The addition of the Proposed Development to other operational, consented and in planning wind farm developments would result in a Substantial magnitude of impact on Unit 1 of the LCT. The residual effect would be **Major** (Significant). Across Unit 2, due to the highly marginal visibility of the Proposed Development, the magnitude of impact would be Negligible or None. The effect would be Moderate/ Minor and not significant.

5.7.51 In-combination with other operational, consented and in planning schemes, the Proposed Development would result in a Substantial magnitude of impact on Unit 1, and a Slight

magnitude of impact on Unit 2. Residual effects would be **Major** (Significant) across Unit 1, reducing to Moderate (not significant) on Unit 2.

5.7.52 Taking account of scoping proposals, there would be significant in-combination cumulative effects (**Major/ Moderate**) on Unit 2 of the LCT. This is largely attributable to development at Glenfiddich which would considerably increase the influence of wind energy development within Glen Rinnes.

TURBINE LIGHTING EFFECTS ON LANDSCAPE CHARACTER TYPES

5.7.53 Table 5.8.1, of TA5.8: Lighting Assessment summarises the likely effects of turbine lights on the character of LCTs within the Study Area. It is noted that, with few exceptions, published character assessments do not generally provide a description of night landscape characteristics and so it has been necessary to place an interpretation of such characteristics based on the descriptions provided, with particular reference to the absence of artificial light sources associated with settlement or transport, perceived remoteness or wildness, and references to open and undeveloped backdrops and skylines that, by implication, provide a dark backdrop or boundary to landscape types and which are therefore susceptible to the inclusion of proposed aviation lighting.

5.7.54 The Lighting Assessment identifies localised significant effects in the following LCTs:

- NS 28: Outlying Hills & Ridges (significant effects would be localised at the Tap o'Noth summit);
- NS 32: Broad Wooded and Farmed Valley between A941 and Huntly;
- NS 288: Upland Farmland;
- NS 289: Upland Farmed Valleys, along the A941 corridor; and
- NS 292: Open Upland.

EFFECTS ON LANDSCAPE DESIGNATIONS AND CLASSIFICATIONS

5.7.55 Technical Appendix 5.3: Landscape Character Types Descriptions contains a description of the Landscape Designations and Classifications within the study area that would be subject to potentially significant effects as a result of the Proposed Development, and Technical Appendix 5.5: Residual Effects on Landscape Designations and Classifications contains a prediction of likely residual effects. Designations and classifications predicted to be subject to potentially significant effects include:

- Ben Rinnes SLA;
- Deveron Valley (Aberdeenshire); and
- Cairngorms National Park (in-combination cumulative effects only).

Ben Rinnes SLA

5.7.56 The Proposed Development is not located within the Ben Rinnes SLA and therefore would not have direct, physical effects on this designated area.

5.7.57 From elevated areas within the Ben Rinnes SLA, the Proposed Development would be viewed in the context of other clusters of existing and consented wind energy development present across the upland landscapes to the east and south and the more agricultural landscapes to the north. The Proposed Development would constitute a notable addition to the influence of wind energy development in views to the east, due to its closer proximity to the SLA in comparison to other development. This would impact upon views for hill walkers accessing the slopes and summit of Ben Rinnes. However, the Proposed Development would not impact upon the landscapes of the well contained, and often remote, glens which form a key

characteristic of the SLA. The proposed turbines would not alter the perceived "*tranquil*"[42] *qualities* experienced from within these landscapes, nor would it introduce a new or unfamiliar land use. It would not impact upon the setting/ backdrop that the hills and ridges within the SLA provide to Glenlivet, Dufftown and other scattered settlement within the SLA glens.

5.7.58 The magnitude of impact would be Moderate across the elevated areas of the SLA, reducing to none within the glens and across the south western extent of the designated area. The residual effect on the Ben Rinnes SLA would therefore be **Major/ Moderate** (Significant) across elevated areas within the SLA, reducing to none elsewhere.

5.7.59 In combination with other operational, consented and in planning wind energy development, the Proposed Development would contribute to wind energy development being a notable land use within the upland landscapes in views from elevated areas of the SLA. Wind energy development would also have increased influence within the low lying glen landscapes (i.e., Glen Rinnes) and would, in parts, reduce the perceived remoteness, tranquillity, and lack of development within these landscapes. The magnitude of cumulative impact would be Moderate. The residual effect would be **Major/ Moderate** (Significant). This influence would be considerably increased following the inclusion of those schemes at Scoping. Wind energy development would substantially influence the character of the SLA, including the character of Glen Rinnes. Wind turbines would be visible from a high proportion of the SLA. The magnitude of impact would be Substantial. The residual in-combination effect would be **Major** (Significant).

Deveron Valley SLA (Aberdeenshire)

5.7.60 The Proposed Development is not located within the Deveron Valley SLA and therefore would not have direct, physical effects on this designated area.

5.7.61 The magnitude of impact on the Deveron Valley SLA would be Substantial at the south western edge of the designated area, reducing to Slight and None across the majority of the SLA. The residual effect would be **Major** (Significant), reducing to Moderate or None (Not significant) with distance. The influence of the Proposed Development on the special qualities and characteristics of the SLA would be limited to locations where the proposed turbines would be located above the valley, altering the perceived size and scale of the landscape in these areas and impacting upon the setting of settlement within the valley. Therefore, significant effects are predicted across the SLA in areas to the west of Huntly, within 5 - 7 km of the Proposed Development. Beyond this distance, the overall impact of the Proposed Development on the key characteristics of the SLA would reduce substantially.

5.7.62 There would be significant in-addition effects across the south western extent of the SLA as a result of the Proposed Development. This is due to the positioning of the Proposed Development (and other operational, consented and proposed developments) across the skyline which forms the edge to the intimate valley in this area, affecting the size and scale of the landscape and altering the setting for properties within the valley. The in-addition magnitude of impact would be Moderate across the south western extent of the SLA, reducing to Slight or None across the wider designated area. The residual effect would be **Major/ Moderate** (Significant), reducing to Moderate/ Minor or None across the wider SLA. There would be little change to the assessment following the inclusion of schemes at Scoping. The magnitude of impact would remain Moderate in the south western extent of the SLA, and reduce to Slight or None elsewhere across the designated area. The residual effect would

[42] As described in Carol Anderson Landscape Associates (2018) Moray Local Landscape Designation Review *Ben Rinnes Special Landscape Area* http://www.moray.gov.uk/downloads/file124520.pdf

remain **Major/ Moderate** (Significant),and would reduce to Moderate or None (Not significant) across the wider designated area.

5.7.63 The Proposed Development, in-combination with other operational, consented and in planning developments would result in a Substantial magnitude of impact across the south western extent of the SLA, reducing to Slight or None across the wider SLA. The residual effect would be locally **Major** (Significant), reducing to Moderate or None overall. In-combination effects would also reduce as wind energy developments are of a smaller size and scale to those in the upland landscapes further south, and their influence across the SLA is restricted by local topography and woodland vegetation.

Cairngorms National Park

5.7.64 Given the distance from the CNP boundary, the limited pattern of theoretical visibility across higher summits and the existing context of wind energy development within the landscape surrounding the CNP it is considered unlikely that the Proposed Development would discernibly affect the Special Landscape Qualities of the CNP or its integrity as a nationally important designation. The assessment presented in Technical Appendix 5.5: Residual Effects on Landscape Designations identifies the magnitude of impact on each of the selected Special Landscape Qualities would range from Slight to Negligible, resulting in a residual effect of Moderate or Moderate/ Minor and not significant.

5.7.65 The Proposed Development would add to the emergent pattern of development in views from a number of summits within the CNP, but would otherwise be obscured from the majority of this designated area. Where visible, the Proposed Development would be seen distantly outwith the CNP in views to the north and north west. The Proposed Development would be viewed in the context of other operational, consented and in planning developments within the area of the Site, and while the addition of the Proposed Development would have some minor influence on the special qualities of the CNP, specifically the degree of perceived naturalness, remoteness and wildness, this would not be significant and would be insufficient to undermine the integrity of the CNP. The magnitude of in-addition cumulative impact would be Negligible, resulting in a Moderate/ Minor (not significant) cumulative effect. This would not change following the consideration of developments at Scoping.

5.7.66 In taking the combined effect of wind energy development into account, it is apparent that localised significant cumulative effects are anticipated in respect of existing, consented and proposed wind farms, and also when scoping schemes are included. Such effects arise from effects on naturalness, remoteness and wildness of summits and do not apply for the majority of the CNP, and so with few exceptions, the wind energy developments identified in the LVIA are not considered to affect the key special qualities for the CNP to the degree, or geographical extent as to undermine the integrity of the CNP. The magnitude of impact would be Moderate across some elevated areas within the CNP, reducing to Slight or None across the wider CNP. The effect would be **Major/ Moderate** (Significant), reducing to Moderate or None overall. There would be little identifiable change to the above assessment following the addition of Scoping developments to other operational, consented, proposed wind farms in conjunction with the Proposed Development.

TURBINE LIGHTING EFFECTS ON LANDSCAPE DESIGNATIONS AND CLASSIFICATIONS

5.7.67 There are few special qualities of designations or landscape classifications within the Study Area that have specific direct relevance to the turbine lighting of the Proposed Development, the exception being those pertaining to the remoteness, solitude and wildness of parts of the Cairngorm National Park, which is also classified as a National Scenic Area and Wild Land Area. Similarly, the special qualities of Ben Rinnes Special landscape Area, which forms part of the

setting to Cairngorms National Park, include its "remote uplands", which contain little influence from artificial lighting, but are nonetheless influenced by lighting in neighbouring settlements and transportation routes.

5.7.68 The Lighting Assessment (see Technical Appendix 5.8) concludes that the Cairngorms National Park would not be significantly impacted by turbine lighting. Conversely, localised **Major/ Moderate** significant effects are anticipated within the Ben Rinnes SLA, due to the introduction of prominent new points of light to a largely dark outlook, and thereby reducing the perceived remoteness of the uplands in this designated area.

EFFECTS ON VISUAL AMENITY

Settlements

Dufftown

5.7.69 The blade tip ZTV indicates that up to nine wind turbines would be theoretically visible from Dufftown. The hub height ZTV indicates only two hubs would be visible from the town. As the Proposed Development is set back from the edge of the valley which Dufftown is located above, the enclosure provided by the valley edges, including the presence of woodland associated with the water features, screens to a high degree actual views to the Proposed Development. Additionally, field reconnaissance suggests that visibility would be further reduced by a combination of built forms within Dufftown, woodland and tree cover and micro-topographical features not reflected in the ZTVs, which foreshorten views or provide localised screening.

5.7.70 It is likely that some views would be available along the southern and south eastern edge of Dufftown (see Viewpoint 3: Corsemaul Drive, Dufftown in Figure 5.11a to 5.11f in Volume 3b). Turbine blades (and the hubs of two turbines) would be viewed along part of the skyline to the south east, set back behind upland hills which lie in front of the Proposed Development and currently form the background to the view. The Proposed Development would be the only discernible wind energy development in these views.

5.7.71 The magnitude of impact for the southern edge of Dufftown would be Moderate. The Proposed Development would cause a notable change to the skyline in views to the south east, introducing large scale moving structures into the view. The change would be localised within a broader, unaltered context. The residual effect would be locally **Major/ Moderate** (significant).

5.7.72 Based on the preceding analysis, the magnitude of impact across the majority of Dufftown would be Negligible or None, resulting in a residual effect of Moderate/ Minor or None.

5.7.73 Should Garbet Wind Farm be consented, the Proposed Development would contribute to the increase in large scale wind turbines across the skyline in the view from the south eastern edge of Dufftown. It would be located behind turbines at Garbet, extending development further to the south west. Wind energy development would become a notable characteristic of the landscape in the view. The magnitude of cumulative impact would be Moderate, resulting in a **Major/ Moderate** (Significant) effect.

5.7.74 Should development at Garbet (application – at appeal) and Glenfiddich (scoping) be constructed, large scale wind energy development would extend across a high proportion of the skyline in views to the south east of Dufftown. The addition of the Proposed Development would link these two developments, creating an almost full skyline of wind energy development in this direction. In conjunction with other operational, consented, in planning and scoping schemes the magnitude of change would be Substantial. The influence of wind

energy development on the composition of the view from the southern edge of Dufftown would considerably increase. The residual effect would be **Major** (significant).

Residential Properties within 2 km of the Proposed Development

5.7.75 Technical Appendix 5.7: Residential Visual Amenity Assessment (RVAA) provides a detailed assessment of the likely effects of the Proposed Development upon the visual amenity of individual properties. The purpose of the RVAA is to identify potential effects of the Proposed Development on residential visual amenity. It is, however, important to note that the assessment of residential visual amenity is separate and distinct from the assessment of visual effects as covered in the LVIA. Whilst residential receptors considered in the RVAA could be subject to significant visual effects, as defined in Section of 5.2 of the LVIA, such effects only become potentially material to the determination of an application for consent if the effects are of such a level as to be 'overbearing' or 'overwhelming' and to represent a matter of public interest. The RVAA in Technical Appendix 5.7 concludes that none of the properties addressed in the assessment would be subject to effects that could be considered overbearing, overwhelming or pervasive and are therefore not considered to exceed the residential Visual Amenity threshold described in the Landscape Institute's guidance on the assessment of residential visual amenity[43].

Transportation and Recreational Routes

5.7.76 Figure 5.5a and 5.5b illustrates the location of the assessed routes in this LVIA.

A920

5.7.77 Viewpoint 13: A920 near Wester Bodylair is illustrative of the effect of the Proposed Development on the amenity of this route (see visualisations in Figures 5.21a to 5.21h in Volume 3b).

5.7.78 There would be no views of the Proposed Development from the area of the A920 which is identified as a 'Scenic Approach' by the Moray Onshore Wind Energy Supplementary Guidance.

5.7.79 The ZTV indicates that for westbound travellers, theoretical visibility of the Proposed Development would commence as the road passes south of Dunbennan Hill and crosses the River Deveron at Cairnford Bridge. Hubs of seven wind turbines and the blades of all structures would be theoretically visible. There is a degree of roadside and riparian vegetation in this area which would reduce the actual visibility of the Proposed Development from this stretch of road, providing only intermittent views to the Site.

5.7.80 As the road user crosses the bridge, views continue to be intermittent as the road passes the Hill of Milleath, raised slightly above the valley floor. The ZTV indicates that only blades and blade tips would be visible along the majority of the road as it passes along the river valley to the Burn of Parkhall crossing. Forestry on hills in the intervening landscape are likely to reduce actual visibility along this stretch of road, where roadside vegetation does not provide screening. To the north/ north west, glimpsed views of operational turbines at Cairnborrow are available from this stretch of road.

5.7.81 As the road climbs out of the valley, near Easter Boghead, the full development would be theoretically visible for approximately 1.5 km. Some infrequent roadside vegetation and small woodlands near the road would provide some screening for short durations but the Proposed Development would largely be visible from this part of the road. Market Hill rises in the foreground and provides full screening of the development for approximately 2 km.

[43] Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19 Landscape Institute, March 2019

5.7.82 As the road user passes Market Hill, open views of all turbines would be visible across the skyline, seen in conjunction with operational turbines at Dorenell and Clashindarroch (see VP13: A920 near Wester Bodylair in Figure 5.21a to 5.21h in Volume 3b). The Proposed Development would form a prominent element in oblique views from the road. It should be noted that an area of juvenile planting is establishing at Wester Bodylair and along the roadside to the east which, once matured, would provide a substantial level of filtering in views to the Proposed Development, reducing its prominence.

5.7.83 For eastbound drivers, views of the Proposed Development would be visible at a highly oblique angle as travellers pass Easter and Wester Bodylair. Once past this location, the Proposed Development would sit behind the road user and would not be discernible in views from the vehicle.

5.7.84 The magnitude of impact for users of the A920 would be Slight, increasing to Substantial in the area to the west of Market Hill where the Proposed Development would form a prominent element on the skyline in oblique views to the south west. These effects would be localised and, on views from the A920 overall, the Proposed Development form a discernible change to the baseline view from some stretches of the road, but the view composition would be broadly consistent with the baseline. The residual effect would be **Major** (Significant) for tourists across a short portion of the A920, reducing to Moderate overall. For local road users, the residual effect would be Moderate in the area to the east of Market Hill, reducing to Moderate/ Minor overall (not significant).

5.7.85 Should the proposed developments at Garbet and Clashindarroch II be constructed, the addition of the Proposed Development would result in a Moderate cumulative magnitude of impact. The Proposed Development would extend the presence of large scale turbines across the landscape to the south of turbines Garbet in views from the A920 to the west of Market Hill. The residual effect would be **Major/ Moderate** (Significant). This would not change following the inclusion of the scoping developments at Glenfiddich and Clashindarroch Extension.

5.7.86 In combination with Clashindarroch, Clashindarroch II, Garbet and Dorenell, the Proposed Development would result in a considerable increase in the influence of wind energy development on the character of the landscape experienced in the view from the road in the area of Market Hill/ Wester Bodylair. The residual effect would be **Major** (Significant). This would not change following the inclusion of Glenfiddich and Clashindarroch Extension, currently at the scoping stage.

5.7.87 It should be noted that these cumulative effects would be localised, and that effects would reduce to Moderate (not significant) across the remainder of the route.

A941

5.7.88 Viewpoints 16 and 19 are illustrative of the effect of the Proposed Development on the amenity of this route (see visualisations in Figures 5.21a to 5.24f and 5.27a to 5.27f).

5.7.89 There would be no views of the Proposed Development from the area of the A941 which is identified as a 'Scenic Approach' by the Moray Onshore Wind Energy Supplementary Guidance.

5.7.90 The A941 follows a meandering route, aligning largely with valleys and glens and contained by upland hills. Due to this, the ZTV indicates that visibility of the Proposed Development would be highly intermittent and fleeting, limited to small stretches of the road north of Cabrach, near Upper Howbog (see Viewpoint 19: A941 at Upper Howbog), a 250 m stretch at Bridgend (see Viewpoint 16: A941 near The Grouse Public Inn in Figure 5.24a to 5.24f) and short stretches of road as the road user passes directly to the south of the Site. Views would

be a largely of blades and blade tips, with some short passages of the view from the road including hubs (i.e., at The Grouse Inn, Bridgend).

5.7.91 As north west bound travellers pass along these sections of the road, the Proposed Development would form a new element across the skyline in the view. At Upper Howbog, it would be seen in conjunction with the operational Dorenell Wind Farm. Lack of roadside vegetation within these areas of visibility would result in largely open and clear views towards the Site, however these would be fleeting and highly intermittent. The magnitude of impact would be None across the majority of the road. This would increase to Moderate for short stretches of the road in the areas described above. The Proposed Development would appear as a prominent, localised change within a broader unaltered context.

5.7.92 The residual effect would be locally **Major/ Moderate** (Significant) for north west bound tourists using the A941. The effect would be locally Moderate (Not significant) for other road users. Across the full extent of the A941, the magnitude of impact would be Negligible, resulting in a Moderate/ Minor effect (Not significant).

5.7.93 Proposed development at Garbet and Clashindarroch II would be largely screened in views from the A941, for road users travelling north west. The addition of the Proposed Development would result in a locally Moderate cumulative 'in addition' impact, and a **Moderate/ Major** cumulative effect, as the Proposed Development would represent a notable increase in the influence of large-scale infrastructure in views from the road. This would reduce to a Moderate/ Minor effect across the full route. In combination, the impact would be Slight, resulting in a Moderate/ Minor effect.

5.7.94 Should the proposed Glenfiddich and Clashindarroch Extension (scoping) developments become constructed, the addition of the Proposed Development would be Slight. The proposed Clashindarroch Wind Farm would sit in the foreground of most views to the Proposed Development for north west bound travellers, from north of Cabrach until the road user has passed Glenfiddich Wind Farm south of Dufftown. The Craig Watch turbines would be seen behind Clashindarroch Extension, increasing the level of turbines in the view. While this change would be discernible, the baseline view would be largely unaltered. In combination with operational, consented, in planning and scoping developments, the magnitude of impact would be Substantial. The residual effect would be **Major**.

5.7.95 For south east bound road users, views would commence as the A941 descends into the River Fiddich valley north of Dufftown. Partial views of up to five hubs and the majority of blades would be visible in largely direct views across the skyline for approximately 2.5 km (see Viewpoint 4: A941 north of Dufftown in Figure 5.12a to 5.12f). The Proposed Development would be viewed in the context of Hill of Towie and Hill of Towie II wind farm development to the east of the road, with glimpsed views of Dorenell Wind Farm across the skyline to the south west. As the traveller enters Dufftown, theoretical views would reduce to None.

5.7.96 As the road user continues south east, views that are theoretically available of the Proposed Development would sit behind the direction of travel and therefore the view would not be affected.

5.7.97 For south east bound users, the magnitude of impact would be Slight in the area to the north of Dufftown. The Proposed Development would be a discernible change in the view, but given the fleeting duration of the view, and the context within which it is viewed, the overall baseline context would remain largely the same. Across the full route, the magnitude of impact would be Negligible or None. The residual effect would be Moderate, reducing to Minor or None, and not Significant.

5.7.98 The addition of the Proposed Development to other proposed developments would result in a Slight magnitude of cumulative impact for south east bound road users. The Proposed Development would be located adjacent to turbines at Garbet Wind Farm, set across the skyline in the direct view from the A941 as it enters Dufftown from the north. No other Proposed Development would be visible. These effects would be localised before screening afforded by roadside planting and built development prevents views from the road. The residual effect would be Moderate, reducing to Minor or None. In combination with other operational, consented and in planning developments, the Proposed Development would contribute to wind energy development becoming a characteristic element across the skyline in the view from the A941 to the north of Dufftown. The magnitude of impact would be Slight, and the residual effect would be Moderate, reducing to Minor (not significant) across the full route.

5.7.99 Should the proposed (scoping) Glenfiddich and Clashindarroch Extension wind farms get constructed, the addition of the Proposed Development would remain the same as above. The in-combination effect would rise to Moderate, as wind energy development would become a notable characteristic in the view from the road to the north of Dufftown. The residual effect for south east bound road users would be **Major/ Moderate** (significant). However, this effect would be localised and reduce as the road user entered Dufftown.

A96

5.7.100 The ZTV indicates that views from the A96 would be limited. Short stretches of the road as it passes within 20 km of the Proposed Development would provide intermittent views of the proposed turbines to road users.

5.7.101 For north west bound road users, views of the Proposed Development would be available near Dummuie, however operational wind turbines in close proximity to the road would be located in the foreground of the view and it is considered unlikely that, at a distance of approximately 18 km, the Proposed Development would be a notable element in views from the road. Theoretical visibility then ceases until the road users are north of Huntly. As the A96 routes south of The Bin, intermittent views of up to five hubs and the blades of all turbines are theoretically visible however at this location the road passes through the edge of the Bin Forest, which would effectively screen views. From this point, the Proposed Development would sit behind the direction of travel and would no longer be visible.

5.7.102 For south east bound travellers, theoretical views of the Proposed Development would commence north of Keith, at North Bogbain. Up to 10 hubs would be theoretically visible for a short duration before intervening topography screens further views.

5.7.103 As road users pass Green of Aucharties, intermittent views of blades of all turbines, and hubs of up to nine turbines would become visible to the south west of the road corridor, at distances of approximately 11 km. The Proposed Development would be viewed in the context of turbines at Cairnborrow and Hill of Towie/ Hill of Towie II, while Clashindarroch and Dorenell would form minor features in the background of the view. Visibility subsides from this point, and as it becomes available again to the north of Huntly, the Proposed Development would sit behind the direction of travel and would no longer be visible.

5.7.104 Where visible, the Proposed Development would largely be viewed at an oblique angle from the road. Views would be intermittent and the turbines would be seen at distances of greater than 11 km, within the context of a range of other land uses, including existing wind energy development. The Proposed Development would form a new and discernible element in these views, however the change in the view would be highly localised. The magnitude of impact would be Slight. The residual effect would be Moderate (not significant).

5.7.105 When considered in addition to other in-planning cumulative developments, where visible the Proposed Development would be located adjacent to turbines at Garbet, appearing as a single wind farm development across upland landscapes in the middle to far distance and resulting in a Slight magnitude of impact. In combination with other operational, consented and in planning development, the Proposed Development would contribute to a Slight magnitude of impact. Wind energy development would be a characteristic element in views from the road, but it would not form a notable characteristic. The residual effect would be Moderate (not significant).

A95

5.7.106 There would be no views of the Proposed Development for north east bound road users on the A95.

5.7.107 For south west bound travellers, views would be theoretically available for a short duration to the south of Cornhill, and again as the road passes across the southern edge of Knock Hill, towards Drumnagorrach. As the road descends into the River Isla valley, views become screened by intervening topography for the remainder of the route. At distances of 18 to 25 km from the Proposed Development, views from the road would observe the proposed turbines within the context of existing development at Edintore, Cairnborrow, Hill of Towie and Hill of Towie II, present in the foreground.

5.7.108 The Proposed Development would be a notable new element in these views however given the short duration of visibility available from the road, and the overall length of the A95 it is considered that the magnitude of impact would be Slight, reducing to Negligible or None. The residual effect would be Moderate/ Minor, reducing to Minor or None across the full A95.

5.7.109 When considered in addition to other operational, consented and proposed developments, where visible the Proposed Development would be located behind or adjacent to proposed turbines at Garbet, and in the foreground of turbines at Clashindarroch and Clashindarroch II, appearing as a single wind farm development across upland landscapes in the middle to far distance. The Proposed Development would be viewed in the context of Hill of Towie and Hill of Towie II, Edintore and Cairnborrow as well as other single or small-scale wind energy developments present in the vicinity of the A95. Given the limited areas of visibility of the Proposed Development, the magnitude of impact would be Slight. In combination with other operational, consented and in planning development, the Proposed Development would contribute to a Slight magnitude of impact. Wind energy development would be a characteristic element in views from the road, but it would not form a notable characteristic. The residual effect would be Moderate (not significant). The addition of schemes at Scoping in proximity to the Proposed Development would not alter this assessment.

B9009

5.7.110 The ZTV indicates no visibility of the Proposed Development from the B9009 for the majority of the route.

5.7.111 However, as the road curves around the base of Little Conval to enter/exit Dufftown, theoretical views of up to seven hubs, and blades of up to 11 turbines would be theoretically visible along an approximately 1.6 km section of road. While actual views would be reduced due to areas of woodland and roadside vegetation, where visible the Proposed Development would appear as a large-scale development across the skyline. Ground based infrastructure, including tower bases and lower sections of the turbines would be screened by upland hills in the middle ground of the view. The Proposed Development would be set back from the road in the view.

5.7.112 Upon entry/ exit to Dufftown, views would be screened by local topography and planting which is present adjacent to the road.

5.7.113 Due to the alignment of the road, views would be similar for north and south bound travellers, who would view the Proposed Development at an oblique angle to the south east.

5.7.114 The magnitude of change would be Moderate in this section of the road. The Proposed Development would form a prominent but localised change in the view from the road, viewed obliquely from the carriageway. Across the full B9009, the impact would be Negligible or None. The residual effect would be local **Major/ Moderate** (Significant) reducing to Moderate/ Minor or None across the full route.

5.7.115 When considered in conjunction with other operational, consented and in planning wind farm developments, the addition of the Proposed Development would result in a notable increase in the influence of wind energy development on the composition of the view from the B9009, across a short stretch of road to the north of the Dufftown Golf Course as it nears Dufftown. The Proposed Development would extend along the skyline in views to the south east, viewed adjacent to those proposed at Garbet. Existing development at Hill of Towie would be seen in the direct view to the north east. The magnitude of impact would be Moderate. The residual effect would be **Major/ Moderate** (Significant). This would reduce to Moderate (not significant) should the proposed (Scoping) Glenfiddich or Clashindarroch Extension wind farms be constructed, as wind energy development would form an already characteristic element in the view.

5.7.116 In combination with other operational, consented and in planning wind farm developments, the Proposed Development would become a notable characteristic of the landscape in the view from the B9009, in the area to the north of Dufftown Golf Course on approach to Dufftown. The magnitude of impact would be Moderate, resulting in a **Major/ Moderate** (significant) effect. Should those developments at Scoping become constructed, this impact would increase to Substantial, where wind energy development would form a key characteristic of the skyline in views to the south east from the road. The effect would be **Major** (significant).

5.7.117 It should be noted that these effects are largely limited to the northernmost extent of the B9009. South of the golf course, effects would reduce substantially and would not be significant.

Local road to east of the Site (unnamed Deveron Valley Road)

5.7.118 The ZTV indicates the Proposed Development would be theoretically visible across a high proportion of this local road.

5.7.119 For south bound travellers, views of the Proposed Development would be largely screened by dense roadside vegetation between the A920 and Haugh of Glass. Glimpsed views of the turbines may be available however it is unlikely that the full development would be discernible.

5.7.120 From south of Haugh of Glass, more open views along the valley landscape are available. The Proposed Development would be prominent to the south west, across the skyline (see Viewpoint 2: Haugh of Glass in Figure 5.10a to 5.10f). These views would be of a short duration, as the topography of Hill of Dumeath and Gallows Hill screen the Proposed Development in views from the road.

5.7.121 As the road routes along the southern edge of Gallow Hill, past the Old School House and Backside Farm, clear and open views towards the Proposed Development would be available (see Viewpoint 1: Minor Road, Deveron Valley in Figure 5.9a to 5.9f). All turbines would be visible above the valley landscape, in close proximity and of a large size and scale. The

Proposed Development would not introduce a new, unfamiliar element into the view, as turbines at Clashindarroch Wind Farm are visible from this location however the Proposed Development would be of a much larger size and scale, and in closer proximity.

5.7.122 As the road continues south, topographic screening reduces the visibility of the Proposed Development. Views of all turbines would become available again near the property at Bellcherrie, continuing south along the road until Easterton. From this stretch of road, the turbines would be partially viewed across the skyline, in close proximity. Due to the rise of the upland landscape in the foreground of the view, the majority of the turbine tower would likely be screened, with just the upper portions of turbines visible. While all turbines are theoretically visible from this stretch of road, due to the angle of view available from the road, they would not all be viewed at one time.

5.7.123 From Easterton, views of the Proposed Development for south bound travellers would cease.

5.7.124 For north bound travellers, joining the road from the A941, views of the Proposed Development would commence at Easterton and would be similar to those for southbound travellers. Viewed obliquely and in close proximity, the turbines would be visible across the skyline behind the upland landscape in the foreground of the view. To the north of Bellcherrie, views would be largely screened by topography, with only blades/ blade tips visible across the skyline. Views would cease as the road user approaches Backside Farm, as the Proposed Development would be located behind the direction of travel and would no longer be visible.

5.7.125 The magnitude of impact for road users on the unnamed Deveron Valley Road would be Substantial in direct views experienced by south bound travellers between the Old Schoolhouse and Backside Farm. This would reduce to Moderate between Backside Farm and Easterton where the Proposed Development would be viewed obliquely across the skyline, partially screened by roadside topography. The wider view across the valley from the road would remain unchanged.

5.7.126 Elsewhere along the road, the magnitude of impact would range from Slight to None.

5.7.127 As it is anticipated that this road is used by local residents (medium sensitivity), rather than tourists (high sensitivity), the residual effect would be **Major/ Moderate** (Significant) for south bound road users in the area between Old Schoolhouse and Backside Farm, reducing to Moderate or Minor elsewhere along the road. For north bound road users, the residual effect would be Moderate between Easterton and Backside Farm, reducing to none.

5.7.128 When considered in addition to other operational, consented and in planning wind farm developments, the Proposed Development would represent a Substantial magnitude of impact. The Proposed Development would considerably increase the influence of wind energy development in views from the local road. The residual effect would be **Major/ Moderate** (significant). Should developments currently at Scoping be considered in the cumulative baseline, the magnitude of impact would not change. On its own, Clashindarroch Extension would notably increase the influence of wind energy development in views across the valley from the road, particularly at and to the north of Backside. The addition of the Proposed Development would extend this influence across to the west of the valley, resulting in large scale wind energy development in close proximity to the road user on either side of the valley.

5.7.129 In combination with other operational, consented and in planning wind farm developments, the Proposed Development would contribute to wind energy development becoming a characteristic element in views from the local road. The magnitude of impact would be Slight, resulting in a Moderate/ Minor effect (not significant). Should proposed development at Clashindarroch Extension (Scoping) be considered, the in-combination effect would increase

to Substantial, where wind energy development would become a key characteristic in views from the road, particularly to the south of properties at the Old Schoolhouse/ Backside. Across the full route, the magnitude of impact would be Slight or Negligible/ None. The effect would be **Major/ Moderate** (significant) in the area to the south of Backside, reducing to Moderate or Moderate/Minor (not significant) overall.

Recreational Routes

Core Path SP30

5.7.130 The Proposed Development would be visible in two sections of the Core Path SP30 – as it crosses the ridge of Blackwater Forest, and as it routes along the eastern edge of Tornichelt Hill, south of the Proposed Development. Views would only be present for northbound path users.

5.7.131 Where visibility is available from the Blackwater Forest ridge, the core path passes through the Dorenell Wind Farm. Views of the Proposed Development would be possible, viewed through existing operational turbines and forming a similar feature in the middle distance of the view across the upland landscape. As the path descends into the Deveron Valley at the base of Tornichelt Hill, direct and channelled views of the Proposed Development would be available. Ground based infrastructure would be screened, but hubs and blades of all turbines would be visible from the northern end of the path.

5.7.132 The magnitude of impact in the northern most extent of the path would be Substantial. The impact would be highly localised to this area, and would reduce quickly as intervening topography screens views. In this area the residual effect would be **Major** (Significant).

5.7.133 Across the summit of Blackwater Forest, the magnitude of impact would be Slight. The Proposed Development would form a change to the view from the path, however given that the path is already passing through an operational wind farm at this location, and the context of Clashindarroch Wind Farm visible to the north east the Proposed Development would form a discernible change, but would be broadly consistent with the baseline context. The residual effect would be Moderate (not significant). Elsewhere along the path, the magnitude of impact would be none.

5.7.134 When considered in conjunction with other operational, consented and in planning wind energy developments, the addition of the Proposed Development would result in a Negligible magnitude of impact in views from the path as the path user travels across the summit of Blackwater Forest. This is due to the presence of turbines at Dorenell Wind Farm in the immediate vicinity of the path - the Proposed Development would be viewed behind these turbines, adjacent to turbines at Garbet whereby intensifying the level of development in this part of the view but not introducing a new element or extending the presence of wind turbines further across the view. The distance between the path user and the Proposed Development would assist in reducing the perception of size differences in turbines. The impact would increase to Moderate as the path user descends into the upper Deveron valley, to meet with the A941. This is due to the Proposed Development being viewed at the end of the valley, adjacent to blade tips at Garbet Wind Farm. The operational Clashindarroch Wind Farm is visible to the north east across the skyline. The change would be localised within a small portion of the view. The residual effect would be locally **Major/ Moderate** (Significant) for a short duration at the northern extent of the path, reducing to Minor (not significant) across the summit of Blackwater Forest. It is considered that the overall effect on path users would be Minor.

5.7.135 Should proposed development at Glenfiddich and Clashindarroch Extension (scoping) be included, the in-combination effect would increase to **Major** (Significant) in the northern extent of the path, as wind energy development at Clashindarroch, Clashindarroch Extension, Garbet coupled with the Proposed Development would result in wind energy development forming a key characteristic of the landscape in views to the north and north east from the path. The in-addition effect would remain as above.

Core Paths SP05, SP04 and SP11

5.7.136 The Proposed Development would be theoretically visible from the western end of SP05 for west bound users, the southern and central extent of SP04 for those using the path in both directions, and the majority of SP11 for southbound path users. Actual views from SP05 would reduce to none, due to the screening effect of an area of mature woodland at Glenrinnes Lodge.

5.7.137 From SP04, as it follows the B9009, actual views would be reduced due to areas of woodland and roadside vegetation. However, where visible the Proposed Development would appear as a large-scale development across the skyline in the southeast view. Ground based infrastructure, including tower bases and lower sections of the turbines would be screened by upland hills in the middle ground. It would form a large and notable feature but would not be prominent.

5.7.138 As SP11 extends south from the B9009, elevated views of the development would be available for a short duration until the path enters the woodland of the Princess Royal Park, which would effectively screen views of the turbines. As the path exits the woodland, and descends into the Dullan Water valley, views of the Proposed Development would become available again. Up to six turbine hubs, and blades of up to 10 turbines would be visible however as the path lowers in elevation, topography in the intervening landscape, as well as shelterbelts and vegetation in the immediate vicinity of the path would begin to screen the development until it is no longer visible.

5.7.139 Given the skyline position and the angle of view that the Proposed Development would occupy in views from Core Path SP04, the impact would be locally Moderate, equating to a localised **Major/ Moderate** (significant) effect on the amenity of walkers on this route. There would be no effect on users of Path SP05.

5.7.140 For users of SP11, the magnitude of impact would be Slight. The change in view would be discernible however the nature of the walk, and the experience of walking into the Dullan Water valley would be largely unchanged. The residual effect would be Moderate (not significant).

Core Path SP03 and SP10

5.7.141 Effects arising from the Proposed Development on views from Core Paths SP03 and SP10 would be experienced by south bound path users only.

5.7.142 The ZTV indicates extensive visibility from SP10 and SP03 as it passes to the north east of Little Conval hill. As SP03 exits an extensive area of forestry at Green Moss, path users walk along the edge of Burnhead Wood with views to turbines at Hill of Towie and (consented) Hill of Towie II to the north east. Vegetation across this area is at varying ages and heights however would provide some substantial screening prior to the path user beginning the descent into the valley of the Maltkiln Burn, near Burnhead. As the path continues south east, glimpsed views of turbine blades across the skyline would be available although local vegetation associated with the burn would filter clear views, as well as local topography not picked up by the ZTV. As the path user continues south, passing through open agricultural farmland, clear and open views to the Proposed Development would be present. The hubs

and blades of five large-scale turbines, and the blades/ blade tips of four turbines would sit across a large proportion of the skyline in the background of the view, at a distance of approximately 7 km. As the path connects with the B9009 to the west of Dufftown, local vegetation alongside the route would reduce the prominence of the turbines in the view.

5.7.143 Given the skyline position of the Proposed Development, and the extent of the view from this route it would occupy, the magnitude of impact for south bound path users would be locally Moderate, equating to a **Major/ Moderate** (significant) effect on the amenity of this route as it enters Dufftown from the southern edge of Burnhead Wood. Elsewhere along the path, the magnitude of impact would be Negligible or None, resulting in a residual effect of Minor or None.

Core Path IW02, IW03 and IW04

5.7.144 Effects arising from the Proposed Development on views from Core Paths IW02, IW03 and IW04 would be experienced by south bound path users only.

5.7.145 The ZTV indicates that only two hubs would be visible from the majority of IW02 and IW04. No turbine hubs would be visible from IW03. The blades/ blade tips of up to eight turbines would be visible from the majority of IW02, and a short section of IW04 as it passes along Station Road to the south of the Dufftown Railway Station.

5.7.146 As the path routes along the floor of the River Fiddich, approaching the northern edge of an area of whisky distilleries, blades of a single turbine are theoretically visible. However due to the presence of large scale buildings and vegetation associated with the river, actual views would be effectively screened from this extent of the path.

5.7.147 As the path connects with the A941 at the Dufftown Railway Station, views to the Proposed Development would be screened by roadside vegetation, buildings and by woodland present in the intervening landscape. Blade tips may be glimpsed, but these would not be notable elements in the view.

5.7.148 The Proposed Development would continue to be screened in views as the path user turns from the B941 onto Castle Road. Here, vegetation and the built environment would prevent longer distance views across the landscape. The path routes around Balvenie Castle, where it lies in a slight cutting and views would remain screened until it exits the formal path and extends along a farm track. A dense area of woodland is present in the foreground of the view from the path which would screen views to the Proposed Development. The path then enters the woodland, obscuring views of the wider area.

5.7.149 As the path user exits the woodland, more open views of the Proposed Development would become available. Two hubs, and the blades of seven turbines would be visible from this extent of the path, to varying degrees. The turbines would be set behind the skyline, largely obscured by topography in the foreground (see Viewpoint 3: Corsemaul Drive, Dufftown in Figure 5.11a to 5.11f). As the path connects with the built up residential environment at Mount Street, views would be screened by buildings.

5.7.150 The magnitude of impact on users of Core Paths IW02, IW03 and IW04 would be negligible or none across the majority of the path network. As the path user exits the area of woodland to the south of Balvenie Castle, the impact would increase to Slight where more open and unobstructed views of turbine blades and hubs would be partially visible across the skyline. This impact would be of a short duration. The residual effect would be Minor/ None across the full path, increasing to Moderate/ Minor locally. The effect would not be significant.

TURBINE LIGHTING EFFECTS ON VISUAL RECEPTORS

Settlements

5.7.151 The Proposed Development's lighting would generally not be visible from the key settlements within the Study Area due to the screening effect of adjoining topography and/ or vegetation.

5.7.152 The key effect on the amenity of settlement and residential receptors would be confined to small villages/ hamlets, farmsteads and scattered dwellings that are generally distributed along the sides of valleys and the local road network where there is a degree of existing lighting associated with building interiors as well as external lighting and lights on vehicles on public roads. The Proposed Development would introduce prominent new light sources to the skyline in views from these properties and their approaches, and in the case of properties within Glen Beg and the Deveron Valley, thereby resulting in significant reductions in perceived darkness and remoteness at these properties. Such impacts are likely to reduce the degree of darkness and sense of remoteness at these properties. However, in the event of an automated

Transportation Routes

5.7.153 From this it is apparent that views of the Proposed Development's lights from would be highly constrained, with notable view shadow and screening by a mixture of topography, vegetation and built structures occurring within the enclosed incised interior of settled valleys and along a high proportion of key transportation corridors.

5.7.154 Routes with the clearest views of the Proposed Development's lights would include sections of the:

- A95, east of Charlestown of Aberlour and in the vicinity of Knock Hill;
- A96, south of Keith;
- A97, primarily north of Aberchirder;
- A98, north of Keith;
- A920, between Huntly and Dufftown;
- A941, in the vicinity of Bridged, and between Coleburn Distillery and Rothes, as well as from a number of minor local roads and B roads

5.7.155 Viewed from such low lying and enclosed positions, the Proposed Development is likely to be seen fleetingly, and only a small number of the turbines would be evident. Given the short duration of such visibility the impact on the majority of local roads would be Slight, equating to a Moderate effect in respect of the amenity of tourist road users and Moderate/ Minor in respect of commuters. The closest road to the Proposed Development would be the minor road in Glen Deveron, which would be subject to Substantial impacts and **Major** (significant) effects in respect of the amenity of tourist road users and **Major/ Moderate** (significant) in respect of commuters' locations between the Haugh of Glass and the A941.

Recreational Routes

5.7.156 With few exceptions, recreational routes and smaller hill summits in the study area are unlikely to be regularly or frequently utilised after dark and therefore are unlikely to have their amenity significantly adversely affected. However, wild camping and overnight stays may be anticipated within the Cairngorms National Park the summit of the Massif representing one of the more wild and remote locations that may be visited by wild campers. Similarly, Ben Rinnes represents a sensitive designated location and popular destination for hill walkers, including campers.

5.7.157 Of these summits, **Major/ Moderate** (significant) effects are predicted at the Ben Rinnes summits where reductions in the perceived remoteness and wildness of summits is anticipated. Effects at the more distant summits in the Cairngorms National Park are not likely to be significant, however.

5.8 Monitoring

5.8.1 Outwith the monitoring of specific aspects of the construction and operation of the Proposed Development by MC, AC and relevant statutory consultees (e.g. NS) to ensure compliance with any consent or details pursuant to conditions of consent, no monitoring is anticipated that relates specifically to landscape and visual effects.

5.9 Summary

5.9.1 The preceding LVIA was undertaken by experienced and competent Landscape Architects and in accordance with an agreed scope and methodology. It considers the current landscape and visual baseline context of the Proposed Development and identifies key sensitive receptors to be addressed in the assessment. Section 5.3 of the LVIA sets out the relevant landscape policy context and Section 5.4 summarises the landscape and visual baseline context.

5.9.2 Section 5.5 of the LVIA identifies key impact generators associated with the construction and operation of the Proposed Development and prioritises them for mitigation in order to ameliorate potential for significant effects on the landscape and visual resource of a 45 km radius study area.

5.9.3 The design of the Proposed Development was informed by a number of technical, commercial and environmental drivers. Section 5.6: Mitigation of the LVIA sets out the key guidance and priorities adopted in order to mitigate potential landscape and visual effects, including matters pertaining to the spatial framework.

5.9.4 Section 5.7 of the LVIA describes anticipated residual construction effects. Section 5.8 covers monitoring requirements and Section 5.9 contains a summary of assessment findings the details of which are presented in the following Technical Appendices:

- Technical Appendix 5.3 - Residual Effects on Landscape Character Types;
- Technical Appendix 5.5 - Residual Effects on Landscape Designations and Classifications;
- Technical Appendix 5.6 - Viewpoint Assessment;
- Technical Appendix 5.7 - Residential Visual Amenity Study; and
- Technical Appendix 5.8 - Lighting Assessment.

5.9.5 Table 5.13, below, summarises the significant landscape and visual effects identified by the LVIA for construction and operational phases of the Proposed Development. It is apparent from this analysis that significant effects would be geographically limited in extent, predominantly occurring across elevated areas of landscape within 16 km of the nearest proposed turbine.

5.9.6 The decommissioning phase of the Proposed Development would be of a shorter duration to that of the construction phase, with the dismantling of all above ground structures and reinstatement of disturbed ground. Below ground structures would be left in place to avoid further disturbance. There would therefore be a temporary impact from the activities on Site to remove structures, but this would be of relatively short duration. Accordingly, the decommissioning phase is considered to be likely to have a minimal effect on the landscape

and visual amenity of the locality. Mitigation measures associated with decommissioning would be agreed during the preparation of the final decommissioning plan that would require approval of MC and AC and statutory consultees.

5.9.7 Any commercial onshore wind farm in the UK is likely to create some significant effects on landscape character and designations as well as the amenity of the immediately surrounding area. The Proposed Development is not unusual in this regard.

5.9.8 The identified significant effects arising from the Proposed Development are largely related to its scale and position on an area of undeveloped upland landscape. The degree of the Proposed Development's prominence in the landscape and in the view varies considerably depending on the receptor location. Where significant effects are identified, there is a certain level of nuance associated with the effect and the significant effect does not apply across the full extent of the landscape or visual receptor. Significant effects outwith 5 – 7 km of the Proposed Development are predominantly localised to summits, to identified sections of the road network or recreational routes or to certain areas of LCTs or landscape designations.

5.9.9 This is illustrated within the upper River Deveron/ Markie Water valleys, where views from the A920 are generally limited to short sections near Wester Bodylair and Easter Boghead. While effects would be significant here, they would be of short duration. From the majority of the road, road users would not have views of the Proposed Development, or views would not be significantly affected.

5.9.10 Moreover, whilst the Proposed Development undoubtedly represents a significant increase in the influence of wind energy development in views from elevated landscapes within 20 km of the Site, it is important to note that, outwith 5 – 7 km of the Site, the pattern of visibility is largely limited to elevated slopes and summits where the Proposed Development would be viewed within a broad landscape context, which includes other wind energy development. This is illustrated in the viewpoint assessment presented in Technical Appendix 5.6. There are very few effects experienced from within low lying or more intimate landscapes associated with the glens and valleys that characterise the landscapes within the study area, such as Glen Rinnes and Strathspey. Significant effects on the Deveron Valley are limited to the area immediately east and north of the Proposed Development, within approximately 7 km of the proposed turbines.

5.9.11 The Proposed Development would contribute to an emerging pattern of development across the upland landscapes established by adjacent operational development at Dorenell and Clashindarroch and by proposed development at Garbet and Clashindarroch II. The Proposed Development would achieve a degree of consistency with regards to the size and scale of other proposed turbines in the immediate area and would consolidate the pattern of development by in-filling an area of landscape between Garbet and Clashindarroch II wind farms. It affords an opportunity for the establishment of a cohesive and well-designed array that takes account of key landscape and visual sensitivities and avoids a more piecemeal and discordant development pattern that could be more deleterious in landscape and visual terms.

Table 5.13: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Potential significant effects on	Phased felling and construction and reinstatement/ replanting, to limit the geographical extent of disturbance at any given time and	Forest Management Plan to deliver the forestry felling and replanting in	Moderate, adverse (not significant)

Table 5.13: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
landscape fabric	to ensure rapid establishment of replacement planting and landscaping. Felling and replanting requirements are set out in Technical Appendix 2.6: Forestry Impact Assessment. Effective management of the construction project, using experienced contractors and measures set out in Technical Appendix 2.1: Outline CEMP.	Technical Appendix 2.6: Forestry Impact Assessment. Forestry Management Plan to be delivered as a condition of consent. The CEMP would be finalised and delivered as condition of consent.	
Potential significant effects on landscape character	Phased felling and construction and reinstatement/ replanting, to ensure rapid establishment of replacement planting and landscaping. Relatively short duration of construction activities. Effective management of the construction project, using experienced contractors and measures set out in Technical Appendix 2.1: Outline CEMP.	Forest Management Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Moderate, adverse (not significant)
Potential significant effects on designated landscapes	All working areas would be restricted as far as practicable to the specified areas and demarcated to keep affected areas to a minimum and prevent incursion of Site plant into non-construction locations. Material storage/ temporary stockpiles would be retained for the shortest duration practicable and would be sited to avoid visual intrusion to neighbouring receptor locations, with particular regard to avoidance of sky-lining such features in views from sensitive landscapes such as Glen Rinnes. Location of borrow pit selected to minimise the visibility of these elements from external receptor locations. Substation sites were selected to take advantage of a small plateau to the south east of Garbet Hill, making use of the enclosure provided by the surrounding topography.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Moderate, adverse (not significant)
Potential significant effects on visual amenity	Location of temporary construction compounds were considered to minimise the effects on the character and visual amenity of neighbouring receptor locations, including scattered residential properties and communities	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Moderate, adverse (not significant)

Table 5.13: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
	Material storage/ temporary stockpiles would be retained for the shortest duration practicable and would be sited to avoid visual intrusion to neighbouring receptor locations, with particular regard to avoidance of sky-lining such features in views in views from neighbouring low-lying receptor locations such as the valley landscape to the south of the Site (the route of the A941), or the sensitive landscapes of Glen Rinnes, Glen Fiddich and the Deveron Valley. Location of borrow pit selected to minimise the visibility of these elements from external receptor locations. The profile of the final excavation void would also be carefully considered to avoid unsightly exposed faces and the formation of a steeply graded rim. Substation sites were selected to take advantage of a small plateau to the south east of Garbet Hill, making use of the enclosure provided by the surrounding topography.		
Cumulative Construction Effects			
Cumulative construction effects on landscape fabric as well as landscape character and amenity of the Site	None	None	Not significant
Operation			
Potential significant effects on landscape fabric relating to loss of characteristic land cover	Replacement planting to meet the requirements set out in Technical Appendix 2.6: Forestry Impact Assessment.	Forest Management Plan to deliver the forestry felling and replanting in Technical Appendix 2.6: Forestry Impact Assessment. Forestry Management Plan to be delivered as a condition of consent.	None. Not significant.
Effects on landscape character	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the 13 LCTs assessed, significant adverse residual effects were predicted in parts of the following LCTs: • LCT 292 – Open Upland (Major adverse); • LCT 32 – Farmed and Wooded River Valleys (Major adverse);

Table 5.13: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
	Technical Appendix 5.8: Lighting Assessment		• LCT 27 – Farmed Moorland Edge (Major/ Moderate adverse); • LCT 28 – Outlying Hills and Ridges (Major adverse); • LCT 288 – Upland Farmland (Turbine Lighting effects only during hours of darkness/ when lit); • LCT 289 – Upland Farmed Valleys (Major/ Moderate adverse); and • LCT 294 – Upland Valleys (Major adverse).
Effects on Landscape Designations and Classifications	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the designations and landscape classifications assessed, significant adverse residual effects were predicted in parts of the following: • Ben Rinnes SLA (Major/ Moderate adverse) • Deveron Valley SLA (Aberdeenshire) (Major adverse) It should be noted that none were considered to undermine the integrity of either designation.
Effects on the amenity of settlements	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Localised significant adverse residual effects were predicted in parts of Dufftown (Major/ Moderate adverse) Such effects are not anticipated to be ubiquitous or pervasive in each settlement.
Transportation Routes	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the routes assessed, significant adverse effects were predicted on discrete sections of the following highways: • A920 (Major adverse) • A941 (Major/ Moderate adverse) • B9009 (Major/ Moderate adverse) • Local road to east of the Site (Major/ Moderate adverse)
Recreational Routes	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	No nationally or regionally important recreational routes would be significantly affected. However, significant adverse effects were predicted on parts of the following Core Paths which are of local importance:

Table 5.13: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
	Technical Appendix 5.8: Lighting Assessment.		• SP03 (Major/ Moderate adverse) • SP04 (Major/ Moderate adverse) • SP30 (Major adverse)
Cumulative Operational Effects[44]			
Potential significant cumulative effects on landscape fabric relating to loss of characteristic land cover	None	None	None. Not significant.
Effects on landscape character	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the 13 LCTs assessed, significant adverse residual cumulative effects were predicted in parts of the following LCTs: • LCT 292 – Open Upland (Major adverse); • LCT 32 – Farmed and Wooded River Valleys (Major adverse); • LCT 27 – Farmed Moorland Edge (Major/ Moderate adverse); • LCT 28 – Outlying Hills and Ridges (Major adverse); • LCT 123 – Smooth Rounded Hills - Major/ Moderate adverse); • LCT 289 – Upland Farmed Valleys (Major/ Moderate adverse); • LCT 290 Upland Moorland and Forestry (Major/ Moderate adverse); • LCT 294 – Upland Valleys (Major adverse); and • LCT 291 - Open Rolling Upland Major adverse).
Effects on Landscape Designations and Classifications	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the designations and landscape classifications assessed, significant adverse residual cumulative effects were predicted in parts of the following: • Ben Rinnes SLA (Major/ Moderate adverse)

[44] Please note, the cumulative scenario which was assessed to be of greatest significance is reported in Table 5.13. Please see appropriate Technical Appendix for the detailed assessment of cumulative effects for each receptor based on each cumulative scenario.

Table 5.13: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
			• Deveron Valley SLA (Aberdeenshire) (Major adverse) Significant adverse cumulative in-combination effects were predicted across some areas of the CNP (Major/ Moderate adverse). It should be noted that none were considered to undermine the integrity of either designation.
Effects on the amenity of settlements	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Localised significant adverse residual cumulative effects were predicted in parts of Dufftown (Major/ Moderate adverse) Such effects are not anticipated to be ubiquitous or pervasive in the settlement.
Transportation Routes	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the routes assessed, significant adverse cumulative effects were predicted on discrete sections of the following highways: • A920 (Major adverse) • A941 (Major/ Moderate adverse) • B9009 (Major/ Moderate adverse) • Local road to east of the Site (Major/ Moderate adverse)
Recreational Routes	Careful siting and design of the Proposed Development in accordance with Section 5.6: Mitigation of the LVIA. Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	No nationally or regionally important recreational routes would be significantly affected. However, significant adverse residual cumulative effects were predicted on parts of the following Core Paths which are of local importance: • SP03 (Major/ Moderate adverse) • SP04 (Major/ Moderate adverse) • SP30 (Major adverse)

6 Cultural Heritage

6.1 Introduction

6.1.1 This chapter provides an assessment of the potential effects of the Proposed Development on cultural heritage and archaeology receptors associated with the construction, operation and decommissioning of the Proposed Development. The effects associated with the construction phase of the Proposed Development on cultural heritage and archaeology can be considered to be representative of reasonable worst-case decommissioning effects, therefore a separate assessment of the decommissioning phase has not been undertaken as part of this assessment.

6.1.2 The specific objectives of the chapter are to:

- describe the cultural heritage and archaeology baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, setting and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

6.1.3 This chapter has been produced by AOC Archaeology Group which is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA). The assessment has been carried out by Lynn Fraser and overseen by Victoria Oleksy. Victoria Oleksy is an Assistant Director and Consultancy Sector Head with 17 years' of experience working on cultural heritage assessments. Victoria specialises in EIAs, Archaeological Impact Assessment and Conservation Management Plans and has appeared as an expert witness for planning appeals and called-in planning applications (refer to Technical Appendix 1.2). Lynn Fraser is a Project Officer with 11 years' of experience working on a range of EIAs, desk-based assessments and large walkover survey projects.

6.1.4 This assessment has been carried out in accordance with the standards of professional conduct outlined in the CIfA Code of Conduct: professional ethics in archaeology[1], as well as the CIfA Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment[2]; historic environment desk-based assessment[3]; archaeological field evaluations[4]; and other relevant guidance.

6.1.5 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Cultural Heritage Figures

[1] CIfA 2014a. Code of Conduct: professional ethics in archaeology. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2021. [Accessed 26 October 2021] Available at: https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2021.pdf

[2] CIfA 2014b. Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2020. [Accessed 26 October 2021.] Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GCommissioning_2.pdf

[3] CIfA 2014c. Standard and guidance for historic environment desk-based assessment. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2020. [Accessed 26 October 2021.] Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf

[4] CIfA 2014d. Standard and guidance for archaeological field evaluation. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2020. [Accessed 26 October 2021.] Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GFieldevaluation_3.pdf

  - Figure 6.1: Designated and Non-designated Assets within the Site and 1 km Study Area.
  - Figure 6.1a: Non-designated Assets within the Site and 1 km Study Area.
  - Figure 6.1b: Designated and Non-designated Assets within the Site and 1 km Study Area.
  - Figure 6.1c: Designated and Non-designated Assets within the Site and 1 km Study Area.
  - Figure 6.1d: Designated and Non-designated Assets within the Site and the 1 km Study Area.
  - Figure 6.2: Designated Cultural Heritage Assets with 5 km and 10 km of the Site.
  - Figure 6.3: Extract from the 1872 Ordnance Survey Map.
  - Figure 6.4: Non-designated Cultural Heritage Assets with the Potential for Direct Impacts; and
  - Figure 6.5: Non-designated Cultural Assets with Habitat Management Plan and Compensatory Planting Areas.

- Volume 3b: Cultural Heritage Visualisations
  - Figure 3.12a-f: Cultural Heritage: Jock's Hill (view including Auchindoun Castle).
  - Figure 3.13a-f: Cultural Heritage: Auchindoun Castle (on approach).
  - Figure 3.14a-f: Cultural Heritage: Auchindoun Castle (from southern entrance).
  - Figure 3.15a-d: Cultural Heritage: Balvenie Castle.
  - Figure 3.16a-f: Craig Dorney.
  - Figure 3.21a-f: Cultural Heritage: Tap o'Noth.
  - Figure 3.29a-f: Cultural Heritage: Auchindoun Castle.
- Volume 4: Technical Appendices
  - Technical Appendix 6.1: Heritage Assets Gazetteer;
  - Technical Appendix 6.2: Settings Assessment;
  - Technical Appendix 6.3: Plates; and
  - Technical Appendix 6.4: Turbine 3 Consultation Material.

6.1.6 Figures and technical appendices are referenced in the text where relevant.

6.2 Assessment Methodology and Significance Criteria

Scope of Assessment

6.2.1 This assessment considers the potential for direct physical effects upon archaeological remains and heritage assets during the construction phase as well as the potential for operational and cumulative setting effects upon designated heritage assets.

6.2.2 This chapter considers effects on:

- nationally designated heritage assets;
- non-designated assets deemed to be of National or Regional Significance by the Moray and Aberdeenshire Archaeology Service;
- non-designated heritage assets; and
- hitherto unrecorded heritage assets that may survive within the Site.

6.2.3 Where appropriate and if necessary, measures to mitigate or offset such effects are identified. An assessment of the significance of residual effects following the implementation of any mitigation is also made.

6.2.4 The chapter assesses cumulative effects arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application or those which are at the Scoping stage but where they may be particularly relevant to assessing cumulative effects. Operational, under construction and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present a 'worst case scenario'.

6.2.5 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

6.2.6 The scope of the assessment has been informed by relevant legislation, policy and guidance as outlined below and by consultation responses summarised in Table 6.1 and Technical Appendix 1.1.

Legislation

6.2.7 The statutory framework for cultural heritage in Scotland is outlined in:

- Ancient Monuments and Archaeological Areas Act 1979 (as amended)[5];
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 (as amended)[6];
- Planning etc. (Scotland) Act 2006[7];
- Historic Environment (Amendment) (Scotland) Act 2011[8];
- Historic Environment Scotland Act 2014[9]; and
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended)[10].

Planning Policy

6.2.8 Planning policy relevant to this Chapter is contained within:

- Scottish Planning Policy (SPP)[11];
- Historic Environment Policy for Scotland (HEPS) [12] including its associated Designation Policy and Selection Guidance [13];
- Moray Local Development Plan 2020 (MLDP)[14]; and

[5] UK Government (1979). The Ancient Monuments and Archaeological Areas Act 1979. Available at: http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf.

[6] UK Government (1997). Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. Available at: https://www.legislation.gov.uk/ukpga/1997/9/pdfs/ukpga_19970009_en.pdf.

[7] Scottish Government (2006). Planning etc. (Scotland) Act 2006. Available at: https://www.legislation.gov.uk/asp/2006/17/contents

[8] Scottish Government (2011). Historic Environment (Amendment) (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/asp/2011/3/contents/enacted

[9] Scottish Government (2014). Historic Environment Scotland Act 2014: Available at: https://www.legislation.gov.uk/asp/2014/19/contents/enacted

[10] Scottish Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/ssi/2017/101/contents/made

[11] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[12] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

[13] Historic Environment Scotland (2019b). Designation Policy and Selection Guidance. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b

[14] Moray Council (2020). Moray Local Development Plan 2020. Available at: http://www.moray.gov.uk/moray_standard/page_133431.html

- Aberdeenshire Local Development Plan 2017 (ALDP)[15].

Emerging Policy

6.2.9 The Scottish Government published a consultation draft of the National Planning Framework 4 (NPF4)[16] on 10 November 2021. Consultation closed on 31 March 2022. Once adopted NPF4 will replace the national planning policies set out in SPP[17]. The draft policies on the historic environment contained with the Draft NPF4 broadly align with those set out currently in SPP.

6.2.10 Aberdeenshire Proposed Local Development Plan 2020[18] was submitted to Scottish Ministers for examination and this commenced in June 2021. Its adoption is expected in summer 2022 when it will replace the current Local Development Plan.

Guidance

6.2.11 The following best practice guidelines/ guidance have been used in preparing this assessment:

- PAN2/2011 'Planning and Archaeology'[19];
- CIfA Standards and Guidance for Historic Environment Desk Based Assessments[20] and Commissioning Work or Providing Consultancy Advice on the Historic Environment[21] ;
- HES's Managing Change in the Historic Environment: Setting[22];
- NatureScot's published guidance for Assessing the Cumulative Impact of Onshore Wind Energy Developments[23]; and
- NatureScot and Historic Environment Scotland's Environmental Impact Assessment Handbook v5 (SNH & HES 2018)[24].

Consultation

6.2.12 Table 6.1 summarises the consultation responses received regarding cultural heritage and provides information on where and/ or how they have been addressed in this assessment.

6.2.13 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

[15] Aberdeenshire Council (2017). Aberdeenshire Local Development Plan 2017. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/

[16] Scottish Government (2021). Draft National Planning Framework 4. Available at: https://www.gov.scot/publications/scotland-2045-fourth-national-planning-framework-draft/documents/

[17] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[18] Aberdeenshire Council (2020). Proposed Aberdeenshire Local Development Plan 2020. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/pldp-2020/pldp-2020-non-notifiable-modifications/

[19] Scottish Government (2011). PAN2/2011 Planning and Archaeology. Available at: http://www.scotland.gov.uk/Resource/Doc/355385/0120020.pdf.

[20] CIfA 2014c. Standard and guidance for historic environment desk-based assessment. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2020. Accessed 26 October 2021. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf

[21] CIfA 2014b. Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment. The Chartered Institute for Archaeologists. Published December 2014. Updated October 2020. Accessed 26 October 2021. Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GCommissioning_2.pdf

[22] Historic Environment Scotland (2016). Managing Change in the Historic Environment: Setting. Available at: https://www.historicenvironment.scot/media/2359/setting-2.pdf.

[23] NatureScot (2021). Assessing the cumulative landscape and visual impact of onshore wind energy developments. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments

[24] Historic Environment Scotland (2018). Environmental Impact Assessment Handbook. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=6ed33b65-9df1-4a2f-acbb-a8e800a592c0.

Table 6.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
Historic Environment Scotland 18 January 2021	Scoping Response	HES noted that there was the potential for significant adverse effects on the setting of nationally important assets in the vicinity of the Proposed Development. They indicated that visualisations should be required for: Auchindoun Castle (SM 90024 and Property in Care) (Asset 115); Mortlach, Battle Stone, symbol stone (SM 350) (Asset 119); Balvenie Castle (SM 90028 and Property in Care) (Asset 114); Wormy Hillock, henge (SM 3278) (Asset 117); and Tap o'Noth, fort (SM 63) (Asset 118). Category A Listed Buildings to be included in the assessment: Craig Castle (LB 2736); and Drumminor Castle (LB 2743).	Copies of draft visualisations were issued to HES for review. Mortlach, Battle Stone (Asset 119); Wormy Hillock (Asset 117) and the two Category A Listed Buildings noted by HES lie outwith the zone of theoretical visibility (ZTV) for the Proposed Development and as such visualisations have not been produced for them and they are not considered in the detailed setting assessment. Photomontages for Auchindoun Castle (Asset 115) and Tap o'Noth (Asset 118) are presented in Figures 3.12 to 3.14, 3.21 and 3.29. A wireline visualisation for Balvenie Castle (Asset 114) is presented in Figure 3.15. These visualisations have been used to inform the settings assessment detailed in Section 6.4.
Aberdeenshire Council (AC) 22 January 2021	Scoping Response	Concern expressed at lack of reference to Craig Dorney hillfort (Asset 20) in the Scoping Report, which at the time of consultation was a non-designated asset. Recommended the fort be included in the assessment. LiDAR survey of the Proposed Development recommended in addition to desk-based assessment and walkover survey. Visualisations recommended for Tap o'Noth hillfort (Asset 118) and Craig Dorney (Asset 20).	A meeting was held with Aberdeenshire Council Archaeology Service (ACAS) on 14/01/2021 to discuss Craig Dorney hillfort (Asset 20); it was agreed that Craig Dorney would be included in the setting assessment and that AOC would include a visit to the fort and the land between it and the Site as part of the walkover survey. A setting assessment of Craig Dorney hillfort and a rapid survey of its environs was carried out in March 2021 during a walkover survey of the Site. An email (26/05/2021) was sent to ACAS detailing the findings of the rapid survey and advising that due to the ground conditions encountered a LiDAR survey would be unlikely to provide suitable data. It was suggested, taking account of these limitations, mitigation should take the form of further walkover survey post-determination following tree felling but prior to construction works commencing. Email response from ACAS (10/06/2021) accepting LiDAR survey not appropriate and noting the proposal of further mitigation. An assessment of the settings impacts of the Proposed Development on Craig Dorney have been informed by site visits, ZTV analysis and visualisations (Figure 3.16) and are presented in Section 6.4. Visualisations have also been included for Tap o'Noth.

Table 6.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
Moray Council (MC) 19 February 2021	Scoping Response	No specific comments regarding the assessment were made.	The assessment has been undertaken in line with the information and impact assessment outlined in the scoping report.
Historic Environment Scotland 31 August 2021	Pre-Application Advice Request Response	HES expressed concern about the potential for impacts on the setting of Auchindoun Castle (Asset 115) and recommended that it should form the focus of the assessment, and that further mitigation should be incorporated into the scheme to reduce and avoid impacts where possible. Photomontage visualisations requested. HES also noted that there is some visibility of the Proposed Development from Balvenie Castle (Asset 114) and Tap o'Noth (Asset 118) and impacts on their setting should be considered as part of the assessment. HES noted there is no visibility from Mortlach Battle Stone (Asset 119) and Wormy Hillock Henge (Asset 117).	An assessment of the settings impacts of the Proposed Development on Auchindoun Castle (Asset 115), Tap o'Noth (Asset 118) and Balvenie Castle (Asset 114) have been informed by site visits, ZTV analysis and visualisations (Figures 3.12 to 3.15, 3.21 and 3.29) and are presented in Section 6.4.
Historic Environment Scotland 9 December 2021	Pre-application Advice Request Response	Following previous consultation (as outlined above) HES were provided with a draft photomontage showing potential views from the eastern entrance of Auchindoun Castle (Asset 115). They were also provided with further information about efforts to mitigate the impacts of the proposed Turbine 3, including the Applicant's attempts to microsite and to lower the height of this turbine. HES noted that micrositing was not possible due to other environmental constraints. They noted that if reduction in height of the turbine would not make a substantive difference to the impact that this should be explained and illustrated in the EIAR. HES requested further clarification as to the visualisations which would be included in the EIAR.	On 21 December 2021 HES were provided with a clear list of visualisations which were proposed for inclusion in the EIAR. These are presented in Figures 3.12 to 3.16, 3.21 and 3.29. and discussed as appropriate in Section 6.4 or Technical Appendix 6.2. HES were also provided with wirelines from the eastern entrance of Auchindoun Castle (Asset 115) to illustrate that there was no material difference in impact from Turbine 3 at 200 m and at 180 m. The consultation material has been provided within Technical Appendix 6.4.

Potential Effects Scoped Out

6.2.14 Impacts upon designated and regionally significant assets outwith the ZTV have been scoped out of this assessment. All designated heritage assets within the Study Areas are shown within ZTV on Figure 6.2.

Method of Baseline Characterisation

Extent of the Study Area

6.2.15 The aim of this assessment is to identify the archaeological and cultural heritage significance of the Site and to identify the likely significant direct and setting effects which may result as a consequence of the Proposed Development. Three study areas were identified for this assessment:

- A 1 km study area around the Site boundary identifying all previously recorded designated and non-designated heritage assets and previous archaeological investigations (events) to allow for assessment of the potential for direct effect on known heritage assets and to assess the potential for hitherto unknown buried assets to survive on-site and thus potentially be impacted upon (Figure 6.1). This study area is covered by the ZTV.
- A 5 km study area identifying all designated heritage assets including World Heritage Sites, Scheduled Monuments; all Listed Buildings; Inventoried Gardens and Designed Landscapes; Inventoried Battlefields and Conservation Areas to allow for the assessment of potential effects on their settings (Figure 6.2). This study area is covered by the Zone of Theoretical Visibility (ZTV).
- A 10 km study area for the identifying all designated heritage assets which are considered to be nationally important including Scheduled Monuments; Category A Listed Buildings; Inventoried Gardens and Designed Landscapes, Inventoried Battlefields and World Heritage Sites to allow for assessment of potential effects on their settings (Figure 6.2). This study area is covered by the ZTV.

6.2.16 Each heritage asset referred to in the text is listed in the Gazetteer in Technical Appendix 6.1. Each has been assigned an 'Asset No.' unique to this assessment, and the Gazetteer includes information regarding the type, period, grid reference, National Record of the Historic Environment (NRHE) number, the AC and MC HER number, statutory protective designation, and other descriptive information, as derived from the consulted sources.

Desk Study

6.2.17 The following sources were consulted for the collation of data:

- AC and MC HER data, extracts received 19 October 2020;
- NRHE data as held by HES[25], last checked January 2022;
- Spatial data and descriptive information for designated assets held on the HES data website[26], last checked January 2022;
- Historic maps as held by the National Library of Scotland (NLS)[27];
- Historic Land-Use Assessment Data for Scotland (HLAMap)[28]: for information on the historic land use character of the Site and the surrounding area;
- Scottish Palaeoecological Archive Database (SPAD)[29]: for information on sites with palaeoenvironmental and palaeoecological potential;
- Scottish Government, Scottish Remote Sensing Portal[30]: for any LiDAR data covering the Site; and
- Aerial photography as held by HES in the National Collection of Aerial Photography (NCAP)[31] and Aberdeenshire Council Archaeology Service (ACAS).

[25] Available at: https://pastmap.org.uk/map
[26] Available at: http://portal.historicenvironment.scot/downloads
[27] Available at: https://maps.nls.uk/
[28] Available at: https://hlamap.org.uk/
[29] Available at: https://www.geos.ed.ac.uk/~ajn/spad/
[30] Available at: https://remotesensingdata.gov.scot/data#/list
[31] Available via subscriptions at: https://ncap.org.uk/

Field Survey

6.2.18 An archaeological walkover survey of the Site was undertaken between the 8 and 12 March 2021 with the aim of identifying any previously unknown archaeological remains. All known and accessible heritage assets were assessed in the field to establish their survival, extent, significance, and relationship to other assets. Weather and any other conditions affecting the visibility during the survey were also recorded. All features were marked on plans, at a relevant scale, and keyed by means of Grid References to the Ordnance Survey mapping.

6.2.19 Visits were made to designated and regionally significant assets to inform the setting assessment between the 8 - 12 March 2021 and on 6 - 7 July 2021. Weather conditions were generally wet giving poor visibility at times, however multiple visits were made to key heritage assets to ensure a full understanding of their setting and how that contributes to their significance was gained.

Criteria for the Assessment of Effects

6.2.20 This assessment distinguishes between the terms 'impact' and 'effect'. An impact is defined as a physical change to a heritage asset or its setting, whereas an effect refers to the significance of this impact. The first stage of the assessment involves establishing the significance and importance of the heritage assets and assessing the sensitivity of those assets to change (impact). Using the proposed design for the Proposed Development (see Chapter 2: Development Description), an assessment of the impact magnitude is made and a judgement regarding the level and significance of effect is arrived at.

Criteria for Assessing the Sensitivity of Heritage Assets

6.2.21 The definition of cultural significance is readily accepted by heritage professionals both in the UK and internationally and was first fully outlined in the Burra Charter, which states in article one that 'cultural significance' or 'cultural heritage value' means aesthetic, historic, scientific, social, or spiritual value for past, present or future generations[32]. This definition has since been adopted by heritage organisations around the world, including HES. HEPS notes that to have cultural significance an asset must have a particular "*aesthetic, historic, scientific or social value for past, present and future generations*"[33]. Heritage assets also have value in the sense that they "*...contribute to sense of place, cultural identity, social wellbeing, economic growth, civic participation and lifelong learning*"[34].

6.2.22 All heritage assets have significance; however, some heritage assets are judged to be more important than others. The level of that importance is, from a cultural resource management perspective, determined by establishing the asset's capacity to contribute to our understanding or appreciation of the past[35]. In the case of many heritage assets, their importance has already been established through the designation (i.e., Scheduling, Listing and Inventory) processes applied by HES.

6.2.23 The rating of importance of heritage assets is first and foremost made in reference to their designation. For non-designated assets importance will be assigned based on professional judgement and guided by the criteria presented in Table 6.2, which itself relates to the criteria

[32] ICOMOS (2013). Burra Charter. Available at: https://australia.icomos.org/publications/charters/.

[33] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

[34] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[35] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

for designations as set out in HES's Designation Policy and Selection Guidance[36] and Scotland's Listed Buildings[37].

Table 6.2: Criteria for Establishing Importance of Heritage Assets

Importance	Receptors
Very High	World Heritage Sites (As protected by SPP); Other designated or non-designated assets with demonstrable Outstanding Universal Value.
High	Scheduled Monuments (as protected by the Ancient Monuments and Archaeological Areas Act 1979 (the "1979 Act"); Category A Listed Buildings (as protected by the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997) (the "1997 Act"); Inventory Gardens and Designed Landscapes (as protected by the 1979 Act, as amended by the Historic Environment (Amendment) (Scotland) Act 2011 'the 2011 Act'); Inventory Battlefields (as protected by the 1979 Act, as amended by the 2011 Act); Outstanding examples of some period, style or type; Non-designated assets considered to meet the criteria for the designations as set out above (as protected by SPP).
Medium	Category B and C Listed Buildings (as protected by the 1997 Act); Conservation Areas (as protected by the 1997 Act); Major or representative examples of some period, style or type; or Non-designated assets considered to meet the criteria for the designations as set out above (as protected by SPP);
Low	Locally Listed assets; Examples of any period, style or type which contribute to our understanding of the historic environment at the local level.
Negligible	Relatively numerous types of assets; Findspots of artefacts that have no definite archaeological remains known in their context. The above non-designated assets are protected by Paragraph 137 of SPP.

6.2.24 Determining cultural heritage significance can be made with reference to the intrinsic, contextual, and associative characteristics of an asset as set out in HEPS[38] and its accompanying Designation Policy and Selection Guidance[39]. HEPS Designation Policy and Selection Guidance[40] indicates that the relationship of an asset to its setting or the landscape makes up part of its contextual characteristics. The Xi'an Declaration[41] set out the first internationally accepted definition of setting with regard to heritage assets, indicating that setting is important where it forms part of, or contributes to, the significance of a heritage asset. While SPP does not differentiate between the importance of the asset itself and the importance of the asset's setting, HES's Managing Change Guidance, in defining what factors need to be considered in assessing the impact of a change on the setting of a historic asset or place, states that the magnitude of the proposed change should be considered *"relative to*

[36] Historic Environment Scotland (2019b). Designation Policy and Selection Guidance. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b

[37] Historic Environment Scotland (2019c; updated 2021). Scotland's Listed Buildings. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=34c90cb9-5ff3-45c3-8bc3-a58400fcbc44

[38] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

[39] Historic Environment Scotland (2019b). Designation Policy and Selection Guidance. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b

[40] ibid

[41] ICOMOS (2005). Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas. Available at: https://www.icomos.org/charters/xian-declaration.pdf

the sensitivity of the setting of an asset"[42]; thereby making clear that assets vary in their sensitivity to changes in setting and thus have a relative sensitivity.

6.2.25 The EIA Handbook suggests that cultural significance aligns with sensitivity but also states that *"the relationship between value and sensitivity should be clearly articulated in the assessment"*[43]. It is therefore recognised[44] that the importance of an asset is not the same as its sensitivity to changes to its setting. Elements of setting may make a positive, neutral, or negative contribution to the significance of an asset. Thus, in determining the nature and level of effects upon assets and their settings by a development, the contribution that setting makes to an asset's significance and thus its sensitivity to changes to setting need to be considered.

6.2.26 This approach recognises the importance of preserving the integrity of the setting of an asset in the context of the contribution that setting makes to the understanding, appreciation and experience of a given asset. It recognises that setting is a key characteristic in understanding and appreciating some, but by no means all, assets. Indeed, assets of High or Very High importance do not necessarily have high sensitivity to changes to their settings (e.g., do not necessarily have a high relative sensitivity). An asset's relative sensitivity to alterations to its setting refers to its capacity to retain its ability to contribute to our understanding and appreciation of the past in the face of changes to its setting. The ability of an asset's setting to contribute to an understanding, appreciation and experience of it and its significance also has a bearing on the sensitivity of that asset to changes to its setting. While heritage assets of High or Very High importance are likely to be sensitive to direct effects, not all will have a similar sensitivity to effects on their setting; this would be true where setting does not appreciably contribute to their significance. HES's guidance on setting makes clear that the level of effect may relate to *"the ability of the setting [of an asset] to absorb new development without eroding its key characteristics"*[45]. Assets with Very High or High relative sensitivity to settings effects may be vulnerable to any changes that affect their settings, and even slight changes may erode their key characteristics or the ability of their settings to contribute to the understanding, appreciation, and experience of them. Assets whose relative sensitivity to changes to their setting is lower, may be able to accommodate greater changes to their settings without having key characteristics eroded.

6.2.27 The criteria used for establishing an asset's relative sensitivity to changes to its setting is detailed in Table 6.3. This table has been developed based on AOC's professional judgement and experience in assessing setting effects. It has been developed with reference to the policy and guidance noted above including SPP[46], HEPS[47] and its Designation Policy and Selection

[42] Historic Environment Scotland (2016; updated 2020). Managing Change in the Historic Environment: Setting. Available at: https://www.historicenvironment.scot/media/2359/setting-2.pdf.

[43] Historic Environment Scotland (2018). Environmental Impact Assessment Handbook. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=6ed33b65-9df1-4a2f-acbb-a8e800a592c0.

[44] ibid

[45] Historic Environment Scotland (2016; updated 2020). Managing Change in the Historic Environment: Setting. Available at: https://www.historicenvironment.scot/media/2359/setting-2.pdf.

[46] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[47] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

Guidance[48],the Xi'an Declaration[49], the EIA Handbook[50] and HES's guidance on the setting of heritage assets[51].

Table 6.3: Criteria for Establishing Relative Sensitivity of a Heritage Asset to Changes to its Setting

Relative Sensitivity	Criteria
Very High	An asset, the setting of which, is critical to an understanding, appreciation, and experience of it should be thought of as having Very High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, make an essential direct contribution to their cultural significance (e.g., form part of their Contextual Characteristics[52]).
High	An asset, the setting, of which, makes a major contribution to an understanding, appreciation, and experience of it should be thought of as having High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, contribute directly to their cultural significance (e.g., form part of their Contextual Characteristics[53]).
Medium	An asset, the setting of which, makes a moderate contribution to an understanding, appreciation, and experience of it should be thought of as having Medium Sensitivity to changes to its setting. This could be an asset for which setting makes a contribution to significance but whereby its value is derived mainly from its other characteristics[54].
Low	An asset, the setting of which, makes some contribution to an understanding, appreciation, and experience of it should generally be thought of as having Low Sensitivity to changes to its setting. This may be an asset whose significance is predominantly derived from its other characteristics.
Negligible	An asset whose setting makes minimal contribution to an understanding, appreciation, and experience of it should generally be thought of as having Negligible Sensitivity to changes to its setting.

6.2.28 The determination of a heritage asset's relative sensitivity to changes to its setting is first and foremost reliant upon the determination of its setting and the key characteristics of setting which contribute to its cultural significance and an understanding and appreciation of that cultural significance. This aligns with Stage 2 of the HES guidance on setting (2020, 9). The criteria set out in Table 6.3 are intended as a guide. Assessment of individual heritage assets is informed by knowledge of the asset itself; of the asset type if applicable and by site visits to establish the current setting of the assets. This will allow for the use of professional judgement and each asset is assessed on an individual basis.

Criteria for Assessing the Magnitude of Impact

6.2.29 Potential impacts, that is the physical change to known heritage assets, and unknown buried archaeological remains, or changes to assets' settings, in the case of the Proposed Development relate to the possibility of disturbing, removing, or destroying in situ remains and artefacts during the construction phase, or the placement of new features within their setting during the operational phase.

[48] Historic Environment Scotland (2019b). Designation Policy and Selection Guidance. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b

[49] ICOMOS (2005). Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas. Available at: https://www.icomos.org/charters/xian-declaration.pdf

[50] Historic Environment Scotland (2018). Environmental Impact Assessment Handbook. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=6ed33b65-9df1-4a2f-acbb-a8e800a592c0.

[51] Historic Environment Scotland (2016; updated 2020). Managing Change in the Historic Environment: Setting. Available at: https://www.historicenvironment.scot/media/2359/setting-2.pdf.

[52] Historic Environment Scotland (2019b). Designation Policy and Selection Guidance (Anne 1). Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b

[53] ibid

[54] ibid

6.2.30 The magnitude of the impacts upon heritage assets caused by the Proposed Development is rated using the classifications and criteria outlined in Table 6.4.

Table 6.4: Criteria for Classifying Magnitude of Impact

Impact Magnitude	Criteria
High	Substantial loss of information content resulting from total or large-scale removal of deposits from an asset. Major alteration of an asset's baseline setting, which materially compromises the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset and erodes the key characteristics[55] of the setting.
Medium	Loss of information content resulting from material alteration of the baseline conditions by removal of part of an asset. Alteration of an asset's baseline setting that effects the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset to a degree but whereby the cultural significance of the monument in its current setting remains legible. The key characteristics of the setting[56] are not eroded.
Low	Detectable impacts leading to minor loss of information content. Alterations to the asset's baseline setting, which do not affect the ability to understand, appreciate and experience the contribution that setting makes to the asset's overall significance.
Negligible	Loss of a small percentage of the area of an asset's peripheral deposits. A reversible alteration to the fabric of the asset. A marginal alteration to the asset's baseline setting.
None	No effect predicted.

Criteria for Assessing Significance

6.2.31 The predicted level of effect on each heritage asset is then determined by considering the asset's importance and/ or relative sensitivity in conjunction with the predicted magnitude of the impact. The method of deriving the level of effect is provided in Table 6.5.

Table 6.5: Level of Effect based on Inter-Relationship between the Importance and/ or Sensitivity of a Heritage Asset and/ or its setting and the Magnitude of Impact

Magnitude of Impact	Importance and/ or Sensitivity				
	Negligible	Low	Medium	High	Very High
High	Minor	Moderate	Moderate	Major	Major
Medium	Negligible	Minor	Moderate	Moderate	Major
Low	Negligible	Negligible	Minor	Minor	Moderate
Negligible	Negligible	Negligible	Negligible	Minor	Minor

6.2.32 The level of effect is judged to be the interaction of the asset's importance and/ or relative sensitivity (Tables 6.2 and/ or 6.3) and the magnitude of the impact (Table 6.4). In order to provide a level of consistency, the assessment of importance and relative sensitivity, the magnitude of impact and the assessment of level of effect are guided by pre-defined criteria. However, a qualitative descriptive narrative is also provided for each asset to summarise and explain each of the professional value judgements that have been made in establishing importance and/or sensitivity and magnitude of impact for each individual asset.

[55] Historic Environment Scotland (2016; updated 2020). Managing Change in the Historic Environment: Setting. Available at: https://www.historicenvironment.scot/media/2359/setting-2.pdf.

[56] ibid

6.2.33 Using professional judgment and with reference to the Guidelines for Environmental Impact Assessment (as updated)[57], and the EIA Handbook[58], the assessment considers moderate and greater effects to be significant (shaded grey in Table 6.5), while minor and lesser effects are considered not significant.

Integrity of Setting

6.2.34 In paragraph 145, SPP notes that where there is potential for a Proposed Development to have an adverse effect on a Scheduled Monument or on the integrity of its setting, permission should only be granted where there are 'exceptional circumstances'[59]. Adverse effects on integrity of setting are judged here to relate to whether a change would seriously adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance to the extent that the setting of the asset can no longer be understood or appreciated.

6.2.35 In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as 'significant' in the assessment will have the potential to adversely affect integrity of setting. Where no significant effect is found, it is considered that the integrity of an asset's setting will remain intact. This is because for many assets, setting may make a limited contribution to their significance and as such changes would not affect the integrity of their settings. Additionally, as set out in Table 6.4, lower ratings of magnitude of change relate to changes that would not obscure or erode key characteristics of setting.

6.2.36 Where significant effects are found, a detailed assessment of adverse effects upon integrity of setting is made. Whilst non-significant effects are unlikely to affect integrity of setting, the reverse is not always true. That is, the assessment of an effect as being 'significant' does not necessarily mean that the adverse effect to the asset's setting will harm its integrity. The assessment of adverse effect upon the integrity of an asset's setting, where required, will be a qualitative one, and will largely depend upon whether the effect predicted would result in a major impediment to the ability to understand or appreciate the heritage asset and therefore reduce its cultural significance.

Criteria for Assessing Cumulative Effects

6.2.37 It is necessary to consider whether the effects of other schemes in conjunction with the Proposed Development would result in an additional cumulative change upon heritage assets, beyond the levels predicted for the Proposed Development alone. The in-combination effect also needs to be considered. However, only those assets which are judged to have the potential to be subject to significant cumulative effects will be included in the detailed cumulative assessment provided.

6.2.38 The cumulative assessment will have regard to the guidance on cumulative effects upon heritage assets as set out in Environmental Impact Assessment Handbook V5[60] (and will utilise the criteria used in determining effects from the Proposed Development as outlined in Tables 6.2 to 6.5 above. The assessment of cumulative effects will consider whether there would be an increased impact, either additive or synergistic, upon the setting of heritage assets as a

[57] IEMA (2017). Guidelines for Environmental Impact Assessment.

[58] Historic Environment Scotland (2018). Environmental Impact Assessment Handbook. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=6ed33b65-9df1-4a2f-acbb-a8e800a592c0.

[59] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[60] Historic Environment Scotland (2018). Environmental Impact Assessment Handbook. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=6ed33b65-9df1-4a2f-acbb-a8e800a592c0.

result of adding the Proposed Development to a baseline, which may include operational, under construction, consented or proposed developments as agreed with AC and MC.

6.2.39 In determining the degree to which a cumulative effect may occur as a result of the addition of the Proposed Development into the cumulative baseline a number of factors are taken into consideration including:

- the distance between wind farms;
- the interrelationship between their ZTV;
- the overall character of the asset and its sensitivity to wind farms;
- the siting, scale and design of the wind farms themselves;
- the way in which the asset is experienced;
- the placing of the cumulative wind farm(s) in relation to both the Proposed Development being assessed and the heritage asset under consideration; and
- the contribution of the cumulative baseline schemes to the significance of the effect, excluding the Proposed Development being assessed, upon the setting of the heritage asset under consideration.

6.2.40 This assessment is based upon a list of operational or consented developments along with developments where planning permission has been applied for. AC have also requested that two at scoping proposed developments are considered for the cumulative assessment. Whilst less weight can be given to these because it is not certain they will come forward to application and where they do the design may be largely changed; they are considered here at the request of AC.

6.2.41 Cumulative developments are consistent with those assessed as part of the Landscape and Visual Impact Assessment (Chapter 5 of this EIAR). While all have been considered, only those which contribute to, or have the possibility to contribute to cumulative effects on specific heritage assets, are discussed in detail in the text. Additionally, given the emphasis HES and NatureScot place on significant effects, cumulative effects have only been considered in detail for those assets where the effect on setting from the Proposed Development alone, has been judged to be minor or greater. The setting of assets which would have a magnitude of impact of negligible or less are judged to be unlikely to reach the threshold of significance as defined in Table 6.5.

Requirements for Mitigation

6.2.42 National and local planning policies and planning guidance outlined above, require a mitigation response that is designed to take cognisance of the possible impacts upon heritage assets by a Proposed Development and avoid, minimise, or offset any such impacts as appropriate. The planning policies and guidance express a general presumption in favour of preserving heritage remains in situ [wherever possible]. Their 'preservation by record' (i.e., through excavation and recording, followed by analysis and publication by qualified archaeologists) is a less desirable alternative[61,62].

Assessment of Residual Effect Significance

6.2.43 The residual effect is what remains following the application of mitigation and management measures, and construction has been completed and is thus the final level of impact associated

[61] Scottish Government (2014). Scottish Planning Policy. Available at: Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy

[62] Historic Environment Scotland (2019a). Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/.

with the Proposed Development. The level of residual effect is defined using criteria outlined in Tables 6.2 to 6.5. No direct mitigation is possible for setting effects (beyond embedded mitigation by design) and therefore residual effects on the setting of heritage assets would be the same as predicted for the operational phase. The predicted level of effect on each heritage asset is determined by considering the asset's importance and/ or sensitivity in conjunction with the predicted magnitude of the impact.

Limitations and Assumptions

6.2.44 This assessment is based upon data obtained from publicly accessible archives as described in the Data Sources section above. HER data was received from ACAS in October 2020 and NRHE data and HES Designation data was downloaded from HES in October 2020 and checked in January 2022. This assessment does not include any records added or altered after this date. These limitations are not considered to undermine the validity of the assessment.

6.2.45 Dense tree cover prevented archaeological walkover survey within the north eastern end of the Site to the west of Craig Dorney Hillfort (Asset 20). This limitation was discussed with ACAS during pre-determination consultation; and it was indicated that mitigation, including further walkover survey, following tree felling but prior to commencement of construction would be proposed and secured via a suitably worded planning condition. This would enable any assets within the forestry, which could potentially be subject to direct impacts as a result of the Proposed Development, to be identified and for suitable further mitigation measures to be agreed, if necessary.

6.3 Baseline Conditions

Current Baseline

6.3.1 There are no designated assets within the Site boundary. The desk-based assessment and walkover survey have identified 53 non-designated assets within the Site boundary (as shown in Figure 6.1). Assets 18-19, 33-36, 38-40, 42, 44, 46, 50, 52-53, 56-57, 59, 63-64, 67-68, 71, 73, 76-78, 80, 86, 161-178 and 186-191, which include farmsteads, boundary stones, buildings, hut circles, field systems, cairns, shooting butts and artefact findspots, as well as the Regionally Significant hut circles at Drywell (Asset 44).

6.3.2 Between the Site boundary and 1 km from the Site, there are the following assets:

- Scheduled hillfort on Craig Dorney (Asset 20);
- the Category C Listed Blackwater Bridge (Asset 129); and
- a further 85 non-designated assets (Assets 1-17, 21-32, 37, 41, 43, 45, 47-49, 51, 54-55, 58, 60-62, 65-66, 69-70, 72, 74-75, 79, 81-85, 87-110 and 179-185).

6.3.3 Between 1 km and 5 km of the Site boundary, there are two Scheduled Monuments, Auchindoun Castle (Asset 115) and Mortlach Symbol Stone (Asset 119); two Category A Listed Buildings, Beldorney Castle (Asset 126) and Mortlach Parish Church, Watch House and Burial Ground (Asset 128); 13 Category B Listed Buildings (Assets 130, 139, 141, 144, 146-147, 149-152, 154-155 and 158); and 18 Category C Listed Buildings (Assets 125, 131-138, 140, 142-143, 145, 148, 153, 156-157 and 159).

6.3.4 Between 5 km and 10 km from the Site boundary, there are a further 11 Scheduled Monuments (Assets 111-114, 116-118 and 120-123), which include townships, hut circles, castles, prehistoric funerary monuments, a hillfort, and a cup-marked stone. There are also two Category A Listed Buildings (Assets 124 and 127), and one Inventory Battlefield (Asset 160).

Archaeological and Historical Background

PREHISTORIC (8000 BC – AD 43) AND ROMAN (AD 43 – 410)

6.3.5 There are eight heritage assets of prehistoric date within the Site. Regionally Significant (as defined by the HER) remains of hut circles and a field system are recorded at Drywells (Asset 44). There are four huts, together with a further probable hut, formed by low turf-covered banks. The field system comprises several heather-covered stone clearance heaps and a few scarcely recognisable fields defined by heaps, vague lynchets and field banks. Several Bronze Age cist burials and beakers are recorded as being found at Fortieth (Assets 38 and 63), and Lesmurdie (Asset 68), between ca. 1830 and 1991. Three prehistoric arrowheads of indeterminate period are recorded at Greenloan (Asset 39), together with a large Neolithic leaf-shaped arrowhead at Craignure (Asset 42). Further prehistoric activity at Greenloan is evidenced by eleven cup-marked stones, mainly from a large cairn, with several flint arrowheads, a spearhead, and a scraper being found nearby (Asset 64). A possible, denuded chambered cairn was recorded at Drywells during the walkover survey (Asset 161).

6.3.6 Within 1 km of the Site boundary are a further 15 assets of prehistoric date. These include artefact findspots (Assets 3, 12, 29, 43, 49, 60, 74-75 and 99); hut circles (Assets 5, 17, 30, 90 and 106); and field systems (Asset 62).

6.3.7 Between 5 km and 10 km from the Site boundary there are seven prehistoric Scheduled Monuments: a settlement at Wood of Furlhead (Asset 113), Gallows Hill Cairn (Asset 116), Wormy Hillock henge (Asset 117), Tap o'Noth hillfort (Asset 118), a cupmarked stone at Brawland (Asset 121), and hut circles at Newseat (Asset 122) and Currach Cottage (Asset 123).

6.3.8 There are no assets of Roman date recorded within the Study Areas.

6.3.9 On the basis of current evidence, and in addition to the known prehistoric assets on Site, there is judged to be high potential for further hitherto unknown archaeological remains of prehistoric date and low potential for remains of Roman date to survive within the Site.

EARLY HISTORIC AND MEDIEVAL (AD 410 – 1600)

6.3.10 There are no heritage assets of Early Historic and medieval date within the Site. Within 1 km of the Site is the Scheduled Craig Dorney hillfort (Asset 20), visible as a roughly oval-shaped rampart, now reduced to a terrace feature, enclosing the summit of Craig Dorney Hill. A lower, second terrace feature and sections of an enclosing ditch are also partially visible. Limited archaeological investigations have produced dating evidence from the 5th and 6th centuries AD. The form of the monument, however, suggests earlier origins, most likely in the Iron Age. There are also four non-designated heritage assets from this period: the site of a chapel on the brow of Chapel Hill, of which only a few scattered stones remain (Asset 13); and the locations of three manors at Succoth, Bellcherrie and Mains of Lesmurdie (Assets 37, 61 and 69), none of which have any visible remains.

6.3.11 Within 5 km of the Site boundary there are two Scheduled Monuments that date to the medieval period: Auchindoun Castle (Asset 115), a 15th century L-plan tower house and lime kiln situated within a bivallate hillfort of presumed Iron Age date; and the Mortlach symbol stone (Asset 119), a carved stone called the Battle Stone standing in the middle of the lower cemetery of Mortlach parish church. There is one Category A Listed Building, Beldorney Castle (Asset 126), which is a Z-plan tower house.

6.3.12 Between 5 km and 10 km from the Site boundary there are a further three Scheduled Monuments, the settlement at Innesbrae (Asset 111), Balvenie Castle (Asset 114) and Gauldwell Castle (Asset 120); one Category A Listed Buildings, Kinninvie House (Asset 127); and the Battle of Glenlivet Inventory Battlefield (Asset 160).

6.3.13 On the basis of current evidence, there is judged to be medium potential for archaeological remains of Early Historic and medieval date to survive within the Site.

POST-MEDIEVAL (AD 1600 – 1900)

6.3.14 Early pre-Ordnance Survey maps of the Site tend to be schematic and lack detail although Gordon's map dating from 1636 to 1652[63] (not illustrated) covers the area of the Site. Hills and river systems are depicted, which bear a rough similarity to the topographical nature of the Site, although the buildings and places are depicted as more generic symbols. The River Deveron is labelled and depicted along with a stylised building symbol at the location of Beldorney Castle (Asset 126) and a placename at Belcherrie is given, where documentary evidence suggests the site of a manor (Asset 61); Gordon's map labels Belcherrie as 'Belchizie'. Lesmurdie is also depicted. The exact position of the Site itself cannot be identified as schematic hills are depicted.

6.3.15 Roy's Military Survey of Scotland 1747 to 1755[64] (not illustrated) shows more detail of the settlements and structures in the area, although the Site itself is not depicted in detail.

6.3.16 The first map to show detail of the entire Site is the Ordnance Survey Map of 1872[65] (Figure 6.3). It depicts most of the Site as undeveloped and as being dominated by valleys and hills. Post-medieval county boundary stones or watershed boundary stones are clearly marked and correspond with the current HER locations of boundary stones (Assets 33, 35, 52, 59, 67 and 78). Farmsteads, buildings, and enclosures are also marked and correspond with the ruined remains of Assets 19, 34, 40, 50, 53 and 73.

6.3.17 In addition to the boundary stones and buildings, there are a further 28 heritage assets of post-medieval date within the Site (Assets 46, 56-57, 71, 76, 162-178 and 186-191) all of which are non-designated. These include a rubbing stone, a church, and a quarry, together with shooting butts recorded during the walkover survey.

6.3.18 Within 1 km of the Site boundary there are a further 46 non-designated heritage assets from this period (Assets 1-2, 4, 6-11, 14-16, 21-24, 26-28, 31-32, 41, 45, 47-48, 54-55, 65-66, 70, 72, 79, 81, 83, 87, 89, 91-92, 97, 100-102, 105 and 107-109), which include farmsteads, buildings, enclosures, mills, lime kilns, boundary stones, cairns, a township, and a sheepfold, together with the Category C Listed Blackwater Bridge (Asset 129).

6.3.19 Within 5 km of the Site Boundary there is one Category A Listed Building from the post-medieval period, Mortlach Parish Church, Watch House and Burial Ground (Asset 128); 13 Category B Listed Buildings, which include houses (Assets 130, 133, 146-147, 149 and 152), churches (Assets 139, 144 and 155), a mill (Asset 141), a bank (Asset 150), a former town hall (Asset 151) and a clocktower (Asset 158); and 18 Category C Listed Buildings, which include a shooting lodge (Asset 125), a churchyard and graveyard (Assets 131 and 138), houses (Assets 132, 134, 142, 145, 148, 153-154 and 156), bridges (Assets 135, 136 and 137), a mill (Asset 140), a steading (Asset 143), a distillery (Asset 157), and a Police Station (Asset 159).

6.3.20 Between 5 km and 10 km of the Site boundary there is one Scheduled Monument of post-medieval date, a farmhouse, farm steading and township near Innesbrae (Asset 112), and one Category A Listed Building, Drummuir Castle (Asset 124).

[63] Gordon, Robert (ca. 1636-52). Aberdeen, Banf [sic], Murrey [sic] &c. to Inverness : [and] Fra the north water to Ross / Robertus Gordonius a Strathloch describebat 1640.. Available at: https://maps.nls.uk/rec/9

[64] Roy, William (1757-55). Roy Military Survey of Scotland. Available a at: https://maps.nls.uk/geo/roy/#zoom=13&lat=57.4209&lon=-3.0417&layers=0&point=0,0

[65] Ordnance Survey (1872). Banffshire, Sheet XXXI. Available at: https://maps.nls.uk/view/228776842

6.3.21 Based on current evidence, there is judged to be high potential for further hitherto unknown remains of post-medieval date to survive within the Site.

MODERN (AD 1900 – PRESENT)

6.3.22 There are no modern heritage assets within the Site. Within 1 km of the Site Boundary, the non-designated Cabrach Royal Observer Corps post (Asset 85) and Cabrach War Memorial (Asset 104) are recorded.

6.3.23 The Ordnance Survey maps in the modern period, such as the Ordnance Survey Map of 1905[66] (not illustrated), show that the nature of the Site remained relatively unchanged, except for the post-medieval farmsteads recorded on the 19th century maps, which are depicted as mostly abandoned and in a ruinous state. Farmsteads still in use, such as Backside (Asset 1), situated to the east of the Site, tend to be further downslope towards the River Deveron and the modern roads.

6.3.24 Based on current evidence, there is judged to be low potential for remains of modern date to be present within the Site.

PERIOD NOT ASSIGNED

6.3.25 Within the Site, there are five heritage assets that do not have a period assigned to them. These include the Blue Stone (Asset 18), which is a natural feature, and a possible hut circle (Asset 36), a cairn (Asset 77), possible building footings (Asset 80), and a chapel and burial ground (Asset 86). Whilst it is not possible to assign a definitive time period to these assets without excavation, it is likely that the hut circle is associated with the Bronze Age activity recorded elsewhere in the Site; and the building and chapel are likely to date to the medieval and/or post-medieval periods. The cairn, however, given its form, could date from any time from the prehistoric period through to modern era.

6.3.26 There are a further 22 heritage assets of indeterminate age within 1 km of the Site boundary. These include buildings (Asset 25 and 96), a cupmarked stone (Asset 51), enclosures (Assets 58, 93-95 and 103), a mound (Asset 82), dykes (Assets 84, 98, 181 and 183), a stone artefact (Asset 88), a possible platform (Asset 179), cairns (Assets 180, 182 and 186-188) and possible structures (Assets 184-185).

LiDAR and Aerial Photographs

6.3.27 The Scottish Remote Sensing Portal was checked for publicly available LiDAR data covering the Site. No such data was available.

6.3.28 A search of NCAP was made for aerial photography covering the Site. Photographs from 1988 were identified and indicated that Howeshalloch and Brown Hill were planted with trees. There were no potential assets visible within the Site, beyond those which had been previously recorded on the HER and NRHE. The previously unrecorded possible cairn (Asset 182), also identified during the walkover survey, is visible.

6.3.29 Further aerial photographs were supplied by ACAS. These dated from 1984 to 1990, and focus on Craig Dorney Hillfort and the immediate area around it. They indicated the full extent of the hillfort and a number of the recorded assets around the hillfort.

Walkover Survey

6.3.30 A systematic walkover survey of the Site was undertaken between 23 and 25 March 2021 to investigate the condition and significance of known archaeology on the Site and identify any previously unknown remains. All assets recorded during the survey have been included in

[66] Ordnance Survey (1905). Aberdeenshire She XXXIII. Available at: https://maps.nls.uk/view/75473877

this assessment and asset numbers are detailed in the relevant sections above. Plates detailed below are included in Technical Appendix 6.3.

6.3.31 The majority of the previously unknown assets recorded within the Site are shooting butts that relate to post-medieval sporting activity in the area (Assets 163 – 177 and 189 – 191; Plates 1 - 2). Footings of a structure with an enclosure attached, at Drywells, (Asset 162; Plate 3) is also likely to date to the post-medieval period. Near Asset 162 was a possible denuded chambered cairn (Asset 161; Plate 4), which could date to the prehistoric period; other prehistoric assets have previously been recorded in this part of the Site (Assets 39, 44 and 64). Three small stone cairns (Assets 186 – 188; Plate 5) were recorded on Garbet Hill, together with a large, well-built cairn standing about 2 m high (Asset 178; Plate 6) that was interpreted as a commemorative cairn.

6.3.32 As agreed with ACAS, the walkover survey included a rapid assessment of the ground between the Site and Craig Dorney hillfort (Asset 20), during which several previously unrecorded remains were noted. Most of the remains were ephemeral in nature and could not be confidently ascribed to a specific period as they may relate to activity dating from the prehistoric period through to the post-medieval era. These comprised a possible platform (Asset 179; Plate 7), a possible clearance cairn (Asset 180; Plate 8), a possible wall (Asset 181; Plate 9), and a possible structure (Asset 184; Plate 10). Asset 185 (Plate 11) was interpreted as the possible chamber of a denuded cairn, in which case would most likely date to the prehistoric period. The most substantial asset was a large cairn (Asset 182; Plate 12), possibly a prehistoric chambered cairn, which had a stone dyke (Asset 183; Plate 13) placed on its top, most likely from the post-medieval activity in the area.

Future Baseline

6.3.33 The baseline conditions will be unchanged if the Proposed Development does not proceed. Future baselines (without the Proposed Development) would largely be expected to mirror the current baseline. Any alteration to the baseline condition of the heritage assets within the Site would likely relate to continued use of the Site for forestry operations. This could result in further degradation or loss of known or hitherto unrecorded assets within the Site. The current baseline is taken as the basis for the construction effects assessment presented here.

6.3.34 The setting of the Site and heritage assets within the wider study area will be altered in the future through the construction of consented turbines and other developments. The effects of consented and proposed turbines on the setting of heritage assets is discussed under cumulative effects.

Summary of Sensitive Receptors

Scoped Out Receptors

6.3.35 Direct effects upon all assets outwith the Site boundary are scoped out. Non-designated assets outwith the Site boundary have been identified to allow for an assessment of archaeological potential.

6.3.36 Designated heritage assets which were found to lie outwith the ZTV have been scoped out of this assessment. Consideration has been given to the potential for proposed turbines to be visible in key views of heritage assets, even where turbines would not be visible from assets themselves and where appropriate such assets have been included. Assets identified in the Gazetteer (Technical Appendix 6.1) but not noted below or in Technical Appendix 6.2 would have no impact upon their setting.

6.3.37 Setting effects on the majority of non-designated heritage assets within the Site boundary were scoped out of the assessment following the completion of the walkover survey. The

majority of assets were found to relate to post-medieval and modern shooting activity, post-medieval boundary cairns and post-medieval agricultural remains. These assets are generally of Negligible or Low importance, as set out in Table 6.6 below. Their setting, insofar as it contributes to an understanding and appreciation of them, relates largely to their relationship to each other (which has already be compromised by commercial forestry on the Site) and access to moorland resources in the form of game and rough grazing. Whilst the Proposed Development would form a new feature in the near vicinity it would not materially detract from these elements of setting and as such effects upon the setting of these assets is not considered further. The potential for impacts upon the regionally important Drywells hut circles and field system (Asset 44) are considered in Technical Appendix 6.2.

Scoped In Receptors

RECEPTORS BROUGHT FORWARD FOR ASSESSMENT OF DIRECT EFFECTS

6.3.38 A total of 53 non-designated cultural heritage assets have been identified within the Site. Potential for impacts upon most of these assets has been avoided through the iterative design process. Those that may be directly impacted are summarised in Table 6.6. Their relative importance has been classified according to the method shown in Table 6.2.

Table 6.6: Assets Brought Forward for Assessment of Direct Effects

Asset Number	Asset Name	Designation	Description	Importance
19	Linn Burn	Non-designated	Structure footings	Negligible
33	Craig Watch	Non-designated	Boundary Stone	Low
35	Garbet Hill	Non-designated	Boundary Stone	Low
36	Badiemulloch	Non-designated	Hut circle	Medium
44	Drylaw	Non-designated	Field system and hut circles	Medium
50	Tombain	Non-designated	Remains of post-medieval houses/ enclosures	Low
52	Garbet Hill	Non-designated	Boundary Stone	Low
59	Garbet Hill	Non-designated	Boundary Stone	Low
67	Garbet Hill	Non-designated	Boundary Stone	Low
77	Garbet Hill	Non-designated	Cairn	Low
78	Craig Watch	Non-designated	Boundary Stone	Low
163	Craig Watch	Non-designated	Shooting Butt	Negligible
165	Craig Watch	Non-designated	Shooting Butt	Negligible
166	Craig Watch	Non-designated	Shooting Butt	Negligible
169	Craig Watch	Non-designated	Shooting Butt	Negligible
173	Linn Burn	Non-designated	Shooting Butt	Negligible
174	Linn Burn	Non-designated	Shooting Butt	Negligible
175	Linn Burn	Non-designated	Shooting Butt	Negligible
178	Garbet Hill	Non-designated	Commemorative Cairn (possible)	Low

RECEPTORS BROUGHT FORWARD FOR ASSESSMENT OF SETTING EFFECTS

6.3.39 There are six Scheduled Monuments and 23 Listed Buildings lying within the ZTV and these have been carried forward for detailed assessment. These assets are indicated in Table 6.7.

Table 6.7: Assets Brought Forward for Assessment of Setting Effects

Asset Number	Asset Name	Designation	Relative Sensitivity to Changes to Setting	Approx. Distance to Nearest Proposed Turbine
20	Craig Dorney, hillfort	Scheduled Monument	High	0.90 km
44	Drywells, field system and hut circles	Non-designated asset of regional importance	Low	0.57 km
111	Innesbrae, buildings 320 m SW of	Scheduled Monument	Low	10.69 km
114	Balvenie Castle	Scheduled Monument	Medium	8.15 km
115	Auchindoun Castle, castle and fort	Scheduled Monument	High	3.99 km
118	Tap o'Noth	Scheduled Monument	High	10.58 km
120	Gauldwell Castle	Scheduled Monument	Medium	12.24 km
125	Blackwater Lodge	Listed Building – Category C	Low	7.06 km
126	Beldorney Castle	Listed Building – Category A	Medium	2.55 km
130	Old Manse Inn Farmhouse	Listed Building – Category B	Low	5.52 km
133	Manse Cottages	Listed Building – Category B	Low	5.09 km
134	Blairmore House	Listed Building – Category C	Medium	5.25 km
135	Bridge over Allt Deveron by Cabrach Church	Listed Building – Category C	Low	7.33 km
136	Bridge over Milltown Burn by Milltown	Listed Building – Category C	Low	7.16 km
137	Bridge of Parkhaugh	Listed Building – Category C	Low	3.56 km
138	Walla Kirk Graveyard	Listed Building – Category C	Low	3.00 km
140	Mill of Invermarkie	Listed Building – Category C	Low	3.93 km
142	Edinglassie Mains Farmhouse	Listed Building – Category C	Low	3.44 km
143	Edinglassie Mains Steading and Former Stables	Listed Building – Category C	Low	3.46 km
144	Cabrach Parish Church and Burial Ground	Listed Building – Category B	Low	7.29 km
147	Glen Rinnes Lodge	Listed Building – Category B	Medium	7.61 km
150	1 Balvenie Street, Dufftown	Listed Building – Category B	Low	7.62 km
151	9-13 (odd nos) Church Street, Dufftown	Listed Building – Category B	Low	7.56 km
152	49 Fife Street, Dufftown	Listed Building – Category B	Low	7.42 km
153	30 Fife Street, Dufftown	Listed Building – Category C	Low	7.51 km
154	68 Fife Street, Dufftown	Listed Building – Category C	Low	7.53 km
155	St Mary of the Assumption Roman Catholic Church, Hall & Gatepiers	Listed Building – Category B	Low	7.53 km
156	51 Fife Street, Garden & Walls, Dufftown	Listed Building – Category C	Low	7.19 km
158	Clock Tower, The Square, Dufftown	Listed Building – Category B	Low	7.60 km
159	York Street, Police Station & Police House with rear walls to Hill Street, Dufftown	Listed Building – Category C	Low	7.90 km

6.4 Assessment of Likely Effects

Potential Construction Effects

6.4.1 During construction, direct physical impacts could occur from Site vegetation clearance, earthmoving operations, creation of the substation, track construction, and construction of all associated infrastructure (turbine bases, compounds, drainage etc.). Works to be undertaken for compensatory planting and habitat management plans also have the potential to impact upon heritage assets. Setting impacts may occur due to the introduction of construction machinery on-site, additional construction traffic and construction of compounds. Given the nature of such impacts, setting impacts are only likely to occur in close proximity to the proposed works. The closest designated asset to the Site, Craig Dorney hillfort (Asset 20), lies 0.90 km east south east of the nearest turbine. No significant construction effects on setting are anticipated. Any effects of construction activities upon setting would be temporary, short-term, and reversible and would not exceed the operational effects upon setting and so are not discussed further here.

6.4.2 The Proposed Development has been designed to avoid direct impacts on known heritage assets where possible. However, a number of non-designated heritage assets have been identified on the Site could potentially be directly impacted by the Proposed Development or works proposed under the Habitat Management Plan (MHP) or for Compensatory Planting (assets listed in Table 6.6; Figure 6.4 and Figure 6.5). An Outline HMP is proposed as part of the Proposed Development, this is presented in Technical Appendix 7.5 and indicative compensatory planting search areas shown in Technical Appendix 2.6.

6.4.3 Asset 19 is the much degraded footings of a small rectangular structure immediately to the east of the existing track at Linn Burn, which could be compromised by the proposed upgrade works to the track or by compensatory planting. Shooting butts (Assets 173-175) are also located in this area and could be impacted upon by compensatory planting. Further shooting butts (Assets 165 and 166) could be compromised by the construction of the hardstanding for proposed Turbine 8, and the shooting butt at Asset 169 could potential be impacted by proposed upgrade works to the existing track. Boundary stones and cairns (Assets 33,35, 52, 59, 67, 77 and 78), a further shooting butt (Asset 163), hut circles and field systems (Assets 36 and 44) and remains of post-medieval structures at Tombain (Asset 50) have the potential be impacted upon by works proposed as part of the HMP.

6.4.4 Asset 19 is considered to be of Negligible importance; it forms part of a small post-medieval farmstead of a type that are relatively numerous in the area. An existing road which runs immediately adjacent to the asset is proposed to be upgrade and could result in a loss of peripheral deposits associated with the asset. Compensatory planting is proposed across the majority of Asset 19 and could result in loss of or damage to a considerable portion of the remains. This would potentially result in a High magnitude impact. Given the asset's Negligible Importance impacts would represent a **Minor** level effect, which are not significant.

6.4.5 The shooting butts are also considered to be of Negligible importance; they are representative of sporting activity in the area and are extremely common remains. Construction would take place in the close vicinity of the shooting butts at Assets 165, 166, and 169, but it is not intended to remove them. At worst, a medium magnitude of impact is predicted. These impacts would result in **Negligible** level effects, which are not significant.

6.4.6 Further shooting butts at Linn Burn (Assets 173 - 175) and Craig Watch (Asset 163) are located in a proposed compensatory planting area and an HMP area respectively. Compensatory planting at Linn burn could potentially remove or damage the shooting butts

located there resulting in a High magnitude of impact. Given the assets' Negligible importance these impacts would represent **Minor** level effects, which are not significant.

6.4.7 Asset 163 is located within HMP Area 4 which is proposed for peat restoration, which could include ditch blocking and rewetting along with implementing a sensitive grazing regime and reseeding bare areas. It is likely that the assets could be avoided by any works taking place here associated with the HMP but there is some potential for inadvertent damage. A Medium magnitude of impact resulting in a **Negligible** level of effect is predicted. Such an effect would not be significant.

6.4.8 Proposed Habitat Management Areas are shown on Figure 1 of the HMP (Technical Appendix 7.5). HMP Area 1 is proposed for riparian planting and peat restoration. This may involve rewetting and ditch blocking. A sensitive grazing regime is also planned and bare areas would be reseeded to promote vegetation growth and prevent erosion. There are five known heritage assets (Assets 35, 52, 59, 67 and 77) along the northern boundary of Area 1 and a further asset, a possible commemorative cairn (Asset 178) at its eastern edge. Area 4 is also proposed for peat restoration including possible ditch blocking and re-wetting; two known heritage assets (Assets 33 and 78) are located along the western boundary of Area 4. Four of the five assets along the northern boundary of Area 1 comprise boundary stones (Assets 35, 52, 59 and 67) along the parish boundary. As do the two assets (Assets 33 and 78) along the western boundary of Area 4. All are judged to be of low importance, representing remains of a relatively common type of asset which contribute to an understanding of local parish and land divisions in the past. Asset 77 within Area 1 represents the remains of a cairn which is first depicted on the 2nd Edition 1876 Ordnance Survey map. Given the cairn is not depicted on the 1st Edition Ordnance Survey mapping and its location along the parish boundary, it is considered likely to also be a post-medieval boundary feature and of low sensitivity. The possible commemorative cairn appears to be modern in date and is also considered to be of Low importance.

6.4.9 Given their location on edge of the proposed HMP Areas and the nature of the works required for rewetting and ditch blocking, direct impacts upon these assets are considered to be unlikely. As with the shooting butts discussed above, at worst a medium magnitude of impact could be expected as any impacts are likely to arise from inadvertent damage taking place during works in close proximity to the assets and are unlikely to constitute full removal. Any such impact would result in **Minor** level effects which are not significant.

6.4.10 HMP Area 2 is proposed for grass and heathland management and would include a sensitive grazing regime and scrub/ heather removal. Two known heritage assets are located within the HMP Area 2 and a further asset (Asset 44) lies immediately adjacent to the northern boundary of the area. The two known assets within Area 2 include a possible hut circle (Asset 36) on the south west slope of Kelman Hill and remains of houses and enclosures at Tombain (Asset 50) on the eastern boundary of the Area. The hut circle (Asset 36) is considered to be of medium importance and may be related to the Regionally Important group of hut circles to the north east at Asset 44, which lies adjacent to the northern boundary of Area 2 and is also considered to be of medium importance. Together these assets comprise a relatively intact and representative example of their type. The remains at Tombain (Asset 50) are likely of post-medieval date, appearing on the 1st Edition Ordnance Survey map, it is considered to be of low importance representing a common type of asset of post-medieval date. Any impact here is likely to be limited to peripheral impacts resulting from heather/ scrub removal and is thus considered to be a worst of low magnitude. Such an impact would result in a **Minor** level of effect upon the hut circle (Asset 36) and a **Negligible** level of effect upon Tombain (Asset 50). These effects are not significant.

6.4.11 Given the presence of known heritage assets on the Site, there is the potential for unknown buried remains to be present, which could be directly impacted by the Proposed Development. The importance of any such assets is by their very nature unknown. Known heritage assets within the Site range in importance from Negligible to Medium. The Proposed Development has the potential to have a High magnitude impact as ground breaking works could result in the removal of any such assets. Assuming that unknown assets within the Site are of similar levels of importance, there is the potential for effects ranging between Negligible and Moderate. Moderate level effects would be considered significant. However, the potential for assets of High importance cannot be ruled out. Mitigation proposals as set out below take account of the potential for hitherto unknown remains to survive within the Site.

Potential Operational Effects

6.4.12 Direct effects upon known and any previously unknown archaeological remains which may be present on the Site would cease with the completion of the groundworks stage of construction and consequently no direct effects are predicted during the operational phase of the Proposed Development.

6.4.13 Operational phase effects have the potential to impact upon the settings of assets such as Scheduled Monuments, Listed Buildings, and Inventory Battlefields. There are no Conservation Areas, Inventory Garden and Designed Landscapes or World Heritage Sites within the Study Areas. ZTV analysis and mapping have been used to identify those assets that could potentially be affected by changes to their settings during the operational phase of the Proposed Development (Figure 6.2) and the assets that have been carried forward for detailed assessment have been outlined in Table 6.7. The detailed assessments have included a review of the contextual characteristics of each asset using information drawn from their designation documentation, supplemented by observations on the morphology, condition and character of each asset and the nature of their settings made during site visits undertaken in March and July 2021.

Auchindoun Castle (Asset 115)

6.4.14 Auchindoun Castle comprises the 15th Century remains of an L-plan, four storey tower house set within a stone-built, rectangular enclosure wall inside a bivallate fort that is assumed to be of Iron Age in date. The Castle tower is unusual in having the entrance not in the re-entrant angle, but towards the west end of the south wall. The remains of the tower include the remains of barrel-vaulted basements, halls, a possible prison, and stewards' quarters. The tower is surrounded by a high wall, which, on the south, contained the gatehouse range. The eastern section of the wall was altered later to accommodate a range containing a kitchen, bakery, and other offices. A rounded tower with gun-loops was a later addition to the north west corner.

6.4.15 Beyond the immediate setting of the Castle, which is defined by grass-covered ramparts, the Castle is set upon the steep south east facing slopes of Glen Fiddich at 274 m Above Ordnance Datum (AOD). There are extensive views east from the Castle towards the summit of The Scalp, which are in the main unimproved moorland, although with evidence of management. When looking out from the eastern entrance, the emptiness of the landscape to the east of the Castle heightens the sense of apparent remoteness and contributes to the understanding of the strategic placement of the Castle and the earlier possible fort at this point in the landscape.

6.4.16 The sense of remoteness when looking east from the Castle is not, however, repeated in other views from the Castle. Views south from the main tower entrance are restricted by the enclosing wall, which offers only partial glimpses of the river valley through windows and doorways. However, views south from the Castle on approach, and when standing at the

entrance to the outer Castle wall (and also from upper floors of the Castle if they were accessible), contribute to an understanding of the strategic placement of the Castle with extensive views along Glen Fiddich to the south and towards the old hill road to Tomintoul which follows the River Fiddich, and the old road to Cabrach along the route of the A941[67].

6.4.17 The River Fiddich forms the boundary between the contrasting landscapes of the steep moorland valley sides of Ben Main to the east, and improved pasture and farmland around Laggan to the west. The improved farmland on the west bank of the river is a more complex landscape and features modern agricultural structures and woodland copses with enclosed improved fields. More distant views south, over the valley, feature modern conifer plantations alongside recently felled forestry plantation, and turbines of the Dorenell Wind Farm. Views west from the Castle are part of this same improved pastoral landscape with more proximate views featuring the dwelling of Parkhead alongside conifer plantations. Views north from the Castle are across open, improved pastoral land with conifer plantations in the middle distance. The tips of two wind turbines, a radio mast and electricity pylons as well as dispersed rural settlement are also visible.

6.4.18 Views of the Castle from the wider landscape vary. Those from the promoted approach, and official access, to the north west are relatively proximate and restricted to glimpses through cleared forest plantation until within approximately 200 m of the Castle where it is visible as a prominent structure puncturing the horizon against a backdrop of moorland hills. Views of the Castle are largely limited by topography on approach from the old hill road (A941) to the south. However, good views of the Castle and its strategic hilltop location are obtained for a short stretch on the A941 south of Laggan where the strategic elevated location is easily appreciated and contributes to a sense of projected dominance. The steep rising ground and proximity of woodland, limit views of the Castle on approach from the north, although there are clear views from the A920 to the north east. Clear uninterrupted views of the Castle with a backdrop of improved agricultural land will be visible on approach from across the moorland to the east.

6.4.19 The Castle is thus set in a mixture of upland moorland landscape to the east and improved agricultural land to the south, west and north. As acknowledged above, the absence of modern features in views to the east contributes to a sense of remoteness and understanding of the nature of the landscape in which the Castle was likely built. However, whilst the improved landscape to the south, west and north will reflect to some degree the use of the landscape during the Castle's construction, it is much changed from that in which it was built, and commercial forest plantation is a common feature. The landscape in which the Castle is set is thus clearly not the landscape that existed when the Castle was constructed, nor is it free from modern intrusions. Despite these modern elements, it is considered that the current setting of the Castle contributes to the ability to understand, appreciate, and experience the asset. It is argued that the Castle was placed to take advantage of a strategic defensive position, overlooking Glen Fiddich. As such, the asset's sensitivity to changes to its setting is considered to be high.

6.4.20 The nearest Proposed Development turbine would be 3.99 km to the south west, with the ZTV indicating that two to four turbines would be visible from the east side of the asset, five from the centre and six from the west. Visualisations (Figures 3.12 to 3.14 and Figure 3.29) show how the Proposed Development would be seen both from and with the Castle from various locations. Wirelines as presented in Figure 3.13a and Figure 3.13e show that six turbines would be theoretically visible on the approach to Auchindoun Castle. This would include the

[67] Simpson, W D. (1929a). 'The early castles of Mar. (First paper)', Proc Soc Antiq Scot, vol. 63, 1928-9. Page 126. Availabe at: RCAHMS Shelf Number: D.5.11.MAR.P

full rotor and upper portion of the hub of one turbine (Turbine 1) and tips of a further five. However the photomontage provided at Figure 3.13f indicates that that Turbine 1 would be wholly screened by the buildings associated with Parkhead Farmhouse and so only tips are visible. Whilst the turbines would be more visible once past Parkhead the track to the Castle turns northwest at this point and as such turbines would be very peripheral in views and not seen in direct juxtaposition with the Castle. Figures 3.13a t 3.13f indicated that the Castle would still very much be dominant in the landscape upon approach and the Proposed Development would not material detract from an understanding, appreciation and experience of its topographic and defensive position.

6.4.21 Figures 3.14 and 3.29 provide an indication of views from the southern and eastern entrance of Auchindoun Castle respectively. From both location five turbines would be visible with the full rotor of one turbine being visible and the other four being only visible at tips. From the southern entrance Turbine 1's full rotor would be visible whilst from eastern entrance Turbine 3's full rotor would be visible. Although the turbines would be seen from the Castle, and perhaps lessen the experience of remoteness when looking east, given their limited number and proportion visible from the Castle, the Proposed Development would not diminish the ability to understand and appreciate the location of the Castle in the landscape, nor would it impede the ability of the viewer to understand the strategic and defensive advantages of that location.

6.4.22 At the request of HES, Figure 3.12 shows the potential view from Jock's Hill from which Auchindoun Castle and the Proposed Development could both be seen. Whilst 11 turbines of the Proposed Development could be seen from Jock's Hill (10 from hub height and one as just a tip), the turbines would not be seen directly behind Auchindoun Castle. The Castle would be located to the north east with the proposed turbines visible beyond the ridgeline to the east. There would be a considerable degree of separation between Castle and the turbines and the turbines would be seen within the wide landscape panorama in which the Castle is seen from Jock's Hill. Further the turbines would appear beyond Glenfiddich, which the Castle can be seen to dominate in this view.

6.4.23 On the basis of the above, there is judged to be a medium magnitude of setting impact from the Proposed Development. Overall, this would lead to a **Moderate** level of effect, which is considered to be significant.

6.4.24 Whilst there would be a potentially significant effect upon the setting of the Castle, as noted above, the asset's key relationship with Glen Fiddich would still be appreciable and the ability to understand its defensive position would not be diminished. On this basis, the key characteristics of setting would not be materially adversely affected; there would not be an adverse effect upon the integrity of the asset's setting.

Craig Dorney Hillfort (Asset 20)

6.4.25 Craig Dorney (Asset 20) is an Early Medieval hillfort, with possible Iron Age origins, situated on top of a small hill of the same name, which makes a significant contribution to the modern landscape. The fort occupies a locally prominent landscape position on top of a hill. The all-round, open, commanding views over the surrounding landscape confirm this prominent position, and in particular its dominance over a natural routeway on lower ground along the Deveron Valley to the south east. Existing turbines are visible in several directions with a concentration to the south west.

6.4.26 The fort also makes a significant contribution to the historic landscape. Located to be visible in the wider landscape and inter-visible with contemporary monuments, Craig Dorney forms part of a regional distribution of forts occupying dominant landmarks such as Tap o'Noth (Asset 118), approximately 10 km to the south east. Dating evidence from Craig Dorney

suggests that it was one of a number of forts occupied in the mid first millennium AD, centred around the Pictish Royal Centre at Rhynie, approximately 15 km to the south east.

6.4.27 The fort has clearly been sited, in a strategic defensive position, to provide extensive views over the landscape and to ensure that it is visible, as a prominent feature, from the wider landscape, with key views south east over the Deveron Valley and beyond towards Rhynie. On this basis, it is judged to be of high sensitivity to changes to its setting, particularly along the Deveron Valley.

6.4.28 The nearest Proposed Development turbine would be 0.90 km to the west north west, with the ZTV indicating that all 11 turbines would be visible, all within a portion of topographic bowl that forms a key characteristic of the asset's setting and extends around it in all directions. Visualisations (Figure 3.16) shows that all of the turbines would be located in close proximity to the fort. Turbines 7 and 9 in particular, which are located 0.90 km and 1.2 km from the asset respectively are located on the eastward facing slope of Craig Watch and would thus be seen from base to up height with associated infrastructure visible at ground level in areas of cleared plantation. Figure 5.9a shows the view of Craig Dorney from the minor road within the Deveron Valley. From here all 11 turbines would be seen to the right (west) of the hillfort, though they would not appear directly behind it and an appreciation of it as a distinct topographical features seen from within the Deveron Valley would be maintained. Further, whilst the turbines would be visible they would clearly be located beyond the valley which forms a key element of the asset's setting. Turbines would be located within the close setting of the asset but would not occupy the near, and key, view over the Deveron Valley and beyond to the south and south east. There would be an alteration of an asset's current setting, and given the proximity of the Proposed Development to the assets, they would likely effect the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset to a degree but the cultural significance of the monument in its current setting would remain legible. The magnitude of impact is judged to be medium. This would result in a **Moderate** level of effect, which is considered significant.

6.4.29 Whilst there would be a potentially significant effect upon the setting of the hillfort, as noted above, the asset's key relationship with the Deveron Valley, the Pictish Royal Centre at Rhynie, and surrounding landscape would still be appreciable and the ability to understand its defensive position would not be diminished. On this basis, there would not be an adverse effect upon the integrity of the asset's setting.

Balvenie Castle (Asset 114)

6.4.30 Balvenie Castle (Asset 114), a 13th to 16th century castle, sits on a promontory above the River Fiddich at Dufftown. The castle is surrounded on three sides by mature deciduous trees, which screen it from the Glenfiddich distillery. It has an open view from the front elevation, which includes views towards the Proposed Development. The castle looks out to, in the near foreground, a small cottage and, in the mid-distance, an open quarry that is partially screened by deciduous trees. Views of the wider landscape are largely obscured from the castle given the current vegetation close by and in the middle distance. However, the castle will have been located for strategic and defensive purposes and its location on a promontory over the River Fiddich contributes to an understanding and appreciation of it as such. The castle is considered to have a high sensitivity to changes within the context of the valley of the River Fiddich near its confluence with Littletulloch Burn, as it would have been deliberately sited to have strategic views over this routeway and to provide a defensive position above it. It is, however, considered to be less sensitive, of medium sensitivity, to changes beyond this defined setting.

6.4.31 The nearest Proposed Development turbine would be 8.15 km to the south east, with the ZTV indicating that 6 to 7 turbines would be visible. A wireline (Figure 3.15a) indicates that five turbines would be visible: two at hub height, albeit these merge together to almost form a single unit, and three visible as blade tips. The turbines would not affect the ability to understand the function and location of the castle. However, given the direction in which the turbines would be seen, they would potentially form a notable alteration to the setting of the asset, albeit beyond those elements of setting, as defined above, which directly contribute to any understanding and appreciation of it and its cultural value. On this basis, there is potential for low magnitude impact upon the setting of Balvenie Castle. Given the relative position of the Proposed Development in relation to the castle, the trees which currently provide screening and its medium sensitivity to change in this context, there is judged to be a **Minor** level of effect on the setting, which is not considered significant. The integrity of the asset's setting would not be affected.

Tap o'Noth (Asset 118)

6.4.32 The Iron Age hillfort on Tap o'Noth (Asset 118) is one of the largest in Scotland and, situated on the top of the Hill of Noth, is the second highest fort in Scotland; it is visible from the sea, 48 km to the east. Its situation gives it commanding, open views in all directions over the surrounding landscape. Existing turbines are visible in several directions with a concentration to the north west. The fort has clearly been sited, in a strategic defensive position, to provide extensive views over the landscape and to ensure that it is visible, as a prominent feature, from the wider landscape. On this basis, it judged to be of high sensitivity to changes to its setting.

6.4.33 The nearest Proposed Development turbine would be 10.58 km to the north west, with the ZTV indicating that 11 turbines would be visible. Visualisations (Figure 3.21) shows that 11 turbines would be visible above the horizon; they would be seen in a landscape which includes improved agricultural land, commercial forest plantation and existing turbines. Given the distance to the Proposed Development, the expansive panoramic views available from the fort, and its current landscape setting, the turbines would not affect the ability to understand the strategic or defensive nature of the asset, and nor would they materially affect the ability to appreciate or experience the panoramic views. On this basis, it is judged that any impact upon the setting of the asset would be of low magnitude. This would result in a **Minor** level of effect, which is not considered significant.

Other Receptors

6.4.34 Potential effects upon the setting of Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20) are considered to be potentially significant and as such the detailed setting assessment for these assets is provided above. Effects upon the settings of Tap o'Noth (Asset 118) and Balvenie Castle (Asset 114) are also considered above as their consideration was specifically requested by statutory consultees.

6.4.35 With the exception of Auchindoun Castle (Asset 115) and Craig Dorney Hillfort (Asset 20), on which the settings assessment found the Proposed Development would have **Moderate** and therefore, significant effects, it was found that the effects of the Proposed Development upon the setting of all other designated assets would not be significant. The significance of would range from **Negligible** to **Minor**. A summary of the effects is presented in Table 6.2.1 in Technical Appendix 6.2, and this is accompanied by a detailed qualitative assessment for each asset.

Potential Decommissioning Effects

6.4.36 Detailed assessment of impacts on cultural heritage assets arising from the decommissioning phase have been scoped out of this assessment. A detailed assessment of the cultural heritage impacts of decommissioning the Proposed Development has not been undertaken as part of the EIA because: (i) the future baseline conditions (environmental and other developments) cannot be predicted accurately at this stage; (ii) the detailed proposals for decommissioning are not known at this stage, and (iii) the best practice decommissioning guidance methods will likely change during the lifetime of the Proposed Development.

6.4.37 In general, is anticipated that direct impacts during the decommissioning phase would be limited and would only occur if new ground works are required beyond the areas disturbed during the original construction works and as such no significant direct effects are expected to arise from the decommissioning phase of the Proposed Development. Decommissioning would be undertaken in line with best practice processes and methods at that time and would be managed through an agreed Decommissioning Environmental Management Plan. All operational effects upon the settings of designated assets would be reversed with the removal of the turbines following decommissioning, leading to a neutral and not significant effect.

Potential Cumulative Construction Effects

6.4.38 Cumulative effects relating to cultural heritage are for the most part limited to operational effects upon the settings of heritage assets. While there can in some rare cases, be cumulative direct effects, none are anticipated to result from the construction, operation or decommissioning of the Proposed Development.

6.4.39 Archaeological remains are by their very nature an irreplaceable resource and are subject to threats both within and outwith the planning system. The range of non-development threats is broad and includes deterioration of upstanding structural remains through natural weathering and erosion. In terms of the Site, loss resulting from ongoing forestry operations is also possible. Any archaeological remains which may be present on the Site need to be understood within this context of gradual loss which occurs on a local, regional and national scale. Archaeological investigations allow any loss to be controlled through programmes of recording, sampling and analysis. The consequence of this is that where direct impacts occur through either development or academic research, then our understanding of these assets is enhanced, and the results of these investigations inform our knowledge of the past. Indeed, our understanding of archaeological heritage in MC, AC and Scotland on the whole is itself the cumulative product of the results of numerous investigations undertaken over many generations. Any direct impacts which may result from the Proposed Development would be addressed through the detailed programme of mitigation that is set out below in Section 6.5. Proposed mitigation includes comprehensive investigations should this be required, the results of which would contribute to our overall understanding of MC and AC's past and therefore create a beneficial cumulative legacy, albeit through preservation by record. The significance of the cumulative effect on archaeology during construction, combined with other developments or causes of loss would thus, following the implementation of mitigation, be **Negligible** and not significant.

Potential Cumulative Operational Effects

6.4.40 With regard to potential cumulative effects on cultural heritage assets, the assessment considers operational, consented and within-planning developments within 60 km of the Proposed Development. Whilst all have been considered, only those deemed to potential contribute to effects upon the heritage assets in question are noted in the text. Two proposed developments at the scoping stage, Glenfiddich and Clashindarroch Extension, are also

considered at the request of AC given their proximity to the Proposed Development, though it is noted that the inclusion of these is not usual and any conclusions on cumulative effect related to them can only be tentative as it is not clear when or if they will reach application nor is it clear how, if they are brought forward, their layouts will have changed as a result of the design iteration process.

6.4.41 The assessment will consider the in addition cumulative effect of adding the Proposed Development to the current cumulative baseline which includes operational/ under construction/ consented developments at Clashindarroch, Dorenell, Hill of Towie, Hill of Towie II, Edintore, Midtown of Glass, Cairnborrow, Baillieswards Farm, Dummuie, Upper Wheedlemont Farm, Cairnmore, Kildrummy, Hunthill, Ardoch Farm, Followsters Newmill, Garralhill Newmill, and Riverstone Kinnoir Huntly.

6.4.42 Consideration will also be given to the effects of adding the Proposed Development to the future cumulative baseline, which would include those developments noted above along with the application/ appeal developments at Clashindarroch II, Garbet, and Rothes III are included.

6.4.43 Finally consideration will be given to the effects of adding the Proposed Development to a theoretical cumulative baseline which includes the developments noted above along with the two at scoping developments at Glenfiddich and Clashindarroch Extension. In combination effects of all the developments will also be considered.

6.4.44 Cumulative effects have been considered for those assets where the effect upon setting from the Proposed Development alone has been judged to be of Minor level or greater and/ or for assets which have been identified by consultees as requiring further assessment. This is because it is judged to be unlikely that cumulative effects upon the setting of those monuments which would be subject to negligible level effects (based on the Proposed Development itself) are unlikely to reach the EIA Regulation significance threshold. The assets considered for cumulative effects are detailed in Table 6.8.

Table 6.8: Assets Brought Forward for Cumulative Assessment

Asset Number	Receptor Name	Receptor Sensitivity to Changes to Setting
20	Craig Dorney, hillfort (Scheduled Monument)	High
44	Drywells, field system and hut circles (non-designated)	Low
114	Balvenie Castle (Scheduled Monument)	Medium
115	Auchindoun Castle (Scheduled Monument)	High
118	Tap o'Noth (Scheduled Monument)	High
120	Gauldwell Castle (Scheduled Monument)	Medium
126	Beldorney Castle (Category A Listed Building)	Medium
147	Glen Rinnes Lodge (Category B Listed Building	Medium

Craig Dorney Hillfort (Asset 20)

6.4.45 The setting of Craig Dorney hillfort (Asset 20) relates to a distinct position on a hilltop commanding, open views in all directions over the surrounding landscape, and in particular along the Deveron Valley. The operational developments at Dorenell, Hill of Towie, Edintore, Cairnborrow and Clashindarroch are currently visible, with a few others at great distances. Given the presence of turbines within the current setting of the asset, and the asset's recent designation, it can be assumed that HES do not consider that these existing wind farms have a significantly adverse effect upon the integrity of asset's setting and that even in its current setting, which includes operational turbines, it is considered to be of national importance. The

Proposed Development would increase the proportion of the overall view that would be occupied by relatively large scale wind farm development and as the turbines would be located within the elements of setting which directly contribute to an understanding and appreciation of the asset, the magnitude of cumulative impact is judged to be medium. The level of cumulative effect would be **Moderate** and considered significant.

6.4.46 Consideration must also be given to the effect of adding the Proposed Development to a future cumulative baseline which may include the application developments at Garbet and Clashindarroch II. Given the location of asset in relation to these schemes and the current cumulative baseline outlined above, Clashindarroch II would extend the horizontal spread of turbines visible to south east by adding to the operational Clashindarroch. However, these schemes are at a such a distance from the hillfort that it would not materially change the current setting of the asset. Garbet would see the introduction of turbines to the west of the asset and the Proposed Development would be located between the asset and Garbet and be located at closer proximity. On this basis, the primary impact upon the setting Craig Dorney fort would be from the Proposed Development alone and the level of effect is not expected to exceed the **Moderate** level of effect (which is considered significant) identified for the Proposed Development on its own.

6.4.47 AC requested that consideration be given to cumulative effects which also included the at scoping developments at Glenfiddich and Clashindarroch Extension for the Landscape and Visual Impact Assessment. For consistency with this Chapter, this is considered here though it is noted that any assessment can only be tentative as there is significant potential for these proposals to change prior to planning applications being submitted. Consideration of a baseline which would include the at scoping developments at Glenfiddich and Clashindarroch Extension would not materially change the conclusion of the assessment set out above. Glenfiddich turbines would be seen behind the Proposed Development turbines and views of them may well be limited by the hills to the west of the Site (see Figure 3.16a). Clashindarroch Extension would extend the horizontal spread of turbines in views to the south east of the hillfort and would bring them slightly closer (see Figure 3.16d). However these would be at a sufficient distance that they would not materially change the cumulative baseline and again the level of cumulative effect represented by adding the Proposed Development to this baseline is judged not to exceed the level of effect predicted for the Proposed Development itself. A **Moderate** cumulative effect is predicted, which is considered significant.

6.4.48 The in combination effect of all of these developments is also considered to be **Moderate** and therefore significant. There would be an increase in the number and spread of turbines seen to the east and west of the asset. The greatest effect would be from the Proposed Development itself given its proximity to the hillfort and for the reasons set out above. In all cumulative scenarios, the asset's key relationship with the Deveron Valley, the Pictish Royal Centre at Rhynie, and surrounding landscape would still be appreciable and the ability to understand its defensive position would not be diminished. On this basis, there would not be an adverse effect upon the integrity of the asset's setting.

Drywells (Asset 44)

6.4.49 The setting of the field system and hut circles at Drywells, insofar as it contributes to an understanding and appreciation of the asset, relates to the spatial and visual relationships of the individual components of the asset and their relationship to proximate agricultural land Succoth Burn and the River Deveron Valley. The asset lies in a relatively low lying location of the asset with the hills of Kelman, Garbet, Craig Watch, Grumack and Daugh of Corinacy, surrounding it; these hills rise to between 398 mAOD (Kelman) and 527 mAOD (southern summit of Grumack). As such it is considered that any visibility of developments which make

up the current or future cumulative baseline would be extremely limited. The addition of the Proposed Development to any of these baselines or in combination would therefore meant that cumulative effects would not exceed the level of effect predicted for the Proposed Development itself. **Minor** and not significant effects are predicted.

Balvenie Castle (Asset 114)

6.4.50 The setting of Balvenie Castle (Asset 114) relates to its strategic and defensive location on a promontory over the River Fiddich, with views over the routeway through the valley. There are currently no operational developments visible in the direction of the Proposed Development, however the current cumulative baseline operational development at Edintore, and the consented development at Hill of Towie II are/ would be potentially visible beyond the mature trees that surround the castle. The addition of the Proposed Development to the current cumulative baseline would increase the proportion of the overall view that would be occupied by relatively large scale wind farm development but would not affect the ability to understand the relationship between the monument and its position in the landscape. The magnitude of cumulative impact is judged to be low. The level of cumulative effect would be **Minor** and therefore not significant.

6.4.51 The potential future cumulative baseline would also include the in-planning development at Garbet. The Garbet turbines would be located between the Castle and the Proposed Development though only the tips of two Garbet turbines would be visible (see Figure 3.15a). The level of cumulative effect represented by adding the Proposed Development to this baseline is judged not to exceed the level of effect predicted for the Proposed Development itself. This would result in a **Minor** cumulative effect which is not significant.

6.4.52 Wirelines as presented in Figure 3.15 indicate that the in scoping developments of Glenfiddich and Clashindarroch Extension would not be visible from Belvenie Castle and as such they would not contribute to the cumulative baseline.

6.4.53 The in combination effects of all of the above turbines are considered to **Minor** and not significant. This is so judged because the inclusion of Garbet Proposed Development would represent an increase the proportion of the overall view that would be occupied by relatively large scale wind farm development, but the visibility of Garbet would be so limited that the cumulative effect would not be any greater than the effects of the Proposed Development on its own. The cumulative effect would not affect the ability to understand the relationship between the monument and its position in the landscape. The integrity of the asset's setting would not be affected.

Auchindoun Castle (Asset 115)

6.4.54 The setting of Auchindoun Castle (Asset 115) relates to its strategic placement with extensive views along Glen Fiddich to the south and towards the old hill road to Tomintoul which follows the River Fiddich, and the old road to Cabrach along the route of the A941. There are currently no operational developments visible in the direction of the Proposed Development, however the operational developments of Hill of Towie and Dorenell are potentially visible, although only Dorenell was visible during the asset visits. These, along with the consented Hill of Towie II form the current cumulative baseline. The addition of the Proposed Development to the current cumulative baseline would not elevate the impact upon the setting of Auchindoun Castle beyond that predicted for the Proposed Development on its own. That impact would be **Moderate** and significant for the reasons set out above.

6.4.55 The future cumulative baseline would include the application development of Garbet which would not be visible from Castle itself (see Figures 3.15 and 3.29) and would have limited visibility on approach (see Figure 3.13a) but would be visible from certain viewpoints of the

Castle in the wider landscape. For example Figure 3.12a indicates the view of the Castle from Jock's Hill and the inclusion of Garbet would see the turbines in the view extend further north and be located at a closer proximity to Castle. In near views of the Castle addition of the Proposed Development to the future cumulative baseline would not elevate the impact upon the setting of Auchindoun Castle beyond that predicted for the Proposed Development on its own. That impact would be **Moderate** and significant for the reasons set out above.

6.4.56 Consideration is also given to a theoretical cumulative baseline which would include the at scoping Glenfiddich. Glenfiddich itself may have an impact upon the setting of Auchindoun Castle, being located in key views from the asset to the south along Glen Fiddich. However, the Proposed Development would, in this scenario be seen to the north and west of the Glenfiddich turbines, which would be having the greatest effect. In near views of the Castle addition of the Proposed Development to the theoretical cumulative baseline would not elevate the impact upon the setting of Auchindoun Castle beyond that predicted for the Proposed Development on its own. That impact would be **Moderate** and significant for the reasons set out above.

6.4.57 The in combination cumulative effect of all the developments noted above is judged likely to be **Moderate** and significant. This is because the Proposed Development to the east of the Castle and Glenfiddich to the south of Castle would increase the number of turbines in relatively close proximity to the asset, and in the case of Glenfiddich potentially in a key view. However, overall the in combination effects are unlikely to change to the setting of the Castle to such an extent that the asset's key relationship with Glen Fiddich would no longer be appreciable. The ability to understand the assets defensive position would not be diminished. On this basis, the key characteristics of setting would not be materially adversely affected; there would not be an adverse effect upon the integrity of the asset's setting.

Tap o'Noth (Asset 118)

6.4.58 The setting of Tap o'Noth (Asset 118) relates to its siting on the top of Hill of Noth with commanding, open views in all directions over the surrounding landscape. A large number of operational developments are visible from the asset as can be seen in Figure 3.21 and include Clashindarroch, Dorenell, Hill of Towie, Edintore, Riverstone Kinnoir, Dummuie, Upper Wheedlemont Farm, Cairnmore and Kildrummy are currently visible and, together with the others shown on the Figure, make up the current cumulative baseline. The Proposed Development would be seen to the right (north) of Clashindarroch, and this would extend the horizontal spread of turbines in this view, but given the distance between the asset and the operational Clashindarroch and the Proposed Development, the Proposed Development would not elevate the impact upon the setting above that predicted for the Proposed Development alone. The magnitude of cumulative impact is judged to be low. The level of cumulative effect would be **Minor** and therefore not significant.

6.4.59 In the future cumulative baseline scenario, the application development of Clashindarroch II would be located between Tap o'Noth and the Proposed Development (see Figure 3.21a). The Proposed Development would appear as additional turbines in a view that already contains turbines. The magnitude of cumulative impact is judged to be negligible. The level of cumulative effect would be **Minor** and therefore not significant.

6.4.60 The inclusion of Clashindarroch Extension in the baseline scenario would only increase the number of turbines located between Tap o'Noth and Proposed Development (see Figure 3.21a) and so a **Minor** and not significant cumulative effect is maintained. For these reasons the in combination effect is also judged to be **Minor** and not significant. The integrity of the asset's setting would not be adversely affected.

Gauldwell Castle (Asset 120)

6.4.61 The setting of Gauldwell Castle (Asset 120) relates to its positioning which was designed to have views along the Burn of Aldernie's valley to the north and south, together with views along the Fiddich Valley. There are currently no operational developments visible in the direction of the Proposed Development, however the operational developments of Hill of Towie, Edintore, Meikleton of Arnold and Dorenell are potentially visible beyond the mature trees that surround the castle. These developments form the current cumulative baseline. The addition of the Proposed Development to this baseline would not added to the number of turbines which affect any of the key elements of setting identified for the asset. As such the impacts are not considered to be any different than those expected for the Proposed Development on its own. As such at most a low magnitude impact and **Minor** level cumulative effect are predicted. This effect is not significant.

6.4.62 In a future cumulative baseline which would include the application development at Garbet, the Proposed Development would likely be seen behind Garbet when viewed from the asset. As such, it would not materially change the cumulative baseline. The magnitude of cumulative impact, for this cumulative scenario, is judged to be negligible. The level of cumulative effect would be **Negligible** and therefore not significant. The at scoping developments of Glenfiddich and Clashindarroch Extension are sufficiently distant from the asset that they would not materially change the cumulative baseline and as such, **Negligible** and not significant effects are also predicted in this scenario.

6.4.63 In combination effects of the cumulative developments noted above are considered to be, at worst, **Minor** and not significant as the asset is quite distant from all the developments and whilst the developments may be visible, all are located beyond the elements of setting which directly contribute to an understanding and appreciation of the asset and its significance. No adverse effects upon the integrity of the asset's setting are expected.

Beldorney Castle (Asset 126)

6.4.64 The setting of Beldorney Castle (Asset 126) relates to its position overlooking the River Deveron. There are currently no operational developments visible in the direction of the Proposed Development, however the operational developments of Hill of Towie, Edintore, Meikleton of Arnold, Clashindarroch and Dorenell are potentially visible from the asset and form the current cumulative baseline. The Proposed Development would increase the proportion of the overall view that would be occupied by relatively large scale wind farm development but would not affect the ability to understand the relationship between the monument and its position in the landscape. The magnitude of cumulative impact is judged to be low. The level of cumulative effect would be **Minor** and therefore not significant.

6.4.65 If the future cumulative baseline where to include Clashindarroch II and Garbet or indeed the at scoping developments of Clashindarroch Extension and Glenfiddich the addition of the Proposed Development would also result in a **Minor** level cumulative effect which is not significant. This is because the location of these wind farms in relation to each other and the existing baseline would materially alter the current setting and whilst the Proposed Development would increase the proportion of the overall view that would be occupied by relatively large scale wind farm development but would not affect the ability to understand the relationship between the monument and its position in the landscape. For these same reasons the in combination effect is also judged to be **Minor** and not significant.

Glen Rinnes Lodge (Asset 147)

6.4.66 The setting of Glen Rinnes Lodge (Asset 147) relates to its formal garden and policies within which it is located. There are currently no operational developments visible in the direction

of the Proposed Development, however the operational developments of Hill of Towie, Edintore, Meikleton of Arnold and Dorenell are potentially visible and form the current cumulative baseline. In this scenario the Proposed Development would increase the number of turbines visible in an arc from north to west to south from the asset. However, it would be located at a significant distance from the asset and well beyond the elements of setting which contribute to the significance of the asset. As such the cumulative effect is judged to be no greater than the impact of the Proposed Development on its own. This would be a **Minor** and not significant cumulative effect.

6.4.67 In a future cumulative baseline, the application development at Garbet would be located between the asset and the Proposed Development. The Proposed Development would appear behind Garbet and, as such, would not materially change the cumulative baseline. The magnitude of cumulative impact is judged to be negligible. The level of cumulative effect would be **Negligible** and therefore not significant. The same would be true of the baseline scenario which included the at-scoping development at Glenfiddich.

6.4.68 The in combination effect is judged to be **Minor** and not significant as together Garbet, Glenfiddich and the Proposed Development would increase the portion of views to the west which would be occupied by turbines, however all would be located well beyond the key elements of the asset's setting and the relationship of the asset to its setting would still be readily appreciable.

6.5 Mitigation

6.5.1 National planning policies and planning guidance as well as the local planning policies require that account be taken of potential effects upon heritage assets by proposed developments and that, where possible, such effects are avoided. Where avoidance is not possible, effects should be minimised or offset. The planning guidance expresses a general presumption in favour of preserving heritage remains in situ. Their 'preservation by record' (i.e., through excavation and recording, followed by analysis and publication, by qualified archaeologists) is a less desirable alternative.

6.5.2 The Proposed Development has been subject to an iterative design process whereby environmental (including setting effects) and technical constraints have been given due consideration (see Chapter 3: Design Evolution and Alternatives for further details). Beyond the steps taken during the iterative design process to minimise impacts upon the setting of Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20), there are no direct measures that can be offered to further mitigate the predicted effects.

Mitigation during Construction

6.5.3 The potential for non-significant effects ranging from Minor to Negligible, resulting from enhancement works associated with the HMP and compensatory planting, have been found upon a number non-designated heritage assets. These assets include a number of boundary stones (Assets 35, 52, 59, and 67) and a cairn (Asset 77) along the northern boundary of HMP Area 2, a possible commemorative cairn (Asset 178) in the east of HMP Area 2, and two further boundary stones (Assets 33 and 78) along the western boundary of HMP Area 5. Two assets, a hut circle (Asset 36) and post-medieval buildings (Asset 50) are located with HMP Area 2 and the hut circles and field system at Asset 44 is located along its northern boundary; these could potentially be impacted upon. A shooting butt (Asset 163) in HMP Area 4 could also be impacted upon. It is proposed that any impacts are avoided by fencing these features under archaeological supervision prior to the commencement of enhancement works and no enhancement works are undertaken within the fenced areas. This would ensure that any impacts upon these assets are avoided and would result in **No Effect**.

6.5.4 Impacts upon the post-medieval structural remains (Asset 19) and shooting butts (Assets 173 to 175), which are located within an area proposed for compensatory planting would be more difficult to avoid given these occupy a considerable portion of area proposed for planting. These assets should be subject to photographic recording prior to the commencement of planting activities to ensure their preservation by record. Monitoring of ground works, via an archaeological watching brief, may also be required to allow for assessment and recording of any remains to be removed or damaged.

6.5.5 The known archaeological remains within the Site which lie in close proximity to the Proposed Development footprint are mostly of negligible or low importance, and furthermore, direct impacts of only negligible level effects are predicted on three heritage assets. Given the proximity of these assets to proposed infrastructure, they should be demarcated prior to commencement of construction to avoid inadvertent damage. Where damage cannot be avoided, they should be recorded prior to removal. The method of recording would be agreed with ACAS, but it is likely that a photographic survey of the shooting butts (Assets 165, 166, and 169) would be sufficient.

6.5.6 Dense tree cover prevented archaeological walkover survey within the north eastern end of the Site to the west of Craig Dorney hillfort (Asset 20). Further survey may be required in this area following any tree felling to be undertaken for the Proposed Development. The timescale, extent, and location of such a survey would be agreed with ACAS; however, it would be undertaken post felling but prior to the commencement of construction. The purpose of the survey would be to identify and investigate any previously unrecorded remains. Given the presence of large zones of (generally shallow) peat moorland within the Site and the potential for hitherto unknown remains to survive on Site (as outlined in Section 6.3) there is a low probability that currently unknown buried remains might be disturbed by ground-breaking works on the Site during construction. Accordingly, a representative proportion of these works, in areas of relatively greater archaeological potential, would be subject to an archaeological watching brief during ground-breaking works. The extent and location of such works would be agreed with ACAS. The purpose of such a watching brief would be to determine the presence, character, extent and significance of any currently unknown archaeological features or artefacts that may be disturbed by ground-breaking works.

6.5.7 It is envisaged that all such mitigation work would be secured via a suitably worded planning condition.

Mitigation during Operation

6.5.8 The design of the Proposed Development has considered the presence and setting of the Scheduled Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20) in particular. Beyond the steps taken during the iterative design process to minimise impacts upon the settings of the castle and hillfort, there are no direct measures that can be offered to further mitigate the predicted effects. However, the design evolution chapter (Chapter 3) and the Landscape and Visual Assessment (Chapter 5) discusses the measures taken to reduce the appearance or visual presence of the turbines within the wider landscape.

Mitigation during Decommissioning

6.5.9 Where decommissioning activities will take place fully within the construction footprint it is anticipated that assets which required demarcating during construction would require this again. The aim would be to avoid inadvertent damage by plant movement. No Watching Brief would be required on ground breaking works within the construction footprint during decommissioning. If ground breaking works were required outwith the construction footprint these maybe subject to further monitoring via an Archaeological Watching Brief.

6.5.10 Decommissioning would be undertaken in line with an agreed Decommissioning Environmental Management Plan which would adhere to best practice at the time of decommissioning.

6.6 Assessment of Residual Effects

Residual Construction Effects

6.6.1 The Proposed Development has been designed to avoid direct impacts on known heritage assets where possible. Four non-designated assets (Assets 19, 165 to 166 and 169) could potentially be directly impacted by the construction of the Proposed Development. However, at worst, these impacts would be **Negligible**. Whilst no mitigation is required, demarcation of assets to avoid inadvertent damage to the assets and recording where damage cannot be avoided is suggested. This would ensure that there was no loss of information content and that the assets were preserved by record. If demarcation results in avoidance of impacts there would be no residual effect, in the event that damage cannot be avoided and recording is undertaken the impact would be **Negligible** but offset. No significant residual impacts on known heritage assets are therefore anticipated.

6.6.2 Ten heritage assets have been identified within the proposed HMP Areas. The levels of effect include a potential **Moderate** and significant upon Badiemulloch farmstead (Asset 76) and **Negligible** to **Minor** effects, which are not significant, upon the other nine assets. It is considered that all effects with HMP Areas can be avoided by fencing of the known assets prior to the commencement of enhancement works and prohibiting any such works within the fenced areas. The implementation of mitigation would result in no residual construction effects upon these assets.

Residual Operational Effects

6.6.3 As the mitigation measures taken to reduce setting impacts on designated cultural heritage assets have largely been implemented through the development design, the predicted residual impacts on the settings of the aforementioned heritage assets will be the same as assessed for the potential effects. This includes two potential **Moderate** and significant operational setting effects upon the Scheduled Monuments at Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20), though no adverse effect upon the integrity of these assets' setting has been found. Setting effect on all other assets are not anticipated to be significant.

Residual Decommissioning Effects

6.6.4 No direct effects are anticipated to arise from decommissioning provided works are contained within the construction footprint. Demarcation of archaeological assets in close proximity to working areas would ensure that accidental damage resulting from plant movement is avoided.

6.6.5 All operational effects upon the settings of designated assets would be reversed with the removal of the turbines following decommissioning, leading to a neutral residual effect.

Residual Cumulative Construction Effects

6.6.6 Any direct impacts which may result from the Proposed Development would be addressed through the detailed programme of mitigation that is set out above in Section 6.5. Proposed mitigation includes comprehensive investigations should this be required, the results of which would contribute to our overall understanding of MC and AC's past and therefore create a beneficial cumulative legacy, albeit through preservation by record. The significance of the cumulative effect on archaeology during construction, combined with other developments or causes of loss would thus, following the implementation of mitigation, be, at most, **Negligible** and not significant.

Residual Cumulative Operational Effects

6.6.7 As the mitigation measures taken to reduce setting impacts on designated cultural heritage assets have largely been implemented through the development design, the predicted residual cumulative operational effects will be the same as assessed for the potential cumulative effects. This includes two potential **Moderate** and significant cumulative setting effects upon the Scheduled Monuments at Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20), no adverse impacts upon the integrity of these assets' settings is not predicted. Cumulative setting effects on all other assets are not considered to be significant.

6.7 Monitoring

6.7.1 No monitoring is required outwith the measures noted above under Section 6.5 which are to be undertaken during the construction phase. It is anticipated that these measures would be secured via a suitably worded planning condition.

6.8 Summary

6.8.1 This Chapter assesses the potential for direct and setting effects on archaeological features and cultural heritage assets resulting from the construction, operation and decommissioning of the Proposed Development.

6.8.2 Nineteen of the 53 identified non-designated assets within the Site Boundary (Assets 19, 33, 35, 36, 44, 50, 52, 59, 67, 77, 78,, 163, 165, 166, 169, 173-175 and 178) could potentially be directly impacted by the construction of the Proposed Development, compensatory planting or by enhancement works with the HMP Areas. However, proposed mitigation would ensure that impacts upon assets within the HMP Areas are avoided entirely. This would be achieved through fencing of the assets prior to commencement of enhancement works and prohibiting any works within the fenced areas. The proposed mitigation measures associated with the assets in close proximity to the Proposed Development footprint or within compensatory planting areas would include demarcating the areas, undertaking a watching brief and recording any remains where relevant, would result in, at worst, residual effects which are considered to be, at most, **Minor** and therefore not significant. The potential for hitherto unknown archaeological remains to survive on-Site has been considered and mitigation measures have been suggested to ensure identification, assessment and recording of any such assets as required.

6.8.3 Operational effects include impacts upon the settings of designated assets such as World Heritage Sites, Listed Buildings, Scheduled Monuments, Conservation Areas, Inventoried Battlefields and Inventoried Gardens and Designed Landscapes. Impacts upon setting are a material consideration in the planning process. There are no designated heritage assets within the Site. There are three Scheduled Monuments within 5 km of the Site. A further 11 Scheduled Monuments are situated between 5 km and 10 km of the Site. There is one Category C Listed Building within 1 km of the Site boundary, two Category A, 13 Category B Listed Buildings and 18 Category C Listed Buildings within 5 km of the Site boundary and a further two Category A Listed Buildings are located between 5 km and 10 km of the Site boundary. One Inventory Battlefield lies within 10 km of the Site boundary. There are no Inventory Gardens and Designed Landscapes within 10 km of the Site boundary.

6.8.4 Potential operational effects on settings of designated heritage assets within the 5 km and 10 km Study Areas have been considered in detail as part of this assessment. **Moderate** and therefore significant effects have been predicted upon the settings of the Scheduled Monuments Craig Dorney hillfort (Asset 20) and Auchindoun Castle (Asset 115). Whilst there would be a potentially significant effect upon the settings of these assets, their key

relationships would still be appreciable and the ability to understand their positions would not be diminished. On this basis, the key characteristics of setting would not be materially adversely affected; there would not be an adverse effect upon the integrity of the assets' setting.

6.8.5 Non significant effects have also been predicted for the remaining Scheduled Monuments and Listed Buildings within the study areas. With **Minor** effects anticipated upon the setting of Balvenie Castle (Asset 114), Tap o'Noth (Asset 118), Gauldwell Castle (Asset 120), Beldorney Castle (Asset 126), and Glen Rinnes Lodge (Asset 147). **Negligible** effects have been predicted upon the settings of all other designated heritage assets considered.

6.8.6 The design of the Proposed Development has considered the presence and setting of the Scheduled Auchindoun Castle (Asset 115) and Craig Dorney hillfort (Asset 20) and sought to reduce impacts upon them through the proposed turbine placements where possible.

6.8.7 The possibility of cumulative effects has been considered and assessed and **Moderate** and therefore significant cumulative effects have been identified on Craig Dorney hillfort (Asset 20) and Auchindoun Castle (Asset 115). All other cumulative effects are not considered significant.

Table 6.9: Summary of Residual Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Potential direct impact on known non-designated Assets 19, 165, 166, 169, 173-175 and 178	Demarcating of remains if required. Watching brief on ground breaking works which will cross or be located in the vicinity of these assets and recording of any remains. The watching brief would particularly relate to Assets 19 and 173-175 located within a proposed compensatory planting area.	Planning Condition with scope agreed by Written Scheme of Investigation	Minor to Negligible, Adverse, though offset, Not significant
Possible impact upon hitherto unknown archaeological remains.	Walkover survey following felling in forestry area but prior to commencement of construction to identify the extent of survival of known remains and demarcating of remains if required, to be secured by planning condition. Watching brief on ground breaking works which will cross or be located in the vicinity of any assets identified during walkover survey and recording of any remains. Outwith forestry areas a representative proportion of ground works, in areas of relatively greater archaeological potential, would be subject to an archaeological watching brief during ground-breaking works.	Planning Condition with scope agreed by Written Scheme of Investigation	Moderate to Negligible, Adverse, though offset Not significant
Potential impacts upon non-designated assets (Assets 33, 35, 36, 44, 50, 52, 59, 67, 77, 78, 163 and 178) within areas proposed for enhancement as part of the HMP.	Fencing of the assets under archaeological supervision prior to commencement of enhancement works and prohibiting of any planting within the fenced areas.	Planning Condition with scope agreed by Written Scheme of Investigation	No effect
Operation			
Impacts on the settings of Scheduled Monuments at Craig	None	N/A	Moderate, Adverse, Significant

Table 6.9: Summary of Residual Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Dorney hillfort and Auchindoun Castle (Assets 20 and 115)			
Impacts on the settings of designated assets (Scheduled Monument Assets 111, 114, 118, 120 and Listed Building Assets 125-126, 130, 133-136, 138, 140, 143, 144, 147, 150-156 and 158-159) and upon the setting of the non-designated asset at Drywells (Asset 44).	None	N/A	Minor to Negligible Adverse, Not significant
Decommissioning			
Potential impact on heritage assets close to infrastructure.	None required unless the decommissioning extends beyond the construction footprint. Otherwise demarcation of archaeological assets in close proximity to working areas would ensure that accidental damage resulting from plant movement is avoided.	Decommissioning Management Plan	Neutral, Not Significant
Cumulative Construction			
Potential cumulative impact on known and unknown archaeological remains within the Site.	Demarcating of remains if required. Watching brief on ground breaking works which would cross or be located in the vicinity of these assets and recording of any remains. Walkover survey following felling in forestry area but prior to commencement of construction to identify the extent of survival of known remains and demarcating of remains if required, to be secured by planning condition. Watching brief on ground breaking works which would cross or be located in the vicinity of any assets identified during walkover survey and recording of any remains. Outwith forestry areas a representative proportion of ground works, in areas of relatively greater archaeological potential, would be subject to an archaeological watching brief during ground-breaking work.	Planning Condition with scope agreed by Written Scheme of Investigation	Negligible, Adverse, though offset, Not significant
Cumulative Operation			
Potential impact on the settings of the designated Scheduled Monument Craig Dorney hillfort (Asset 20) and Auchindoun Castle (Asset 115)	None	N/A	Moderate, Adverse, Significant
Potential impact on the settings of designated assets (Scheduled Monuments at Assets 114, 118, 120 and Listed Buildings at Assets 126 and 147) and upon the setting of the non-designated asset at Drywells (Asset 44).	None	N/A	Minor to Negligible, Adverse, Not significant

7. Ecology

7.1 Introduction

7.1.1 This chapter considers the potential for significant effects on important ecological features associated with the construction, operation and decommissioning of the Proposed Development.

7.1.2 The assessment is based upon comprehensive baseline data, comprising specifically targeted ecological field surveys of important and legally protected ecological features identified from desk study and consultation feedback. It draws on pre-existing information, where appropriate, from other studies and survey data sources, and is based on the Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland (Chartered Institute of Ecology and Environment Management (CIEEM), 2018[1]) and NatureScot's Environmental Impact Assessment Handbook (formerly Scottish Natural Heritage (SNH), 2018[2]).

7.1.3 The specific objectives of the chapter are to:

- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the ecological baseline conditions at the Proposed Development and associated Study Areas, to identify the ecological features which will be the focus of this assessment;
- evaluate the sensitivity of each ecological feature;
- describe the potential impacts, including direct, indirect and cumulative impacts;
- describe the mitigation measures proposed to avoid, reduce and offset potential significant adverse effects; and
- assess the significance of residual effects remaining following the implementation of mitigation.

7.1.4 The assessment has been carried out by Avian Ecology Ltd. Lead authors: Mr Howard Fearn MSc MCIEEM, Director (refer to Technical Appendix 1.2) and Dr Claudia Garratt, Senior Ecologist. Mr Fearn and Dr Garratt have over 15 and 10 years' experience respectively as ecological consultants specialising in renewable energy developments. During this time, they have carried out EcIA and information to inform Appropriate Assessment (AA) for Habitats Regulations Appraisal (HRA) for ornithological or ecological interest at multiple onshore wind developments, repowers and life extensions and have also carried out technical review and quality assurance of Environmental Impact Assessment (EIA) Report chapters written by others. Dr Garratt has a first-class BSc (Hons) in Zoology, and a PhD, both from the University of Newcastle on Tyne.

7.1.5 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
  - Figure 7.1: Statutory Sites Designated for Ecological Interest;
  - Figure 7.2: Phase 1 Habitat Survey;
  - Figure 7.3: National Vegetation Classification Survey;
  - Figure 7.4: Terrestrial Mammal Survey;
  - Figure 7.5: Bat Roost Survey;

[1] CIEEM (2018, updated 2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

[2] SNH (2018) Environmental Impact Assessment Handbook. V5. April 2018. Inverness

  - Figure 7.6: Bat Activity Survey; and
  - Figure 7.7a & b: Fish Habitat Survey.
- Volume 4: Technical Appendices:
  - Technical Appendix 7.1: Habitats and Vegetation;
  - Technical Appendix 7.2: Protected Terrestrial Mammals;
  - Technical Appendix 7.3: Bats;
  - Technical Appendix 7.4: Fish Habitat; and
  - Technical Appendix 7.5: Outline Habitat Management Plan.

7.1.6 Figures and technical appendices, including those of other chapters, are referenced in the text where relevant. Note that, with the exception of habitat community names and references to genus groups, only common names are used within this chapter; scientific names are provided in the technical appendices.

7.1.7 This Chapter complements Chapter 8: Ornithology and Chapter 9: Hydrology, Hydrogeology and Geology. Note that in the interests of concision, information contained in other chapters and appendices is not repeated herein unless essential for understanding, and is instead cross referred to within this chapter.

7.1.8 The Site is defined by the red line site boundary shown on Figures 7.1 to 7.7.

7.2 Assessment Methodology and Significance Criteria

Scope of Assessment

7.2.1 The assessment presented within this Chapter has been undertaken in accordance with CIEEM guidelines[1] and considers the following potential impacts upon ecological features associated with construction, operation and decommissioning of the Proposed Development:

- habitat loss/ deterioration - direct and indirect loss and deterioration of habitats;
- mortality/ loss of life - direct or indirect loss of life or injury; and
- disturbance/ displacement of species - disturbance and displacement of non-avian faunal species; loss, damage or disturbance to their breeding and/ or resting places.

7.2.2 The potential effects are considered as a result of the Proposed Development alone and cumulatively, in-combination with other developments which are the subject of a valid planning application. Operational, under construction and consented developments are considered for the cumulative impact assessment. Developments close to the end of their operational life will be included as part of the cumulative assessment to present 'worst case scenario'.

7.2.3 CIEEM guidelines[1] stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and resilient to impacts of the Proposed Development. As such, the assessment considers effects upon designated sites and ecological features which are considered 'important' on the basis of relevant guidance and professional judgement.

7.2.4 Where ecological features are not considered so important as to warrant a detailed assessment, or where they would not be significantly affected on the basis of baseline information, these are 'scoped out' of the assessment. Mitigation measures for such features may, however, still be outlined as appropriate to reduce and/ or avoid any potentially adverse effects or to ensure legislative compliance.

7.2.5 The assessment is based on the Proposed Development described in Chapter 2: Development Description, and has been undertaken in recognition of design evolution and embedded

mitigation measures, as detailed in full within Chapter 2 and Chapter 3: Design Evolution and Alternatives and standard practices and construction environmental management included within the Outline Construction Environmental Management Plan (OCEMP), Technical Appendix 2.1.

7.2.6 The scope of the assessment has been informed by consultation responses summarised in Table 7.1 and key legislation, policy and guidance below. Note that only items with specific relevance to ecology are listed below; general legislation and planning policy relevant to the Proposed Development are detailed in Chapter 4: Energy and Planning Legislation and Policy.

Legislation

7.2.7 The following legislation has been taken into account as part of this ecology assessment:

- the Conservation of Habitats and Species Regulations 2017, as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 (collectively 'the Habitats Regulations')[3];
- the Nature Conservation (Scotland) Act 2004[4];
- the Protection of Badgers Act 1992 (as amended in Scotland)[5];
- the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003[6];
- the Wildlife and Countryside Act 1981 (as amended in Scotland)[7]; and
- the Wildlife and Natural Environment (Scotland) Act 2011[8].

Planning Policy

7.2.8 The following planning policy has been considered as part of this ecology assessment:

- The National Planning Policy Framework 3 (2014)[9] (Draft NPF4 is currently under consideration by Scottish Ministers);
- Scottish Planning Policy (2014)[10];
- Scottish Government Planning Advice Note 60: Planning for Natural Heritage (2000)[11];
- Proposed Aberdeenshire Local Development Plan 2020 (to be adopted 2022) and associated relevant supporting documents (e.g. 'Habitats Regulations Appraisal')[12]; and

[3] The Habitats Regulations https://www.legislation.gov.uk/sdsi/2019/9780111041062 [Accessed 04/02/2022]

[4] Nature Conservation (Scotland) Act 2004 https://www.legislation.gov.uk/asp/2004/6/contents [Accessed 18/11/20]

[5] The Protection of Badgers Act 1992 https://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed 18/11/20]

[6] The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act https://www.legislation.gov.uk/asp/2003/15/contents [Accessed 01/03/2022]

[7] The Wildlife and Countryside Act 1981 (as amended in Scotland under the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011 https://www.legislation.gov.uk/ukpga/1981/69 [Accessed 18/11/20]

[8] The Wildlife and Natural Environment (Scotland) Act 2011 https://www.legislation.gov.uk/asp/2011/6/contents/enacted [Accessed 18/11/20]

[9] The Scottish Government (2014). Scotland's Third National Planning Framework. Available at https://www.gov.scot/publications/national-planning-framework-3/documents/ [Accessed 01/03/2022]

[10] The Scottish Government (2014). Scottish Planning Policy. Available at https://www.gov.scot/publications/scottish-planning-policy/documents/ [Accessed 01/03/2022]

[11] The Scottish Government (2000). Planning Advice Note 60: Planning for Natural Heritage. Available at https://www.gov.scot/publications/pan-60-natural-heritage/ [Accessed 01/03/2022]

[12] Available at https://aberdeenshire.gov.uk/planning/plans-and-policies/pldp-2020/proposed-local-development-plan-2020 [Accessed 01/03/2022]

- Moray Local Development Plan 2020 (adopted July 2020) and associated relevant Supplementary Guidance and supporting documents (e.g. 'Moray Forestry and Woodland Strategy' and 'Moray Onshore Wind Energy Non-Statutory Guidance')[13].

7.2.9 The Scottish Biodiversity List (SBL) 2020[14] and North East Scotland Local Biodiversity Action Plan[15] are also considered in the assessment. The SBL is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland.

Guidance

7.2.10 The following best practice guidelines and guidance have been reviewed and taken into account as part of this ecology assessment:

- Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2012)[16];
- Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition (Collins, 2016)[17];
- Bat Surveys: Good Practice Guidance 2nd edition (Hundt, 2012)[18];
- Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation (SNH, 2019a)[19];
- Good Practice During Wind Farm Construction (SNH, 2019b)[20];
- Guidance on Assessing the Impacts of Groundwater Abstractions and Groundwater Dependant Terrestrial Ecosystems (GWDTEs) (Scottish Environmental Protection Agency ((SEPA), 2017)[21];
- Land use planning system SEPA guidance Note 31 (SEPA, 2014)[22];
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)[1];
- Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines (MSS, 2021)[23];
- General Pre-application and Scoping Advice for Onshore Wind Farms (NatureScot, 2020a)[24];

[13] Available at http://www.moray.gov.uk/moray_standard/page_133431.html [Accessed 01/03/2022]

[14] Scottish Biodiversity List (2020). Published by the Scottish Government at https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list

[15] The North East Scotland Biodiversity Partnership (NESBiP) provides guidance for developers concerning biodiversity in the north-east region of Scotland. https://www.nesbiodiversity.org.uk/biodiversity-information-for-developers/important-local-species/ [Accessed 01/02/2022]

[16] SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. NatureScot, Inverness.

[17] Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition. Bat Conservation Trust, London.

[18] Hundt (2012). Bat Surveys: Good Practice Guidelines 2nd edition. Bat Conservation Trust, London.

[19] SNH (2019a). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation. Joint Publication with NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT).

[20] SNH (2019b). Good Practice During Wind Farm Construction. NatureScot, Inverness.

[21] SEPA (2017). Guidance on Assessing the Impacts of Groundwater Abstractions and Groundwater Dependant Terrestrial Ecosystems. SEPA.

[22] SEPA (2014) Land use planning system. SEPA guidance Note 31. Guidance on assessing the impacts of windfarm development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems. Version 2.

[23] Marine Scotland Science (2021) Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines. https://www.gov.scot/publications/freshwater-and-diadromous-fish-and-fisheries-associated-with-onshore-wind-farm-and-transmission-line-developments-generic-scoping-guidelines/ [Accessed 20/01/2022]

[24] NatureScot (2020a). General Pre-application and/ Scoping Advice to Developers for Onshore Wind Farms. NatureScot, Inverness.

- NatureScot Carbon and Peatland map (SNH, 2016)[25];
- Standing Advice for Planning Consultations:
  - Protected Species: Badger (NatureScot, 2020b)[26];
  - Protected Species: Bats (NatureScot, 2020c)[27];
  - Protected Species: Freshwater Pearl Mussel (NatureScot, 2020d)[28];
  - Protected Species: Great Crested Newt (NatureScot, 2020e)[29];
  - Protected Species: Otter (NatureScot, 2020f)[30];
  - Protected Species: Pine Marten (NatureScot, 2020g)[31];
  - Protected Species: Red Squirrel (NatureScot, 2020h)[32];
  - Protected Species: Water Vole (NatureScot, 2020i)[33];
  - Protected Species: Wildcat (NatureScot, 2020j)[34]; and
- BS 42020 – a code of practice for biodiversity in planning and development.

7.2.11 Guidance followed with respect to survey methodologies is detailed in Technical Appendices 7.1 to 7.4.

Consultation

7.2.12 Table 7.1 summarises the consultation responses received regarding Ecology and provides information on where and/ or how they have been addressed in this assessment. To avoid repetition, information contained elsewhere in the chapter is only briefly summarised in Table 7.1, with cross references given to where in the chapter further information is provided.

7.2.13 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register, including those who were consulted but did not provide responses.

Table 7.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
NatureScot (16/05/2019)	Other - survey scoping	Agreed with scope of information gathering proposed, including desk study requests and field surveys. Confirmed that the main ecology/ ornithology consideration for development at this location will comprise the Tips of Corsemaul and Tom Mor Special Protection Area (SPA) breeding common gull colony.	Noted. Ornithology matters addressed separately in Chapter 8.
Energy Consents Unit	Scoping	Scottish Ministers directed the Applicant to Marine Scotland Science (MSS) standing advice for onshore wind development.	Noted and considered in the assessment. Consideration of watercourses is included in

[25] NatureScot (2016). Available at https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map [Accessed 06/02/2022]

[26] NatureScot (2020b). Standing Advice for Planning Consultations – Protected Species: Badger. NatureScot, Inverness.

[27] NatureScot (2020c). Standing Advice for Planning Consultations – Protected Species: Bats. NatureScot, Inverness.

[28] NatureScot (2020d). Standing Advice for Planning Consultations – Protected Species: Freshwater Pearl Mussel. NatureScot, Inverness.

[29] NatureScot (2020e). Standing Advice for Planning Consultations – Protected Species: Great Crested Newt. NatureScot, Inverness.

[30] NatureScot (2020f). Standing Advice for Planning Consultations – Protected Species: Otter. NatureScot, Inverness.

[31] NatureScot (2020g). Standing Advice for Planning Consultations – Protected Species: Pine Marten. NatureScot, Inverness.

[32] NatureScot (2020h). Standing Advice for Planning Consultations – Protected Species: Red Squirrel. NatureScot, Inverness.

[33] NatureScot (2020i). Standing Advice for Planning Consultations – Protected Species: Water Vole. NatureScot, Inverness.

[34] NatureScot (2020j). Standing Advice for Planning Consultations – Protected Species: Wildcat. NatureScot, Inverness

Table 7.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
(ECU) (19/03/2020)		Assessment should consider nearby Special Areas of Conservation (SACs) with fish as qualifying feature, in addition to watercourses within and downstream of the Proposed Development.	Chapter 9: Hydrology. Information to inform HRA for SACs with fish as a qualifying features is included in Section 7.11
Marine Scotland Science (MSS) (July 2020) – Included as part of the ECU response	Scoping	Referenced general standing guidance[23] in relation to onshore wind farm developments, freshwater and diadromous fish and fisheries. SACs are also to be considered where fish are a qualifying feature and proposed felling operations particularly in acid sensitive areas.	SACs and proposed felling operations have been considered in the Site design and are presented in Technical Appendix 2.6. Downstream receptors are included within the scope of the hydrology chapter, including Protected Areas.
Scottish Wildcat Action (SWA) (11/11/2020)	Other - data request	SWA provided wildcat/ wildcat hybrid records they have relevant to the Site (see Desk Study). SWA stated that although much of the Site (single-aged conifer plantation) is not good habitat for wildcat, they may use some open areas in conjunction with surrounding open ground. SWA provided some information into potential habitat enhancement measures that could be adopted as part of the Habitat Management Plan (HMP) to benefit wildcats.	Wildcats are considered in Section 7.5. Proposed HMP measures are provided in Section 7.7.
River Deveron District Salmon Fishery Board (RDDSFB) (10/12/2020)	Scoping	Potential impacts on fish populations may occur during either the construction or operational phase. During construction, the potential impacts could include noise/ vibration disturbance, siltation of habitat, and hydrological changes of the peat system, pollution and the blocking or hindering of upstream access of fish.	It is considered that embedded mitigation, including mitigation by design and good practice to be implemented during construction and operational phases, will prevent significant impacts to fish populations and so they are scoped out of the EIA process (see Section 7.5). A Fish Monitoring Plan (FMP) is proposed as part of the embedded mitigation; see Section 7.4. Further consideration of Hydrology, including watercourse crossings, is contained within Chapter 9: Hydrology, Hydrogeology and Geology.
		During the operational phase, the main concerns are poor road drainage, accelerated levels of erosion and the poor maintenance of silt traps and road crossings.	Impacts on the watercourses which drain the Site have been considered in Chapter 9 and appropriate measures included in relation to water quality and water quantity. Principles for the drainage of tracks such that rates of erosion are not increased are set out in this chapter. Detailed drainage design and methods for the entrainment of sediments would be provided in detailed design

Table 7.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
			prepared by the appointed contractor.
		Juvenile fish data held by the Deveron, Bogie, and Isla Rivers Charitable Trust (DBIRCT) demonstrates the importance of the watercourses within and bordering the development site for fish stocks. It is important to also note that activities within the site boundary could also have a detrimental effect on fish stocks and their habitats outwith the site. Fish stocks should be fully acknowledged during the preparation of the EIA and further comprehensive data (including via electrofishing in and Scottish Fisheries Coordination Centre (SFCC) fish habitat survey of all watercourses draining the site) collected before any works proceed.	It is considered that embedded mitigation, including mitigation by design and good practice to be implemented during construction and operational phases, will prevent significant impacts to fish populations and so they are scoped out of the EIA process (see Section 7.5). A Fish Monitoring Plan (FMP), including pre-construction surveys, is proposed as part of the embedded mitigation; see Section 7.4. Consultation with NatureScot confirmed that it was satisfied with the proposed scope of baseline surveys.
		A formal Fisheries Management Plan (FMP) and Habitat Management Plan (HMP) should be specified and formed for the development and the RDDSFB have full input during the formation of the plans to cover all their concerns.	Discussion of a FMP and further proposed survey for fish is included in Section 7.4 and 7.5. A FMP, including provision for pre-, during- and post-construction fish monitoring would be produced pre-consent in consultation with RDDSFB and DBIRCT. HMP proposals are included in Section 7.7.
NatureScot (14/01/2021)	Scoping	NatureScot stated that the proposed scope topic for protected species and habitats is appropriate. HRA will be required for the River Spey SAC. The HRA is expected to be relatively straightforward and focussing on standard mitigation to avoid effects on watercourses. If public road network improvements are required in proximity to the SAC the potential risk and impact will need to be assessed and presented to inform the HRA.	Information to inform HRA for the River Spey SAC is included in Section 7.11. Access and impacts to the public road network are discussed in Chapter 10: Traffic, Transport and Access.
RSPB Scotland (21/01/2021)	Scoping	RSPB stated that they are content that the key sensitivities have been identified and that the completed surveys should be adequate for the purposes of informing the EIA. RSPB expressed concerns relating to the location of Turbines 1 and 4 (from the Scoping Layout) on areas indicated as Class 1 peatland habitat, considered to have Significant Protection. Proposals must also demonstrate that areas of the deepest peat have been avoided.	Assessment of impacts to peatland habitat are included in Section 7.6, with impacts to and mitigation for areas of deep peat included in Chapter 9: Hydrology, Hydrogeology and Geology and within Technical Appendices 2.3 and 2.4.

Table 7.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
Aberdeenshire Council (22/01/2021)	Scoping	Agreed that the data search buffers for the desk-study and designated sites to be considered in the EIA Report are appropriate. Recommended that potential impacts to and mitigation for wildcat are included in the EIA Report.	Wildcats are considered in Section 7.5. Proposed HMP measures are provided in Section 7.7.
Moray Council (19/02/2021)	Scoping	Stated that all developments must aim to retain, protect and enhance features of biological interest and provide for their appropriate management. Proposals must safeguard, and where physically possible extend or enhance, wildlife corridors, green/ blue networks and prevent fragmentation of existing habitats. The Applicant must demonstrate that they have included biodiversity features into the design of the development in accordance with Part 2 of the MLDP 2020 Planning Policy Guidance. Should Garbet Wood be affected by the Proposed Development, a detailed woodland survey including NVC must be carried out.	Assessment of habitat and biodiversity features within the Site is included in Section 7.6. Proposed HMP measures are provided in Section 7.7. Garbet Wood is not within the zone of influence of the Proposed Development.

Potential Effects Scoped Out

7.2.14 The EIA scoping report for the Proposed Development was submitted on 20 November 2020. Several ecological features were scoped out of consideration during the scoping process, and so are not considered further in this EIAR. A summary of these is provided here for information; for further details see the Scoping Report.

7.2.15 The potential for indirect effects upon the habitat or floristic qualifying interests of any statutorily designated site for nature conservation located greater than 2 km from the Site is scoped out of the assessment, by virtue of the static nature of the sites' qualifying habitats interests, spatial separation and/ or absence of hydrological pathways of connectivity.

7.2.16 The potential for impacts upon the following statutory designated sites located within 10 km of the Site has therefore been scoped out of assessment:

- Craigs of Succoth Site of Special Scientific Interest (SSSI);
- Hill of Towanreef SAC/ SSSI; and,
- Den of Pitlurg SSSI.

7.2.17 Effects on habitats and species (excluding bats) during operation has been scoped out. Good practice to prevent damage and/ or pollution incidents associated with maintenance during the operations phase would be managed by operational environmental management protocols, and so no further impacts to habitats during operation are anticipated. Maintenance visits would be rare and unlikely to result in disturbance to protected species.

7.2.18 As stated in the Scoping Report, there is no suitable habitat for freshwater pearl mussel within or immediately downstream of the Site, and so impacts to this species are not considered further in the EcIA, but they are considered in relation to the HRA process for the River Spey SAC.

Method of Baseline Characterisation

Extent of the Study Area

7.2.19 The main Study Area within which baseline information in relation to ecological features has been obtained has comprised the Site boundary, extended to 5 km for proximity to designated sites with faunal ecological interest (further extended to 10 km for sites with bats as qualifying interests) in line with good practice and to provide adequate species-specific information to inform HRA where appropriate. The Study Area for each field survey type (i.e., the Site plus a survey- or species-specific buffer) are defined in the individual survey methods sections below.

7.2.20 Field surveys were carried out in 2020 in relation to the 'Original Site Boundary'. The Site Boundary was then extended to the north west and south west in October 2020, and updated surveys for the extension area were carried out in spring 2021. The Study Area comprises all land covered for ecology surveys for the Proposed Development in both 2020 and 2021, as shown on Figures 7.1 to 7.7.

7.2.21 Full details of Study Areas adopted for desk study and field surveys are provided in Technical Appendices 7.1 to 7.4 and illustrated in Figures 7.1 to 7.7.

Desk Study

7.2.22 A desk study review of existing ecological information was undertaken to:

- identify the location of designated sites for nature conservation within and within close proximity to the Proposed Development (10 km for statutory sites and 2 km for non-statutory sites);
- identify existing records of protected and/ or notable species and habitats within 2 km of the Proposed Development;
- identify any factor or features that may influence the potential for impacts to ecological features as a result of the Proposed Development;
- inform the requirement for further detailed survey; and,
- provide context for assessment.

7.2.23 The following key sources, species specialist and biological recording groups were consulted:

- SiteLink website (NatureScot)[35];
- Scotland's Environment Map (Scottish Government)[36];
- North East Scotland Biological Records Centre (NESBReC)[37];
- Saving Scotland's Red Squirrels[38];
- UK Habitats Directive Article 17 Report (JNCC, 2019)[39];
- SEPA's River Basin Management Plan (SEPA, 2021)[40];

[35] https://sitelink.nature.scot/home

[36] https://map.environment.gov.scot/sewebmap/ [last accessed 04/02/2022]

[37] http://www.nesbrec.org.uk/ [last accessed 04/02/2022]

[38] https://scottishsquirrels.org.uk/squirrel-sightings/

[39] JNCC (2019). The UK Approach to Assessing Conservation Status for the 2019. Article 17 Reporting Under the EU Habitats Directive. Joint Nature Conservation Committee, Peterborough

[40] SEPA (2021). River Basin Management Plan. Available at: https://www.sepa.org.uk/data-visualisation/water-environment-hub

- River Deveron Fisheries District Management Plan 2020-2023 (DBIRCT, 2020)[41];
- NatureScot Carbon and Peatland Map (SNH, 2016)[42]; and,
- EIA documentation for Garbet Wind Farm (2013) development (Planning Reference: 21/00020/EIA)[43].

7.2.24 Additional peer-reviewed literature and industry guidance is referred to where relevant.

7.2.25 Details and results of the desk study undertaken are provided in Technical Appendices 7.1 to 7.4.

Field Survey

7.2.26 Detailed knowledge of habitats and vegetation, and the presence or likely presence of protected and notable faunal species, has been derived from field surveys.

7.2.27 The following field surveys have been completed:

- Phase 1 habitat survey;
- National Vegetation Classification (NVC) survey;
- terrestrial mammal surveys;
- bat activity surveys;
- bat roost surveys; and,
- fish habitat survey.

7.2.28 All field surveys have been undertaken within the most recently available two-year survey window prior to submission, in accordance with current NatureScot guidance[24]. Methods are summarised below, with further details in Technical Appendices 7.1 to 7.4.

PHASE 1 HABITAT SURVEY

7.2.29 A Phase 1 habitat survey was undertaken on 3 and 4 June 2020 of the original Site boundary, with a further survey undertaken in the extended area on 20 to 22 April 2021. The surveys were undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010)[44]. The Study Area included coverage of all habitats within the Site boundary and out to 250 m (aside from the south east corner of the Site, where no development is proposed), as shown in Figure 7.2, and as access permissions allowed.

7.2.30 Full details are provided in Technical Appendix 7.1.

NVC SURVEY

7.2.31 An NVC survey of the original Site boundary was undertaken on 10 August 2020, following the guiding principles detailed in the NVC: Users' Handbook (Rodwell, 2006)[45]. A further survey was undertaken in the extended area on 20 to 22 April 2021.

7.2.32 The Study Area included coverage of all habitats within the Site boundary and out to 250 m as shown in Figure 7.3, and as access permissions allowed, with focus on those habitats likely

[41] Deveron, Bogie and Isla Rivers Charitable Trust (2020) River Deveron Fisheries District Management Plan 2020-2023

[42] Available at https://map.environment.gov.scot/Soil_maps/?layer=10 [last accessed 04/02/2022]

[43] Obtained via a freedom of information request

[44] JNCC (2010). Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit. Joint Nature Conservation Committee (JNCC), Peterborough.

[45] Rodwell, J. S. (2006). National Vegetation Community Users' Handbook. JNCC, Peterborough.

to represent habitat types listed on Annex 1 of the Habitats Directive or comprising potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

7.2.33 Full details are provided in Technical Appendix 7.1.

TERRESTRIAL MAMMAL SURVEYS

7.2.34 A walkover survey of the original Site boundary for badger, red squirrel, pine marten, wildcat, otter and water vole was undertaken over three days in June and October 2020, with a further extended Phase 1 survey undertaken in the extended area of the Site in April 2021. The survey methodology followed industry standard guidance as outlined in Technical Appendix 7.2, and the Study Area included coverage of all habitats within the Site boundary and out to 50 m for water vole, 100 m for badger, 200 m for otter and 250 m for pine marten and wildcat as shown in Figure 7.4, and as access permissions allowed.

7.2.35 Full details are provided in Technical Appendix 7.2.

BAT ROOST SURVEYS

7.2.36 A review of aerial imagery was undertaken to identify any structures or trees with the potential to support maternity roosts and/ or significant hibernation or swarming sites. This identified 16 structures and two groups of trees located within proximity to the Site (see Figure 7.5, for which bat roost surveys were undertaken in January 2021 in accordance with NatureScot guidance[19] and Bat Conservation Trust (BCT) guidance[17].

7.2.37 Surveys comprised a ground-level preliminary roost assessment in accordance with BCT guidance[17].

7.2.38 Full details are provided in Technical Appendix 7.3.

BAT ACTIVITY SURVEYS

7.2.39 NatureScot guidance recommends that bat activity surveys are undertaken in spring (April to May), summer (June to mid-August) and autumn (mid-August to October). Eleven ground-level automated monitoring stations (MS1 to MS11, Figure 7.6: Bat Activity Survey Plan) were deployed in May, June, July, August and September 2020. Monitoring locations were distributed within the Site boundary at representative turbine locations, and habitat features (see Figure 7.6) in accordance with NatureScot guidance[19]. NatureScot guidance[19] advises a minimum of ten consecutive monitoring nights for each activity period (spring, summer and autumn). Instances where this was not achieved are identified and discussed in Technical Appendix 7.3, and in Section 7.2.69 to 7.2.72 below.

7.2.40 All sonogram data obtained from activity surveys was uploaded to the online *Ecobat* tool in order to quantify bat activity in accordance with NatureScot guidance[19], with full details presented in Technical Appendix 7.3.

FISH HABITAT SURVEYS

7.2.41 A fish habitat survey, comprising a walkover, was completed of all watercourses within the original Site boundary between 24 and 26 August 2020 (see Figures 7.7a and b). Watercourses were then classified in accordance with the Scottish Fisheries Co-ordination Centre's (SFCC) Habitat Surveys Training Course Manual[46].

7.2.42 Full details are provided in Technical Appendix 7.4.

[46] Scottish Fisheries Co-ordination Centre (2007). Habitat Surveys Training Course Manual. [pdf] Available at: http://www.sfcc.co.uk/assets/files/SFCC%20Habitat%20Training%20Manual.pdf

Criteria for the Assessment of Effects

7.2.43 The assessment has been undertaken in accordance with CIEEM guidelines[1] and includes the following stages:

- determination and evaluation of important ecological features;
- identification and characterisation of impacts;
- outline of mitigating measures to avoid and reduce significant effects;
- assessment of the significance of any residual effects after such measures; and,
- identification of appropriate compensation measures to offset significant residual effects.

Criteria for Assessing the Sensitivity of Receptors

7.2.44 Relevant European, national and local guidance from governments and specialist organisations has been referred to in order to determine the sensitivity (or importance) of ecological features. Reference has also been made to NatureScot guidance on key ecological features when considering the development of onshore wind farms in Scotland[24].

7.2.45 In addition, importance has also been determined using professional judgement and taking account of the results of baseline field and desk study findings and the functional role of features within the context of the geographical area.

7.2.46 It should be noted that importance does not necessarily relate to the level of legal protection that a feature receives, and ecological features may be important for a variety of reasons, such as their connectivity to a designated site, rarity or the geographical location of species relative to their known range.

7.2.47 For the purposes of this assessment the sensitivity or importance of an ecological feature is considered in the context of a defined geographical area, ranging from international to local, as detailed in Table 7.2.

Table 7.2: Sensitivity/ Geographic Scale of Ecological Feature Importance

Sensitivity/ Importance	Definition
Very High – International	An internationally designated site (i.e., SAC and/ or Ramsar site or candidate site (cSAC)). Large areas of priority habitat listed under Annex 1 of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource. A regularly occurring, nationally significant population of any internationally important species, listed under Annex II or Annex IV of the Habitats Directive.
High – National	A nationally designated site (e.g., SSSI) or area meeting criteria for national level designations. Significant extents of a priority habitat identified in the SBL, or smaller areas which are essential to maintain the viability of that ecological resource. A regularly occurring, regionally significant population of any nationally important species listed as a SBL priority species and species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Actor Annex II or Annex IV of the Habitats Directive.
Medium – Regional	Viable areas of key semi-natural habitat identified in the UK Biodiversity Action Plan (UKBAP). A regularly occurring, locally significant population of any nationally important species listed on the SBL and species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive. Sites which exceed the local authority-level designations but fall short of SSSI selection guidelines, including extensive areas of semi-natural woodland.
Low – Local	Other species of local conservation, specifically those listed by the North East Scotland Local Biodiversity Action Plan (LBAP). Areas of habitat or species considered to appreciably enrich the ecological resource within the local context (e.g., species-rich flushes or hedgerows).

Table 7.2: Sensitivity/ Geographic Scale of Ecological Feature Importance	
Sensitivity/ Importance	**Definition**
	All other species and habitats that are widespread and common and which are not present in locally, regionally or nationally important numbers or habitats which are considered to be of poor ecological value.

Criteria for Assessing Potential Impacts

7.2.48 Once identified, potential impacts are described making reference to the following characteristics as appropriate:

- adverse or beneficial;
- extent, magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

7.2.49 The assessment only makes reference to those characteristics relevant to understanding the nature of an effect and determining its significance. For the purposes of this assessment the temporal nature of potential effects is described as follows:

- negligible: of inconsequential duration;
- short-term: for 1 to 5 years;
- medium-term: for 5 to 10 years;
- long-term: >10 to 30 years; and
- permanent: >30 years.

7.2.50 The criteria used to determine the magnitude of impacts are set out in Table 7.3.

Table 7.3: Impact Magnitude	
Magnitude	**Definition**
Very High	The impact (either on its own or in-combination with other proposals) may result in the permanent total or almost complete loss of a site and/ or species status or productivity.
High	The impact (either on its own or in-combination with other proposals) may adversely affect the conservation status of a site and/ or species population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/ or the population levels of species of interest.
Medium	The impact (either on its own or in-combination with other proposals) would not adversely affect the conservation status of a site and/ or species, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the long term.
Low	The impact (either on its own or in-combination with other proposals) would not adversely affect the conservation status of a site and/ or species, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the long term.
Negligible	A very slight (indiscernible) reduction in a site and/ or species status or productivity and/ or no observable impact.

Criteria for Assessing Significance

7.2.51 For the purposes of this assessment, significant effects are identified as those which encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

7.2.52 Such effects are identified by considering the importance of a feature, the magnitude of the impact and applying professional judgement based on best available evidence, to identify whether the integrity of a feature would be affected.

7.2.53 The term 'integrity' is used here to refer to the maintenance of the conservation status of a population of a species at a specific location or geographical scale.

7.2.54 For the purposes of this assessment, significant effects are primarily expressed with reference to an appropriate geographical scale.

7.2.55 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.

7.2.56 Where the assessment proposes measures to mitigate adverse effects on ecological features, a further assessment of residual effects, taking into account such measures, has been undertaken.

7.2.57 CIEEM guidelines[1] do not recommend the sole use of a matrix table as commonly set out in EIAR chapters to determine 'significant' and 'non-significant' effects. For the purposes of this assessment presented herein, Table 7.4 sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations 2017.

Table 7.4: Effect (EIA Significance)

Significance	Definition	
Significant	Major Adverse/ Beneficial	A medium or high, medium or long-term adverse or beneficial effect upon the integrity of an ecological feature at a national (Scottish) or international level.
	Moderate Adverse/ Beneficial	A high or very high, long-term or permanent adverse or beneficial effect upon the integrity of an ecological feature at a regional level or above.
Non-significant	Minor Adverse/ Beneficial	A low or medium, short-term or long-term adverse or beneficial effect upon the integrity of an ecological feature at a regional level or below
	Negligible/ Beneficial	A negligible or low adverse or beneficial effect upon the integrity of an ecological feature, typically at a site level or below.

Requirements for Avoidance, Mitigation, Compensation and Enhancement

7.2.58 The mitigation hierarchy has been adopted to avoid, mitigate and compensate for potential ecological impacts as a result of the Proposed Development:

- avoidance is used where an impact has been avoided e.g., through changes in Proposed Development design;
- mitigation is used to refer to measures to reduce or remedy a specific adverse impact in situ;
- compensation describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible; and

- enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

7.2.59 Note that in this chapter these are referred to collectively as 'mitigation' for brevity when discussing generalities, though with the form of mitigation specified as appropriate in discussion of any specific requirements.

Criteria for Assessing Cumulative Effects

7.2.60 Potentially significant cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location.

7.2.61 For aquatic features, potential cumulative effects are likely to be significant only for other developments located relatively close (i.e., within 2 km) and within the same hydrological sub-catchments.

7.2.62 For (non-avian) species potentially significant cumulative effects are only likely where other developments are located within the regular range of more mobile species (e.g., bats). Cumulative impacts have therefore been assessed with reference to NatureScot guidance[19] for bats and otters only and within 5 km of the Proposed Development for construction-phase disturbance impacts, extended to 10 km for potentially longer term impacts associated with the operational phase.

7.2.63 In accordance with NatureScot guidance[16], a cumulative impact assessment need only be sought where it is considered that a proposal could result in significant cumulative impacts.

7.2.64 Cumulative effects are only considered for features above negligible magnitude impacts, as it is considered that negligible residual impacts will not add measurably to cumulative effects.

7.2.65 Cumulative impacts to habitats are only considered where there will be an above negligible adverse magnitude impact of loss of habitats following any mitigation and/ or enhancement proposals.

7.2.66 Due to the nature of the species and impacts assessed, no non-wind developments were included in the consideration of cumulative effects, and no such developments were identified for consideration by consultees during the scoping process.

7.2.67 The cumulative assessment includes consideration of:

- existing wind farm developments, either operational or under construction;
- consented wind farm developments, awaiting implementation; and
- wind farm applications awaiting determination within the planning process with relevant ecological information in the public domain.

7.2.68 Those developments which have been withdrawn and/ or refused are not considered, unless an appeal is currently in progress and information is available.

7.2.69 Whilst single or small-scale wind turbine developments (three turbines or less) may contribute to cumulative effects, these have been scoped out of assessment, in line with NatureScot guidance[16] as applications for such developments do not generally consider the potential for impacts upon ecological features in sufficient detail to inform meaningful assessment, and information is often not readily available for small-scale developments.

Limitations and Assumptions

7.2.70 Cumulative Impact Assessment is limited by the availability of information in the public domain, particularly for older operational developments or developments very early in the planning process (scoping-stage), and so it is generally only possible to make a qualitative assessment of likely impacts. In light of this, such developments without assessment information in the public domain are excluded from the cumulative impact assessment process.

7.2.71 Fish habitat surveys were conducted within the original Site boundary only, and so the extended area has not been surveyed for the baseline period. However, embedded mitigation and good practice to protect fish habitat during construction and operation (see Section 7.4) and the provision of a fish monitoring plan (FMP; see Section 7.5) which will include further surveys of watercourses within the Site prior to commencement of any site-clearance and construction works, mean that this is not considered to be a limitation to the understanding of the likely impacts of the Proposed Development on fish.

7.2.72 The only other limitations experienced with regard to baseline surveys and analysis were with respect to bats. These are outlined in detail in Technical Appendix 7.3, and are summarised below.

7.2.73 Due to COVID-19 restrictions on movement applicable at the time of survey commencement, spring (April and May) bat surveys were delayed and so overlapped with the summer survey period (June to mid-August). Detectors were deployed at the earliest and safest possible opportunity during the spring activity period, on the 20 May 2020, and given the latitude of the Site and delayed start to summer relative to more southerly sites in the UK, this is not considered to represent a constraint to the validity of the data.

7.2.74 NatureScot guidance[19] requires a minimum of 10 consecutive monitoring nights for each of the spring, summer and autumn 2020 activity periods. Due to detector malfunctions (which are not uncommon events for this type of survey, given the length of time detectors may be out, in sometimes adverse conditions), fewer than 30 recording nights were obtained for some detector locations. However, when the data for the 11 detector locations are combined it equates to 312 nights out of the recommended 330, which is considered in excess of what is needed to characterise bat interest and activity levels at a site of this type.

7.2.75 A weather station malfunction has also necessitated using off-site weather data in the analysis of which nights to exclude from the data set. However, bats were recorded on all but two recording nights, including during nights deemed as having unsuitable weather, and so few nights have been excluded from analysis on these grounds, so this is not considered to represent a significant limitation to the data. Likely unsuitable weather conditions were experienced on several nights of recording, these weather conditions are likely to be representative for sites at this latitude, and bat activity was still recorded on the majority of these nights and so have been included within the analysis. Although it is recognised that poor weather can affect bat activity, excluding these data from the analysis skews the dataset and would remove some high collision risk species (noctule) from the dataset. Subsequently inclusion of these nights represents a precautionary approach.

ECOBAT TOOL

7.2.76 The *Ecobat* tool remains is in its infancy, and naturally there are fewer data in the reference range, reducing the confidence in the assigned category. The tool does however, provide a guide for discussion along with site-specific circumstances (e.g., habitats present, desk study information) and its use is advised in accordance with NatureScot guidance[19].

7.2.77 The data within the reference range used to compare activity levels between Site data and other records within 100 km^2 is likely to be have been obtained from surveys undertaken at proposed or operational wind farm sites and so from relatively low value habitats.

7.2.78 Data entered into *Ecobat* cannot be subsequently deleted, and so if analysis is run multiple times for a site due to e.g., corrections to the data, each submission is treated as new records of bats and is added to the reference range, potentially leading to a large overestimation of the number of bat records used for comparison in the reference range.

7.2.79 When data are entered into *Ecobat* for analysis, there is no allowance for entering recording nights where no bat passes were recorded, and so the analysis is carried out only on presence data. This can act to skew the results and elevate the risk levels of percentile ranks calculated.

7.2.80 *Ecobat* output is therefore regarded as an indicative assessment and to be considered alongside desk study information and professional judgement, rather than conclusive evidence of the importance of a site for bats.

7.3 Baseline Conditions

Current Baseline

7.3.1 This section provides a summary of baseline ecological conditions in relation to:

- designated sites for nature conservation;
- habitats and vegetation;
- terrestrial mammals;
- bats; and,
- fisheries.

7.3.2 Detailed information regarding desk study records and field survey results are presented in Technical Appendices 7.1 to 7.4.

Designated Sites for Nature Conservation

7.3.3 This section should be read with reference to Figure 7.1.

7.3.4 River Spey SAC is within the zone of influence (ZoI) of the Site. Table 7.5 provides a summary of the information relating to this Site. The distance specified within Table 7.5 is measured from the Proposed Development to the SAC boundary at its nearest point.

7.3.5 There are no non-statutory designated sites located within 2 km of the Proposed Development.

7.3.6 Sites designated for ornithological interests only are considered separately in Chapter 8.

Table 7.5: Designated Sites for Nature Conservation

Site Name	Approximate Distance from the Site (km)	Qualifying Interests
River Spey SAC	0.05 km north west	▪ otter; ▪ freshwater pearl mussel (FWPM); ▪ sea lamprey; and, ▪ Atlantic salmon.

Habitats and Vegetation

7.3.7 This section should be read with reference to Technical Appendix 7.1 and Figures 7.2 and 7.3. Target Notes as shown on Figure 7.2 are provided in Appendix 7.1. Phase 1 Habitat classification codes for each habitat type are given in brackets, and are also provided in Table

7.6. Further details on peatland and GWDTEs are provided in Chapter 9: Hydrology, Hydrogeology and Geology.

7.3.8 Coniferous plantation (A1.2.2) is the most extensive habitat within the Study Area (see Table 7.6, below), principally comprising semi-mature Sitka spruce, with occasional lodgepole pine and larch. There are small areas of clear-fell in the north east. On the south western margin, plantation conifers occur together with acid dry dwarf shrub heath (see Table 7.6). Small pockets of broadleaved plantation woodland are also present in the north west of the Study Area. Broadleaved semi-natural woodland bounds the River Deveron on the south east boundary.

7.3.9 Improved grassland (B4) is also present throughout the Site, particularly in the south of the Study Area. This habitat is used for sheep grazing and has a low herb diversity and abundant perennial ryegrass. Occasional small traces of more acid grassland are found within this habitat with occurrence of species such as Yorkshire fog, sheep's fescue, common bent and crested dog's tail.

7.3.10 Semi-improved acid grassland (B1.2) occurs within pasture areas in the south and north east of the Study Area, and comprises of common bent and Yorkshire fog, and also heath rush and wavy hair-grass. Although limited in extent there are also small pockets of unimproved acid grassland (B1.1) with a high density of heath rush and mat grass, and this grassland also supports hare's-tail cottongrass and some ericoids.

7.3.11 Marshy grassland (B5) forms damp fields, rides and along watercourses and is dominated by soft rush and purple moor grass, with some tufted hair-grass.

7.3.12 Dry heath (D1) is present close to the margins of the coniferous plantation in the Study Area, and is dominated by dense common heather, with frequent bell heather and occasional juniper and gorse. Wet heath (D2) has a limited extent and is principally associated with rides and openings within the forested areas within the Study Area. Cross-leaved heath is abundant, with some bog-mosses and cup lichens.

7.3.13 Bog habitat within the Study Area is blanket bog (E1.6.1) that is located on the flat to gently sloping ground to the north of the Study Area, and consists of dense tussocks of hare's-tail cottongrass with a mix of ericoids including common heather, bilberry and crowberry spread throughout. Dry modified bog (E1.8) is mostly present on the southern slopes of Garbet Hill, which has been subject to drainage, grazing and heather mowing/ burning, on peat of variable depths. Typical species include common heather and hare's tail cottongrass. There is some acute-leaved bog-moss, however the predominant bryophytes are red-stemmed feather moss and glittering wood-moss.

7.3.14 There are a small number of streams (G2.1) which flow through the Study Area and most of these are headwaters of the River Deveron which flows to the east of the Study Area. There is a pond (G1) which is located on the edge of the forestry in the north east of the Study Area, surrounded by reedbed swamp (F1).

7.3.15 No protected or non-native plant species listed on Schedule 8 and 9 of the Wildlife and Countryside 1981 (as amended) respectively were recorded within the Study Area.

7.3.16 A summary of habitat types and communities and their approximate areas within the Site is provided in Table 7.6. The total area of the Site used for the relative coverage is 1,074.22 ha based on the GIS measurement of area within the Site boundary.

Table 7.6: Summary of Baseline Habitats and Vegetation Communities Within the Site

Phase 1 Habitat Type	Phase 1 Code	NVC Community/ Sub-community	Extent (ha)	Relative Coverage (%)*
Coniferous plantation woodland	A1.2.2	No NVC	332.59	30.96
Acid dry dwarf shrub heath	D1.1	H12a, H10a, H13	183.17	17.05
Improved grassland	B4	No NVC, U4b	151.5	14.10
Dry modified bog	E1.8	H12a/H18, H12a, U4	119.84	11.16
Blanket bog	E1.6.1	M19a, M19a/b, M17a	90.26	8.40
Semi-improved acid grassland	B1.2	U4b, U4e(H10d), U4b/M23b, U4b/MG9, U4e, U4	83.77	7.80
Marsh/ marshy grassland	B5	M23b, M23a, M23, H12, MG9, U4b, U5	64.34	5.99
Unimproved acid grassland	B1.1	U6c, U4e, No NVC	19.27	1.79
Coniferous plantation woodland/ acid dry dwarf shrub heath	A1.2.2 /D1.1	No NVC/H12a	13.75	1.28
Built areas	J4	No NVC	3.91	0.36
Dense scrub	A2.1	No NVC	3.24	0.30
Unimproved neutral grassland	B2.1	MG9	3	0.28
Broadleaved plantation woodland	A1.1.2	W4, W7	1.21	0.11
Marshy grassland/ acid grassland mosaic	B5/B1.2	MG9/U16	1.59	0.15
Wet modified bog	E1.7	M20	1.39	0.13
Scattered coniferous trees	A1.3.2	No NVC	1.15	0.11
Wet dwarf shrub heath	D2	M15b/H12a	0.14	0.01
Recently-felled Coniferous plantation woodland	A4.2	No NVC	0.1	0.01
* Note that due to rounding, percentages may not add up to 100%				

7.3.17 Priority habitats present on-site identified through NVC survey, and their likely groundwater dependency, are summarised in Table 7.7. NVC communities which do not represent priority habitat, or which are very localised and/ or limited in extent are not included in Table 7.7; details of these are provided in Technical Appendix 7.1.

Table 7.7: Summary of Vegetation Communities

NVC Community	Principal Corresponding Habitats Directive Annex I Type/s	Corresponding SBL Priority Habitat Type	North East of Scotland Biodiversity Action Plan	Potential Dependence of Community/ Habitat on Groundwater*
H10a *Calluna vulgaris* – *Erica cinerea* heath, typical sub-community	4030 European dry heaths	Upland Heathland	Upland Heathland	3
H12a *Calluna vulgaris* – *Vaccinium myrtillus* heath, *Calluna vulgaris* sub-community	4030 European dry heaths. (Where on deep peat >0.5 m, this habitat represents degraded blanket bog, restoration to H7130 Blanket bog may be possible)	Upland Heathland (Blanket Bog where on deep peat >0.5 m)	Upland Heathland	3

Table 7.7: Summary of Vegetation Communities

NVC Community	Principal Corresponding Habitats Directive Annex I Type/s	Corresponding SBL Priority Habitat Type	North East of Scotland Biodiversity Action Plan	Potential Dependence of Community/ Habitat on Groundwater*
H13 *Calluna vulgaris – Cladonia arbuscula* heath (suggested community)	4030 European dry heaths. (This community is linked to 4060 Alpine and Boreal heaths, but only where it occurs above the natural tree line.)	Upland Heathland	Upland Heathland	3
H18 *Vaccinium myrtillus – Deschampsia flexuosa* heath (suggested community)	4030 European dry heaths. (Where on deep peat >0.5 m, this habitat represents degraded blanket bog, restoration to H7130 Blanket bog may be possible)	Upland Heathland	Upland Heathland	3
M4 *Carex rostrata – Sphagnum fallax* mire (suggested community)	7140 Transition mires and quaking bogs	Blanket Bog	-	3
M15b *Trichophorum germanicum – Erica tetralix* wet heath, typical sub-community	4010 Northern Atlantic wet heaths with *Erica tetralix*	Upland Heathland	Upland heathland	2
M17a *Trichophorum germanicum – Eriophorum vaginatum* mire, *Drosera rotundifolia – Sphagnum spp* sub-community	H7130 Blanket bog	Blanket Bog	-	3
M19a *Calluna vulgaris – Eriophorum vaginatum* mire, *Erica tetralix* sub-community	H7130 Blanket bog	Blanket Bog	-	3
M19b *Calluna vulgaris – Eriophorum vaginatum* mire, *Cladonia* sub-community (suggested community)	H7130 Blanket bog	Blanket Bog	-	3
M20 *Eriophorum vaginatum* mire (suggested community)	H7130 Blanket bog	Blanket Bog	-	3
M23a *Juncus effusus/ acutiflorus - Galium palustre* rush pasture, *Juncus acutiflorus* sub-community	-	Upland flushes, fens and swamps	-	1
M23b *Juncus effusus/ acutiflorus - Galium palustre* rush pasture, *Juncus effusus* sub-community	-	-	-	1
MG9 *Holcus lanatus – Deschampsia cespitosa* grassland (suggested community)	-	-	Grasslands	2

Table 7.7: Summary of Vegetation Communities

NVC Community	Principal Corresponding Habitats Directive Annex I Type/s	Corresponding SBL Priority Habitat Type	North East of Scotland Biodiversity Action Plan	Potential Dependence of Community/ Habitat on Groundwater*
S4 *Phragmites australis* swamp	Only Annex 1 if within water body of relevant Annex 1 type	Freshwater and wetland	Freshwater Habitats	3
U5 *Nardus stricta – Galium saxatile* grassland (suggested community)	-	*Nardus stricta-Galium saxatile* grassland	Grasslands	3
U5a Nardus stricta - Galium saxatile grassland; species-poor sub-community	-	*Nardus stricta-Galium saxatile* grassland	Grasslands	3
U6c *Juncus squarrosus - Festuca ovina* grassland, *Vaccinium myrtillus* sub-community	-	*Juncus squarrosus-Festuca ovina* grassland	Grasslands	2
W4 *Betula pubescens-Molinia caerulea* woodland (suggested community)	-	Upland birchwoods	Woodlands	1
W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland	H91E0 Alder woodland on flood plains.	Wet Woodland	Woodlands	1
Carex nigra – C. echinata – C. panicea flush	-	Upland flushes, fens and swamps	-	1
	Notes: * 1=High, 2=moderate, 3=low			

7.3.18 Several of the habitats in Table 7.7 may indicate the presence of GWDTE which are either highly or moderately dependent on groundwater, depending on hydrogeological setting. Where they occur in mosaic with other, non-GWDTE habitat, groundwater dependence is considered unlikely.

7.3.19 Of these habitats, M23b marshy grassland and *Carex* flush (high dependence) and MG9 unimproved grassland (moderate dependence) occur within a ZoI of infrastructure (100 m of tracks, 250 m of other infrastructure); see Figure 7.3. For further discussion of GWDTE, and of embedded mitigation to prevent impacts to these habitats, see Chapter 9: Hydrology, Hydrogeology and Geology.

Terrestrial Mammals -Excluding Bats

7.3.20 This section should be read with reference to Technical Appendix 7.2 and Figure 7.4. Baseline terrestrial mammal conditions are summarised below in Table 7.8.

Table 7.8: Summary of Terrestrial Mammal Survey Results

Terrestrial Mammal Species	Summary of Survey Results
Otter	Desk Study Two potential otter holts were recorded, as well as two potential resting places/ couches, several spraints and a sighting of an otter were recorded during surveys for Garbet Wind Farm in 2018. Field survey

Table 7.8: Summary of Terrestrial Mammal Survey Results	
Terrestrial Mammal Species	**Summary of Survey Results**
	Watercourses within and intersecting the Site do provide potential suitable commuting opportunities for otter, but are considered to provide relatively poor foraging opportunities due to their low importance for fish species.
Pine marten	Desk Study No evidence of pine martens was found in desk study records. Field survey Pine marten scats were recorded within the plantation woodland within the Site, as summarised in Technical Appendix 7.2. The woodland habitats of the Site provides some opportunities for the establishment of den sites, though conifer plantations are sub-optimal as the trees rarely contain cavities. The Site has pockets of open habitats with some suitability for foraging and commuting. The predominantly wet nature of moorland habitats present within the Site, notably blanket bog is however, generally suboptimal for pine marten.
Wildcat	Desk Study The Site falls at the outer limit of the Strathbogie Scottish Wildcat Priority Area. Saving Wildcats confirmed no existing records of wildcat were identified within 2 km of the Site, although several records have been recorded to the east of the Site, 2.3 km from the Site boundary. No evidence of wildcat was found during the surveys for Garbet Wind Farm. Field survey A single wildcat or hybrid was observed on 05 October 2020 (see Technical Appendix 7.2). Plantation woodland habitats that dominate the Site are considered to provide suboptimal habitats for wildcat. More favourable habitats provided by mosaics of deciduous woodland, scrub and grasslands are absent from the local surrounding area.
Water vole	Desk Study No evidence of water vole was found in desk study records. Field survey Evidence of water vole activity recorded within the study area included a burrow, characteristic droppings, latrines, and clipped vegetation (see Figure 7.4 and Appendix 7.2). Additionally, four water vole latrines were recorded whilst carrying out fish surveys within the Site.
Badger	Desk Study Four active setts and latrines and prints, hair and spoil heaps were found during surveys for Garbet Wind Farm. Field survey No evidence of badger was recorded, though some suitable sett building and foraging opportunities exist in places. The Site is considered sub-optimal for this species.
Red squirrel	Desk Study Six records of red squirrel from the last 10 years and within 2 km of the Site were available on the Saving Scotland's Red Squirrels website. No evidence of red squirrel was found during surveys for Garbet Wind Farm. Field survey No evidence of squirrel was recorded, though suitable drey building and foraging opportunities exist in places. The Site is sub-optimal for this species as it predominantly comprises managed Sitka spruce and is surrounded by open moorland.

7.3.21 A mountain hare was also observed on Garbet Hill during the baseline survey, with several additional signs of *Lepus* droppings recorded on similar suitable upland habitat. Whilst brown hare droppings were not ruled out, these are considered likely to be mountain hare droppings.

7.3.22 Roe and red deer were recorded at the north of the Site, with numerous deer droppings also present in the forestry.

Terrestrial Mammals - Bats

7.3.23 This section should be read with reference to Technical Appendix 7.3 and Figures 7.5 and 7.6.

DESK STUDY

7.3.24 NESBReC returned a total of 81 bat records for the period 2011 to 2021 from within 10 km of the Site. These are provided in Technical Appendix 7.3 and summarised below. Records comprised:

- common pipistrelle (43 records),
- soprano pipistrelle (25 records),
- Daubenton's bat (4 records),
- Natterer's bat (1 record),
- brown long-eared bat (3 records), and
- an unidentified bat species (3 records).

7.3.25 The records included four records of roosts for common pipistrelle, three for soprano pipistrelle and one for brown long-eared bat. Limited information regarding the nature of these roosts was provided by NESBReC but none were specifically identified as maternity or hibernation roosts. Some of the records were from the same locations but on different dates, and so in some cases may represent the same roost recorded during different survey visits.

HABITAT ASSESSMENT

7.3.26 The habitats within the Site are considered to be of low habitat risk for bats, in accordance with criteria presented in BCT guidelines[17].

7.3.27 The predominantly closed canopy commercially managed coniferous woodlands of the Site provide relatively poor foraging opportunities for bat species. There are few prominent linear features, such as tree lines, scrub and major wooded riparian networks, providing connectivity between the Site and potentially higher value habitats for bats within wider landscape.

ROOSTING BATS

7.3.28 There are no existing roost records at the Site identified through the desk study. A number of features with the potential to support roosting bats, comprising stone ruins and mature trees, were identified in proximity to the Site and were subject to a preliminary roost assessment, results of which are provided in Technical Appendix 7.3. However, none of these locations are within 200 m plus blade length (277.5 m) of the proposed turbine locations and so they are not considered further in this chapter.

7.3.29 There are no trees or built structures within the Site boundary are considered to be suitable for maternity or hibernation roosts.

BAT ACTIVITY

7.3.30 Common pipistrelle, soprano pipistrelle, noctule, brown long-eared and *Myotis* bat species were recorded during the bat activity surveys.

7.3.31 Table 7.9 summarises the results of automated detector surveys, with full details provided in Technical Appendix 7.3: Bats.

7.3.32 All sonogram data was uploaded to Ecobat in order to quantify bat activity in accordance with NatureScot guidance[19], with full results presented in Technical Appendix 7.3: Bats.

7.3.33 Overall 13,345 bat passes were recorded, over 11 monitoring stations. Bats were detected on 58 nights between 20/05/2020 and 10/09/2020, out of a possible 60 recording dates and a collective 312 nights from 11 static bat detectors.

Table 7.91: Total Number of Bat Passes.			
Species	**Passes (No.)**	**Percentage of Total (%)[47]**	**Mean Passes per Night[48]**
Brown long-eared bat	33	0.2	0.1
Common pipistrelle	8,553	64.1	27.4
Myotis species	353	2.6	1.1
Noctule	1,553	11.6	5.0
Soprano pipistrelle	2,853	21.4	9.1
Total	**13,345**	**100**	**42.8**

7.3.34 Common pipistrelle was the most frequently recorded species representing 64.05% of all recordings. Activity overall was considered to be moderate, with the species being recorded on 111 nights out of 312 and representing 27.4 passes per night for the survey period. When compared with activity at other sites (*Ecobat* reference range and percentiles) common pipistrelle activity was concluded to be **moderate to high** at the 74th percentile.

7.3.35 Soprano pipistrelle represented 21.4% of all recordings. Activity overall was considered to be low, with the species being recorded on 96 nights out of 312 and representing 9.1 passes per night for the survey period. When compared with activity at other sites (*Ecobat* reference range and percentiles) soprano pipistrelle activity was concluded to be **moderate to high** at the 64th percentile.

7.3.36 Noctule represented 11.6% of all recordings. Activity overall was considered to be low, with the species being recorded on 118 nights out of 312 and representing 5.0 passes per night for the survey period. When compared with activity at other sites (*Ecobat* reference range and percentiles) noctule activity was concluded to be **low to moderate** at the 38th percentile.

7.3.37 *Myotis* species bats represented 2.6% of all recordings. Activity overall was considered to be low, with the species being recorded on 83 nights out of 312 and representing 1.1 passes per night for the survey period. When compared with activity at other sites (*Ecobat* reference range and percentiles) Myotis bat activity was concluded to be **low to moderate** at the 38th percentile.

7.3.38 Brown long-eared bat activity was considered to be low with less than 1 bat pass recorded per night. When compared with activity at other sites (*Ecobat* reference range and percentiles) activity of brown long-eared bat was considered to be **low**.

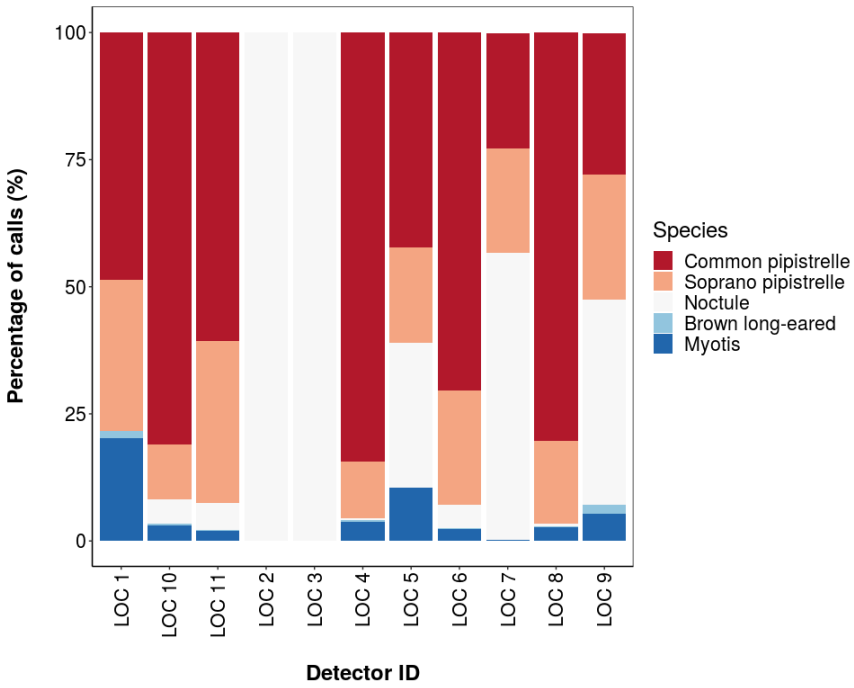
7.3.39 Overall, bat activity was highest at the woodland locations, in particular MS11 at the north east border of the Site, where plantation forestry meets pasture, with 29.88% of the bat passes recorded in this location. Woodland and edge habitats are likely to offer increased foraging value compared to other open monitoring locations (MS1, MS2 and MS3) where activity comprised less than 1% of the total bat passes.

7.3.40 Species composition differed by detector location (as shown in the graphic below, taken from the *Ecobat* output – note that in the Ecobat output monitoring stations (MS) are referred to as locations or 'LOC's)), with common pipistrelle comprising the majority of records at several

[47] The 'Total' percentage may not be exactly 100% due to rounding of the percentages per species.

[48] Total passes recorded/ total nights included

of the monitoring stations, and only noctule recorded at MS2 and MS3, both of which are in open habitat (see Figure 7.6).



Graph 1: Percentage species composition of passes at each Monitoring Station (MS/LOC) (Source: Ecobat)

7.3.41 Overall, activity was generally higher in the summer and autumn months with low activity consistently recorded in spring (with the exception of noctule for which activity levels were moderate in May and June 2020, and low in July to September 2020). No pipistrelles were recorded at all in May or June 2020.

7.3.42 The Ecobat tool identified the possible presence of roosts of common pipistrelle, soprano pipistrelle, *Myotis* species and noctule bat within proximity of the Site based on recording of activity at the Site within or before their species-specific emergence times. Activity within this period was highest at MS7 (Figure 7.6) for Noctule and at MS8 for common and soprano pipistrelle, with MS8 recording activity for pipistrelle species within a half hour period prior to the species specific emergence time (i.e., up to 15 minutes before sunset). Common pipistrelle were also recorded within this period at MS10, though given the proximity of these two monitoring stations within the Site this may represent the same nearby roost.

Fish

7.3.43 This section should be read with reference to Technical Appendix 7.4 and Figures 7.7a and b.

7.3.44 The DBIRCT and RDDSFB returned two records of Atlantic salmon (fry and parr) and two records of brown trout (fry and parr) from Charach Water, a tributary of the River Deveron, located at the southernmost Site boundary.

7.3.45 Functional fish habitat within the Proposed Development is restricted to downstream sections of Green Burn and Linn Burn and is considered to be of low sensitivity due to the short extent of low quality habitat recorded.

7.3.46 No significant areas of high calibre Salmonid spawning habitat (see Technical Appendix 7.4) were identified within these watercourses, with habitat suitability limited to juvenile fish.

Similarly, no significant areas of spawning or nursery habitat for lamprey species were noted and suitable habitat for European eel is limited.

7.3.47 No suitable habitat within the wetted channels was considered likely to support freshwater pearl mussel due to a lack of suitable substrates, that likely wash-out during high flow conditions, and generally narrow, shallow channels that diffuse through flush vegetation.

7.3.48 Watercourses downstream of the Proposed Development may support higher quality fish and freshwater pearl mussel habitat and are hydrologically connected to the River Deveron.

Additional Species

7.3.49 No other species are considered as having the potential for significant effects as a result of the Proposed Development.

Future Baseline

7.3.50 In the absence of the Proposed Development, assuming a "do-nothing" scenario or gap between baseline surveys and the commencement of construction of the Proposed Development, changes in baseline ecology conditions (i.e., distributions and populations) are most likely to result from habitat modifications within or surrounding the Site due to land management practices (principally forestry works and farming).

7.3.51 In the absence of the Proposed Development, the habitats within the Site are considered likely to remain under the existing management regime, comprising principally commercial forestry workings at the north and east of the Site, and livestock farming to the south west. Dry dwarf shrub heath at the north west of the Site and in the south of the Site on Kelman Hill is currently managed via burning and/ or swiping. These operations may alter the distribution of faunal species recorded during baseline surveys; however, it is highly unlikely this would be in such a way as to substantially alter the baseline reported here.

7.3.52 The Site is not subject to any other development pressures or management which would affect the habitats or species in such a way that the present baseline conditions presented here would become substantively different.

7.3.53 Whilst short-term and small-scale variability in populations and distributions may occur, and revisions to conservation statuses and designations are possible, such changes would be unlikely to qualitatively alter the conclusion of the assessment presented within and have been accounted for through application of a precautionary approach and appropriate mitigation.

7.4 Standard Mitigation

Embedded Mitigation

7.4.1 The Proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects (see Chapter 2: Development Description, for further details).

7.4.2 Design considerations have been incorporated to avoid or minimise adverse effects upon ecological features, as set out below.

7.4.3 The on-site track layout has been designed to minimise environmental disturbance and land take by wherever possible avoiding areas of deeper peat as well as, wherever possible, avoiding or minimising areas of identified environmental constraints.

7.4.4 The majority of the turbines are located in the north east of the Site, in the area that is currently managed conifer plantation. The Proposed Development design has in so far as has

been possible avoided locating infrastructure within areas of higher quality blanket bog and upland heath. It has however, not been possible to entirely avoid areas of peatland habitats, due to the distribution of these habitat types within the Site boundary. The layout of infrastructure (e.g., wind turbines, tracks and substation) has sought to avoid areas of deeper peat, minimising the potential for impacts to habitat types with greater future restoration potential.

7.4.5 A minimum 50 m buffer has been included around all mapped watercourses for turbine hardstanding and associated access tracks, except for watercourse crossings, for which the requirement has been minimised as part of sensitive Proposed Development design. This distance also achieves the minimum buffer required between turbine locations and watercourses to achieve a minimum 50 m 'standoff' from bat habitat features and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance[19].

7.4.6 Design of new watercourse crossings would maintain hydraulic connectivity and allow the free passage of fish and other wildlife beneath. Watercourse crossings would also be of sufficient size so as not to restrict or concentrate flows downstream and to convey flows during periods of heavy rainfall (e.g., 1 in 200-year event plus climate change allowance).

7.4.7 The intention is to key-hole fell the forestry for turbine placement. Any restocking would maintain a minimum 96 m buffer between restocked trees and the turbines, and retained trees at the edge of the key-hole would not be allowed to exceed 38 m in height during the lifespan of the Proposed Development, to achieve a minimum 50 m 'standoff' from bat habitat features (woodland) and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance[19].

7.4.8 A minimum 50 m buffer (from blade tip) from all buildings has been maintained, in the event bat roost establishment may occur between baseline surveys and the commencement of operation.

Good Practice Measures

7.4.9 Details of construction phase mitigation measures for the Proposed Development will be contained within the OCEMP (see Technical Appendix 2.1). The OCEMP will include an outline of all good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the construction and operation of the Proposed Development in line with current industry and statutory guidance.

7.4.10 Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards to construction in peatlands and near watercourses to be adopted during the construction and operation phases are detailed in Chapter 9: Hydrology, Hydrogeology and Geology.

7.4.11 Good practice measures to protect retained habitats during the construction works would be implemented including the sensitive demarcation of working areas, to be overseen by an Environmental Clerk of Works (ECoW).

7.4.12 Good practice measures to prevent harm to faunal species, would also include the careful storage of potentially dangerous substances or materials within construction compounds. Excavations will either be temporarily covered at night or designed to include a ramp.

7.4.13 In accordance with CIEEM guidance[1], mitigation is only a requirement where a Proposed Development will result in potentially significant effects. However it is also good practice to propose measures to reduce adverse effects that are not significant. In accordance with this,

a commitment to a HMP is included in the Proposed Development from the outset to provide enhancement measures for important ecological features (see Section 7.7 and Technical Appendix 7.5).

7.4.14 Good practice habitat reinstatement measures would also be adopted and implemented, on areas subject to disturbance during construction works as soon as it is practical to do so. Further details of habitat reinstatement measures to be implemented are provided within Chapter 8: Ornithology and within an outline HMP (see Technical Appendix 7.5).

7.4.15 A FMP would also be implemented to record pre-, during and post-construction fish populations in watercourses on and adjoining the Site, with details to be agreed post-consent with input from the DBIRCT and RDDSFB.

Pre-construction Surveys

7.4.16 There is potential for a change in the distribution of protected terrestrial mammal species within the Site, between the completion of baseline surveys presented herein and the commencement of construction activities for the Proposed Development. Pre-construction surveys for protected terrestrial mammals including otter, water vole, wildcat, badger, pine marten and red squirrel would therefore be undertaken, within a defined period prior to the commencement of construction works and as outlined within the OCEMP (see Technical Appendix 2.1).

7.4.17 This would cover all areas within 250 m of the Proposed Development infrastructure and associated working areas.

7.4.18 The results of the pre-construction surveys would inform the need for further mitigation (if required) in respect of sensitive working practices, species protection plans (SPPs) and the requirement to consult with NatureScot, in relation to protected species licensing.

Ecological Clerk of Works

7.4.19 A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to oversee environmental protection measures and working practices specified in the OCEMP and prevent breaches of legislation pertaining to protected species and habitats. The role of the ECoW would be defined in the CEMP, and would include the following tasks:

- provide toolbox talks and information to all staff on-site, so staff are aware of the ecological sensitivities within the Site and the legal implications of not complying with agreed working practices;
- agree and monitor measures designed to minimise damage to retained habitats;
- undertake pre-construction surveys and advise on ecological issues and working restrictions where required;
- complete site-supervision works as required, in relation to sensitive habitats and protected species; and
- Oversee restoration of working areas following construction.

7.5 Summary of Sensitive Receptors

Scoped Out Receptors

7.5.1 CIEEM guidelines[1] stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and/ or resilient to impacts of a development proposal.

7.5.2 As such, the assessment presented within this chapter considers the effects upon designated sites for nature conservation and ecological features which are considered 'important' on the basis of relevant guidance and professional judgement.

7.5.3 Where ecological features are not considered so important as to warrant a detailed assessment or where they would not be significantly affected on the basis of baseline information, these are 'scoped out' of the assessment below, and are not considered further within this chapter. Mitigation measures for such features may however, still be outlined as appropriate, to reduce and/ or avoid any potentially adverse effects, or to ensure legislative compliance.

Designated Sites for Nature Conservation

7.5.4 Although the River Spey SAC is adjacent to the Site boundary, it is approximately 4 km from any areas of proposed infrastructure, and with no hydrological connectivity (see Chapter 9: Hydrology, Hydrogeology and Geology). As such, there is no route to impact for any of the solely aquatic qualifying features of the SAC (Atlantic salmon, sea lamprey and freshwater pearl mussel), and they are not considered further in this EcIA, though they are given consideration in the HRA process (see Section 7.11). However, existing records of otter within proximity to the Site were identified during the desk study and otter are a mobile species that may range quite widely in suitable habitat, and as such the potential for impacts upon the otter qualifying interests of the River Spey SAC is assessed within the chapter.

Habitats and Vegetation

7.5.5 The following habitats are considered of less than 'Local' ecological value in the context of the Proposed Development as they are features which are not potential GWDTEs, are relatively widespread, and/ or for which there is no route to impact due to spatial separation from the Proposed Development:

- broad-leaved plantation woodland;
- coniferous plantation woodland, including in mosaic with other habitats (further consideration of forestry interests is provided in Technical Appendix 2.6: Forestry Impact Assessment);
- scattered coniferous trees;
- recently felled coniferous woodland;
- broadleaved plantation woodland;
- broadleaved semi-natural woodland;
- dense scrub;
- arable;
- improved grassland;
- semi-improved acid grassland;
- unimproved acid grassland;
- unimproved neutral grassland; and,
- buildings and bare ground.

7.5.6 These habitats are therefore scoped out of further assessment.

7.5.7 Of the marshy grassland habitats present on-site, in an upland setting only NVC Codes M23a and U5 (see Table 7.6) have any protection status above the general inclusion of 'grasslands' on the north east of Scotland LBAP, and so may be of Local value or above. M23a corresponds with 'Upland Flushes, Fens and Swamp' on the SBL, and U5 with *Nardus stricta-Galium saxatile*

grassland. However, there would be no direct or indirect loss of M23a or U5 as a result of the Proposed Development, and therefore marshy grassland is scoped out of further assessment in this chapter. Likely groundwater dependence of marshy grassland habitat is considered separately in Chapter 9: Hydrology, Hydrogeology and Geology.

7.5.8 Impacts to habitats are possible at a wider spatial scale than those considered in Section 7.6, due to dust from traffic movements and pollution, e.g. from contaminated water - wetter habitats in particular, and from fuel spills. However, embedded mitigation measures implemented under the CEMP would limit the potential of these mechanisms to adversely impact habitats to the extent that impacts are expected to be of negligible magnitude and therefore not significant, and so indirect impacts associated with pollution are scoped out of further assessment in this chapter.

Species

7.5.9 NatureScot guidance[24] advises that there are some species, which with standard mitigation measures, are unlikely to experience a significant environmental effect as a result of the construction and/ or operation of onshore wind farms. These species do not require surveys to inform the EIA, but may require appropriate mitigation to ensure legislative compliance.

7.5.10 On this basis, baseline surveys for invertebrates, reptiles and amphibians have not been undertaken to inform the design and assessment of the Proposed Development. The desk study returned one record of a common frog, and one record of a grey mountain carpet moth. On consideration of the desk study and of the extent and nature of the Proposed Development, invertebrates, amphibians and reptiles are scoped-out of detailed assessment. It is also considered that with the application of embedded mitigation to prevent accidental mortality during construction and operation, there is no likelihood for significant impacts to the local mountain hare population and so this species is also scoped out of further assessment.

7.5.11 Both red and roe deer were noted to be present on-site. Any requirement for wild deer management is assumed to be undertaken by the landowner. As such, there would be commitment to liaise with the landowner to ensure that ongoing deer management activities take account of the construction and operation phases of the Proposed Development, with wild deer to be managed on-site as per the status quo. Deer are therefore scoped out of further assessment.

7.5.12 Baseline information collected through desk study, consultation with specialist recording groups and terrestrial mammal surveys has identified no evidence of, and only limited suitable habitat for the following protected terrestrial mammal species within the Site and/ or within a ZoI of infrastructure:

- badger;
- red squirrel; and
- roosting bats – no potential maternity and/ or hibernation/ swarming sites have been identified within at least 200 m plus blade tip of the proposed turbine locations.

7.5.13 These features are therefore scoped out of further assessment.

7.5.14 Brown long-eared bat is scoped-out of detailed assessment as the Site risk assessment for this species is 'Low' (see Technical Appendix 7.3) and they are considered to be of low population level vulnerability to wind farms in accordance with NatureScot guidance[19] and therefore of low sensitivity. Activity levels of *Myotis* at the Site represents 'Low to Moderate Site Risk', however this species is acknowledged as being Low collision risk, and Low/ Medium population vulnerability. Given the low numbers of passes of *Myotis* recorded (353 passes in

total; 2.6% of all passes) and the very low numbers of calls detected within or before the species-specific emergence time for *Myotis* significant adverse effects on populations are unlikely and so they are scoped out of further assessment.

7.5.15 Construction would mainly take place during daylight hours during the season when bats are active (April to October, inclusive), therefore any disturbance for foraging and commuting bats of any species is highly unlikely to occur and is therefore scoped-out.

7.5.16 Evidence, in the form of scat, was recorded of pine marten presence in the forestry though surveys found no dens and only limited suitable habitat for this species. Signs were largely restricted to tracks and forest clearings (forest edge habitat). Pine martens' preferred habitat consists of structurally complex habitats with a good availability of safe resting sites[49], more common in older growth woodland, which at the Proposed Development is largely restricted to areas of the Site where there is no development proposed. It is therefore not considered that the habitat within a ZoI of the Proposed Development would support a high density of pine marten, or is likely to be regularly used by this species for purposes other than foraging and commuting. Pine marten are increasing in numbers in the UK and are established across much of Scotland north of the central belt; in addition they have large home ranges of 3 to 33 km^2 (typically in forestry or rocky hillsides)[50]. As forest plantation is a common habitat in this part of Scotland, the Site is considered at most of local conservation importance for pine marten, and it is considered that embedded mitigation measures to be included in the CEMP would be sufficient to prevent any adverse impacts to this species.

7.5.17 The Site falls at the outer limit of the Strathbogie Scottish Wildcat Priority Area and a wildcat or hybrid individual was seen approximately 150 m outside the north eastern Site boundary during baseline surveys (see Figure 7.4). A data request to SWA returned no records of wildcat from within 2 km of the Site, though there are records from just outwith this distance and they are known to be present in forestry in the wider area, particularly south east of the Proposed Development. The woodland habitats at the Site, comprising predominantly single-age plantation, were confirmed by SWA as providing suboptimal habitat for wildcat and no wildcat dens or den-suitable habitat were noted during the field surveys, though they may commute through and hunt within the Site. It is considered unlikely that the habitats at the Proposed Development are regularly used by wildcat, and they are known to continue using forested and open habitats around constructed wind farms in the wider area[51] and so it is considered that the potential for adverse impacts is restricted to disturbance during the construction-phase. Embedded mitigation and good practice measures to be implemented under the CEMP, including pre-construction surveys and SPPs where appropriate, and presence of an ECoW during construction, would reduce the likelihood of adverse impacts to this species and the likelihood for significant effects to the local wildcat population is considered negligible and this species is therefore scoped out of further assessment. However, it is proposed that consideration of this species be built into any habitat management creation and enhancement proposals (see Section 7.7 and Technical Appendix 7.5).

7.5.18 Notwithstanding the scoping out of the above identified species from detailed EcIA, consideration is given to the provision of precautionary mitigation to ensure legislation compliance with regards the protection afforded to these species under the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland)

[49] Birks J & Messenger J (2010) Evidence of pine martens in England and Wales 1996 – 2007, Herefordshire

[50] Information from the Vincent Wildlife Trust summarized https://www.discoverwildlife.com/animal-facts/mammals/facts-about-pine-martens/ [last accessed 03/02/2022]

[51] Confidential location data 2015-2018 received from SWA

and the Wildlife and Countryside Act 1981 (as amended in Scotland), as relevant (see Section 7.4).

7.5.19 Very little habitat suitable for adult fish was recorded within the Site, and that which was recorded was observed to be low quality, and no high-quality spawning habitat is present so habitat suitability within the Site is restricted to juvenile fish. Watercourses downstream of the Proposed Development may support higher quality fish and freshwater pearl mussel habitat and are hydrologically connected to the River Deveron; The DBIRCT and RDDSFB returned two records of Atlantic salmon (fry and parr) and two records of brown trout (fry and parr) from Charach Water, a tributary of the River Deveron, located outwith the south western Site boundary. The RDDSFB highlighted the importance of the watercourses within and bordering the Site for fish stocks and the potential for activities within the Site boundary to have a detrimental effect on fish stocks and their habitats outwith the Site. Proposed Development design and evolution has inherently minimised the requirement for near watercourse working and the number of watercourse crossings to facilitate access tracks. Where watercourse crossings are required these have been sensitively designed to ensure the continued free passage of fish movements in accordance with SEPA guidance. Embedded mitigation and good practice measures implemented under the CEMP, including (but not restricted to) pollution and siltation protection measures, water quality monitoring pre-, during and post-construction and presence of an ECoW during construction, would prevent adverse impacts associated with the Proposed Development to fish. A FMP, including provision for pre-, during- and post-construction fish monitoring would be produced pre-consent in consultation with RDDSFB and DBIRCT. As such, and providing the implementation of good practice construction measures detailed herein (and in the OCEMP provided as Technical Appendix 2.1) significant effects upon fisheries interests would not occur and such species are scoped out of the assessment.

Summary

7.5.20 The above discussed features are not considered to be 'important ecological features' in the context of the Site and/ or of the Proposed Development. The likelihood of significant effects to their populations at any geographical scale is considered to be negligible, and so they are assigned less than Local value and scoped out of further consideration within this chapter.

Scoped In Receptors

7.5.21 A summary of Important Ecological Features scoped-in for detailed assessment is provided in Table 7.10.

Table 7.10: Summary of Important Ecological Feature Sensitivity

Important Ecological Feature	Sensitivity	Justification
River Spey SAC (otters only)	High/ International	Provided protection under the Habitats Regulations. The SAC abuts the north west corner of the Site and, while there is no route to impact for several of the qualifying features, otter is a mobile species that may use habitats within the Site. Any otter present at the Site are likely to be from the River Spey SAC population.
Blanket Bog (construction-phase)	**Medium/ Regional**	Blanket bog is included on Annex 1 of the Habitats Directive and on the SBL. The Carbon and Peatland Map 2016[42] indicates that the majority of the Site comprises Class 5 or Class 4 peatland habitats, though a large area of Class 1 peatland habitat skirts the Site to the north and extends across the top and down the eastern face of Craig Watch Hill and along the south west of the forestry to the west of Brown Hill. The NVC habitat results for this area identify

Table 7.10: Summary of Important Ecological Feature Sensitivity

Important Ecological Feature	Sensitivity	Justification
		this as M19a/b and M19a blanket bog, with M19a the dominant sub-community within the Site. The Proposed Development largely avoids peat depth >0.5 m and Class 1 soils but small areas will be lost to Turbine 1, and to Turbines 6 and 8 on Craig Watch. The blanket bog habitats within the Site supported Sphagnum moss indicating that the habitats were 'peat forming' and active; however the bog mosses present are limited to acute leaved bog-moss and so the Sphagnum community is species-poor. This is not unexpected where blanket bog habitats are heavily modified through anthropogenic activities (commercial forestry and drainage). Peat was found to be largely dry and characterised by similar abundances of both common heather and hare's-tail cottongrass. This is consistent with afforestation and artificial drainage measures undertaken and therefore identified Class 1 soils are considered to be of no greater than Regional value. Despite their modified state, the presence of indicator species, and being located on deep peat (>1 m) warrant the habitat type to be considered of medium sensitivity. Habitat loss as a result of the Proposed Development has been minimised through a sensitive and iterative design process, however direct land-take resulting in the loss of some Annex 1/ SBL habitat types would be unavoidable. Additionally, temporary habitat losses are also anticipated to occur during the construction and decommissioning phases of the Proposed Development. The potential for indirect effects on adjoining/ nearby habitats through local changes to hydrology is also considered within the assessment.
Dry Modified Bog (construction-phase)	Low/ Local	Dry modified bog is classified as blanket bog and so is an Annex 1 habitat under the Habitats Directive and is also included on the SBL. The dry modified bog habitats on Site are represented by NVC habitat classifications H12a and H12a/H18 over peat >0.5 m in depth, and cover an extensive area in the centre of the Site on the south and western slopes of Garbet Hill. While heavily degraded, and currently supporting heathland vegetation communities rather than blanket bog communities, when on deep peat restoration of this habitat to Blanket Bog is considered possible under Annex 1 criteria. Within the Site, the heathland vegetation of this habitat has been subject to extensive management via draining, swiping and burning, and is also grazed in places, to the extent that successful restoration back to blanket bog is considered to be highly unlikely. Habitat areas are sizeable and connectivity is largely retained, but in the absence of favourable management intervention are not afforded Regional value due to their extent of degradation and drying impacts, poor species-diversity and quality.
Acid Dry Dwarf Shrub Heath (construction-phase)	Low/ Local	Dry dwarf shrub heath is included on Annex 1 of the Habitats Directive and on the SBL. Dry dwarf shrub heath is the most extensive priority habitat within the Site. Though part of a wider extent of this habitat stretching over the hills to the north west of the Proposed Development, dry dwarf shrub heath within the Site is mostly limited to areas at the south east and north west of the Site. This habitat within the Site is heavily managed and very species-poor, and is not considered to represent an important example of the Annex 1/SBL 'upland dry heath' habitat.
Otter (construction-phase)	Low/ Local	Otter are protected under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004 (as amended). They are also SBL priority species. No evidence of otter was recorded within the Site, and watercourses within the Site are considered to be of limited value for this species. However, otter evidence, including potential holts, was recorded for the Garbet Wind Farm, the application boundary for which is adjacent to the Site to the north west. Habitats within the Garbet Hill site, particularly Glen Markie and the Markie Water, are likely to represent considerably higher value habitat for this species than most of the habitats within the Proposed Development.

Table 7.10: Summary of Important Ecological Feature Sensitivity		
Important Ecological Feature	**Sensitivity**	**Justification**
		Given the status of otter as a qualifying feature of the River Spey SAC and known presence in the wider area, as well as the existence of suitable habitat for this species downstream of the Site e.g., Charach Water, Linn Burn and the River Deveron, it is considered to be an Important Ecological Feature. However, the lack of evidence for regular use of the habitats within the Site by this species, it is considered of no greater than Local value in the context of the Proposed Development.
Water Vole (construction-phase)	Low/ Local	Water vole are protected under Schedule 5 of the Wildlife and Countryside Act. Evidence of water vole presence, including a burrow, were recorded along watercourses within the Site during protected mammal and fish habitat surveys. However, presence evidence was not extensive, and so the population present is unlikely to be of greater than Local importance.
Bats (common pipistrelle, soprano pipistrelle and noctule) (operational-phase)	Medium/ Regional	All bat species are protected under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004 (as amended). They are also SBL priority species. Activity recorded during 2020 baseline surveys was dominated by common and soprano pipistrelle, representing "Moderate Site Risk". in accordance with NatureScot guidance[19] (see Technical Appendix 7.3: Bats). Noctule were also recorded in reasonable numbers and are considered to fall under the "Low Site Risk" category. Activity levels for this species were highest, and also recorded prior to the species-specific emergence time, at MS7 and MS9 (see Figure 7.6). Given current limitations in available bat survey data on the *Ecobat* database, definitive bat activity for regions are not generated and bat activity representations are instead indicative for each region. Based on this the results show that overall, there is a low/ medium likelihood of the Proposed Development resulting in significant impact on bats. Data collected indicates low activity levels based on bat passes per hour, and of a very narrow range of species, which is considered representative of the low value for bats of habitats within proximity to the proposed turbine locations. The *Ecobat* analysis indicated bat activity may be slightly increased to low/medium. No bat roosts were confirmed within the Site, but it is considered likely these may be present within the surrounding area.

7.6 Assessment of Likely Effects

7.6.1 This section presents an assessment of effects upon the important ecological features identified in Table 7.10, both as a result of the Proposed Development alone, and cumulatively in-combination with other wind farm developments in the absence of additional mitigation.

7.6.2 The Proposed Development has been assessed for an operational life of 33 years.

Potential Construction Effects

7.6.3 Following the application of embedded mitigation and good practice measures as outlined in Section 7.4, potential construction phase ecological effects associated with the Proposed Development are considered to relate to:

- direct land take (habitat loss) to accommodate the Proposed Development;
- direct mortality of protected species via vehicle collision;
- temporary disturbance and land take for laydown areas and construction compounds;
- disturbance to, fragmentation or severance of connecting habitat or potential commuting routes within, and adjacent to, the Site; and

- disturbance resulting from site clearance and construction, plant and vehicles movements and Site workers' activities.

River Spey SAC

7.6.4 No direct effects on the River Spey SAC would occur as a result of the Proposed Development. The potential for indirect effects on the SAC has also been inherently avoided, with all proposed infrastructure and construction corridors located approximately 4 km from the SAC and with no hydrological connectivity.

7.6.5 It is therefore considered that there would be no effects of construction on the River Spey SAC.

7.6.6 The potential for impacts upon otter, a qualifying interest of the River Spey SAC, is provided separately within the species assessment.

Habitats and Vegetation (Blanket Bog and Upland Heath)

7.6.7 Following the application of good practice measures during the construction phase to prevent indirect impacts (see Section 7.5), there are two main ways by which habitats and vegetation may be affected as a result of the construction phase of the Proposed Development:

- direct loss – the loss of habitats and vegetation under the footprint of the Proposed Development; and
- indirect loss – calculated for blanket bog, wet modified bog and wet dwarf shrub habitats which are located within 10 m of direct habitat loss areas, to account for potential changes in habitat vegetation structure due to drying effects as a result of construction works. For all other habitats a temporary loss is calculated within 2 m of direct habitat loss areas, to include for additional habitat disturbance during construction works.

7.6.8 Habitat losses are calculated based on NVC community, though Phase 1 habitat type is used to group the habitats for ease of reference. As such, some NVC habitat types within a Phase 1 habitat group do not contribute to the total extent within the Site as provided in Table 7.11.

7.6.9 For the purposes of assessment, a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of blanket bog, dry modified bog and dry dwarf shrub heath habitats represents a permanent, irreversible adverse effect. In practice some areas indirectly/ temporarily affected may be able to be restored i.e., during habitat reinstatement following construction in accordance with the OCEMP (Technical Appendix 2.1).

7.6.10 Table 7.11 details the estimated direct and indirect/ temporary habitat losses as a result of the construction of the Proposed Development, and potential effects on blanket bog and heath communities.

7.6.11 Total known direct land take for the Proposed Development would be 17.21 ha of which 5.03 ha are accounted for in Table 7.11. The remaining 12.18 ha of habitats to be directly lost comprise coniferous plantation woodland and scattered coniferous trees, dense scrub, marshy grassland, improved grassland, semi-improved acid grassland and mosaic habitat which have been scoped out of the assessment.

7.6.12 There would be a 2.9% direct relative coverage loss of dry modified bog and 1.3% of blanket bog, which equates to a direct loss of 2.2% of peatland habitats overall. Direct loss of dry heath habitat for the Proposed Development equates to 0.24% of its extent within the Site. Potential indirect losses of protected and notable habitats within 2 m or 10 m of proposed infrastructure are of a greater extent (see Table 7.11), though are less certain to take place.

Note that the impact assessment below is based on the potential total (direct and indirect) loss.

Table 7.11: Summary of Habitat Losses

Phase 1 Habitat Type	NVC Community/ Sub-community	Total Area Within Site Boundary (ha)	Habitat Losses (ha)			Proportion Lost (%)
			Direct	Indirect	Total	
Dry modified bog (E1.8)	H12a and H12a/ H18	119.05	3.42	4.48	7.90	6.64
Blanket bog (E1.6.1)	M19a and M19a/b	86.68	1.16	2.44	3.60	4.15
Acid dry dwarf shrub heath (D1.1)	H12a and H13	181.48	0.45	0.51	0.95	0.52
Total		**387.21**	**5.03**	**7.43**	**12.45**	**3.22**

BLANKET BOG AND DRY MODIFIED BOG (PEATLAND)

7.6.13 Both blanket bog and dry modified bog are classified as blanket bog on Annex 1 of the Habitats Directive, and so are grouped for this assessment as 'Peatland'. The Carbon and Peatland Map 2016[42] shows that the Proposed Development sits at the furthest north eastern edge of where extensive areas of priority peatland are located in the Grampian region, at the far eastern edge of NHZ11, grading to the east of the Site into "Lowland" and "Valleys/ Straths/ Glens/ Voes" Landscape Character Types[36] of NHZ12. The fact that they are at the edge of their range in this part of Scotland, coupled with extensive previous anthrogenic intervention, has contributed to the dry, species-poor nature of peatland habitats on the Site, and they are not considered Regionally important examples of blanket bog habitat.

7.6.14 In the context of the quality of these habitats on-Site, and the wider availability of extents of Class 1 Peatland to the south and west of the Proposed Development in NHZ11, the direct and indirect loss of the peatland habitats is considered to constitute an impact of Low/ Medium magnitude at a Regional scale, resulting in a **Minor Adverse** effect which is considered not significant.

7.6.15 A commitment to a HMP is included as part of the Proposed Development (see Section 7.4.13 and Technical Appendix 7.5) which would include proposals for peatland restoration. Further details are provided in Section 7.7.

ACID DRY DWARF SHRUB HEATH

7.6.16 The dry dwarf shrub heath habitat on-site is heavily managed and species-poor. Only a very small amount of this habitat would be lost to infrastructure for the Proposed Development and this is considered to constitute an impact of Negligible magnitude at a Local scale, resulting in a **Negligible Adverse** effect which is not significant.

7.6.17 An area of dry dwarf shrub heath has been identified as a search area for compensatory planting (see Technical Appendix 2.6: Forestry Impact Assessment). The compensatory planting plan would be finalised and agreed post-consent, and so losses associated with this element cannot be assessed at this stage. However, in the event that some compensatory planting is undertaken in areas of dry-dwarf shrub heath this would lead to an increase of loss relative to that assessed within this chapter. Given the extent and condition of this habitat within the Site, and the minimal proportion of loss overall (as outlined above), it is considered that this would still result in a no greater than **Minor Adverse** effect, and so the significance of effects associated with the Proposed Development would remain unchanged.

Otter

7.6.18 No evidence of otter was recorded within the Site, and the watercourses in the Site are considered sub-optimal for this species. However, they are present in the wider area, and are a feature of the River Spey SAC, and so it is likely that they do use habitats within the Site on occasion for commuting and/ or foraging, though noting that considerably higher value habitat is available within the surrounding glens and major watercourses. Otters which may use the Site on occasion are considered part of the River Spey SAC population.

7.6.19 The death or injury of an otter during construction works is considered highly unlikely, following the implementation of the good practice measures outlined as part of the CEMP, including the careful storage of potentially dangerous substances or materials.

7.6.20 Direct increases in vehicle movements within and to the Site, may result in a temporary increase in risk to otters from road traffic collisions. However, given the general nocturnal nature of otter activity, such risks would be small and restricted to the occurrence of construction works taking place during darkness or winter months should these occur, and upon which the appointed ECoW would advise. Potentially significant effects upon otters as a result of death or injury are therefore highly unlikely to occur and are considered to represent a **Negligible Adverse** effect which is not significant.

7.6.21 The majority of construction works associated with the Proposed Development would affect terrestrial habitats, with the potential for impacts upon watercourses which may be used by otter minimised through embedded mitigation. As such, there would be a very small loss in the availability of watercourse habitats for otter within the Site as a result of the construction of two new watercourse crossings and two field drain crossings.

7.6.22 Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands and near watercourses, to be adopted during the construction and operation phases and serving to protect the aquatic environment, are detailed in Chapter 9: Hydrology, Hydrogeology and Geology.

7.6.23 Watercourse crossings would also be of a design to allow for the free passage of wildlife beneath, as such, it is considered that otters would become adapted to crossings in the long-term, without any significant barriers to movement. Habitat losses for otter are therefore considered to represent an impact of Negligible magnitude, resulting in a **Negligible Adverse** effect which is not significant.

7.6.24 Construction works have the potential to result in temporary disturbance to otters using the watercourses within the Site as a result of increased noise and human presence, which may result in a disruption to foraging and commuting activities. Disturbance is most likely to occur during works in close proximity to watercourses, primarily associated with new watercourse crossings. Otters are known to occupy large home ranges and are able to adapt to some levels of human disturbance (e.g. Chanin, 2003[52]), their use of watercourses within the wider surrounding areas of the Site is also established. As such, given the minimum requirement for construction works within close proximity to watercourses, the potential for disturbance to otter would occur within a very small area of suitable habitats available locally for the species.

[52] Chanin P (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No 10.

7.6.25 Overall potential disturbance risks to otter are considered to comprise no more than a Low magnitude impact which would result in a **Minor Adverse** effect which is considered not significant.

7.6.26 No holts or potential otter resting places were recorded within the Site however, it is possible that breeding or resting places may be established prior to the commencement of construction activities for the proposed Development. Pre-construction surveys would be undertaken (see Section 7.4) to ascertain any changes in baseline otter conditions within the Site to identify the requirement for additional species-specific mitigation.

7.6.27 As no significant effects are predicted for otter, it is considered that all impacts upon the River Spey SAC associated with the construction and operation of the Proposed Development would be a Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is not significant.

Water Vole

7.6.28 Signs indicative of water vole presence has been established at several locations along watercourses within the Site, including a burrow with evidence of recent use (feeding signs and a latrine). The burrow was located 190 m downstream of where the main access track crosses the Burn of Findouran, and also downslope of the temporary construction compound and infrastructure associated with Turbine 2, and so outwith the ZoI for this species with the application of embedded good practice measures. However, water voles may use suitable habitats throughout the Site variably between years. Irrespective of this, the spatial extent of construction works for the Proposed Development in water vole suitable habitat would be highly localised, restricted to two new watercourse crossings and two field drain crossings, and as such is only likely to potentially impact upon a small number of individual water vole territories.

7.6.29 The construction of watercourse crossings would require the permanent loss of watercourse bank habitat available for potential use by the established local water vole population within the Site. In the context of remaining available and suitable habitat for water voles within the Site and locally, this is considered to represent no more than a Low magnitude of impact, resulting in a **Minor Adverse** effect which is considered not significant. The design of watercourse crossings would retain free passage of water voles and other wildlife beneath (see Section 7.4) and as such, given the small number of crossings required, the fragmentation of water vole habitat within the Site would not occur.

7.6.30 The construction of watercourse crossings has the potential to result in the killing, injuring or disturbance of individual water voles and/ or damage or destruction to water vole burrows, should these be established within working areas. Construction works at watercourse crossings would, however, be restricted to defined working areas, overseen by an ECoW, and subject to pre-construction surveys and SPPs where appropriate. As such, together with the mobility of the species allowing for escape, the construction of watercourses is highly unlikely to result in the death or injury of individual water voles. Potential effects are therefore considered to be a Negligible magnitude of impact, resulting in a **Minor Adverse** effect which is considered not significant.

7.6.31 Noise and visual disturbances are also generally considered unlikely to have any significant effects upon water voles (Dean *et al*., 2016[53]) however should disturbances occur to the point

[53] Dean, M., Strachan, R., Gow, D. and Andrew, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

at which a water vole may potentially abandon its burrow this would constitute a breach of the provisions of the Wildlife and Countryside Act. Construction works would be overseen by an ECoW (see Section 7.4) to prevent such breaches of legislation.

Potential Operational Effects

7.6.32 Operational effects are defined as effects following the construction of the Proposed Development. Operational effects generally relate to disturbance of adjacent habitats or species, on either a temporary or permanent basis. Some effects may reduce with habituation or remain for the lifetime of the Proposed Development.

7.6.33 During the operational phase, with the application of good practice measures relating to wind farm operation and maintenance activities, it is considered that potential adverse impacts are restricted to the risk of collision mortality for common and soprano pipistrelle and noctule bats. Direct adverse effects for other sensitive ecological features (such as habitat loss and disturbance) are not anticipated to occur during the operational period.

7.6.34 The HMP, which would be implemented during the first years of operation and remain in place for the lifetime of the Proposed Development, is expected to provide beneficial effects associated with the Proposed Development in the long term for important ecological and ornithological features (see Section 7.7).

7.6.35 Potential for impacts on surface water, groundwater, peat and GWDTEs are discussed separately in Chapter 9: Hydrology, Hydrogeology and Geology.

Bats

7.6.36 NatureScot guidance[19] (SNH, 2019a) states that operational wind farms can affect bats in three ways:

- death or physical injury caused by interaction with operational wind turbines (e.g., collision or barotrauma);
- loss of, or damage to, commuting and foraging habitat; and
- displacement of individuals or populations from the area.

7.6.37 The assessment of operational effects is restricted to sp., common and soprano pipistrelle and noctule bats only, as they are categorised as of high risk of collision from wind turbine developments[19] and were the three most commonly recorded species accounting for 97.1% of all bat recordings.

7.6.38 The assessment of potential impacts on bats resulting from the operation of the proposed wind turbines has been based on the two-stage methodology set out in current NatureScot guidelines[19] using the *Ecobat* tool as follows:

7.6.39 NatureScot guidance[19] requires a two-stage site assessment approach, as follows:

- Stage 1 - gives an indication of the potential risk level of a site, based on consideration of habitat and development-related features; and
- Stage 2 – uses the output of stage 1 (i.e., the potential risk level of a site) to provide an overall risk assessment based on the activity level of high collision risk species.

7.6.40 Full details are presented in Technical Appendix 7.3.

7.6.41 Following the Site Risk Level matrix presented in Table 3a of the NatureScot guidance[19] for Stage 1, the Proposed Development is assessed as having an overall 'Site Risk' of 2,

representing a Low/ Lowest Site Risk, based on a Site 'Habitat Risk' of Low and Site 'Project Size' of Medium.

7.6.42 Stage 2 of the assessment process has been informed by the output from *Ecobat* which provides a numerical comparative interpretation of bat activity at development sites (Lintott *et al*., 2018[54]). Stage 2 considers the conclusions of Stage 1 in relation to relative levels of bat activity and considering the vulnerability of species recorded, at the population level.

7.6.43 The full evaluation of bat activity for Stage 2 is presented within Technical Appendix 7.3. The following information is taken from the Overall Risk Assessment, provided in Table 7.3.18 of the Technical Appendix.

7.6.44 The risk of operational mortality to bats is generally acknowledged to be lowest at locations with low bat activity. Activity of noctule was highest at MS7 (Moderate to High) and MS9 (Moderate), but Low to Moderate or Low at all other monitoring stations.

7.6.45 Soprano pipistrelle activity was largely Moderate or lower across the monitoring stations at which it was recorded, with the exception of MS6, MS7 and MS11 which were Moderate to High or High. The highest activity was recorded at MS7.

7.6.46 With the exception of MS1 which was Low to Moderate, and MS2 and MS3 where this species was not recorded at all, common pipistrelle was consistently Moderate, Moderate to High or High, with the highest activity levels recorded at MS7 and MS11.

7.6.47 The overall risk assessment for common pipistrelle and soprano pipistrelle is considered to fall "Medium Site Risk" and noctule is considered to fall under "Low Site Risk". On this basis, the Stage 2 overall risk assessment concludes that there is a Low/ Medium likelihood of the Proposed Development resulting in significant impact on bat species populations. However, given the current limitations of the *Ecobat* tool, these conclusions are considered precautionary and very likely overstate the potential for population level effects.

7.6.48 No maternity roosts and/ or significant swarming or hibernation roosts for any bat species were confirmed within the Site, and no potential for these to be present was identified.

7.6.49 NatureScot guidance[19] advises that to reduce potential impacts upon bats, resulting from operational wind turbine development, a 50 m 'stand-off' distance should be maintained around bat habitat features, into which no part of the turbine intrudes. The guidance provides a formula for calculating this 'stand-off' distance.

7.6.50 The layout of the Proposed Development would require key-hole felling of plantation woodland habitat around the eight turbines which are located in areas of forestry. A minimum buffer of 96 m would be maintained between the turbine and the retained plantation woodland. Trees at the edge of the keyhole would not be allowed to exceed 38 m in height during the lifespan of the Proposed Development, based on the calculation provided in NatureScot guidance[19], to prevent the 50 m stand-off distance from being eroded.

7.6.51 The layout of the Proposed Development has also adopted a minimum 68 m 'stand-off' distance between proposed turbine locations and all watercourses (with the exception of Turbine 7 which is 53.6 m from a water body noted as a 'dry ditch' during the fish habitat survey). However, for the proposed turbine specifications, and adopting a precautionary watercourse feature height of 2 m over lifespan of the Proposed Development, the distance

[54] Lintott, P.R., Davison, S., van Breda, J., Kubasiewicz, L., Dowse, D., Daisley, J., Haddy, E. and Mathews, F., (2018). Ecobat: An online resource to facilitate transparent, evidence-based interpretation of bat activity data. Ecology and evolution, 8(2), pp.935-941

that is required to achieve the 50 m stand-off to turbine blade tips is 42 m, based on the calculation in the NatureScot guidance[19].

7.6.52 As such the Proposed Development provides a stand-off distance in excess of 50 m for all turbine locations for potential woodland edge and watercourse features for bats.

7.6.53 Based on activity levels recorded and subsequent analysis as outlined, mortality or injury levels for bat species are considered to be low. The Proposed Development is not considered to represent a site of concern for bat collision risks following the approach to assessment set out in NatureScot guidance[19]. It is however, acknowledged that low risk sites can still result in bat casualties, but for which embedded 'stand-off' distances from habitat features in accordance with NatureScot guidance[19] is considered adequate mitigation to avoid potentially significant operational mortality risks to bat populations at most low-risk locations.

7.6.54 Impacts of bat collision risk mortality are subsequently considered to be of no more than a Low magnitude impact, resulting in a **Minor Adverse** effect which is considered not significant.

7.6.55 Given the overall low quality of the habitats within the Site for bats, and the presence of valleys and mixed woodland and farmland habitat in the area surrounding the Site, loss and damage to bat foraging or commuting habitat for the Proposed Development is considered to be inconsequential at a population level and are subsequently an Negligible magnitude of impact resulting in a **Negligible Adverse** effect which is not significant.

7.6.56 Based on the lack of suitable roost features within a ZoI of the Proposed Development, activity levels recorded and subsequent analysis as outlined, displacement levels are likely to be low and are subsequently considered to represent a Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

Potential Decommissioning Effects

7.6.57 Decommissioning, including the removal of infrastructure, would involve earthworks which in the absence of mitigation have the potential to cause pollution, and/ or to adversely impact habitats and protected species. Potential decommissioning effects are considered to be similar to those identified for the construction phase. The future species community and habitat composition and condition at the time of decommissioning is unknown and cannot be reasonably assumed with any certainty. Decommissioning effects are therefore not considered separately for each ecological feature.

7.6.58 Providing the implementation of good practice measures such as those included in the OCEMP (Technical Appendix 2.1), be implemented, it is unlikely that significant effects upon important ecological features would occur.

7.6.59 The removal of infrastructure and potential pollution or acidification is considered further in Chapter 9: Hydrology, Hydrogeology and Geology.

Potential Cumulative Construction Effects

7.6.60 As described in Section 7.3, cumulative effects are only considered for features with above Negligible magnitude effects, and in the case of habitats, cumulative impacts are only considered where there will be an above Negligible adverse effect associated with loss of habitats following any mitigation and/ or enhancement proposals. As such, as habitats restoration is proposed under an HMP (see Section 7.7), cumulative effects for construction are considered in relation to otter only. Following implementation of habitat enhancement measures under the HMP, there are predicted to be no adverse impacts of habitat loss for

otters and the potential for significant beneficial effects. As such, cumulative habitat loss is scoped out of further assessment.

7.6.61 Construction activities at nearby projects could result in cumulative disturbance and displacement effects when within close proximity to the Site and undertaken at the same time. For the purposes of assessment of cumulative construction-phase disturbance effects, 'nearby' is defined as within 5 km given the localised nature of effects from construction activities.

7.6.62 The potential for cumulative construction-phase effects to occur is considered in relation to Clashindarroch II (ECU00000409) which is in planning and the adjacent Garbet Wind Farm (21/00020/EIA) which has been refused but is being appealed. All other wind farms of more than three turbines within at least 5 km are either at scoping stage, or are operational and therefore would not contribute to cumulative construction-phase effects.

7.6.63 Impact assessment information for Garbet Wind Farm is not available in the public domain, though it is known that otter were recorded on-site during the baseline, including holts/ places of shelter. No concerns relating to otter were raised by consultees in response to the Garbet Wind Farm submission.

7.6.64 The Clashindarroch II application predicted an overall Negligible, non-significant effect of construction on otter following the application of embedded mitigation measures, and so no cumulative effects are predicted. A SPP is proposed as appropriate to prevent impacts to otter during the construction of Clashindarroch II. As such there will be a Negligible magnitude of cumulative impact, resulting in a **Negligible Adverse** cumulative effect which is not significant.

Potential Cumulative Operational Effects

7.6.65 As explained in Section 7.2, for non-avian species, potentially significant cumulative effects are only likely where other developments are located within the regular range of more mobile species (e.g., bats) and for features with above negligible magnitude predicted impacts.

7.6.66 Cumulative operational effects are considered in relation to bats only.

7.6.67 Bat collision impacts have been minimised through the sensitive and considered design of the Proposed Development and by implementation of standard good practice measures regarding buffer distances of turbines from woodland edges, commuting corridors and other bat features in order to minimise the potential for impacts on commuting and foraging bats and therefore the likelihood of cumulative operational impacts.

7.6.68 Of the other wind farm developments within 10 km of the Proposed Development, there was no assessment information available online for Dorenell Wind Farm due to its age, and so it is not included in the consideration of cumulative effects, though it is acknowledged that it is likely to contribute to cumulative effects particularly given the number of turbines (59).

7.6.69 Cairnborrow, a four turbine development on agricultural land of turbines 100 m to tip, also did not have any assessment information in the public domain. However, the HMP stated that low levels of activity of common and soprano pipistrelle and *Myotis* sp. bats were recorded during surveys and a small common pipistrelle roost was identified adjacent to the Site. Good foraging habitat was limited within the Cairnborrow site, so it is assumed that there are unlikely to be significant impacts. Habitat management measures away from the turbines in the form of planting to benefit and attract insects were expected to increase food resources for bats.

7.6.70 Clashindarroch Wind Farm EIA is not available in the public domain, however it is mentioned in the Environmental Statement for Clashindarroch II in relation to cumulative impacts.

7.6.71 Clashindarroch II recorded low levels of bat activity by common and soprano pipistrelle. Foraging habitat quality is poor away from forest edges and riparian corridors. Roosting habitat quality is poor though one small non-breeding common pipistrelle roost site was located approximately 200 m from the nearest proposed wind turbine.

7.6.72 The potential for collision risk/ barotrauma of bats with turbine blades was assessed as a Low effect, resulting in a potential effect significance level of Minor Adverse, not significant. Cumulative effects between Clashindarroch Wind Farm and Clashindarroch II were not considered to be a significant concern for this assessment due to the inherently low risk to bats from the existing wind farm.

7.6.73 Hill of Towie II Wind Farm recorded low activity levels of bats, predominantly common and soprano pipistrelles. It was predicted that pipistrelles using the site would be unlikely to be at significant risk of turbine collision and it was therefore considered that the magnitude of impact will be negligible, and the residual effect therefore be Negligible Adverse (not significant).

7.6.74 Both Clashindarroch II and Hill of Towie II have incorporated a minimum 50 m buffer between potential bat features and turbine blade tips into their development design. This implementation at other wind farm sites of standard good practice measures regarding buffer distances of turbines from forestry edges to minimise impacts on commuting and foraging bats, further minimises the likelihood of cumulative impacts.

7.6.75 Cumulative impacts on bats are considered to be no more than a Medium magnitude of impact, resulting in a **Minor Adverse** effect which is considered not significant.

7.7 Mitigation

7.7.1 There are no significant adverse effects predicted for any important ecological feature as a result of the construction/ operation of the Proposed Development, either alone or cumulatively with other developments. As such no mitigation is required in accordance with CIEEM guidance[1], however it is also good practice to propose measures to reduce adverse effects that are not significant. Enhancement measures designed to benefit ecological features at the Site are outlined below.

Enhancement

Habitat Management Plan

7.7.2 A detailed HMP would be produced post-consent for agreement by statutory consultees and other stakeholders. The objectives of this plan would be to restore degraded peatland habitats on-site, to mitigate loss and to provide a net gain of good quality bog habitat within the Site, and to provide habitat creation and enhancement to benefit a range of species, including otter and wildcat. An Outline Habitat Management Plan (OHMP) setting out the broad principles is provided as Technical Appendix 7.5, and is summarised below.

7.7.3 Peat restoration, including rewetting via blocking of drains, would be undertaken in appropriate areas of the Site. Where possible without compromising forestry objectives, this would be planned to link to and extend the areas of Class 1 peatland within and bordering the Site. Grassland/ heath management include managing the grazing pressure, is proposed on Kelman Hill, to enhance the quality of this habitat within the Site for biodiversity.

7.7.4 Riparian planting is proposed within the Site, which would enhance habitat connectivity for otter and wildcat. Other measures to improve habitat diversity, such as leaving brash piles in places and scrub areas such as gorse, would also be of benefit to these (and other) species. Measures which help to connect the Site to wider habitats, such as Clashindarroch Forest, would provide benefits to wildcat at a landscape scale.

7.7.5 It is predicted that implementation of the HMP would provide beneficial effects associated with the Proposed Development in the long-term, particularly in the context of the current heavily modified and degraded condition of the peatland habitats within the Site (which would be expected to continue under the future baseline scenario).

7.8 Assessment of Residual Effects

7.8.1 No significant adverse residual effects are predicted to occur upon any important ecological feature as a result of the construction, operation or decommissioning of the Proposed Development, either alone or cumulatively with other developments via 'in-combination' effects or 'effect interactions'. Habitat creation and enhancement measures to be implemented under the HMP are expected to provide net beneficial effects associated with the Proposed Development longer term. As such, residual effects for all important ecological features are considered not significant.

7.9 Monitoring

Construction Phase Monitoring

7.9.1 Monitoring would be carried out on-Site throughout the construction-phase by the ECoW, with details of any specific monitoring required to be provided in the CEMP and any associated species protection plans. Construction phase fish monitoring would be detailed in the FMP.

Operation Phase Monitoring

7.9.2 No operational phase monitoring is required or proposed, beyond that to be agreed as part of the HMP.

Decommissioning Phase Monitoring

7.9.3 No specific decommissioning phase monitoring is required or proposed, however in line with guidance at the time an ECoW may be present to monitor activities associated with decommissioning.

7.10 Summary

7.10.1 A summary of potential effects is provided in Table 7.12

Table 7.12: Summary of Potential Significant Effects of the Proposed Development

Likely Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
River Spey SAC	None required – no route to impact	N/A	No effect, Not Significant
Blanket Bog	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
Dry Modified Bog	Specific mitigation not required. Embedded mitigation and good	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant

Table 7.12: Summary of Potential Significant Effects of the Proposed Development			
Likely Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
	practice protocols included as part of the CEMP.		
Acid Dry Dwarf Shrub Heath	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
Otter	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP (including SPP if required, and ECoW presence during construction), to be agreed post-consent and prior to commencement of construction.	Minor/ Negligible Adverse, Not Significant
Water vole	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP (including SPP if required, and ECoW presence during construction), to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
Operation			
Habitats (blanket bog, dry modified bog and acid dry dwarf shrub heath)	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the Operational Management Plans. HMP to provide enhancement and biodiversity benefit.	Implementation of a HMP, to be agreed post-consent and prior to commencement of construction.	Beneficial, Not Significant
Species (otter and wild cat)	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the Operational Management Plans. HMP to provide enhancement and biodiversity benefit.	Implementation of a HMP, to be agreed post-consent and prior to commencement of construction.	Beneficial, Not Significant
Bat species	Specific mitigation not required.	Maintaining a stand-off distance between turbine blades and potential bat features to reduce collision risk.	Minor Adverse (collision)/ Negligible Adverse (all other impacts), Not Significant
Decommissioning			
All important ecological features assessed herein	Embedded mitigation and good practice	Via approved decommissioning protocols, to be approved prior to decommissioning.	Not Significant
Cumulative Construction			
Otter	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP. HMP to provide enhancement and biodiversity benefit.	Implementation of a CEMP (including SPP if required, and ECoW presence during construction) and HMP, to be agreed post-consent and prior to commencement of construction.	Negligible Adverse, Not Significant
Cumulative Operation			
Bats	Specific mitigation not required.	Maintaining a stand-off distance between turbine blades and potential bat features to reduce collision risk.	Minor Adverse, Not Significant

7.11 Information to Inform Habitats Regulations Appraisal

Screening for Likely Significant Effects

7.11.1 Under the Conservation (Natural Habitats, &c.) Regulations 1994, as amended (the Habitats Regulations)[3] any development that may have a likely significant effect (LSE) on a SAC, either alone or in combination with other plans or projects, requires an AA to be carried out by the relevant competent authority, to determine whether the proposal would have an adverse effect on the integrity of the SAC.

7.11.2 Before an AA is initiated a screening process has been undertaken to determine whether any of the predicted impacts of the Proposed Development would result in a LSE. This screening assessment is presented here to provide information to the competent authority to allow them to reach a decision on whether or not the Proposed Development would have a LSE on the River Spey SAC and therefore whether an AA is required.

7.11.3 The River Spey SAC is located 50 m north of the Site at its closest point, and is designated by virtue of its importance for:

- otter;
- Atlantic salmon;
- freshwater pearl mussel; and,
- sea lamprey.

7.11.4 This SAC has the following overarching conservation objectives:

- to ensure that the qualifying features of the River Spey SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status; and
- to ensure that the integrity of River Spey SAC is restored by meeting objectives 2a, 2b and 2c for each qualifying feature (and 2d for freshwater pearl mussel).

7.11.5 For Atlantic salmon and freshwater pearl mussel, objectives 2a, 2b and 2c are:

- restore the population of freshwater pearl mussel and Atlantic salmon (for salmon including a range of genetic types) as a viable component of the site;
- restore the distribution of freshwater pearl mussel and Atlantic salmon throughout the site; and
- restore the habitats supporting freshwater pearl mussel and Atlantic salmon within the site and availability of food.

7.11.6 Objective 2d for freshwater pearl mussel is:

- restore the distribution and viability of freshwater pearl mussel host species and their supporting habitats

7.11.7 For sea lamprey and otter, objectives 2a, 2b and 2c are:

- maintain the population of sea lamprey and otter as a viable component of the site;
- maintain the distribution of sea lamprey and otter throughout the site; and
- maintain the habitats supporting sea lamprey and otter within the site and availability of food.

7.11.8 The watercourses within the Site drain into the River Deveron catchment, as such there is no hydrological connectivity and so would be no direct or indirect effects on the solely aquatic features of the SAC from the construction, operation and decommissioning of the Proposed Development of the Proposed Development. As such there is no LSE for Atlantic salmon, sea

lamprey and freshwater pearl mussel within the SAC arising as a result of the Proposed Development and they are scoped out of further consideration within the HRA process.

7.11.9 Otter are a mobile species, and occupy very large home ranges (around 32 km for males and 20 km for females)[55]. Although no evidence of otter and only limited suitable habitat for this species was recorded within the Site, they may use the Site on occasion. Given the proximity of the SAC to the Site, any otters present are considered likely to be part of the SAC population, and so it is not possible to conclude no LSE on otter, and so information to inform AA is provided below to allow the competent authority to determine whether the Proposed Development would lead to an Adverse Effect on Site Integrity (AESI).

Information to Inform Appropriate Assessment

7.11.10 No evidence of otter activity and no potential holts or resting places were recorded within the Site. Although individual otters using the Site are considered likely to comprise part of the River Spey SAC qualifying population, the watercourses of the Site are largely considered to be of limited value for the species; they provide suitable commuting opportunities for otter, but with watercourse suitability within the Site restricted to juvenile fish the foraging potential is lower than that available in surrounding watercourses downstream of and in adjacent valleys to the Site. Functional fish habitat recorded within the Site during the baseline fish habitat survey is relatively restricted and is considered to be of low sensitivity given the short extents and low-quality habitat recorded. No significant areas of high calibre salmonid spawning habitat were recorded, with habitat suitability where present, limited to juvenile fish. No significant areas of spawning or nursery habitat for lamprey species were noted and suitable habitat for eel is also limited. Though amphibians are likely to be present within the Site there is little evidence that the habitats within the Site are extensively used by foraging otters or that they provide an important source of food for this species. A FMP is proposed to be drawn up in consultation with the RDDSFB and the DBIRCT to monitor and mitigate potential impacts to fish stocks as a result of the Proposed Development.

7.11.11 In order to prevent otter mortality associated with the Proposed Development, good practice measures implemented during construction via a site-specific CEMP and operation via a site-specific Environmental Management Plan (EMP) will include:

- pre-construction surveys;
- careful storage of potentially dangerous substances or materials within designated areas;
- speed limits on Site tracks and access roads;
- restricting working at night;
- capping of excavations at night;
- pollution prevention controls;
- water quality monitoring pre-, during- and post-construction; and
- regular toolbox talks given by the site ECoW.

7.11.12 No holts or potential otter resting places were recorded within the Site, however it is possible that breeding or resting places may be established prior to the commencement of construction activities for the Proposed Development. Pre-construction surveys would be undertaken to ascertain any changes in baseline otter conditions within the Site to identify the requirement for additional species-specific mitigation.

[55] https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter [last accessed 06/02/2022].

7.11.13 Full details of construction phase mitigation measures for the Proposed Development would be contained within a CEMP. The CEMP will include all good practice construction measures, pollution prevention controls and monitoring to be implemented during construction of the Proposed Development in line with current industry and statutory guidance. Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands and near watercourses, to be adopted during the construction, operation and decommissioning phases and serving to protect the aquatic environment, are detailed in Chapter 9: Hydrology, Hydrogeology and Geology.

7.11.14 The potential for indirect effects to otter via effects to habitats supporting them and their prey species has also been avoided and minimised through embedded mitigation measures including adoption of a minimum 50 m buffer around all watercourses for infrastructure, with the exception of watercourse crossings, the requirement for which has been minimised via Site design.

7.11.15 River Spey is an extensive SAC, with a total catchment of approximately 3,000 km^2 and a river network extending to approximately 36,400 km[56]. As such, with the application of embedded mitigation and good practice, which have demonstrable extensive success in preventing impacts and adverse effects associated with wind farm development, it can be concluded that the Proposed Development would not result in any AESI, either alone or in combination with other developments.

Summary

7.11.16 To summarise, in the absence of embedded mitigation, there is the potential for LSE to otter via direct mortality and/ or indirect effects of pollution incidents, such as accidental spills or mobilisation of sediments, during the construction and operation phases of the Proposed Development. With the successful implementation of the proposed embedded mitigation, it is concluded that the potential for effects on qualifying features of the River Spey SAC would be negligible and there would be no AESI as a result of the Proposed Development.

[56] NatureScot 2011. River Spey Site Of Special Scientific Interest Site Management Statement.

8 Ornithology

8.1 Introduction

8.1.1 This chapter considers the potential significant effects on important ornithological receptors associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the ornithological baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

8.1.2 The assessment has been carried out by Avian Ecology Ltd. lead authors: Mr Howard Fearn MSc MCIEEM, Director and Dr Colin Bonnington DPhil MSc BSc (Hons) MCIEEM, Senior Ecologist. Mr Fearn and Dr Bonnington have over 15 and 10 years' experience respectively as professional ecologists, specialising in renewable energy developments. Both Mr Fearn and Dr Bonnington have contributed to, and led on, many large-scale renewable energy projects in Scotland, including numerous wind energy projects (further details of the competency of authors is provided in Technical Appendix 1.2.

8.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
  - Figure 8.1: Ornithological Statutory Designated Sites;
  - Figure 8.2a: Desk Study Records;
  - Figure 8.3a: Vantage Point and Viewshed Location Plan Year 1 (Breeding Season, March - August);
  - Figure 8.3b: Vantage Point and Viewshed Location Plan Year 1 (Non-Breeding Season, September - February);
  - Figure 8.3c: Vantage Point and Viewshed Location Plan (Year 2);
  - Figure 8.4a: Breeding Bird Survey Plan (Year 1);
  - Figure 8.4b: Breeding Bird Survey Plan (Year 2);
  - Figure 8.5a: Target Species Flights Year 1 - Other species;
  - Figure 8.5b: Target Species Flights Year 1 – Raptors & Owls;
  - Figure 8.5c: Target Species Flights Year 1 - Common gull;
  - Figure 8.5d: Target Species Flights Year 2 - Other species);
  - Figure 8.5e: Target Species Flights Year 2 – Raptors & Owls;
  - Figure 8.5f: Target Species Flights Year 2 (Common gull);
  - Figure 8.6a: Moorland Breeding Bird Survey Results (Year 1);
  - Figure 8.6b: Moorland Breeding Bird Survey Results (Year 2); and
  - Figure 8.7a: Breeding Raptor and Owl Survey Results (Year 1).
- Volume 4: Technical Appendices
  - Technical Appendix 8.1: Ornithology; and
  - Technical Appendix 8.2: Collision Risk Model Analysis.
- Volume 5: Confidential Information.
  - Technical Appendix 8.3: Confidential Ornithology Appendix;

- Figure 8.2b: Confidential Desk Study Records;
- Figure 8.7b: Confidential Breeding Raptor and Owl Survey Results (Year 1);
- Figure 8.7c: Confidential Breeding Raptor and Owl Survey Results (Year 2);
- Figure 8.8a: Confidential Woodland Grouse Lek Results (Year 1); and
- Figure 8.8b: Confidential Woodland Grouse Lek Results (Year 2).

8.1.4 Figures and technical appendices are referenced in the text where relevant.

8.2 Assessment Methodology and Significance Criteria

Scope of Assessment

8.2.1 This Chapter has been undertaken in accordance with CIEEM guidelines[1] and considers the following main potential effects upon ornithological receptors associated with construction, operation and decommissioning of the Proposed Development:

- Collision Mortality – the risk of mortality resulting from collision or interaction with the turbines and/ or other wind farm infrastructure; and
- Disturbance/ Displacement of Species - disturbance and displacement of birds from the area occupied by the Proposed Development and surrounding areas as a result of the construction and operation of the Proposed Development.

8.2.2 The potential effects are considered as a result of the Proposed Development alone and cumulatively, in-combination with other notable developments (further details on developments considered in the assessment of cumulative effects is provided in Chapter 1: Introduction). The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative schemes, which are the subject of a valid planning application. Operational, under construction and consented developments are considered for the cumulative assessment. Developments close to the end of their operational life will be included as part of the cumulative assessment to present 'worst case scenario'.

8.2.3 CIEEM guidelines[1] stipulate that it is not necessary to carry out a detailed assessment of impacts upon ornithological receptors that are sufficiently widespread, unthreatened and resilient to impacts of the Proposed Development.

8.2.4 The assessment is based on the Proposed Development as described in Chapter 2: Development Description and considers effects upon designated sites and ornithological receptors which are considered important on the basis of baseline information, relevant guidance, literature, professional judgement of the authors and opinions of statutory advisory bodies provided through consultations in relation to the Proposed Development and, where relevant, other wind farm developments.

8.2.5 Where ornithological receptors are not considered so important as to warrant a detailed assessment, or where they will not be significantly affected on the basis of baseline information (e.g. passerine species), these are 'scoped out' of the assessment. Mitigation measures for such receptors may however, still be outlined as appropriate to reduce and/ or avoid any potentially adverse effects or to ensure legislative compliance for breeding and roosting birds.

1 CIEEM (2018, updated 2019). Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

8.2.6 The scope of the assessment has been informed by consultation responses summarised in Table 8.1 and the following guidelines/ policies:

Legislation

- Conservation of Habitats and Species Regulations 2017, as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 (collectively 'the Habitats Regulations')[2];
- The Nature Conservation (Scotland) Act 2004[3];
- The Wildlife and Countryside Act 1981 (as amended)[4]; and
- The Wildlife and Natural Environment (Scotland) Act 2011[5].

Planning Policy

- The National Planning Policy Framework 3 (2014)[6] (Draft NPF4 is currently under consideration by Scottish Ministers);
- Scottish Planning Policy (2014)[7];
- Proposed Aberdeenshire Local Development Plan 2020 (to be adopted 2022) and associated relevant supporting documents (e.g. 'Habitats Regulations Appraisal')[8]; and
- Moray Local Development Plan 2020 (adopted July 2020) and associated relevant Supplementary Guidance and supporting documents (e.g. 'Moray Onshore Wind Energy Non-Statutory Guidance')[9].

8.2.7 The Scottish Biodiversity List (SBL)[10] and North East Scotland Local Biodiversity Action Plan[11] are also considered in the assessment. The SBL is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland.

Guidance

8.2.8 The following best practice guidelines and guidance have been reviewed and taken into account as part of this ornithology assessment:

- Assessing Connectivity with Special Protection Areas[12];

[2] The Habitats Regulations. Available at: https://www.legislation.gov.uk/sdsi/2019/9780111041062 [Accessed 04/02/2022]

[3] Nature Conservation (Scotland) Act 2004. Available at: https://www.legislation.gov.uk/asp/2004/6/contents [Accessed 18/11/2021]

[4] The Wildlife and Countryside Act 1981 (as amended in Scotland under the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/ukpga/1981/69 [Accessed 18/11/2021]

[5] The Wildlife and Natural Environment (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/asp/2011/6/contents/enacted [Accessed 18/11/2021]

[6] The Scottish Government (2014). Scotland's Third National Planning Framework. Available at https://www.gov.scot/publications/national-planning-framework-3/documents/ [Accessed 01/03/2022]

[7] The Scottish Government (2014). Scottish Planning Policy. Available at https://www.gov.scot/publications/scottish-planning-policy/documents/ [Accessed 01/03/2022]

[8] Available at: https://aberdeenshire.gov.uk/planning/plans-and-policies/pldp-2020/proposed-local-development-plan-2020 [Accessed 01/03/2022]

[9] Available at: http://www.moray.gov.uk/moray_standard/page_133431.html [Accessed 01/03/2022]

[10] Scottish Biodiversity List (2020). Published by the Scottish Government Available at https://www.nature.scot/scotlands-biodiversity/ scottish-biodiversity-strategy/scottish-biodiversity-list [Accessed 01/03/2022].

[11] North East Scotland Biodiversity Partnership (2021) Available at: https://www.nesbiodiversity.org.uk/biodiversity-information-for-developers/important-local-species/ [accessed 07/02/2022].

[12] SNH (2016a). Assessing Connectivity with Special Protection Areas. SNH, Inverness.

- Assessing the Cumulative Impacts of Onshore Wind Farms on Birds[13];
- Assessing the Significance of Impacts from Onshore Wind Farms outwith Designated Areas[14];
- Fifth Birds of Conservation[15];
- Environmental Statements and Annexes of Environmentally Sensitive Bird Information: Guidance for Developers, Consultants and Consultees[16];
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine[1];
- Implications of Additional Protection for Hen Harrier, Red Kite and Golden Eagle Under Schedules A1 & 1A of the Wildlife and Countryside Act (1981)[17];
- Windfarms and Birds – Calculating a Theoretical Collision Risk Assuming No avoiding Action[18];
- Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms[19];
- Assessing the cumulative impact of onshore wind energy developments. Guidance[20];
- Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model[21];
- Natural Heritage Zone Bird Population Estimates[22]; and
- General pre-application and scoping advice for onshore wind farms[23].

Consultation

8.2.9 Table 8.1 summarises the consultation responses received regarding Ornithology and provides information on where and/or how they have been addressed in this assessment.

8.2.10 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 8.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
NatureScot – 14/05/2019	Other –Scope of Ornithology Surveys	NatureScot was consulted to provide advice on the proposed approach to baseline Ornithological and Ecological	Surveys were undertaken in accordance with advice provided (see Technical Appendix 8.1: Ornithology).

[13] SNH (2018a). Assessing the Cumulative Impacts of Onshore Wind Farms on Birds. SNH, Inverness.

[14] SNH (2018b). Assessing the significance of impacts from onshore wind farms outwith designated areas. SNH, Inverness.

[15] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds, 114, pp. 723–747.

[16] SNH (2016b). Environmental Statements and Annexes of Environmentally Sensitive Bird Information. SNH, Inverness.

[17] SNH (2014). Implications of Additional Protection for Hen Harrier, Red Kite and Golden Eagle under Schedules A1 & 1A of the Wildlife and Countryside Act (1981). SNH, Inverness.

[18] SNH (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoiding action. SNH, Inverness.

[19] SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness.

[20] SNH (2012). Assessing the cumulative impact of onshore wind energy developments. Guidance. March 2012.

[21] SNH (2018c). Avoidance rates for the onshore SNH Wind Farm Collision Risk Model. SNH, Inverness.

[22] Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned Report Number 1504.

[23] NatureScot (2020). General Pre-application/Scoping Advice to Developers of Onshore Wind Farms. NatureScot, Inverness.

Table 8.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		information (see also Chapter 7: Ecology). Focus of ornithological interest for the Proposed Development is the Tips of Corsemaul and Tom Mor Special Protection Area (SPA) and the breeding common gull *Larus canus* colony it supports. It should be demonstrated that the Proposed Development will not affect the declining SPA gull population, and positive habitat management to benefit the gull colony should be sufficiently detailed at the application stage.	An Information to Inform a Habitats Regulations Appraisal (HRA) related to the Tips of Corsemaul and Tom Mor SPA (and SSSI) is provided in Section 8.11.
NatureScot – 21/08/2019	Other – Alteration to Ornithology Vantage Point (VP) Location	NatureScot was consulted to inform them of a forced change to the location of VP2, due to developing access restrictions, on completion of the bird breeding season surveys. Acknowledged the VP re-location and stated that the assessment should provide details of the alteration, and why it is unlikely to represent a substantive constraint.	The alteration of VP2 has been detailed in Technical Appendix 8.1: Ornithology, and included in the *Limitations and Assumptions* in Section 8.2
NatureScot – 09/04/2020	Other – Completion of Year 1 Ornithology Surveys	Consulted with NatureScot to discuss the requirements for further ornithological surveys. NatureScot agreed that given the results and the main ornithological interest at the locality of the Site, ornithological surveys undertaken over two breeding seasons, and one non-breeding season would be appropriate to inform the assessment.	Surveys were accordingly undertaken over a 18 month period (two breeding seasons 2019 and 2020 and one non-breeding season 2019-20), as detailed in Technical Appendix 8.1: Ornithology.
NatureScot – 15/01/2021	Scoping Response	Potential effects on the Tips of Corsemaul and Tom Mor SPA must be assessed, including through a Habitats Regulations Appraisal (HRA). Effects include collision risk and displacement, particularly as a result of barrier effects, where gulls could be deterred from using regular foraging routes. Confirmed that the scope of ornithology surveys is appropriate, with no further comments.	An Information to Inform a HRA related to the Tips of Corsemaul and Tom Mor SPA (and SSSI) is provided in Section 8.11.
The Royal Society for the Protection of Birds (RSPB) – 21/01/2021	Scoping Response	Need to fully justify the reduction of survey effort (less than two years) following consultation with NatureScot.	The survey effort and survey scope is detailed in Technical Appendix 8.1: Ornithology, and as agreed with NatureScot. It was agreed that 1.5 years of ornithology surveys (comprising 2 breeding seasons and 1 non-breeding season) would be appropriate given the ornithological sensitivities of the Site (breeding bird assemblage).
		Ensure that the turbine development area is sufficiently covered by the VP survey	Study areas have appropriately covered the developable area,

Table 8.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		viewsheds, and the areas for Site access and infrastructure are also appropriately covered by the ornithology surveys.	and VP viewsheds have appropriately covered the proposed turbine envelope. See Technical Appendix 8.1: Ornithology.
		Removal of forestry for the Proposed Development may make the Site more attractive to species like hen harrier *Circus cyaneus* and merlin *Falco columbarius*. Refer to NatureScot guidance for such proposals.	Forestry clearance is considered in the OHMP, provided as Technical Appendix 7.5, where measures are included to deter species such as hen harrier and merlin and are in accordance with NatureScot guidance. Section 8.4.16 summaries such measures.
		Compensatory tree planting should avoid sensitive peatland habitats, which support raptors and waders.	Tree planting considered in the Outline Habitat Management Plan (OHMP) has been sensitive to those habitats most used by open ground nesting raptors and waders (like curlew). Peat probing has been undertaken and has informed suitable areas for compensatory planting (see Technical Appendix 7.5).
		Sensitive records (including confidential information) should be shared with the RSPB, given its specialist ornithological expertise.	Confidential information can be made available to the RSPB, as well as NatureScot and the Scottish Government.
		Cumulative impacts must be fully assessed (at the correct Natural Heritage Zone (NHZ) scale) and for hen harrier, curlew and golden eagle in particular.	Cumulative impacts are fully assessed in Section 8.6.
Aberdeenshire Council – 22/01/2021	Scoping Response	Considered NatureScot and the RSPB to be best placed to make comments of scoping. Recommends EIA Report details best practice measures, mitigation and any enhancement measures to avoid significant effects of the Proposed Development on ornithology. Welcome the proposal to submit an OHMP with the application.	NatureScot and RSPB consultation comments addressed in this table. Mitigation measures have been presented in this chapter. An OHMP is provided as Technical Appendix 7.5.
Moray Council – 19/02/2021	Scoping Response	Given the close proximity of the Tips of Corsemaul and Tom Mor SPA and SSSI, the Proposed Development must not compromise objectives of the designated sites, and not adversely affect the integrity of these sites. Consider NatureScot best to comment on scope of surveys proposed. Proposed Developments must, where possible, retain, protect and enhance features of biological interest.	NatureScot comments addressed in this table. OHMP which aims to protect and enhance key ornithological features is provided as Technical Appendix 7.5.
NatureScot – 08/04/2021	Other – Completion of Ornithology Surveys	Confirmed with NatureScot that they agree that an appropriate level of ornithology survey data has been collected (18 months) to inform	Surveys were accordingly undertaken over a 18 month period (two breeding seasons 2019 and 2020 and one non-breeding season 2019-20), as

Table 8.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		assessment for the Proposed Development.	detailed in Technical Appendix 8.1: Ornithology.
NatureScot – 18/05/2021	Other – Post-Scoping	Recommended careful consideration of tree planting, particularly avoiding those areas with highest levels of common gull activity.	Those areas identified within the OHMP avoid areas with the highest activity of common gull, with Kelman Hill managed for the species (see Technical Appendix 7.5).

Potential Effects Scoped Out

8.2.11 Ornithological features of 'Local' importance (as listed in Table 8.9) have been "scoped out" of detailed assessment on the basis of their established presence in numbers of very low importance, low levels of activity recorded during baseline surveys (details provided in Technical Appendix 8.1: Ornithology) and/ or as they are not considered a priority for assessment in accordance with NatureScot guidance[14], given their generally accepted low sensitivity to wind farm developments. The only exception being curlew, golden plover and lapwing which although assigned 'Local' importance are considered further given Collision Risk Model (CRM) Analysis was undertaken for these species.

8.2.12 It is generally considered that passerine species (small perching birds), due to their short lifespans and high productivity rates, are not sensitive to potential population level effects at wind farm sites[19].

8.2.13 As all wild birds and their nests are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), mitigation measures are outlined to ensure legislative compliance and protection for the in-use nests, eggs and dependent young of all wild birds.

8.2.14 In accordance with NatureScot guidance[12], the Site is located beyond the maximum core foraging range connectivity distances for all designated sites with qualifying ornithological interest, with the exception of the Tips of Corsemaul and Tom Mor SPA and SSSI, and as such effects upon all other designations are not considered further within this assessment.

8.2.15 The Proposed Development would result in the direct and permanent loss of commercial forestry plantation and limited areas of wet heath and blanket bog habitats, as detailed within Chapter 7: Ecology. Habitat losses have the potential to result in the loss or otherwise lower the quality of nesting and foraging opportunities for ornithological receptors which are known to use or inhabit the Site. Overall direct and permanent habitat losses on the basis of the nature and scale of the Proposed Development are considered to be small, resulting in an adverse impact upon ornithological receptors at no more than Site level only. Suitable habitats and therefore nesting and foraging opportunities would remain widespread within the Site, the immediate and wider surrounding area. Direct and indirect habitat losses for ornithological receptors are therefore not considered within the detailed assessment as losses would not be significant for any species. Furthermore, some habitat enhancement measures to be adopted, as detailed in the OHMP (Technical Appendix 7.5), would aim to benefit ornithological features through enhancing nesting and foraging habitats.

8.2.16 The potential for indirect habitat loss to ornithological receptors as a result of disturbance and displacement is, however, assessed for both the construction and operational phase of the Proposed Development.

Method of Baseline Characterisation

Extent of the Study Area

8.2.17 Study Areas, within which baseline survey information in relation to ornithological receptors has been obtained, has comprised the Site (Figures 8.4a and 8.4b) and areas out to at least 500 m, extended up to 6 km for specific species. This is in accordance with NatureScot guidance[19].

8.2.18 The locations of statutory designated sites for nature conservation with ornithological qualifying interests have also been identified within 10 km of the Site, extended to 20 km for internationally designated sites with migratory goose interests (Figure 8.1).

8.2.19 The Study Area for cumulative assessment has considered other developments in planning or at appeal within 5 km for construction phase effects, and out to 10 km (extended to 25 km for common gull) for operational phase effects. The Study Area of 5 km for assessment of cumulative construction effects with other wind farms is considered appropriate, given the localised nature of effects of construction activities.

8.2.20 Full details of Study Areas adopted for desk study and field surveys, in accordance with NatureScot guidance[19] are provided in Technical Appendix 8.1: Ornithology and illustrated on Figures 8.1 to 8.4a-b.

8.2.21 Species specific Study Areas included the Site, extended to:

- Moorland Breeding Birds Survey (MBBS) Study Area – 500 m, as shown on Figures 8.4a and 8.4b;
- Woodland Grouse Study Area – 1.5 km, as shown on Figures 8.4a and 8.4b; and
- Schedule 1 and Annex 1 listed raptors and owls Study Area – 2 km, as shown on Figures 8.4a and 8.4b, extended to 6 km for eagle species in Year 2 (see Figure 8.4b).

8.2.22 The Vantage Point (VP) Flight Activity Study Area, within which flight activity of target species has been recorded, included the Proposed Development turbine locations and areas out to 500 m, as shown on Figures 8.3a-c.

Desk Study

8.2.23 In accordance with NatureScot guidance[19], a desk study has been undertaken to establish an overview of known and likely bird populations and designated sites in proximity to the Proposed Development, in order to identify known or likely target species and for which further survey may be required.

8.2.24 The desk study also included a review of designated sites within proximity to the Proposed Development and consultation with specialist recording groups for existing ornithological records comprising: the RSPB, the North East Scotland Raptor Study Group (NESRSG) and the North East Scotland Biological Records Centre (NESBReC).

8.2.25 The desk study has also comprised a review of the NatureScot Sitelink website[24] to identify the proximity of the Site to statutory designated sites.

8.2.26 EIA documentation[25] for the refused adjacent Garbet Wind Farm (application 21/000020/EIA to Moray Council, refused on landscape grounds and currently at appeal) has also been

[24] Sitelink website. Available at: https://sitelink.nature.scot/home

[25] MacArthur Green (2020). Garbet Wind Farm – Ornithology – Appendix 9.1.

reviewed, together with additional peer reviewed literature and industry guidance referred to, where appropriate. The Garbet Wind Farm is located to the north west of the Site.

8.2.27 Full details of the desk study undertaken, including search areas for records, are provided within Technical Appendix 8.1: Ornithology.

Field Survey

8.2.28 The following field surveys were carried out between March 2019 and August 2020:

- Vantage Point (VP) flight activity surveys (March 2019 – August 2020);
- Moorland breeding bird survey (MBBS) (2019 and 2020);
- Breeding Annex 1 and Schedule 1**.** raptor and owl searches (2019 and 2020); and
- Breeding woodland grouse searches (2019 and 2020).

8.2.29 Surveys have been undertaken in accordance with current NatureScot[19] guidance with full details presented in Technical Appendix 8.1: Ornithology.

TARGET SPECIES

8.2.30 Target species for survey and reporting consist of Annex 1 and Schedule 1 listed species and red-listed species on Birds of Conservation Concern (BoCC)[15], adopting a precautionary approach and with reference to NatureScot[19,14] guidance, which details priority species for assessment at onshore wind farms.

8.2.31 Target species also included those species listed as qualifying interest species for identified designated sites for nature conservation (Table 8.5).

8.2.32 Passerine species were not identified as target species for survey and recording and are not considered sensitive to wind farm developments at a population level as per NatureScot guidance[19,14]. Observations of notable species e.g. those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) during MBBS were however recorded.

8.2.33 Gulls (other than common gull which is the qualifying interest for the Tips of Corsemaul and Tom Mor SPA and SSSI) and commoner species including buzzard *Buteo buteo*, kestrel *Falco tinnunculus* and sparrowhawk *Accipiter nisus*, mallard *Anas platyrhynchos* and raven *Corvus corax*, were also not identified as target species given their general widespread number and abundance, but were recorded as secondary species during VP flight activity surveys.

FIELD SURVEY PERSONNEL

8.2.34 All field surveys were completed by experienced, reputable and professional ornithologists, fully conversant in established bird survey methodologies for proposed wind turbine developments.

8.2.35 Details of field surveyors are provided in Technical Appendix 8.1: Ornithology.

Criteria for the Assessment of Effects

8.2.36 The assessment has been undertaken in accordance with CIEEM guidelines[1] and includes the following stages:

- determination and evaluation of important ornithological receptors;
- identification and characterisation of impacts;
- outline of mitigating measures to avoid and reduce significant impacts;
- assessment of the significance of any residual effects after such measures; and

- identification of appropriate compensation measures to offset significant residual effects.

Criteria for Assessing the Sensitivity of Receptors

8.2.37 Relevant European, national and local guidance from governments and specialist organisations has been referred to in order to determine the sensitivity (or importance) of ornithological receptors. Reference has also been made to Annex 1 of NatureScot guidance[19] on key ornithological receptors when considering the development of onshore wind farms in Scotland and species with 'restricted ranges' potentially at risk of impacts from wind farms.

8.2.38 In addition, sensitivity has also been determined using professional judgement and taking account of the results of baseline field and desk study findings and the functional role of receptors within the context of the geographical area.

8.2.39 It should be noted that sensitivity, or importance does not necessarily relate to the level of legal protection that a receptor receives, and receptors may be important for a variety of reasons, such as their connectivity to a designated site, rarity or the geographical location of species relative to their known range.

8.2.40 For the purposes of this assessment the sensitivity or importance of an ornithological receptor is considered in the context of a defined geographical area, ranging from International to Local, as detailed in Table 8.2.

Table 8.2: Sensitivity/ Geographic Scale of Ornithological Feature Importance

Sensitivity/ Geographical Scale of Importance	Definition
Very High - International	An internationally designated site i.e., Special Protection Area (SPA) and/ or Ramsar site or candidate site (cSPA). A regularly occurring species present in internationally important numbers (>1% of its biogeographic population) listed under Annex 1 of the Birds Directive[26], or regularly occurring migratory species listed under Annex 2 of the Birds Directive connected to an internationally designated site for this species.
High – National	A nationally designated site e.g. Site of Special Scientific Interest (SSSI), or area meeting criteria for national level designations. A regularly occurring species present in nationally important numbers (>1% of its Scottish population) and listed as a UK Biodiversity Action Plan (BAP)[27], SBL priority species[10], Red-listed Bird of Conservation Concern[15] and listed under Schedule 1 of the Wildlife & Countryside Act[4] or Annex 1 of the Birds Directive.
Medium - Regional	A regularly occurring species present in regionally important numbers i.e., >1% of its relevant Natural Heritage Zone (NHZ) population[22] or appropriate alternative and listed as a UK BAP, SBL priority species, Red-listed Birds of Conservation Concern[15] or listed on Schedule 1 of the Wildlife & Countryside Act or Annex 1 of the Birds Directive.
Low – Local	All other species that are widespread and common and which are not present in regionally or nationally important numbers, but which do contribute to the local breeding/ wintering bird assemblage.

Criteria for Assessing the Magnitude of Change

8.2.41 Once identified, potential effects are described making reference to the following characteristics as appropriate:

- adverse or beneficial;

[26] https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm [accessed 01/04/2022].

[27] https://jncc.gov.uk/our-work/uk-bap/ [accessed 01/04/2022].

- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

8.2.42 The assessment only makes reference to those characteristics relevant to understanding the nature of an effect and determining its significance. For the purposes of this assessment the temporal nature of potential effects are described as follows:

- Negligible: of inconsequential duration;
- Short-term: for 1-5 years;
- Medium-term: for 5-10 years;
- Long-term: >10-30 years; and
- Permanent: >30 years.

8.2.43 The criteria used to determine the magnitude of impacts are set out in Table 8.3.

8.2.44 It is important to note that, where reference is made to population level effects to assess magnitude (e.g. at the Regional NHZ population level), the most recently published population estimates used are considered to be guides.

8.2.45 In addition, it will often be impossible to equate an impact to an actual population loss. For example, where birds may be displaced from a wind farm site as a result of construction or operational activities, such a loss may be temporary or may reasonably result in the relocation of birds to suitable habitats elsewhere within the Site, immediate or wider area. Where uncertainty arises a precautionary approach has been adopted.

8.2.46 As such, professional judgement, on the basis of best available evidence, has been used to inform the assessment of impacts presented within.

Table 8.3: Impact Magnitude

Magnitude	Definition
Very High	The effect (either on its own or in-combination with other proposals) may result in the permanent total or almost complete loss of a designated site and/ or species status or productivity. E.g. Affecting >80% of the relevant Regional NHZ population.
High	The effect (either on its own or in-combination with other proposals) may adversely affect the conservation status of a designated site and/ or species population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/ or the population levels of species of interest. E.g. Affecting 30%-80% of the relevant Regional NHZ population.
Medium	The effect (either on its own or in-combination with other proposals) would not adversely affect the conservation status of a designated site and/ or species, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the long term. E.g. Affecting >10%-30% of the relevant Regional NHZ population.
Low	Neither the above or below applies, but some observable adverse effect is evident on a temporary basis or affects the extent of a species abundance in the local area. E.g. Affecting 1%-10% of the relevant Regional NHZ population.
Negligible	A very slight (indiscernible) reduction in a species status or productivity and/ or no observable effect. e.g. Affecting <1% of the relevant Regional NHZ population.

Criteria for Assessing Significance

8.2.47 CIEEM guidelines[1] note that "A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects have been lawfully permitted following EIA procedures."

8.2.48 For the purposes of assessment significant effects are identified as those which encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

8.2.49 Such effects are identified by considering the importance of a receptor, the magnitude of the effect and applying professional judgement based on best available evidence, to identify whether the integrity of a receptor will be affected.

8.2.50 The term integrity is used here to refer to the maintenance of the conservation status of a population of a species at a specific location or geographical scale.

8.2.51 For the purposes of this assessment, significant effects are primarily expressed with reference to the most recently published Regional NHZ population level[22] (or suitable alternative), in line with NatureScot's interests of a species status at wider spatial levels. The significance of effects at other geographical scales is also expressed where appropriate on a precautionary basis and where sufficient information allows a meaningful assessment.

8.2.52 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.

8.2.53 Where the assessment proposes measures to mitigate adverse effects on ornithological receptors, a further assessment of residual effects, taking into account such measures, has been undertaken.

8.2.54 CIEEM guidelines[1] do not recommend the sole use of a matrix table as commonly set out in EIA Report Chapters to determine 'significant' and 'non-significant' effects. For the purposes of this assessment presented herein, Table 8.4 sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations.

8.2.55 Major and moderate effects are considered significant in the context of the EIA Regulations.

Table 8.4: Effect (EIA Significance)

Significant	Major Adverse/ Beneficial	A medium or high, medium or long-term adverse or beneficial effect upon the integrity of an ornithological receptor at a National (Scottish) or International level.
	Moderate Adverse/ Beneficial	A high or very high, long-term or permanent adverse or beneficial effect upon the integrity of an ornithological receptor at a Regional (NHZ) level (or suitable alternative) or above.
Not Significant	Minor Adverse/ Beneficial	A low or medium, short-term or long-term adverse or beneficial effect upon the integrity of an ornithological receptor at a Regional (NHZ) level (or suitable alternative) or below.
	Negligible Adverse/ Negligible Beneficial	A negligible or low adverse or beneficial effect upon the integrity of an ornithological receptor, typically at a Site level or below.

Requirements for Avoidance, Mitigation, Compensation and Enhancement

8.2.56 The mitigation hierarchy has been adopted to avoid, mitigate and compensate for potential ornithological impacts as a result of the Proposed Development:

- avoidance is used where an impact has been avoided e.g., through iterative scheme design process;
- mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ; and
- compensation describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible.

8.2.57 Enhancement is the provision of new benefits of biodiversity in that area, additional to those provided as part of mitigation or compensation measures, although they can be complementary.

8.2.58 Note that in this chapter these are referred to collectively as 'mitigation' for brevity when discussing generalities, though with the form of mitigation specified as appropriate in discussion of any specific requirements.

Cumulative Effects

8.2.59 Potentially significant cumulative effects can result from individually insignificant but collectively significant effects taking place over a period of time or concentrated in a location.

8.2.60 Cumulative impacts have therefore been assessed with reference to NatureScot guidance[13] for important ornithological receptors subject to a detailed assessment.

8.2.61 The cumulative assessment includes consideration of:

- Existing wind farm developments, either operational or under construction;
- Consented wind farm developments, awaiting implementation; and
- Wind farm applications awaiting determination within the planning process with design information in the public domain.

8.2.62 Those developments which have been withdrawn and/ or refused are not considered, unless an appeal is currently in progress and information is available. Those at the Scoping stage are not considered.

8.2.63 The scope of developments to be considered in the cumulative assessment as described above was defined during the scoping process and agreed by consultees (see Table 8.1).

8.2.64 Whilst single or small-scale wind turbine developments (three turbines or less) may contribute to cumulative effects, these have been scoped out of assessment, in line with NatureScot guidance[20] as applications for such developments do not generally consider the potential for impacts upon ornithological features in sufficient detail to inform meaningful assessment, and information is often not readily available for small-scale developments[28].

8.2.65 With regard to the spatial extent of the cumulative assessment, NatureScot[13] guidance recommends that cumulative effects should typically be assessed at the relevant Regional NHZ population level where wind farms are unlikely to impact on designated sites. In instances where designated sites may be impacted by wind farms, it may be more appropriate to use core foraging ranges for qualifying species of the specific designated site(s). Accordingly, effects on the Tips of Corsemaul and Tom Mor SPA and SSSI are considered in this assessment and the sites are designated for breeding common gulls *Larus canus*. NatureScot guidance[12] on foraging sites of qualifying species from designated sites does not

28 The only exception to this is the two turbine wind farm development 'Muirake', where information is publicly available, and thus the development is included in the cumulative assessment.

however include common gull; but a recent NatureScot report[29] documents an assessment of effects of onshore wind farms out to 25 km for foraging gulls (such as common gull). As such, all wind farm developments within 25 km of the Site have been considered for the purpose of an assessment of cumulative effects on common gull, with 10 km used for other species (which extends beyond the core foraging range for these species[12]) and these wind farm developments are listed as Annex 5 within Technical Appendix 8.1: Ornithology.

Limitations and Assumptions

8.2.66 Limitations are discussed in full within Technical Appendix 8.1: Ornithology. In summary no limitations to baseline information gathering and subsequent assessment herein presented have been identified.

8.2.67 The Proposed Development layout evolved over the course of the survey period, which resulted in modest modifications to the Study Areas between Years 1 and 2. The ornithology surveys were considered to sufficiently cover the Study Areas for all surveys, and accordingly these alterations, are not considered a substantive limitation.

8.2.68 Due to unforeseen access restrictions, VP2 used during VP flight activity surveys had to be relocated. The relocation of the VP was done at the close of the breeding season, to ensure a full breeding season was carried out using the original VP2, with VP2a used during the non-breeding season. VP viewshed coverage was maximised at both VP2 and VP2a, and NatureScot were consulted with this regard (see Table 8.1). The collision risk modelling (CRM) Analysis carried out was also undertaken separately for the breeding season and non-breeding season given the relocation of VP2 between the two survey periods.

8.2.69 Overall the limitations and assumptions are not considered to undermine the validity of the assessment, and the survey data provides an accurate reflection of the levels of target species activity within the adopted Study Areas, and particularly the Site.

8.3 Baseline Conditions

Current Baseline

8.3.1 This section provides a summary of baseline ornithological conditions. It provides an overview of the Proposed Development's proximity to designated sites for nature conservation with ornithological interests, together with the known distribution and flight activity of target species.

8.3.2 Full details are provided within Technical Appendix 8.1: Ornithology, with information that is considered sensitive presented in Volume 5: Confidential Information.

Designated Sites for Nature Conservation

8.3.3 This section should be read with reference to Figure 8.1. Table 8.5 provides a summary of statutory designated sites for nature conservation with cited ornithological interests, located within 10 km of the Site, extended to 20 km for internationally designated sites with migratory goose interests. Note, no designated sites were identified within 20 km with migratory goose interests.

8.3.4 Sites designated for ecological receptors are addressed separately in Chapter 7: Ecology.

29 Furness, R.W. 2019. Avoidance rates of herring gull, great black-backed gull and common gull for use in the assessment of terrestrial wind farms in Scotland. Scottish Natural Heritage Research Report No. 1019.

8.3.5 The distances specified within Table 8.5 are from the Site boundary to the designated boundary at its nearest point.

Table 8.5: Designated Sites for Nature Conservation

Designated Site	Distance/ Orientation	Ornithological Qualifying Interests
Tips of Corsemaul and Tom Mor SPA	1.28 km, north	Common gull (breeding).
Tips of Corsemaul and Tom Mor SSSI	1.28 km, north	Common gull (breeding).

VP Flight Activity Surveys

8.3.6 VP flight activity surveys were undertaken between March 2019 and February 2020 from four VP locations (see Figure 8.3a and Figure 8.3b), and between March 2020 and August 2020 from two VP locations (see Figure 8.3c). The VPs maximised coverage of the VP Study Area required in accordance with NatureScot guidance[19], comprising the Proposed Development turbine locations out to 500 m.

8.3.7 Survey effort and viewshed visibility coverage of the Site is detailed within Technical Appendix 8.1: Ornithology.

8.3.8 Target species flight activity "at collision risk" recorded during the VP survey effort (March 2019 – August 2020) is summarised in Table 8.6. The total number of flights, total number of birds and the total spent at collision risk is presented.

8.3.9 Height bands used during surveys were as follows:

- <20 m;
- 20 m - 50 m;
- 50 m - 180 m; and
- >180 m.

8.3.10 Flights at collision risk are considered to be any flight between 45 and 200 m, which meant that flights at height bands 2-4 were considered as 'at risk'.

8.3.11 Detailed flight records for all species are presented in Technical Appendix 8.1: Ornithology and illustrated in Figures 8.5a-f.

Table 8.6: Target Species Flight Activity Summary ('at risk' flights)

Species	Total No. Flights	Total No. Birds	Total Time Spent "At Collision Risk" (secs)[30]
Pink-footed goose Anser brachrhynchus	10	979	139,310
Golden plover Pluvialis apricaria	5	93	11,379
Curlew Numenius arquata	7	9	685
Common Gull Larus canus	20	34	3,775
Goshawk Accipiter gentilis	18	18	3,862
Hen harrier Circus cyaneus	5	6	958
Peregrine Falco peregrinus	1	1	15
Lapwing Vanellus vanellus	1	2	120
Greylag goose *Anser anser*	2	44	4,422

[30] Total time at risk height multiplied by the number of birds.

8.3.12 VP flight activity surveys undertaken for the Garbet Wind Farm[25] recorded a similar species composition, with flights of 11 species, consisting of common gull (26 flights), curlew (22 flights), black grouse *Tetrao tetrix* (3 flights), golden eagle *Aquila chrysaetos* (2 flights), golden plover (2 flights), greylag goose (2 flights), hen harrier (10 flights), merlin *Falco columbarius* (3 flights), peregrine (10 flights), pink-footed goose (29 flights) and short-eared owl *Asio flammeus* (3 flights).

Collision Mortality Risk

8.3.13 Calculations of collision mortality risk have been undertaken for common gull, hen harrier, goshawk, curlew and golden plover. No other target species recorded during VP flight activity surveys between March 2019 and August 2020 had three or more 'at risk' flights[31], with resulting collision risks reasonably concluded as being very low.

8.3.14 Predicted collision mortality is summarised in Table 8.7 and full details are presented in Technical Appendix 8.2: Collision Risk Model Analysis.

Table 8.7: Predicted Collision Mortality

Species	Season	Annual Seasonal Mortality	33 Year Seasonal Mortality
Common gull	Year 1 Breeding Season (2019)	0.068	2.244
	Year 2 Breeding Season (2020)	0.084	2.769
	Breeding Season Average	0.076	2.507
Hen harrier	Year 1 Breeding Season (2019)	0.105	3.470
	Year 2 Breeding Season (2020)	0	0
	Breeding Season Average	0.053	1.735
Goshawk	Year 1 Breeding Season (2019)	0.834	27.534
	Year 2 Breeding Season (2020)	0.078	2.567
	Breeding Season Average	0.456	15.051
	Year 1 Non-Breeding Season (2019-20)	0.070	2.312
Curlew	Year 1 Breeding Season (2019)	0.015	0.481
	Year 2 Breeding Season (2020)	0.116	3.842
	Breeding Season Average	0.066	2.162
Golden plover[32]	Year 1 Breeding Season (2019)	0.177	5.857
	Year 2 Breeding Season (2020)	0	0
	Breeding Season Average	0.089	2.929

Moorland Breeding Bird Surveys

8.3.15 The Study Area comprised the turbine development area plus 500 m buffer.

8.3.16 The MBBS Study Area in Year 1 and Year 2 differed, with the Study Area in Year 1 extended to include open habitat to the north west of the Site. Design evolution of the Proposed Development over the course of the survey period resulted in the MBBS Study Area in Year 2 being reduced.

[31] With the only exception being pink-footed goose, which given there is no designated site with the species as a qualifying species within 20 km of the Site was not subject to CRM.

[32] Only two 'at risk' flights recorded during the non-breeding season and were therefore not considered for CRM analysis.

8.3.17 The MBBS Study Area supported a maximum of four breeding wading species during the 2019 and 2020 MBBS, with the number of territories being relatively modest (as shown in Table 8.8). Territories were located in open habitat, particularly in the south of the Site, and therefore largely away from the proposed wind turbine locations. Approximate locations of territories are presented in Figures 8.6a and 8.6b respectively for Year 1 (2019) and Year 2 (2020).

Table 8.8: Number of Breeding Territories within the MBBS Study Areas

Species	Year 1 (2019)	Year 2 (2020)
Oystercatcher Haematopus ostralegus	1	4
Lapwing	0	7
Curlew	6	9
Snipe Gallinago gallinago	3	5

8.3.18 A small number of common crossbill *Loxia curvirostra* breeding territories were also recorded in suitable woodland habitat within the MBBS Study Areas in 2019 and 2020. The species is likely to breed widely within suitable habitats of the Site.

8.3.19 Garbet Wind Farm EIA documentation similarly identified relatively modest numbers of oystercatcher, lapwing, curlew and snipe as breeding in open habitats to the north west of the Site in 2017-18, and also golden plover and common sandpiper *Actitis hypoleucos* as possible breeders.

Annex 1/ Schedule 1 Breeding Raptor and Owl Searches

8.3.20 The Study Area comprised the turbine development area plus 2 km buffer (extended to 6 km buffer in Year 2).

8.3.21 A male goshawk display flight was recorded in April 2019 with a potential breeding territory identified within the Site (as shown in Figure 8.7a). No nest sites were identified within the Site; however flight activity of goshawk recorded during VP surveys suggested the Site forms part of a breeding territory.

8.3.22 A barn owl *Tyto alba* nest site was identified outside the Site to the north in 2019, with the location presented in Confidential Figure 8.7b.

8.3.23 In 2020, an active hen harrier nest site was recorded outside the Site, with the location presented in Confidential Figure 8.7c. Furthermore, three potential barn owl nest sites were recorded in 2020 (one considered the same breeding territory identified in 2019), and these are also presented in Confidential Figure 8.7c.

8.3.24 No breeding territories of any additional Schedule 1 or Annex 1 species were recorded.

8.3.25 Baseline surveys to inform Garbet Wind Farm in 2017 and 2018 identified two barn owl breeding territories (one territory considered potentially the same as that identified during field surveys in 2019 and 2020 discussed above), one potential merlin breeding territory and one hen harrier nest site.

Breeding Woodland Grouse

8.3.26 The Study Area comprised the turbine development area plus 1.5 km buffer.

8.3.27 Four black grouse lek sites were recorded in 2019, with five lek sites recorded in 2020 within the Breeding Woodland Grouse Study Area. In both survey years, two leks were located

within the Site, with one lek at the same locality in both years (four males in 2019 and seven males in 2020), suggesting an established lek site.

8.3.28 Most of the lek sites consisted of one to two birds, with the location of these changing between 2019 and 2020, suggesting that these are possible satellite leks rather than established ones.

8.3.29 The locations of black grouse lek sites are presented in Confidential Figure 8.8a (2019) and Confidential Figure 8.8b (2020).

8.3.30 Two leks were identified during baseline surveys for Garbet Wind Farm, with a maximum of five birds recorded at a lek (although given the sensitive nature of the records, specific localities are not provided).

Additional Notable Results from Desk Study

8.3.31 Full desk study results are presented in Technical Appendix 8.1: Ornithology, and results are presented in Figure 8.2a and sensitive records in Confidential Figure 8.2b.

8.3.32 In addition to those results discussed above in the context of the field surveys, records of breeding merlin were returned from NESRSG, and records of breeding (or potentially breeding) goshawk, peregrine, hen harrier and barn owl, and black grouse lek sites were returned from NESBReC.

8.3.33 Winter walkover surveys for the Garbet Wind Farm also recorded one count of 600 pink-footed geese in the winter of 2016/17, and modest numbers of waders, hen harrier and non-breeding black grouse.

Future Baseline

8.3.34 In the absence of the Proposed Development, assuming a "do-nothing" scenario or gap between baseline surveys and the commencement of construction of the Proposed Development, changes in the baseline ornithology conditions (i.e., distributions and populations) are most likely to result from habitat modifications within or surrounding the Site due to local land management practices, principally, forestry works.

8.3.35 Breeding bird densities would therefore reasonably be expected to remain at comparable levels with those recorded during field surveys and identified through desk study i.e., at relatively low levels, albeit central territory locations may shift.

8.3.36 As much of the Site is commercial forestry, it is unsuitable for foraging gulls from the Tips of Corsemaul and Tom Mor SPA and SSSI, with open habitat (most notably Kelman Hill in the south east of the Site) used by common gulls. There is evidence from the VP flight activity surveys that common gull movements from the SPA and SSSI typically avoid passing over the forestry within the Site, with gulls tending to pass over open habitat, including to the east of the forestry (see Figures 8.5c and 8.5f). These gull movements are considered to continue in a "do-nothing" scenario.

8.3.37 The establishment of additional breeding raptor territories within the Site is considered unlikely, given the general absence of suitable nesting habitat features for other raptor species (such as deep heather swards and crags).

8.3.38 Numbers of lekking black grouse, and the number and distribution of lek sites would reasonably be anticipated to be maintained or increased over time, on the basis of continued moorland habitat management. Numbers of breeding wader territories may reasonably fluctuate within the Site in response to any localised changes in habitat suitability (e.g., from

sheep grazing), but would reasonably be expected to be similar over time, also in response to favourable habitat management (grazing).

8.4 Standard Mitigation

Embedded Mitigation

8.4.1 The Proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects (see Chapter 3: Design Evolution and Alternatives for further details).

8.4.2 Design considerations have been incorporated to avoid or minimise adverse effects upon ornithological features, as set out below.

8.4.3 Design of the Proposed Development is sensitive to those areas where common gulls (qualifying feature of the Tips of Corsemaul and Tom Mor SPA and SSSI) are most active. The Site is 1.28 km south of the SPA and SSSI (at its closest point), so no works associated with the Proposed Development would be undertaken within this distance. The key habitat on-Site for foraging common gulls identified during the baseline surveys was Kelman Hill in the south east of the Site. The Proposed Development is offset from Kelman Hill, with at least 1 km distance maintained between the proposed turbines and Kelman Hill, and at least 750 m between the access track and Kelman Hill, to avoid disturbing foraging gulls. Furthermore, baseline surveys identified an established movement route of common gulls to and from, the SPA and SSSI and the direction of Kelman Hill. The Proposed Development is offset from the movement route, with proposed turbines at least 500 m from the route, to avoid creating potential barrier effects to gull movements to and from the SPA and SSSI. As part of the iterative design process, a turbine which was originally proposed in the north east of the Site was then removed to ensure the common gull movement route was maintained and unimpeded.

8.4.4 The on-site track layout has been designed to minimise ornithological disturbance and land take by maintaining at least a 500 m buffer from black grouse leks and nest sites of Annex 1/ Schedule 1 species.

8.4.5 The majority of the proposed turbines are located in the north east of the Site, in the area that is currently a managed conifer plantation, and unsuitable for common gulls. Baseline surveys identified that the main common gull movements were not directly over the plantation, but instead to the east of the plantation, appearing to prefer traversing open habitats (see Figures 8.5c and 8.5f).

8.4.6 The scheme design has in so far as has been possible avoided areas of blanket bog and avoided the location of infrastructure within areas of higher quality blanket bog and upland heath. It has however, not been possible to entirely avoid areas of peatland habitats, due to the distribution of these habitat types within the Site boundary. The layout of infrastructure (e.g., wind turbines, tracks and substation) has sought to avoid areas of deep peat, minimising the potential for impacts to habitat types with greater future restoration potential. Furthermore, typically avoiding areas of bog and heath, would mean that those most suitable breeding grounds, for ground-nesting bird species, such as curlew, are retained (and enhanced).

Good Practice Measures

Construction Environmental Management Plan

8.4.7 An Outline Construction Environmental Management Plan (OCEMP) is provided in Technical Appendix 2.1. Works under the CEMP would be implemented under the supervision of an appointed Environmental Clerk of Works (ECoW).

8.4.8 All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally or recklessly kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. In addition, all wild birds listed on Schedule 1 of the Act receive additional legal protection which makes it an offence to intentionally or recklessly disturb these species while building a nest, or are using or near a nest containing eggs or young; or to disturb their dependent young.

8.4.9 Prior to the commencement of construction activities a Construction Breeding Bird Protection Plan (CBBPP) would be prepared and submitted for agreement in consultation with Aberdeenshire Council (AC) and Moray Council (MC) and NatureScot which would form part of the CEMP.

8.4.10 The CBBPP would be informed by a pre-commencement breeding bird survey to establish the status and distribution of Schedule 1 breeding birds within the Site and within 500 m of disturbing activities. This would be done in the first available breeding season following receipt of consent and would be updated should construction activities not commence within three years of the survey date, and, in the absence of any existing sufficiently adequate information for the Site.

8.4.11 The CBBPP would detail the following measures and any additional measures required on account of findings from the pre-commencement breeding bird survey, to ensure the protection of breeding birds over the course of construction works during the breeding season is updated to reflect best available species guidance applicable at the time.

8.4.12 The location of black grouse leks would also be considered with regards to construction works associated with the Proposed Development. Current research suggests that lekking black grouse are not passively disturbed at distances over 500 - 750 m from source[33]. Adopting these findings, no construction works within 750 m of identified main lek sites (detailed within Volume 5) would be undertaken prior to 9 am in the months of April and May.

8.4.13 This would serve to avoid construction phase disturbance to regionally important numbers of lekking males.

Site Clearance Activities

8.4.14 Habitat clearance activities, where these coincide with the breeding bird season (1 March to 31 August, inclusive) would be subject to a pre-clearance survey by a competent ornithologist to identify any active wild bird nests. Should any active nests be found, works would only proceed under the advice of the appointed ornithologist and following a disturbance risk assessment. This would include all works within the Site (i.e., both the Site and along the Site access route).

8.4.15 Work exclusion buffers around identified nest sites would be implemented where necessary in accordance with best available species guidance applicable at the time and/ or as agreed in consultation with NatureScot.

[33] Ruddock, M. & Whitfield,. D.P. (2007). A review of disturbance distances in selected bird species.

8.4.16 The intention is to key-hole the forestry for proposed turbine placement. Any restocking would maintain a minimum 96 m buffer between restocked trees and the turbines. In order to discourage hen harriers from using key-holed areas created for the Proposed Development, these areas should be managed in accordance with NatureScot guidance[34]. Measures would include sward management where in areas which are not subject to re-stocking, within 500 m of proposed turbines, being kept at a short sward height (≤30 cm) and tall vegetation like heather, rush and willow being cut back to avoid potential nest sites developing (as discussed in the OHMP, Technical Appendix 7.5).

Schedule 1 Raptors

8.4.17 To avoid potential disturbance to breeding Schedule 1 listed raptors, all areas within 500 m of construction activities within the Site would be surveyed in advance of works being commenced during the core breeding season (1 March to 31 August, inclusive), to identify any nesting locations for such species.

8.4.18 Where necessary, work exclusion buffers around identified nest sites would be established where necessary in accordance with best available species guidance applicable at the time and/ or as agreed in consultation with NatureScot. No works would be permitted within the implemented exclusion buffer.

8.4.19 Whilst not a legislative requirement, the CEMP would include measures to safeguard roosting hen harriers during the non-breeding season, if present. Prior to commencement of works, a suitably experienced ornithologist would undertake checks for roosting harriers in suitable areas of habitat up to 600 m from active construction areas. In the event that roosting hen harriers are present, works would only proceed under the advice of the appointed ornithologist and following a disturbance risk assessment.

8.5 Summary of Sensitive Receptors

8.5.1 A summary of identified sensitive/ important ornithological receptors in the Study Area is provided within Table 8.9.

Table 8.9: Summary of Identified Sensitive/ Important Ornithological Receptors

Sensitivity	Feature		
Very High/ International	Tips of Corsemaul and Tom Mor SPA Common gull (breeding)		
High/ National	Tips of Corsemaul and Tom Mor SSSI		
Medium/ Regional	Hen harrier (breeding) Black grouse (breeding) Goshawk		
Low/ Local	Pink-footed goose Greylag goose All other wildfowl All ducks Golden plover Curlew	Lapwing Peregrine Merlin Osprey Red kite All commoner raptors	All owls Raven Goosander All other waders (including snipe) All other gulls All passerines

[34] SNH (2016c). Wind farm proposals on afforested sites – advice on reducing suitability for hen harrier, merlin and short-eared owl. January 2016.

Scoped Out Receptors

8.5.2 With the exception of golden plover, curlew and lapwing listed as priority species for assessment within NatureScot guidance[14], and recorded as breeding within the Study Area and/ or recorded in sufficient number during VP flight activity surveys to undertake CRM analysis, features of 'Local' importance are not considered in detail within this assessment.

8.5.3 Such features are considered to be generally common and widespread species and/ or were recorded very infrequently or in numbers of very low importance during the baseline studies.

8.5.4 Non-breeding hen harrier, goshawk and black grouse are scoped out of assessment due to the lack of activity of these species during baseline studies.

8.5.5 It is generally considered that passerine species (small perching birds) due to their short lifespans and high productivity rates are not sensitive to potential population level effects at wind farm sites[19].

8.5.6 As all wild birds and their nests are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended) mitigation measures are outlined to ensure legislative compliance and protection for the in use nests, eggs and dependent young of all wild birds.

8.5.7 Other than the Tips of Corsemaul and Tom Mor SPA and SSSI, there are no designated sites with qualifying ornithological interest located within 10 km of the Site (extended to 20 km for sites with migratory waterfowl interest), and thus all other designated sites are scoped out of assessment.

Scoped In Receptors

8.5.8 A summary of ornithological receptors scoped into detailed assessment is provided in Table 8.10.

Table 8.10: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Tips of Corsemaul and Tom Mor SPA	Very high/ International	The Tips of Corsemaul and Tom Mor SPA is designated for its internationally important breeding common gull population. The SPA is located 1.28 km north of the Site. The documented foraging range of gulls (including common gulls) to consider for effects of wind farms is 25 km[29], so the Site has potential to be functionally linked to the SPA. The baseline studies recorded high levels of common gull activity.
Common gull (breeding)	Very high/ International	The breeding gull population within the Tips of Corsemaul and Tom Mor SPA is of international importance. The Site is within the documented foraging range for common gulls from the SPA. The baseline studies recorded high levels of common gull activity, with a total of 338 flights during the VP flight activity surveys (20 flights which were 'at risk').
Tips of Corsemaul and Tom Mor SSSI	High/ National	The Tips of Corsemaul and Tom Mor SSSI is designated for its internationally (and thus also nationally) important breeding common gull population. The SSSI is located 1.28 km north of the Site. The Site is within the documented foraging range for common gulls from the SSSI. The baseline studies recorded high levels of common gull activity.
Hen harrier (breeding)	Medium/ Regional	Hen harrier is listed on Schedule 1 and 1A of the Wildlife and Countryside Act 1981 (as amended) and listed on Annex 1 of the Birds Directive. As the Site straddles two NHZs (NHZ11 'Cairngorms Massif' and NHZ12 'North East Glens'), breeding numbers in both NHZs are regarded. The number of breeding pairs in NHZ11 and NHZ12 are respectively 18 and three pairs[22]. One hen harrier nest site was recorded during the 2020 surveys, which represents >1% of both published regional NHZ population estimates (5.6% and 33.3% for NHZ11 and NHZ12, respectively). Furthermore, 14 hen harrier flights were recorded during VP flight activity surveys, of which five flights were considered 'at risk'.

Table 8.10: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Goshawk	Medium/ Regional	Goshawk is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and listed on Annex 1 of the Birds Directive. As the Site straddles two NHZs (NHZ11 'Cairngorms Massif' and NHZ12 'North East Glens'), breeding numbers in both NHZs are regarded. The number of breeding pairs in NHZ11 and NHZ12 are respectively six and 25 pairs[22] One goshawk breeding territory was recorded during the 2019 surveys, which represents >1% of both published regional NHZ population estimates (16.7% and 4% for NHZ11 and NHZ12, respectively). Furthermore, 26 goshawk flights were recorded during VP flight activity surveys, of which 18 flights were considered 'at risk'.
Black grouse (breeding)	Medium/ Regional	Black grouse is listed on Annex 1 of the Birds Directive. As the Site straddles two NHZs (NHZ11 'Cairngorms Massif' and NHZ12 'North East Glens'), breeding numbers in both NHZs are regarded. The number of displaying males in NHZ11 and NHZ12 are respectively 1,071 and 215[22]. A maximum of five black grouse leks were recorded in 2020 (with four leks identified in 2019), consisting of respectively 16 and seven displaying males in 2020 and 2019. The maximum number of lekking males (16) represents 1.49% and 7.44% of the respective NHZ11 and NHZ12 estimates, respectively. No 'at risk' flights were recorded during VP flight activity surveys.
Curlew (breeding)	Low/ Local	Curlew is a 'Priority Species' for considering for wind farm development assessments. The peak number of breeding territories recorded (eight in 2020) is <1% of the NHZ11 and NHZ12 estimates (1,322 and 2,815 respective breeding pairs). There were however 77 curlew flights recorded during the VP flight activity surveys, with seven of these flights 'at risk'.
Golden plover (breeding)	Low/ Local	Golden plover is a 'Priority Species' for considering for wind farm development assessments. No breeding golden plover were recorded during the 2019 or 2020 surveys, thus the breeding number is <1% of the NHZ11 and NHZ12 estimates. There were however 25 golden plover flights recorded during the VP flight activity surveys, with five of these flights 'at risk'.
Lapwing (breeding)	Low/ Local	Lapwing is a 'Priority Species' for considering for wind farm development assessments. There is no published population estimate for lapwing for any of the NHZs (including NHZ11 and NHZ12). A peak of seven breeding lapwing territories were identified during the 2020 surveys. There were also 15 lapwing flights recorded during the VP flight activity surveys, although only one of these flights were 'at risk'.

8.6 Assessment of Likely Effects

8.6.1 This section presents an assessment of effects upon important ornithological receptors (Table 8.10) both as a result of the Proposed Development alone, and cumulatively in-combination with other wind farm developments in the absence of mitigation additional to standard mitigation summarised in section 8.4.

8.6.2 The Proposed Development has been assessed for an operational life of 33 years.

8.6.3 The following potential effects have been assessed:

- Inadvertent destruction of in-use nests during construction;
- Disturbance to birds during construction due to vehicular traffic, operating plant and the presence of construction workers;

- Disturbance to birds during the operation of the turbines, vehicular traffic and the presence of people during operations; and
- Collision mortality of birds with turbine blades and other infrastructure.

Potential Construction Effects

8.6.4 Potential construction phase ornithological effects associated with the Proposed Development are considered to relate to disturbance/ displacement of birds from the area occupied by the Proposed Development and surrounding areas as a result of the construction of the Proposed Development.

8.6.5 Potential effects are assessed on the assumption that embedded mitigation measures, as detailed in Section 8.4 and within Chapter 2: Development Description and Chapter 3: Design Evolution and Alternatives are implemented.

8.6.6 During construction of the Proposed Development, noise and visual disturbance could lead to the temporary displacement or disruption of breeding and foraging birds. The magnitude of effect would be dependent on the timing, the extent of displacement, species affected and availability of alternative suitable habitats within the Site's locality.

Designated Sites for Nature Conservation

8.6.7 The Tips of Corsemaul and Tom Mor SPA and SSSI are 1.28 km north of the Site at its closest point. Potential construction effects to the Tips of Corsemaul and Tom Mor SPA and SSSI are therefore considered to be of a Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

8.6.8 The potential for impacts upon common gull (which is the ornithological interest of the designated site) during the construction of the Proposed Development is discussed under individual species sections below where relevant.

8.6.9 A summary of information relevant to inform a Habitats Regulations Appraisal (HRA) in relation to the Tips of Corsemaul and Tom Mor SPA, is provided in Section 8.11.

Common Gull

8.6.10 A total of 338 common gull flights were observed during breeding season VP flight activity surveys (March to August 2019 and 2020).

8.6.11 There is no information on the disturbance of breeding common gull colonies by construction works associated with wind farms. However, it is typically documented that a distance of at least 500 m is required to negate the potential for disturbance to wetland species[35]. It is therefore reasonable to assume that constructions works associated with the wind farm (given these would be greater than 1.25 km from the SPA and SSSI) would not affect the breeding common gull colony within the SPA and SSSI (even if works are done during the breeding season, March to August).

8.6.12 Common gulls were recorded within the Tips of Corsemaul and Tom Mor SPA and SSSI, with gull movements through, and close to, the Site. One apparent main common gull flight path was typically passing along, and outside, the eastern Site boundary (outside the forestry edge), with regular movements (particularly in Year 1) between the SPA and SSSI, and

[35] Borrowdale, K. (2016). A pilot study on interactions between wading birds and mussel gatherers at Heysham Flat. Available at: https://www.nw-ifca.gov.uk/app/uploads/Pilot-Study-on-Interactions-Between-Wading-Birds-and-Mussel-Gatherers-H-Flat-2014.pdf [accessed 02/02/2022].

Kelman Hill, in the south east of the Site, where gulls were recorded foraging (see Figure 8.5c).

8.6.13 Construction works associated with the Proposed Development would be restricted to central and northern parts of the Site, with most works, including nine out of 11 proposed turbines within commercial forestry within the Site, which the common gull movement routes appears to already avoid (preferring movements over open habitats). Furthermore, habitat loss during construction works would not result in the loss of any key foraging areas for common gull. Construction works would avoid being undertaken along the common gull foraging route, and within 500 m of Kelman Hill. In the event that any necessary construction works are required along the gull foraging route or within 500 m of Kelman Hill, these will be undertaken outside the common gull breeding season (between September and February when the gulls are not present). Disturbance to common gull in flight by construction works are therefore considered to be unlikely, and in any event, would only be localised and temporary.

8.6.14 Construction works are considered to result in no more than a short-term, Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

Hen Harrier

8.6.15 The baseline surveys recorded a breeding hen harrier territory (and nest site) in 2020, outside the Site boundary. Hen harrier activity recorded during VP flight activity surveys was considered low-moderate (total of 14 flights across the 18 month survey period).

8.6.16 There is evidence that breeding hen harrier may nest within 110 m of construction activity at wind farms (for example, Paul's Hill II Wind Farm in Moray[36]). The hen harrier nest site identified is approximately 500 m from the Site boundary, and although hen harrier are unlikely to use the same nest site, they are likely to use a similar locality, so construction works will likely be at least 500 m from this nest site.

8.6.17 The habitats within the Site, which would be subject to most of the construction works, predominantly comprise closed canopy commercial forestry and provide poor foraging and nesting opportunities for hen harrier. Open moorland, particularly to the west of the Site, provides improved nesting opportunities when compared to the Site; although the presence of hen harrier closer to, or within, the Site is not precluded. Some level of disturbance to foraging and nesting birds in proximity to construction works may therefore potentially occur. The construction works (key-holing) has potential to encourage hen harrier into the proposed turbine development area, and accordingly habitat management of these areas to discourage hen harriers would be undertaken (as summarised in Section 8.4).

8.6.18 Such displacement effects would, however, be temporary and would not result in the lowering of the perceived quality of any known breeding hen harrier range, likely to cause reduced breeding success or impair survival, to the extent of the abandonment of the Study Area by the species.

8.6.19 This is on account of extensive and preferable open moorland habitats for foraging and nesting available within the wider area and which will not be affected by the Proposed Development.

[36] Haworth, P. & Fielding, A. (2012). A review of the impacts of terrestrial wind farms on breeding and wintering hen harriers. Haworth Conservation.

8.6.20 Construction works are considered to result in no more than a short-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

Goshawk

8.6.21 The baseline surveys recorded a suspected breeding goshawk territory in 2019, within the Site boundary. Goshawk activity recorded during VP flight activity surveys was considered moderate (total of 26 flights across the 18 month survey period).

8.6.22 However, no goshawk nest site was identified within the Site, or adjacent to the Site, during surveys in 2019 and 2020, and thus construction works associated with the Proposed Development would not occur at a distance in which an active nest site would likely be disturbed (minimum of 300 m based on expert opinion[33]). As such, no disturbance to goshawk at their nest site is expected to occur.

8.6.23 The likelihood for construction phase displacement of goshawk from wind farm sites is low. In the event that some level of disturbance will be caused to individual birds which choose to utilise habitats in the vicinity of working areas over the course of construction works (anticipated being approximately 18 months), such impacts would be temporary.

8.6.24 Construction works are considered to result in no more than a short-term, Low magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect, which is considered not significant.

Black Grouse

8.6.25 Baseline surveys recorded four black grouse lek sites in 2019 and five lek sites in 2020, with at least one site considered an established lek site (with multiple males identified displaying in both survey years). A peak of 16 displaying males were recorded in 2020, with seven displaying males recorded in 2019. The identified lek sites are at least 500 m from the Proposed Development's infrastructure.

8.6.26 Construction activities within the Site during the breeding season for black grouse (March to August inclusive[37]), have the potential to result in the disturbance to lekking males at lek sites and brooding females. A review of disturbance distances for the species suggest that breeding female black grouse would not be passively disturbed at distances greater than 100 - 150 m and leks would not be passively disturbed at over 500 - 750 m[33].

8.6.27 The potential for disturbance to black grouse during the breeding season would be temporary, with effects greatest where works are undertaken within proximity (i.e., within 750 m) to known main lek sites (i.e., those regularly present and supporting larger numbers of males).

8.6.28 Adopting a precautionary approach for the purposes of assessment for black grouse, whereby assuming works would be undertaken during the breeding season and simultaneously across the Site, this has the potential to result in the temporary displacement of lekking males.

8.6.29 Construction works are considered to result in no more than a short-term, Low magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect which is considered not significant.

[37] SNH (2014). Breeding season dates for key breeding species in Scotland. Available at: https://www.nature.scot/sites/default/files/2017-07/A303080%20-%20Bird%20Breeding%20Season%20Dates%20in%20Scotland.pdf [Accessed 02/02/2022].

8.6.30 Such effects are however considered unlikely on the basis of the known availability of alternative lek sites locally to which males may displace.

8.6.31 Embedded mitigation measures (and good practice protocols) are proposed to reduce the potential disturbance effects to lekking black grouse, over the course of construction works.

Curlew

8.6.32 Baseline surveys recorded up to eight breeding territories (with a peak of six within the Site itself), and 77 flights recorded during the VP flight activity surveys.

8.6.33 There have been several studies into the occurrence of displacement for curlew at wind farms, given their relatively widespread nature at upland sites[38,39,40]. Overall, these studies still provide little consistent evidence upon which to draw robust quantitative conclusions on the occurrence of displacement effects for curlew, but the species is generally considered particularly sensitive.

8.6.34 Construction works undertaken during the breeding season for curlew (April to July[37]) may result in the disturbance of breeding pairs however, the numbers of pairs impacted with suitable habitat on-Site and which may be displaced to abundant within the Site and immediate surrounding area, is very small. Furthermore, most of the construction works would be within the commercial forest in the north of the Site, and therefore would principally affect habitats unsuitable for nesting curlew (with open habitats used by curlew mainly in the south of the Site).

8.6.35 Construction works are considered to result in no more than a short-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

Golden Plover

8.6.36 Baseline surveys recorded 25 flights during the VP flight activity surveys, but no evidence that the species was breeding in the survey area.

8.6.37 Although there was no evidence of golden plover breeding, the species was recorded during baseline surveys (and the open habitat within, and adjacent to, the Site are considered potentially suitable for nesting, with the species described as a 'possible breeder' during baseline surveys for the adjacent Garbet Wind Farm application), and as a precaution, potential effects on breeding golden plover are considered.

8.6.38 There is a growing literature of research into the impacts of construction and operational phase disturbance upon breeding golden plover within the UK however, studies show contrasting findings and do not provide a clear evidence base upon which to quantify displacement effects for the species with a high degree of confidence[38,39,40].

8.6.39 Construction works undertaken during the breeding season for golden plover (April to July[37]) may result in the disturbance of breeding pairs, the numbers of pairs that would be impacted

[38] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W, Bainbridge, I.P & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. Journal of Applied Ecology 46, 1323-1331.

[39] Whitfield, D.P., Green, M. & Fielding, A.H. (2010). Are breeding Eurasian curlew Numenius arquata displaced by wind energy developments? Natural Research Projects Ltd. Banchory, Scotland.

[40] Pearce-Higgins, J.W., Stephen, L., Douse, A. & Langston, R.H.W. (2012). Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. Journal of Applied Ecology 49, 386-394.

is however, very small with suitable habitat within which pairs may be displaced to abundant within the Site and immediate surrounding area.

8.6.40 Construction works are considered to result in no more than a short-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

Lapwing

8.6.41 Baseline surveys recorded up to seven breeding territories (with a peak of four within the Site itself), and 15 flights recorded during the VP flight activity surveys.

8.6.42 A study[40] found little evidence that lapwings were adversely impacted by construction phase disturbance from wind farms.

8.6.43 However, as a precaution, it is considered that construction works undertaken during the breeding season for lapwing (March to July[37]) may result in the disturbance of breeding pairs. The numbers of pairs that would be impacted with suitable habitat within which pairs may be displaced to abundant within the Site and immediate surrounding area, is very small.

8.6.44 Construction works are considered to result in no more than a short-term, Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

Potential Operational Effects

8.6.45 Potential operational ornithological effects associated with the Proposed Development are considered to relate to collision mortality and disturbance/ displacement of birds from the area occupied by the Proposed Development and surrounding areas as a result of the operation of the Proposed Development.

8.6.46 Collision risk analysis has been undertaken for common gull, hen harrier, goshawk, curlew and golden plover, on the basis of the low incidence of "at collision risk" flight activity recorded for all other target species.

8.6.47 Full details are provided in Technical Appendix 8.2: Collision Risk Modelling Analysis.

8.6.48 The HMP, which would be implemented during the first years of operation and remain in place for the lifetime of the Proposed Development, is expected to provide beneficial effects associated with the Proposed Development in the long term for important ornithological and ecological features (see Section 8.7).

Displacement

COMMON GULL

8.6.49 There is little evidence of avoidance of wind farms by common gulls[29].

8.6.50 The Site is 1.28 km from the Tips of Corsemaul and Tom Mor SPA and SSSI so it is considered that direct effects of operational phase disturbance on the common gull colony residing in the SPA and SSSI is negated given the spatial segregation.

8.6.51 During the baseline surveys, an established common gull movement route was identified along the eastern Site boundary (typically avoiding flying over the existing commercial forestry within the Site), and with high levels of gull activity associated with Kelman Hill in the south east of the Site. The Proposed Development has been buffered by 500 m from the movement route and Kelman Hill, given (and in the absence of information specific to common gulls) this is the distance at which disturbance to wetland species is typically negated[35]. This buffering

of proposed turbines from these 'key gull areas' is reflected, at least in part, by the high number of common gull flights recorded during VP flight activity surveys; 338 flights, while only 20 flights were 'at risk' (and thus within the turbine envelope, and considered in the CRM Analysis).

8.6.52 Given that the identified common gull movement route has been maintained, which would allow the continued gull movements between the Tips of Corsemaul SPA and SSSI and Kelman Hill, and Kelman Hill buffered by at least 500 m from the Proposed Development, the Proposed Development is not considered likely to have a barrier effect on foraging and traversing gulls to and from the SPA and SSSI.

8.6.53 Operational works are considered to result in no more than a long-term, Low magnitude of impact at the Tips of Corsemaul and Tom Mor SPA population level, resulting in a **Minor Adverse** effect which is considered not significant.

HEN HARRIER

8.6.54 Displacement studies have concluded that hen harriers have a low sensitivity to disturbance at operational wind farms and that birds will nest within 200 m to 300 m of operational turbines[41]. Post-construction monitoring at the operational Berry Burn Wind Farm reports nesting within 250 m of operational wind turbines and within 200 m of access tracks[42] and nesting has been recorded within 200 m of operational wind turbines at the Paul's Hill II Wind Farm[36].

8.6.55 A report concluded from a review of previous studies that if displacement of foraging hen harriers occurs, then it will likely be limited to within 100 m of wind turbines[41], if it occurs at all, with another study[36] also finding no clear evidence of hen harrier foraging displacement at distances beyond 100 m.

8.6.56 The hen harrier nest site recorded during baseline surveys was 500 m from the Site boundary and greater than 1 km from the nearest proposed turbine. Although the pair is unlikely to nest in the exact nest location, it is reasonable to consider that the pair may nest close to the locality.

8.6.57 Losses of potential limited foraging habitat are not likely to affect the perceived quality of the potential foraging range for breeding hen harriers or result in reduced breeding success or subsequent abandonment by breeding pairs. Similarly, the Site is unlikely to be used by a substantial number of non-breeding birds.

8.6.58 Operational disturbance is therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

GOSHAWK

8.6.59 There have been few published studies into the effects of operational displacement for goshawk at wind farms; however, a single review of information from a number of European countries, including the UK, suggests little behavioural responses for the species, with flight paths occurring through a number of operational wind farms[43].

[41] Whitfield, D.P and Madders, M. (2006). A review of the impacts of wind farms on hen harriers *Circus cyaneus* and an estimation of collision avoidance rates. A report prepared by Natural Research Ltd.

[42] Statkraft UK Ltd (2020). Berry Burn Extension Wind Farm EIA Report. Chapter 9.

[43] Krijgsveld, K.L. (2014). Avoidance Behaviour of Birds Around Onshore Wind Farms: Overview of Knowledge Including Effects of Configuration. A report on behalf of Cureau Warrdenburg.

8.6.60 The commercial forestry within the Site was considered as being part of a breeding goshawk pair's territory in 2019 (although no nest site was identified). Although a goshawk nest range is typically lower than 5 ha[44], the home range during the breeding season can be much greater in extent and is considered to be 570 to 3,500 ha[45]. The commercial forestry block within the Site where the Proposed Development would mainly be focused, is approximately 280 ha in extent, and therefore considerably lower than the breeding home range size. It is therefore reasonable to consider that the forestry within the Site, only forms a relatively small part of the pair's breeding territory.

8.6.61 The forestry within the Site is subject to forestry operations and cycles of felling, and therefore the breeding goshawk would have a level of habituation to clearing works within the Site, and with nest sites accordingly changing between breeding seasons. Although a proportion of the commercial forestry would be key-holed for the Proposed Development, given some forestry would be retained, it is likely that the Site would still be used by goshawk, given there is little evidence to suggest displacement effects to the species caused by wind farms and that goshawk in commercial forestry are transitory in terms of breeding and nesting behaviour.

8.6.62 Forested habitats are also common in the wider surrounding area, with notable wooded areas particularly to the east and south west of the Site, and therefore there is considerable potential for alternative nest sites. Losses of potential nesting and foraging habitat are not likely to affect the perceived quality of the potential breeding range for goshawks or result in reduced breeding success or subsequent abandonment by breeding pairs.

8.6.63 Operational disturbance is therefore considered to represent no more than a long-term, Low magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect which is considered not significant.

BLACK GROUSE

8.6.64 Research into the operational displacement of black grouse from wind farm sites remains limited. However, at several sites in Scotland, studies have shown that the abundance of lekking males at wind farm sites did not change during the operational period, although some lek sites, within 500 m of turbine locations, moved locally after construction[46].

8.6.65 The research also outlines evidence of the species occasional use of areas beneath turbines. Confounding factors such as habitat management and the lack of pre-construction data do however, place limitations on evidence suggesting displacement and population level effects for the species[46].

8.6.66 The locations of 'main' lek sites identified during baseline surveys has been considered as part of the evolution of Proposed Development design, and as such, no such lek site is located within 500 m of any proposed turbine locations. Operational displacement of males utilising these lek sites are therefore highly unlikely on the basis of best available evidence. Whilst the displacement of individual lekking males at 'satellite' lek sites cannot be entirely precluded, such effects would not be attributable to local population losses.

[44] Petty, S. (1996). History of the northern goshawk *Accipiter gentilis* in Britain. In book: The introductions and naturalisation of birds (pp. 95-102). The Stationery Office, London. Editors: Holmes, J.S. & Simons, J.R.

[45] Squires, J. & Reynolds, R. (1997). Northern Goshawk. The Birds of North America, 298: 2-27.

[46] Zwart, M. C., P. Robson, S. Rankin, M. J. Whittingham, & McGowan, P. J. K. (2015). Using Environmental Impact Assessment and Post-construction Monitoring Data to Inform Wind Energy Developments. Ecosphere, 6(2), pp 26.

8.6.67 Operational disturbance is therefore considered to represent no more than a long-term, Low magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect which is considered not significant.

CURLEW

8.6.68 Studies at operational wind farms have suggested that displacement effects for curlew has been demonstrated up to 800 m, with densities within 500 m of turbines estimated to decrease by up to 42%[38].

8.6.69 One, and two, curlew breeding territories were within 500 m of the proposed turbines, respectively in Year 1 and Year 2, with the other breeding territories greater than 500 m from the proposed turbines, so unlikely to experience displacement effects. Nine out of the 11 proposed turbines (and much of the infrastructure) are within commercial forestry and woodland habitat is unsuitable for nesting curlew, with edge effects also apparent where ground-nesting wading species (like curlew) avoid breeding within several hundred metres of woodland[47], so there is already a likely avoidance of the forested areas within the Site by curlew (and this can be seen in Figures 8.6a-b, with breeding curlew territories in open habitats typically over 500 m from the forest).

8.6.70 Therefore, assuming a precautionary potential 42% reduction in breeding densities of curlew within 500 m of the proposed turbines, this would comprise displacement of one breeding pair on the basis of two pairs recorded 500 m from the proposed turbines.

8.6.71 The access track is within 500 m of a maximum of three additional breeding curlew territories in Year 2 (and one territory in Year 1). It is considered that during the operational phase of the Proposed Development, the access track would be irregularly used for essential maintenance operations, so displacement effects from the presence of the access track is considered to be negligible.

8.6.72 Equating the displacement of one breeding curlew pair by the Proposed Development (location of proposed turbines) into population losses would also assume alternative suitable nesting habitats remaining locally for the species are limited. Alternative, more suitable, nesting habitats and associated foraging opportunities for the species are however, extensive within immediate surrounding area, with current land management practices (i.e., livestock grazing) also favourable for the species.

8.6.73 Operational disturbance is therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

GOLDEN PLOVER

8.6.74 There was no evidence of breeding of golden plovers within the Site in 2019 or 2020, although 25 golden plover flights were recorded during the VP flight activity surveys (with five of these 'at risk', so through the turbine envelope).

8.6.75 Given there were no golden plover breeding territories within 500 m of the proposed turbines (and only a very low number of flights which passed 'at risk' through the proposed turbine locations), operational displacement effects on golden plover can be discounted.

[47] Wilson, J.D., Anderson, R., Bailey, S., Chetcuti, C., Cowie, N.R., Hancock, M.H., Quine, C.P., Russell, N., Stephen, L. & Thompson, D.B.A. (2014). Modelling edge effects of mature forest plantations on peatland waders inform landscape-scale conservation. Journal of Applied Ecology 51, 204-213.

8.6.76 Operational disturbance is therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

LAPWING

8.6.77 A study[40] found little evidence that lapwings were adversely impacted by operational phase disturbance from wind farms.

8.6.78 No lapwing breeding territories were found within 500 m of the proposed turbines, and any breeding lapwings beyond the 500 m area are unlikely to experience any displacement effects. Nine out of the 11 proposed turbines (and much of the infrastructure) are within commercial forestry and woodland habitat is unsuitable for nesting lapwing, with edge effects also apparent where ground-nesting wading species (like lapwing) avoid breeding within several hundred metres of woodland[47], so there is already an avoidance of the forested areas within the Site by lapwing.

8.6.79 The access track is within 500 m of a maximum of four breeding lapwing territories. It is considered that during the operational phase of the Proposed Development, the access track would be irregularly used for essential maintenance operations, so displacement effects from the presence of the access track is considered to be negligible.

8.6.80 Operational disturbance is therefore considered to represent no more than a long-term, Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

Collision Mortality

COMMON GULL

8.6.81 Common gull collision mortality has been assessed on the basis of 'at collision risk' flight activity recorded during baseline VP Flight Activity Surveys between March and August 2019 (Year 1 breeding season), and March and August 2020 (Year 2 breeding season).

8.6.82 Collision Risk Models (CRM) have been completed using a total of 20 flights which entered the collision risk zone during the VP Survey periods (13 and seven flights respectively in Year 1 and Year 2). An avoidance rate of 99.2% was used[29].

8.6.83 The CRM predicts a breeding season mortality of 0.068 and 0.084 respectively in Year 1 and Year 2, which equates to 2.24 and 2.77 birds over the lifespan (33 years) of the Proposed Development (see Technical Appendix 8.2: Collision Risk Model Analysis).

8.6.84 The common gull population is not assessed at the Regional NHZ scale; instead for the purposes of assessment the predicted mortality rate will be considered in relation to the breeding population using the Tips of Corsemaul and Tom Mor SPA and SSSI.

8.6.85 The Tips Corsemaul and Tom Mor SPA and SSSI are designated for supporting 15,870 breeding pairs of common gull (in 1998[24]). However, reports suggest the breeding colony has declined notably in recent years, with more recent site condition monitoring undertaken by NatureScot reporting a total of 6,220 nests/ breeding pairs in 2007/08, and a total of 1,700 to 2,200 young fledging in 2008. While, monitoring by NatureScot in 2015, found the colony to have reduced further to 3032 nests/ breeding pairs (but with no measure of fledging rates made)[48].

[48] Site Condition Monitoring Management Note. Tips of Corsemaul and Tom Mor (SPA & SSSI). NatureScot. Provided from NatureScot.

8.6.86 The collision risks to common gulls as a result of the Proposed Development, of 0.068 and 0.084 represents up to 0.001% of the most recent breeding population estimate (6,064 birds).

8.6.87 Estimated annual adult survival rates for common gull are stated as 86%, with juvenile survival rates stated as 25% (to age three)[49]. This gives a baseline mortality of 14% and 75% for adult and juvenile birds, respectively. Assuming 14% (adult) and 75% (juvenile) mortality rates and the common gull population of the Tips of Corsemaul and Tom Mor SPA and SSSI of 6,064 adults and 951 juveniles[50], a baseline annual mortality rate in the absence of the Proposed Development would be 849 adults and 713 juveniles. Common gulls recorded during baseline surveys were adult birds moving, to and from, the colony, so the additional maximum mortality resulting from the Proposed Development represents a <0.01% (0.0099%) increase in annual background adult bird mortality rates.

8.6.88 Overall collision mortality risks to common gulls are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the breeding Tips of Corsemaul and Tom Mor SPA population level, resulting in a **Negligible Adverse** effect which is considered not significant.

HEN HARRIER

8.6.89 Hen harrier collision mortality has been assessed on the basis of 'at collision risk' flight activity recorded during baseline VP Flight Activity Surveys between March and August 2019 (Year 1 breeding season). No 'at collision risk' hen harrier flights were recorded during baseline surveys between March and August 2020 (Year 2).

8.6.90 A CRM has been completed using a total of five flights which entered the collision risk zone between March and August 2019. An avoidance rate of 99% was used, in accordance with NatureScot guidance[21].

8.6.91 The CRM predicts a breeding season mortality of 0.105, which equates to 3.47 birds over the lifespan (33 years) of the Proposed Development (see Technical Appendix 8.2: Collision Risk Model Analysis).

8.6.92 The predicted mortality rate of 0.105 represents 0.29% and 1.75% respectively of the most recently published Regional NHZ populations for NHZ11 and NHZ12 (NHZ11 - 36 birds and NHZ12 - six birds).

8.6.93 Estimated adult survival rates for hen harrier are stated as 81%, with juvenile survival rates stated as 22% (to age two)[51]. This gives an annual baseline mortality of 19% and 78% for adult and juvenile birds respectively. Assuming a 19% (adult) and 78% (juvenile) mortality rates and an assumed NHZ11 and NHZ12 population of respectively 36 and six adult birds, an annual baseline mortality rate in the absence of the Proposed Development would be seven adults (for NHZ11) and one adult (for NHZ12). The additional mortality resulting from the Proposed Development represents a 1.5% and 10.5% increase in background mortality rates, for respectively NHZ11 and NHZ12. Note, given the collision mortality rate for hen harrier in Year 2 was zero (as there were no 'at risk' flights recorded), the background mortality rates presented above are highly precautionary and are considered an over-estimation.

[49] Robinson, R.A. (2005). BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford. Available at: http://www.bto.org/birdfacts [accessed 04/02/2022].

[50] Taken as 48.75% of the 2008 fledging count (given the number of pairs reduced by 48.75% between the surveys).

[51] Picozzi, N. (1984). Sex Ratio, Survival and Territorial Behaviour of Polygynous Hen Harriers *Circus c. cyaneus* in Orkney. Ibis 3, 356-365.

8.6.94 Overall collision mortality risks to hen harrier are therefore considered to represent no more than a long-term, Low/ Medium magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect which is considered not significant.

GOSHAWK

8.6.95 Goshawk collision mortality has been assessed on the basis of 'at collision risk' flight activity recorded during baseline VP Flight Activity Surveys between March and August 2019 (Year 1 breeding season), September 2019 to February 2020 (Year 1 non-breeding season) and March to August 2020 (Year 2 breeding season).

8.6.96 CRM have been completed using a total of 18 flights which entered the collision risk zone between March 2019 and August 2020 (11 flights in Year 1 breeding season, four flights in Year 1 non-breeding season and three flights in Year 2 breeding season). An avoidance rate of 98% was used, in accordance with NatureScot guidance[21].

8.6.97 The CRM predicts a breeding season mortality of 0.834 and 0.078, respectively in Year 1 and Year 2, and a non-breeding season mortality of 0.070, which equates to 27.53 and 2.57 birds in the breeding season, and 2.312 birds in the non-breeding season, over the lifespan (33 years) of the Proposed Development (see Technical Appendix 8.2: Collision Risk Model Analysis).

8.6.98 The predicted breeding season mortality rates of 0.834 and 0.078 represents 6.95% and 0.65% respectively of the most recently published Regional NHZ populations for NHZ11 (12 adults), and represents 1.67% and 0.16% respectively of the most recently published Regional NHZ populations for NHZ12 (50 adults).

8.6.99 The predicted non-breeding season mortality rate of 0.070 represents 0.58% and 0.14% of the respective most recently published NHZ11 (12 adults) and NHZ12 (50 adults) populations.

8.6.100 Estimated adult survival rates for goshawk are stated as 83%, with juvenile survival rates stated as 40% (to age two)[49]. This gives an annual baseline mortality of 17% and 60% for adult and juvenile birds, respectively. Assuming a 17% (adult) and 60% (juvenile) mortality rates and an assumed NHZ11 and NHZ12 population of respectively 12 and 50 adult birds, an annual baseline mortality rate in the absence of the Proposed Development would be two adults (for NHZ11) and nine adults (for NHZ12). The additional breeding season mortality resulting from the Proposed Development represents a 41.7% and 3.9% increase in background mortality rates for NHZ11, and 9.27% and 0.87% increase in background mortality rates for NHZ12. The additional non-breeding season mortality resulting from the Proposed Development represents a 3.5% and 0.78% increase in background mortality rates for respectively NHZ11 and NHZ12.

8.6.101 The increase in background mortality rates from the Proposed Development were typically 0.5 – 10% for NHZ11 and NHZ12 populations. The exception to this was the considerably higher mortality rate in the Year 1 breeding season, on the scale of NHZ11, with additional breeding season mortality rate for the NHZ12 population by the Proposed Development increased by 41.7%. Accipiter species (which includes goshawk) are infrequently found as wind turbine collision fatalities worldwide[52], and therefore it is reasonable to predict that collisions for the Proposed Development are unlikely (particularly of the scale predicted for the NHZ12 population). Furthermore, goshawk is a species which is well documented as being difficult

[52] Watson, R.T. (2018). Raptor interactions with wind energy: case studies from around the world. Journal of Raptor Research 52(1), 1-18.

to effectively monitor and define discrete breeding populations[53], and there is no systematic monitoring of populations at an NHZ or regional level. As such the presented NHZ populations are not only out of date, but are likely to under-estimate the true goshawk breeding population in the NHZs.

8.6.102 Overall collision mortality risks to goshawk are therefore considered to represent no more than a long-term, Low/ Medium magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** effect which is considered not significant.

BLACK GROUSE

8.6.103 Overall black grouse flight activity recorded during baseline surveys was low, with a total of two flights recorded, and all below 'at collision risk', as would be typical for the species.

8.6.104 Accordingly, CRMs for the species have not been completed due to the inconsequential levels of collision mortality risk for the species that would be predicted.

8.6.105 The species is acknowledged as being at low risk of collision with turbine blades due to their typical low flight heights and tendency to spend much of their time on the ground.

8.6.106 Overall collision mortality risks to black grouse are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

CURLEW

8.6.107 CRMs for curlew were completed utilising flight activity information from seven flights which occurred within 'at collision risk' (three flights in the breeding season in Year 1 and four such flights in Year 2).

8.6.108 Estimated annual collision risks, using an avoidance rate of 98% in accordance with NatureScot guidance[21], equate to approximately 0.015 to 0.116 birds (see Technical Appendix 8.2: Collision Risk Model Analysis), representing an indiscernible proportion of the most recent nationally published NHZ11 and NHZ12 breeding populations.

8.6.109 Overall collision mortality risks to curlew are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

GOLDEN PLOVER

8.6.110 CRMs for golden plover were completed utilising flight activity information from three flights which occurred within 'at collision risk' (three flights in the breeding season in Year 1).

8.6.111 Estimated annual collision risks, using an avoidance rate of 98% in accordance with NatureScot guidance[21], equate to approximately 0.177 birds (see Technical Appendix 8.2: Collision Risk Model Analysis), representing an indiscernible proportion of the most recent nationally published NHZ11 and NHZ12 breeding populations.

8.6.112 Overall collision mortality risks to golden plover are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

[53] Woodbridge, B. & Hargis, C.D. (2006). North goshawk inventory and monitoring technical guide. USDA.

LAPWING

8.6.113 Overall lapwing flight activity recorded during baseline surveys was low, with a total of 15 flights recorded, and only one 'at collision risk'.

8.6.114 Accordingly, CRMs for the species have not been completed due to the inconsequential levels of collision mortality risk for the species that would be predicted.

8.6.115 Overall collision mortality risks to lapwing are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** effect which is considered not significant.

Potential Decommissioning Effects

8.6.116 Potential decommissioning effects are assumed to be similar to those identified for the construction phase (i.e., disturbance/ displacement). Decommissioning effects are therefore not considered separately for each species.

8.6.117 The future of the bird community at the time of decommissioning (33 years) is unknown and cannot be reasonably assumed with any certainty.

8.6.118 In the absence of mitigation, decommissioning effects may result in the destruction of nest sites and disturbance and displacement of very high sensitivity species like common gull and medium sensitivity species such as goshawk and hen harrier.

8.6.119 Providing the implementation of good practice measures such as those included in the OCEMP (Technical Appendix 2.1), be included, it is unlikely that significant effects upon important ornithological features would occur.

Potential Cumulative Construction Effects

8.6.120 Construction activities at nearby projects in combination with the construction works of the Proposed Development could result in cumulative disturbance and displacement effects on ornithological receptors, providing construction phase of the Proposed Development and other relevant schemes nearby were to overlap.

8.6.121 The potential for cumulative effects to occur is considered in relation to Clashindarroch II (ECU00000409) and Garbet Wind Farm (21/00020/EIA) which are in planning/ at appeal. All other wind farms within at least 5 km are operational and therefore would not contribute to cumulative effects. Wind farm developments at the Scoping stage are not considered.

8.6.122 The Clashindarroch II application predicted no significant construction effects on ornithological receptors. An Outline Bird Protection Plan is included as part of the application which aims to avoid/ minimise effects on breeding birds during the construction phase of Clashindarroch II.

8.6.123 Notwithstanding, a high level assessment can be undertaken on the assumption that for any development to proceed, it will be required to comply with legislation and planning policy and a full assessment of effects and subsequent mitigation or compensation will be required, as necessary.

8.6.124 EIA documentation concerning ornithology for the Garbet Wind Farm has largely been submitted as confidential and thus is not publicly available. Ornithology documentation was requested from NatureScot, who provided the ornithology documentation as a redacted document. NatureScot correspondence with the developer for Garbet Wind Farm, confirmed that they were satisfied with the mitigation proposed and that it was appropriate to minimise risks to ornithological features.

8.6.125 Given all proposed wind farms in close proximity to the Proposed Development (within 5 km) propose mitigation to minimise effects on ornithological receptors (particularly breeding birds), the cumulative effects of the Proposed Development in-combination with these other projects are predicted to be short-term, Negligible magnitude of impact, resulting in a **Negligible Adverse** effect which is considered not significant.

Potential Cumulative Operational Effects

8.6.126 Operational displacement is predicted to be relevant for a very small number of breeding pairs of a narrow range of species. A review of publicly available documentation for those wind farms out to 10 km for species scoped in to this assessment (extended to 25 km for common gull) found no evidence of significant displacement effects on these species. Surveys for Clashindarroch II reported that the development area was used by breeding goshawk, and considered operational effects to be minor adverse, and not significant (with all other wind farms reporting negligible adverse effects or not assessing effects at all on such species). Similarly to the Proposed Development Site, Clashindarroch Forest is commercial forestry so tree-felling for wind farm development is considered to be consistent with forest management and harvesting operations, which goshawk successfully adapt to with sensitive forestry management adopted. There was no evidence of displacement operational effects on common gull. Therefore, cumulative effects would not be deemed significant at a Regional or National level, in line with NatureScot's primary aims of maintaining the conservation of species at these population scales[13,14], so operational displacement is discounted from the cumulative assessment.

8.6.127 Only cumulative collision risks for important ornithological features have been considered as being potentially significant for the purposes of this assessment in terms of operational effects. Accordingly the potential effects on black grouse and lapwing are not considered in the cumulative operational effects due to no collision risk to these species being identified for the Proposed Development.

8.6.128 The geographic scale at which a cumulative assessment of collision risks has been undertaken for common gull is 25 km, which is based on the documented scale typically used to assess effects of onshore wind farms on gulls[29]. For all other species which were subject to CRM Analysis in the assessment a Study Area of 10 km is used to assess cumulative effects given 10 km represents the maximum foraging range of these species, and core foraging ranges for these species are considerably lower[12].

8.6.129 A summary of predicted cumulative annual collision mortality risks to common gull, hen harrier, goshawk, curlew and golden plover, including the Proposed Development and other wind farm developments (for which data was available), is provided in Table 8.11. All wind farm developments listed in Annex 5 of Technical Appendix 8.1: Ornithology are considered. Where the wind farm is not listed in Table 8.11, this means that there was no collision risk estimates for the wind farm development, or given the age of the wind farm, the information is no longer publicly available. For the purposes of the assessment in these instances, no collision risk is considered[54].

8.6.130 Figures presented for other wind farm developments in Table 8.11. have not been checked or amended to reflect avoidance rates used within this assessment.

[54] In the redacted ornithology documentation for Garbet Wind Farm provided by NatureScot, there was no evidence of collision risk modelling, and as such no CRM Analysis is considered to have been undertaken.

Table 8.11: Cumulative Collision Risks					
Wind Farm	**Annual Collision Risk Estimate**				
	Common Gull	**Hen Harrier**	**Goshawk**	**Curlew**	**Golden Plover**
Craig Watch (the Proposed Development)	**0.068 – 0.084**	**0 – 0.105**	**0.078 – 0.834 0.070 (Non-Br.)**	**0.015 - 0.116**	**0 – 0.177**
Muirake	**0.25 (95% avoidance)**	**-**	**-**	**-**	**-**
Hill of Towie II	-	-	-	-	0.97
Clashindarroch II	0.005 (99.2% avoidance)	-	0.046 (98% avoidance)	-	-
Total	0.323 – 0.339	0 – 0.105	0.194 – 0.95	0.015- 0.116	0.97 – 1.147

COMMON GULL

8.6.1 Cumulative collision risk estimates for common gull are calculated at 0.323 – 0.339 birds per year, which represents up to 0.0056% of the most recent breeding population estimate of the Tips of Corsemaul and Tom Mor SPA and SSSI (6,064 adults), and up to an 0.04% increase in annual baseline mortality of the SPA population.

8.6.2 Overall cumulative collision mortality risks to common gulls are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the breeding Tips of Corsemaul and Tom Mor SPA population level, resulting in a **Negligible Adverse** cumulative effect which is considered not significant.

HEN HARRIER

8.6.3 No wind farm developments within 10 km of the Site predicted collision risks with hen harrier, so the cumulative collision risk estimate remains as 0 – 0.105 birds per year, which represents up to 0.29% and 1.75% of the respective most recent breeding population estimate of NHZ11 (36 adults) and NHZ12 (six adults), and up to a respective 1.5% and 10.5% increase in annual baseline mortality of the NHZ11 and NHZ12 breeding estimates.

8.6.4 Overall cumulative collision mortality risks to hen harrier are therefore considered to represent no more than a long-term, Low/ Medium magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** cumulative effect which is considered not significant.

GOSHAWK

8.6.5 Cumulative collision risk estimates for goshawk are calculated at 0.194 – 0.95 birds per year, which represents up to 7.92% and 1.9% of the respective most recent breeding population estimate of NHZ11 (12 adults) and NHZ12 (50 adults), and up to a respective 47.5% and 10.6% increase in annual baseline mortality of the NHZ11 and NHZ12 breeding estimates.

8.6.6 Overall cumulative collision mortality risks to goshawk are therefore considered to represent no more than a long-term, Low/ Medium magnitude of impact at the Regional NHZ population level, resulting in a **Minor Adverse** cumulative effect which is considered not significant.

CURLEW

8.6.7 No wind farm developments within 10 km of the Site predicted collision risks with curlew, so the cumulative collision risk estimate remains as 0.105 – 0.116 birds per year, which represents an indiscernible proportion of the most recent nationally published NHZ11 and NHZ12 breeding populations.

8.6.8 Overall cumulative collision mortality risks to curlew are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** cumulative effect which considered not significant.

GOLDEN PLOVER

8.6.9 Cumulative collision risk estimates for golden plover are calculated at 0.97 – 1.147 birds per year, which represents an indiscernible proportion of the most recent nationally published NHZ11 and NHZ12 breeding populations.

Overall cumulative collision mortality risks to golden plover are therefore considered to represent no more than a long-term, Negligible magnitude of impact at the Regional NHZ population level, resulting in a **Negligible Adverse** cumulative effect which is considered not significant.

8.7 Mitigation

8.7.1 There are no significant adverse effects predicted for any important ecological feature as a result of the construction or operation of the Proposed Development, either alone or cumulatively with other developments. As such no additional mitigation is required in accordance with CIEEM guidance[1], however it is also good practice to propose mitigation measures to reduce negative effects that are not significant. Enhancement measures designed to benefit ecological features at the Site are outlined below.

Enhancement

Habitat Management Plan

8.7.2 A detailed Habitat Management Plan (HMP) would be produced post-consent for agreement by statutory consultees and other relevant stakeholders. The objectives of this plan would be to restore degraded peatland habitats on-site, to mitigate loss and to provide a net gain of good quality bog habitat within the Site, and to provide habitat creation and enhancement to benefit a range of species, including black grouse and ground-nesting waders, like curlew. An OHMP setting out the broad principles is provided in Technical Appendix 7.5, and is summarised below.

8.7.3 Peat restoration, including rewetting via blocking of drains, would be undertaken in appropriate areas of the Site. Where possible, without compromising forestry objectives, it is recommended that this would be planned to link to and extend the areas of Class 1 peatland within and bordering the Site. Grassland/ heath management is proposed on Kelman Hill, to manage the grazing pressure and enhance the quality of this habitat within the Site for ornithological features (particularly foraging gulls). Riparian planting is proposed within the Site, which would enhance habitat connectivity and shelter for bird species, including black grouse.

8.8 Assessment of Residual Effects

8.8.1 No significant residual effects are predicted to occur upon any important ecological feature as a result of the construction, operation or decommissioning of the Proposed Development, either alone or cumulatively with other developments via 'in-combination' effects or 'effect interactions'. As such, residual effects for all important ecological features are not significant.

8.9 Monitoring

Construction Phase Monitoring

8.9.1 Monitoring would be carried out on Site throughout the construction-phase by the ECoW, with details of any specific monitoring required to be provided in the CEMP and any associated species protection plans (SPP).

Operation Phase Monitoring

8.9.2 No operational phase monitoring is required or proposed, beyond that to be agreed as part of the HMP.

Decommissioning Phase Monitoring

8.9.3 No decommissioning phase monitoring is required or proposed.

8.10 Summary

8.10.1 A summary of potential effects is provided in Table 8.12.

Table 8.12: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Negligible Adverse, Not Significant
Common Gull – Displacement/ Disturbance	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Negligible Adverse, Not Significant
Hen harrier – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
Goshawk – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Minor Adverse, Not Significant
Black grouse (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Minor Adverse, Not Significant
Curlew (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for	Through a CEMP and CBBPP, agreed post consent and prior to	Negligible Adverse, Not Significant

Table 8.12: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
	breeding birds as part of the CBBPP.	construction commencing.	
Golden plover (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
Lapwing (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
Operation[55]			
Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding) – Displacement	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Minor Adverse, Not Significant
Common gull (breeding) – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Hen harrier – Displacement	Not required.	n/a	Negligible Adverse, Not Significant
Hen harrier – Collision mortality	Not required.	n/a	Minor Adverse, Not Significant
Goshawk – Displacement	Not required.	n/a	Minor Adverse, Not Significant
Goshawk – Collision mortality	Not required.	n/a	Minor Adverse, Not Significant
Black grouse – Displacement	Not required.	n/a	Minor Adverse, Not Significant
Black grouse – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Curlew – Displacement	Not required.	n/a	Negligible Adverse, Not Significant
Curlew – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Golden plover – Displacement	Not required.	n/a	Negligible Adverse, Not Significant
Golden plover – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Lapwing – Displacement	Not required.	n/a	Negligible Adverse, Not Significant
Lapwing – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Decommissioning			

[55] Measures from the HMP, to be agreed post-consent and prior to commencement of construction, are expected to provide habitat enhancements to benefit ornithological features. However, effects of habitat loss on ornithological receptors have been discounted for detailed assessment, so accordingly are not included in this assessment table.

Table 8.12: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Not Significant
Hen harrier – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Goshawk – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Black grouse (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Curlew (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Golden plover (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Lapwing (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Cumulative Construction			
Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding), Hen harrier, Goshawk, Black grouse, Curlew (breeding), Golden plover (breeding), Lapwing (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
Cumulative Operation			

Table 8.12: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Common gull (breeding) – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Hen harrier – Collision mortality	Not required.	n/a	Minor Adverse, Not Significant
Goshawk – Collision mortality	Not required.	n/a	Minor Adverse, Not Significant
Curlew – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant
Golden plover – Collision mortality	Not required.	n/a	Negligible Adverse, Not Significant

8.11 Information to Inform a Habitats Regulations Appraisal

8.11.1 This section summarises information relating to the potential for likely significant effects upon ornithological qualifying features of the Tips of Corsemaul and Tom Mor SPA (and SSSI), as a result of the Proposed Development.

8.11.2 The Tips of Corsemaul and Tom Mor SPA and SSSI are designated for its breeding common gull colony. The SPA and SSSI are located 1.28 km north of the Site, so is within the likely foraging range of common gulls (which is considered to be 25 km[29]). Consultation with NatureScot (see Table 8.1) confirmed that effects on the common gull population would need to form part of the assessment, with no other designated site with qualifying ornithological interest requiring to be considered.

8.11.3 Common gull activity was recorded during the breeding season (March to August), with a total of 388 gull flights recorded during two breeding seasons in 2019 and 2020. The VP flight activity surveys identified Kelman Hill as an area of high common gull activity (particularly used for foraging), with gull movements to the east of the Site to, and from, the SPA (and SSSI) to Kelman Hill apparent. The design of the Proposed Development is sensitive to this established common gull movement route, with a 500 m buffer applied around the main gull movement route where no proposed turbines would be located. Subsequently, only 20 gull flights (out of 338) were recorded 'at collision risk' and subject to CRM Analysis.

8.11.4 Population estimate for the Tips of Corsemaul and Tom Mor SPA and SSSI is 12,440 adult birds (based on number of fully formed nest sites) from site condition monitoring reported by NatureScot in 2007/08. Furthermore, the site condition monitoring carried out in 2008 revealed that between 1,700 and 2,200 young common gulls fledged[24]. However, the monitoring undertaken in 2015 by NatureScot reported a colony in the SPA and SSSI consisting of 6,064 adult birds (based on number of fully formed nest sites). No measure of fledging success was made in 2015.

8.11.5 The CRM Analysis revealed an annual common gull mortality rate of 0.068 to 0.084 birds as a result of the Proposed Development, which is 2.24 to 2.77 gulls over the 33 year lifespan of the Proposed Development.

8.11.6 Common gull mortality rates for adult birds is documented as 14%[49], and as such, it is reasonable to consider that the colony of 6,064 would accordingly result in mortality of 849 adult birds. Common gulls recorded during baseline surveys were adult birds moving, to and from, the colony, so the additional maximum mortality resulting from the Proposed

Development represents a <0.01% (0.0099%) increase in annual background adult common gull mortality rates. Based on the results of this assessment the Proposed Development is predicted to have a long-term, **Negligible Adverse** effect on the common gulls at the breeding Tips of Corsemaul and Tom Mor SPA population level. Such an increase in mortality would be nugatory and have no meaningful impact at any population level. As such, likely significant effects on common gull through increased collision mortality can be discounted.

8.11.7 In terms of displacement effects, given the distance from the Tips of Corsemaul and Tom Mor SPA and SSSI to the Site is greater than 1.25 km, no construction works would be undertaken in the proximity of the SPA/ SSSI. Furthermore, Proposed Development construction works would be over 500 m from Kelman Hill, and the nearest proposed turbine is 1 km from Kelman Hill. Although there are no studies which have specifically assessed displacement effects of disturbance on common gulls, 500 m is often regarded as an appropriate distance at which disturbance of wetland species can be precluded[35]. As such, given the Proposed Development is offset from the SPA/ SSSI, Kelman Hill and the established common gull movement route, by at least 500 m (and more typically at least 1 km for proposed turbines), the Proposed Development is predicted to have a long-term, **Negligible Adverse** effect on the common gulls at the breeding Tips of Corsemaul and Tom Mor SPA population level. Likely significant effects on common gull through displacement can be discounted.

9 Hydrology, Hydrogeology and Geology

9.1 Introduction

9.1.1 This chapter considers the likely significant effects on hydrology, hydrogeology and geology associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the hydrological, hydrogeological and geological baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

9.1.2 The assessment has been carried out by Jo Thorp (consultant) of Ramboll, a hydrologist with four years' experience assessing upland energy infrastructure projects for EIA and reviewed by Chris Day (senior consultant) of Ramboll with 14 years' experience in a broad range of EIA assessments as a hydrologist (refer to Technical Appendix 1.2).

9.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
  - Figure 9.1: Surface Water Features;
  - Figure 9.2: Sub-catchment Delineation;
  - Figure 9.3: Superficial Geology;
  - Figure 9.4: Bedrock Geology;
  - Figure 9.5: NatureScot (previously known as Scottish National Heritage (SNH)) Carbon and Peatland Soils; and
  - Figure 9.6: Drinking Water Protected Area.
- Volume 4: Technical Appendices
  - Technical Appendix 2.2: Borrow Pit Assessment;
  - Technical Appendix 2.3: Peat Depth Survey Results;
  - Technical Appendix 2.4: Peat Management Plan;
  - Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment;
  - Technical Appendix 9.1: Watercourse Crossing Assessment;
  - Technical Appendix 9.2: Groundwater Dependent Terrestrial Ecosystem (GWDTE) Assessment; and
  - Technical Appendix 9.3: Private Water Supply Assessment.

9.1.4 Figures and technical appendices are referenced in the text where relevant.

9.2 Assessment Methodology and Significance Criteria

Scope of Assessment

9.2.1 This chapter considers effects on:

- water quality (including both surface water and groundwater bodies) and assessment of the impacts from pollution;

- water resources, impacts on flow regimes and the geomorphological characteristic of watercourses as a result of proposed watercourse crossings;
- any alterations to regimes of water supplying Private Water Supplies (PWS) in the locale of the Proposed Development or within potential hydrological connection to the Site;
- the potential for effects on carbon rich soil and deep peat; and
- the potential for the Proposed Development to impact hydrology or hydrogeology with secondary effects on GWDTEs.

9.2.2 The Proposed Development would introduce physical changes which have the potential to alter the hydrological and hydrogeological characteristics of the Site. Hydrological surveys have been undertaken to establish the existing baseline conditions at the Site and within the wider study area.

9.2.3 Following the identification of key hydrological receptors, this chapter provides an assessment of the potential effects on water quality, flooding and water resources during construction, forestry felling and during the operational phase. The assessment is made based on the Proposed Development as described in Chapter 2: Development Description and the mitigation by design set out in Chapter 3: Design Evolution and Alternatives. The assessment also takes in to account the implementation of best practice and design measures that would be secured by planning condition and implemented by an appointed contractor through a Construction Environmental Management Plan (CEMP) prior to the commencement of construction.

9.2.4 The effects on surface and groundwater may also result in secondary effects on terrestrial ecology such as peat forming habitats and GWDTE and/ or aquatic ecology. Such receptors are considered in this chapter only in terms of the potential for changes to the hydrological and hydrogeological regimes to impact upon them. Effects on GWDTEs are considered in Technical Appendix 9.2: Groundwater Dependent Terrestrial Ecosystems Assessment which supports this chapter. Direct effects on ecological (non-avian) receptors from potential hydrological and hydrogeological changes are considered in Chapter 7: Ecology. Further information on the extent and depth of peat on the Site is considered in Technical Appendix 2.3: Peat Depth Survey.

9.2.5 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Under construction and operational developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

9.2.6 The scope of the assessment has been informed by consultation responses summarised in Table 9.1 and the following guidelines/ legislation/ policies:

National Legislation and Policy

- Water Environment and Water Services (Scotland) Act 2003[1];
- Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR)[2];

1 Scottish Government (2003). Water Environment and Water Services (Scotland) Act 2003. Available at: http://www.legislation.gov.uk/asp/2003/3/contents

2 Scottish Government (2011, 2013, 2017) Water Environment (Controlled Activities) (Regulations) Scotland 2011 (CAR) and their further amendments of 2013 and 2017 Available at: https://www.sepa.org.uk/regulations/water/

- The Water Environment (Miscellaneous) (Scotland) Regulations 2017[3];
- Flood Risk Management (Scotland) Act 2009[4];
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[5];
- The Public and Private Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015[6];
- The Public Water Supplies (Scotland) Regulations 2014 (as amended 2017)[7]; and
- The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013[8]

Guidance and Advice

- PPG 1[9]: Understanding your environmental responsibilities - good environmental practices (July 2013);
- GPP 2: Above ground oil storage tanks (January 2018);
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer (November 2017);
- GPP 5: Works and maintenance in or near water (January 2017);
- PPG 6: Working at construction and demolition sites (2012)[10];
- GPP 13: Vehicle washing and cleaning (April 2017)
- GPP 21: Pollution incident response planning (July 2017)
- PPG 22: Incident response - dealing with spills (October 2018)
- PAN 79: Water and Drainage (September 2006);
- LUPS-GU4[11]: Planning guidance on on-shore windfarm developments (2017);
- LUPS-DP-GU2a: Development Plan Guidance on Flood Risk (2018);
- LUPS-GU19: Planning advice on wastewater drainage (2011);
- LUPS-GU31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Version 3 (September 2017);

[3] Scottish Government (2017) The Water Environment (Miscellaneous) (Scotland) Regulations 2017. Available at: http://www.legislation.gov.uk/ssi/2017/389/contents/made

[4] Scottish Government (2009) Flood Risk Management (Scotland) Act 2009. Available at: http://www.legislation.gov.uk/asp/2009/6/contents

[5] Scottish Government (2017) the Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 Available at: https://www.legislation.gov.uk/ssi/2017/282/note/made

[6] Scottish Government (2015) the Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015. Available at: https://www.legislation.gov.uk/ssi/2015/346/contents

[7] Scottish Government (2017) The Public Water Supplies (Scotland) Regulations 2014 (as amended). Available at: https://www.legislation.gov.uk/sdsi/2014/9780111024782/contents

[8] Scottish Government (2013) The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013 [Online] Available at: http://www.legislation.gov.uk/ssi/2013/29/introduction/made

[9] Currently, review and replacement of Pollution Prevention Guidelines (PPGs) with Guidance for Pollution Prevention (GPPs). Current PPGs and GPPs are available online: https://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/

[10] Guidance provided in recent GPPs will be followed and take precedent over information provided in PPG 6, which was withdrawn on 14th December 2015, where there is overlap in the provision of advice. For example, guidance on the storage of handling of oils /fuels in GPP 2 will take precedent over guidance provided in Section 5 (Oil use, storage and refuelling) of PPG 6.

[11] SEPA Guidance and Advice Notes. Available at: https://www.sepa.org.uk/environment/land/planning/guidance-and-advice-notes/

- WAT-SG-25: Good Practice Guide - River Crossings (November 2010) [12];
- WAT-SG-26: Good Practice Guide - Sediment Management (September 2010);
- WAT-SG-29: Good Practice Guide - Temporary Construction Methods (March 2009);
- WAT-SG-75: Sector Specific Guidance: Construction Sites;
- WAT-PS-06-02: Culverting of Watercourses (June 2015);
- SEPA (2015), CAR - A Practical Guide, Version 9 (March 2022)[13];
- Scottish Renewables, Scottish Natural Heritage, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AEECoW (2019), Good Practice During Wind Farm Construction (4th Edition)[14]; and
- Scottish Government (2012) River Crossings and Migratory Fish[15].

Consultation

9.2.7 Table 9.1 summarises the consultation responses received regarding hydrology, hydrogeology and geology, and provides information on where and/ or how they have been addressed in this assessment.

9.2.8 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 9.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
Energy Consents Unit, 19/03/2021	Scoping response	Scottish Ministers request that the company contacts Scottish Water and make further enquires to confirm whether there any Scottish Water assets may be affected by the development, and includes details in the EIAR of any relevant mitigation measures to be provided.	Ramboll contacted Scottish Water (16/04/2021) (EIA@scottishwater.co.uk) to request whether there any Scottish Water assets that may be affected by the Proposed Development. Scottish Water's response (21/04/2021) did not indicate that there were any assets that may be affected and it was confirmed that there are no Scottish Water assets in the Site boundary.
		Scottish Ministers request that the Company investigates the presence of PWS which may be impacted by the development. The EIAR should include details of any supplies identified by this investigation, and if any supplies are identified, the Company should provide an assessment of the potential	Moray and Aberdeenshire Councils have been contacted to provide records of PWS. The results have been considered in the Site's design have been reported in the EIAR. Postal enquiries were issued to land owners of properties within

[12] SEPA Engineering Guidance. Available at: https://www.sepa.org.uk/regulations/water/engineering/engineering-guidance/#position

[13] SEPA The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), A Practical Guide. Version 9, January 2022. Available online: https://www.sepa.org.uk/regulations/water/ [Last accessed March 2022]

[14] Scottish Renewables, Scottish Natural Heritage, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AEECoW (2019), Good Practice During Wind Farm Construction (4th Edition). Available online https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction [Last accessed March 2022]

[15] http://www.scotland.gov.uk/Topics/marine/science/Publications/publicationslatest/rivercrossings

Table 9.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		impacts, risks, and any mitigation which would be provided.	the redline boundary of the Proposed Development. The Proposed Development has been set out such that infrastructure shall be at a suitable buffer from private water supplies. On this basis, no further surveys of the PWS locations were carried out. Assessment of potential impacts, risks, and any mitigation which would be provided is included in Technical Appendix 9.3.
Aberdeenshire Council, 22/01/2021	Scoping response	The proposed study area of the Site area plus a 250 m buffer in relation to impacts on water resources is typical and appropriate as a baseline, however this may need to be increased should connectivity downstream be identified.	The study area for assessment included in this chapter takes in to account a 250 m buffer and potential downstream connection.
		It is possible that the Site may increase runoff and as such an indicative drainage design should be submitted as part of the EIAR. As part of industry guidance and practice, drainage should be discharged locally to open ground/ forest where possible by regular cross drains discharging to the downhill side of the road. Effort should be made to avoid directing runoff from tracks and hardstanding towards existing watercourses, however, should this be the approach taken, typical track details (including drainage arrangements) and watercourse crossings together with a maintenance schedule is likely to be sufficient to address our interests.	The principles of drainage design have been presented in the EIAR (in terms of reduction to a greenfield rate, discharge to areas of vegetation a suitable distance from watercourses, and installation of cross drains) and commit to a drainage design being prepared by the contractor prior to the commencement of work. A 50 m buffer has been applied from the Proposed Development to watercourses (with the exception of watercourse crossings and locations identified in Section 9.4 of this chapter), to allow distribution of drainage from the Site across suitable areas. Where encroachment to the 50 m buffer is unavoidable, specific mitigation measures are set out in Section 9.5 of this chapter. Principles by which alterations in surface water runoff shall be avoided are set out in this chapter with reference to applicable SEPA best practice guidance and relevant CAR requirements. An indicative drainage design is provided post-consent and would be prepared by the Principal Contractor in line with findings of the EIAR, that would ensure compliance with Controlled Activity Regulations (CAR) and SEPA construction site permitting requirements. The detailed drainage design would be based on site-specific drainage calculations for the management of surface

Table 9.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
			water runoff and would determine the location and sizing of drainage assets across the Site. The provision of an indicative drainage design with the EIAR could present drainage configuration that would be subject to alteration at the detailed design stage, or which could fail to integrate with the design to be set out by the appointed contractor prior to the commencement of construction at the Site and as such is not contained within the EIAR.
		It is also noted that while it is often considered that the proposed roads/ tracks and hardstanding areas are permeable, the trafficking during construction compresses the material and so we consider these areas to be effectively impermeable.	Principles for drainage associated with tracks and the management of surface water runoff are set out in this chapter. Detailed drainage plans would be prepared by the appointed contractor to specify Sustainable Drainage System (SuDS) drainage measures such that the Proposed Development shall not lead to an increase in runoff rates from tracks.
		No Flood Risk Assessment is required.	Flood Risk Assessment is scoped out of the EIA. All watercourse crossings shall provide conveyance for the 1 in 200 (0.5%) flow, inclusive of climate change allowance.
SEPA, 05/07/2021	Response to Ramboll consultation document (SEPA Document Ref: 2312 - ECU00002177)	SEPA note encroachment of the track onto the Site to within 50 m of a small watercourse. SEPA are content this could be an acceptable approach (presuming there are no sensitive receptors close-by downstream). The EIA report needs to identify why working in the buffer in this area is an acceptable solution and what mitigation measures will be put in place. As the watercourse is significantly straightened there is an opportunity to try and improve the morphology of the watercourse as part of the works and SEPA would encourage you to this approach.	Mitigation measures to ensure the protection of the watercourse and downstream receptors are presented in Section 9.4 of this report. The engineered channel is a land drainage asset to support agricultural use and is therefore not considered suitable for restoration.
		T10 (now T7) is located so that its currently outwith the 50 m buffer – but as outlined above we would want to see it moved to reduce peat disturbance. A smaller watercourse buffer might be the best overall environmental solution and happy to discuss that further if it becomes an issue.	This turbine (T7) location has been re-sited such that deep peat (as based on interpolated peat data) is avoided as far as possible, the reduced watercourse buffer at this location is discussed in Section 9.4.
		There are no significant watercourse crossings required – SEPA would be	This approach to the assessment of watercourse crossings is noted.

Table 9.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		content with an approach whereby the EIA Report simply committed to all crossings being oversized bottomless arched culverts or traditional style bridges, with no further baseline watercourse information required.	The location of watercourse crossings is identified in Technical Appendix 9.1.
Marine Scotland Sciences (MSS), 19/03/2021	Scoping response	In addition to identifying the main watercourses and waterbodies within and downstream of the proposed development area, developers should identify and consider, at this early stage, any areas of Special Areas of Conservation where fish are a qualifying feature and proposed felling operations particularly in acid sensitive areas.	Downstream receptors are included within the scope of this chapter, including Protected Areas.
River Deveron DSFB, 10/12/2020	Scoping response	Potential impacts on fish populations may occur during either the construction or operational phase. During construction, the potential impacts could include noise/ vibration disturbance, siltation of habitat, and hydrological changes of the peat system, pollution and the blocking or hindering of upstream access of fish.	Locations of proposed watercourse crossings and principles for the design and construction of crossings are set in Technical Appendix 9.1, watercourse crossings shall take in to account SEPA best practice guidance and shall be constructed in line with relevant CAR requirements.
		During the operational phase, the main concerns are poor road drainage, accelerated levels of erosion and the poor maintenance of silt traps and road crossings.	Within this chapter, appropriate mitigation measures have been included in relation to the management of water quality and water quantity on-site. These measures involve maintaining a 50 m stand-off buffer zone between all watercourses and Proposed Development works (and turbines and infrastructure), with the exception of watercourse crossings. An outline CEMP has been prepared for inclusion in with EIAR which will include measures to protect water quality such as the adoption of standard pollution prevention controls in line with regulations and SEPA guidance. Principles for the drainage of tracks such that rates of erosion are not increased are set out in this chapter. Detailed drainage design and methods for the entrainment of sediments would be provided in detailed design prepared by the appointed contractor.
		RDevDSFB would welcome the opportunity to contribute to the design of any watercourse crossings and the outline CEMP and HMP as discussed. The formation of the plans and robust monitoring are key elements of the approach adopted by the RDevDSFB.	Design of watercourse crossings would be in line with SEPA guidelines in order to ensure the continued free passage of fish movements and would take in to account guidance provided by SEPA in response to consultation with Ramboll (SEPA Document Ref: 2312 - ECU00002177)

Table 9.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
Scottish Water, 14/12/2020	Scoping response	The proposed activity falls within a drinking water catchment where a Scottish Water abstraction is located. Scottish Water abstractions are designated as Drinking Water Protected Areas (DWPA) under Article 7 of the Water Framework Directive (WFD). Cairnford Bridge, Huntly supplies Craighead Water Treatment Works (WTW) and it is essential that water quality and water quantity in the area are protected. The activity is a sufficient distance from the intake that it is likely to be low risk, however care needs to be taken and mitigations must still be put in place to protect water quality. Scottish Water has produced a list of precautions for a range of activities. This details protection measures to be taken within a DWPA, the wider drinking water catchment and if there are assets in the area. Please note that Site specific risks and mitigation measures will require to be assessed and implemented.	Based on the assessment that there is likely to be a low risk identified abstraction point, principles for the protection of water resources outlined in the chapter and the implementation of a CEMP (an outline of which is provided in Technical Appendix 2.1) that would be prepared by the appointed contractor would provide suitable protection to protect water quality.
		For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system.	Principles of Surface water management are set out in this chapter and is not anticipated that the management of surface water runoff shall necessitate connection to public sewers.

Potential Effects Scoped Out

9.2.9 Detailed assessment of potential flow rates at proposed watercourse crossing locations would be carried out by a contractor at the detailed design stage such that all of the watercourse crossings identified for the Proposed Development would be designed in compliance with SEPA requirements[16]. The design of watercourse crossings would also take account of the future 'with climate change' baseline and (to avoid altering the flow regime) would be sized for a 1:200 year plus climate change flood event. Therefore, detailed flow rate calculations are not provided within the EIA assessment.

Method of Baseline Characterisation

Extent of the Study Area

9.2.10 The study area includes land within a 250 m radius of the Site, and watercourses with downstream connectivity with the Site (as well as their relevant 50 m buffer zones), including the catchments of the Burn of Findouran, the Burn of Succoth, the Burn of Guestloan, Linn Burn, Tammie's Burn, Chapel Burn and Keelholes Stripes and off-site downstream receptors in connection to the Charach water and the River Deveron (Figure 9.1).

[16] The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended.

Desk Study

9.2.11 The methodology for baseline characterisation is set out as follows:

- describe surface water hydrology, including watercourses, springs and ponds;
- identify existing catchment pressures;
- identify private drinking water abstractions and PWS within the study area;
- identify any flood risks;
- describe the hydromorphological conditions of watercourses;
- collect soil, geological and hydrogeological information;
- confirm surface water catchment areas and watersheds; and
- confirm the extent and nature of peat deposits across the Site (Technical Appendix 2.3).

9.2.12 Published information consulted to determine baseline conditions is outlined in Table 9.2.

Table 9.2: Baseline Information Sources

Topic	Sources of Information
Topography	▪ Aerial Photography[17] ▪ 5 m contour data derived from Ordnance Survey (OS) Digital Terrain Model (DTM) data[18] ▪ 1:25,000 OS Raster Data[18]
Designated Nature Conservation Sites	▪ SNHi Sitelink website[19]
Solid and Superficial Geology	▪ British Geological Survey Digital Data provided at BGS online viewer[20] ▪ BGS Borehole Records[20]
Soils and Peat	▪ SNH Carbon and Peatland Map (2016)[21] ▪ BGS 1:50,000 and 1:625,000 geological maps (superficial and bedrock)[20]
Surface Water Hydrology	▪ 1:10,000 OS Raster Data[18] ▪ 1:25,000 OS Raster Data[18] ▪ OS Open Rivers[22]
Flooding	▪ Indicative River and Coastal Flood Map (SEPA)[23]
Water Quality	▪ SEPA, Water Classification Hub[24] ▪ SEPA, The River Basin Management Plan For The Scotland 2021 - 2027[25]
Water Resources	▪ Private water supply information provided by Aberdeenshire and Moray Councils' Environmental Health Department

[17] Google Earth Imagery, Bing Maps

[18] Under license acquired from Ordnance Survey

[19] SNHi Sitelink. Available online: http://www.snh.org.uk/snhi/ [Last accessed February 2022]

[20] BGS Onshore GeoIndex. Available online: www.bgs.ac.uk [Last accessed February 2022]

[21] National Soil Map of Scotland. Available online: https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/ [Last accessed February 2022]

[22] OS Open Rivers. Available online: https://osdatahub.os.uk/ [Last accessed February 2022]

[23] SEPA Flood Maps. Available online: www.sepa.org.uk [Last accessed February 2022]

[24] SEPA, Water Classification Hub. Available online: https://www.sepa.org.uk/ [Last accessed February 2022]

[25] SEPA, The River Basin Management Plan For The Scotland 2021 – 2027. Available online: https://www.sepa.org.uk/ [Last accessed February 2022]

Table 9.2: Baseline Information Sources	
Topic	**Sources of Information**
	▪ Drinking Water Protected Areas (DWPAs) in the Scotland River Basin District (RBD) maps[26]. ▪ 1:10,000 OS Raster Data[18] ▪ 1:25,000 OS Raster Data[18]
Hydrogeology	▪ BGS 1:50,000 and 1:625,000 geological maps (superficial and bedrock)[20] ▪ BGS Groundwater Vulnerability Maps[20] ▪ BGS 1:625,000 hydrogeological map of the UK[20] ▪ The River Basin Management Plan For The Scotland 2021 – 2027[25]

Field Survey

9.2.13 Site surveying was conducted by Ramboll in March and July 2021. The purpose of the site walkover was to:

- assess the general hydrological condition of the Site;
- characterise watercourses at the Site such that proposed watercourse crossing points could be assessed; and
- assess hydrological conditions at potential GWDTE locations.

9.2.14 The survey consisted of visual inspection and geolocated surveying of watercourses across the Site. Where potentially groundwater dependent vegetation communities were identified by ecological surveying (see below), site specific review was conducted to identify visual evidence of groundwater emergence, association of habitats to surface water features, evidence of connection to upslope surface water runoff and the presence of deep peat in association with habitats.

9.2.15 Ecological surveying in order to identify potentially groundwater dependent vegetation communities was carried out by Avian Ecology in January 2021. Further details of the methodology for National Vegetation Classification (NVC) surveying of habitats is provided in Chapter 7: Ecology.

Criteria for the Assessment of Effects

Criteria for Assessing the Sensitivity of Receptors

9.2.16 Effects on water resources are described as beneficial, neutral or adverse and are considered with reference to the value or sensitivity of the receptor, as described in Table 9.3.

Table 9.3: Sensitivity of Environmental Receptor		
Sensitivity of Receptor	**Definition**	**Typical Criteria**
High	International or national level importance Receptor with a high quality and rarity, regional or national scale and limited potential for substitution/ replacement	▪ High likelihood of fluvial/ tidal flooding in the sub catchment – defined as 1:10 probability in a year. ▪ European Commission (EC) Designated Salmonid / Cyprinid fishery ▪ Surface water WFD class 'High' ▪ Scottish Government Drinking Water Protected Areas

[26] Drinking Water Protected Areas (DWPAs) in the Scotland River Basin District (RBD) maps. Available online: https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/ [Last accessed February 2022].

Table 9.3: Sensitivity of Environmental Receptor		
Sensitivity of Receptor	**Definition**	**Typical Criteria**
		▪ Aquifer providing regionally important resource such as abstraction for public water supply, abstraction for private water supply ▪ Supporting a site protected under EC or UK habitat legislation/ species protected by EC legislation ▪ Protected Bathing Water Area ▪ Active floodplain ▪ Highly GWDTEs ▪ Average peat depth >1 m within the sub-catchment.
Medium	Regional, county and district level importance Receptor with a medium quality and rarity, regional scale and limited potential for substitution/ replacement	▪ Medium likelihood of fluvial/ tidal flooding in the sub catchment – defined as a 1:200 probability in a year ▪ Surface water WFD class 'Good' or 'Moderate' ▪ Aquifer providing water for agricultural or industrial use. ▪ Local or regional ecological status/ locally important fishery ▪ Contains some flood alleviation features ▪ Average peat depth >0.5 m within the sub catchment. ▪ Moderately GWDTEs
Low	Local importance Receptor is on-site or on a neighbouring site with a low quality and rarity, local scale Environmental equilibrium is stable and is resilient to changes that are greater than natural fluctuations, without detriment to its present character	▪ Surface water WFD class 'Poor' ▪ Unproductive strata/ no abstractions for water supply ▪ Sporadic fish present ▪ No flood alleviation features ▪ Sewer ▪ Average peat depth <0.5 m within the sub catchment.

Criteria for Assessing the Magnitude of Change

9.2.17 The size or magnitude of each impact is determined as a predicted deviation from the baseline conditions during construction, operation and decommissioning, as described in Table 9.4.

Table 9.4: Magnitude of Impact on a Receptor	
Magnitude of Impact	**Criteria**
Large	Large alteration/ change in the quality or quantity of and/ or to the physical or biological characteristics of environmental resource.
Medium	Medium alteration/ change in the quality or quantity of and/ or to the physical or biological characteristics of environmental resource.
Small	Small alteration/ change in the quality or quantity of and/ or to the physical or biological characteristics of environmental resource.
None	No alteration/ change detectable in the quality or quantity of and/ or to the physical or biological characteristics of environmental resource.

Criteria for Assessing Cumulative Effects

9.2.18 The potential for cumulative effects to occur as a result of the Proposed Development are assessed based on:

- the potential hydrological connection of other developments, which are the subject of a valid planning application;

- the potential for concurrent phases of construction with other developments with the potential for hydrological connection to the Site; and
- applicable planning conditions with regards to the potential impact of other developments on the water environment.

Criteria for Assessing Significance

9.2.19 Table 9.5 illustrates how residual effects are determined by comparison of the sensitivity of receptors with the magnitude of predicted change. For the purposes of this assessment significant effects are major or moderate.

Table 9.5: Significance Criteria

		Magnitude of Impact			
		None	**Small**	**Medium**	**Large**
Sensitivity of Receptor	**High**	None	Minor	Major	Major
	Medium	None	Minor	Moderate	Moderate
	Low	None	Negligible	Minor	Minor

Limitations and Assumptions

9.2.20 This assessment refers to, and uses publicly available data sources and relies upon the accuracy of this data.

9.2.21 The assessment also relies on an assumption that the schedule of good practice measures set out in this chapter is implemented through the Construction Environmental Management Plan (CEMP) and Peat Management Plan (PMP). If significant effects are identified following the implementation of these good practice measures, then further mitigation will be identified.

9.3 Baseline Conditions

Current Baseline

Surface Hydrology

9.3.1 There are a number of watercourses and small drains on the Site, including the Green Burn/ Burn of Findouran, the Burn of Succoth, the Burn of Guestloan, Linn Burn, Tammie's Burn, Chapel Burn, Keelholes Stripe and Dry Burn, as well as further unnamed watercourses. These watercourses are presented on Figure 9.1 and the delineation of sub-catchments of watercourses on the Site is presented in Figure 9.2. All areas on which development associated with the Proposed Development could take place are within the catchment of tributaries of the River Deveron.

9.3.2 Land in the south west of the Site drains in a westerly direction via Green Burn/ Burn of Findouran and further unnamed streams and drains to Charach Water (also referred to as Burn Treble), and on to the River Deveron.

9.3.3 The north east of the Site (to the north of the watershed running in a north easterly direction between Garbet Hill and Craig Watch) drains to tributaries of the Chapel Burn and Tammie's Burn, which both flow from the Site in a north easterly direction and discharge to the River Deveron. Land to the south east of this watershed drains in a south easterly direction via the Burn of Succoth, the Burn of Guestloan and Linn Burn to the River Deveron.

9.3.4 A very small area close to the central northern boundary of the Site is in connection to Keelholes Stripe which flows on to Markie Water, which in turn discharges to the River

Deveron. No development is proposed on areas of the Site within the catchment of Keelholes Stripe.

9.3.5 An area in the north west of the Site drains to Dry Burn and the River Fiddich, no development or proposed habitat management is proposed on areas of the Site within the catchment of the River Fiddich and development associated with the Proposed Development is separated from the River Fiddich catchment by a distinct watershed that runs from Meikle Balloch Hill to Little Balloch Hill.

Flood Risk

9.3.6 A review of the SEPA online Flood Risk Management Maps[23] shows that a very small area (<1% of the total site area) in direct connectivity to the Burn of Findouran is within an area at high risk of flooding from rivers, indicating that each year this area has a 1 in 10 (10%) chance of flooding. No development footprint or areas of operation during construction associated with the Proposed Development is located in this area and the remainder of the Site is not considered by SEPA to be at risk of flooding from rivers.

9.3.7 Very small, isolated areas of the Site (<1% of the total site area) are assessed to comprise a high probability of surface water flooding (there is considered to be a 1 in 10 or 10% annual probability of flooding), including some very limited areas of existing forestry tracks that would be upgraded as part of the Proposed Development. However, these areas are highly localised and are considered to represent a negligible flood risk at the Site.

9.3.8 Due to the topography, hydrology and infrastructure location it is predicted that there is a low likelihood of groundwater emergence.

Water Quality

9.3.9 According to SEPA's Online Water Classification Hub[24], the River Deveron (Black Water to Huntly) was classified in 2020 to be of "Good" overall status under the WFD, with an overall ecological status of "Good".

9.3.10 Charach Water (referred to as Burn Treble by SEPA for the purposes of WFD classification) was classified in 2020 to be of "Good" overall status under the WFD, with an overall ecological status of "Good".

Geology

SUPERFICIAL GEOLOGY

9.3.11 According to the BGS's 'Geology of Britain Viewer' website (1:50,000)[20], the superficial deposits underlying the Site, where present, comprise a large area of peat, particularly in the northern and central areas. Devensian Till (Diamicton) and alluvium and river terrace deposits (undifferentiated) underlie the other parts of the Site (Figure 9.3). Where no layers are shown on the mapping, no significant superficial deposits are assumed to be present.

BEDROCK GEOLOGY

9.3.12 The underlying bedrock (Figure 9.4) across the majority of the northern, central, and western parts of the Site underlain by bedrock mapped as the Appin Group, comprising metamorphic graphitic pelite, calcareous pelite, calsilicate rocks and psammite. This is interspersed with metamorphic rocks belonging to the Appin Group and the Argyll Group, both comprising metamorphic quartzite. To the east, the Site is underlain by the Argyll Group, comprising metamorphic psammite, semipelite and pelite, and unnamed igneous rocks comprising neoproterozoic mafic lava and mafic tuff.

SOILS AND PEAT

9.3.13 A review of the SNH (now NatureScot) Carbon Rich Soil and Deep Peat and Peatlands Habitat Map (2016)[27] confirmed that areas of peat and organic material are present across parts of the Site (Figure 9.5). Most of the peat is shown as Class 4 or 5, with a very small area of Class 3; however, there are some areas of Class 1 peat shown in the northern and central areas of the Site ('nationally important carbon rich soils, deep peat and priority peatland habitat'). Some smaller areas of Class 2 are also indicated to be present in the central part of the Site ('nationally important carbon rich soils, deep peat and priority peatland habitat').

PEAT DEPTH AND CHARACTER

9.3.14 Findings of detailed peat surveying and assessment of potential impacts on underlying peat resources are provided in Technical Appendix 2.3. In summary, a total of 843 peat depth probes were taken during the Phase 1 peat survey and 1,046 peat depth probes during Phase 2 with a combined peat depth dataset of 1,889 probes. Most of the developable area of the Site has either no peat present or has a shallow depth of peat present (approximately 88% of peat probe points were <0.5 m in depth). These areas of shallow peat can be considered as organo-mineral soils. These are further summarised as follows:

- 614 samples (32.5%) located on land with no peat/ absent;
- 1,049 samples (55.5%) located on land with less than or equal to 0.5 m depth of peat or organo-mineral soil;
- 99 samples (5.2%) fell on land with between 0.51 m and 1.0 m depth of peat; and
- 127 samples (6.7%) located on land with more than 100 m of peat.

9.3.15 The maximum depth of peat recorded at the Site was 5.2 m, located in the central part of the Site during the Stage 1 survey. The maximum depth of peat recorded during the Stage 2 peat probe survey was 3.0 m, also located to the central part of the Site, north of Turbine 8. The mean peat depth recorded was 0.31 m.

9.3.16 The peat across the Site is generally intermediate or fibrous in nature, with the majority of the samples assessed as having moderate fine fibre content and low coarse fibre content. The majority of the samples tested were indicative of weak to strong rates of decomposition.

9.3.17 The mean water content of the peat at all sample locations was dry or semi-dry, which is consistent with the high degree of modification to the peatland integrity and composition through artificial drainage and overplanting with coniferous plantation forest. The drainage of the Site for the purposes of plantation forestry has caused drying, oxidation, and erosion of peat and carbon-rich soils, which have likely increased carbon release.

9.3.18 The peat was found to be acidic with a mean pH value of 3.9 and laboratory analysis of samples indicate that the peat has a high total carbon content.

PEAT GEOMORPHOLOGY

9.3.19 Digital aerial photography and DTM Lidar data was used to interpret and map geomorphological features within the developable areas of the Site. This interpretation and the resulting geomorphological map, as shown in Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment, Figure 2.5.4 were subsequently verified during a Site walkover and survey undertaken by an experienced peatland geotechnical engineer in March and July 2021.

[27] Scottish Natural Heritage. (2016). Carbon and Peatland 2016 Map (http://map.environment.gov.scot/soil_maps/)

9.3.20 The geomorphological features recorded are shown on Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment, Figure 2.5.4. The presence, characteristics and distribution of peatland geomorphological features have been defined to understand the hydrological function of the peatland, with particular reference to the balance of erosion and peat accumulation (or condition), and the sensitivity of peatland to potential land-use changes.

9.3.21 As noted above, the Site has historically been intensively managed with significant areas of commercial forestry plantation and felling, with artificial drainage measures used. In some areas diffuse natural drainage systems were also noted. Within the commercial plantation and forestry areas it was noted that the acrotelmic peat was highly modified as a result of planting and felling activities. No evidence of peat erosion or instability was generally noted other than in the central part of the Site.

9.3.22 Some evidence of instability features were identified, such as haggs, groughs, and other features were noted in the central part of the Site. No major instability features, evidence of incipient instability or past landslides were noted. The design of the Proposed Development avoided these areas.

Groundwater Bodies

9.3.23 The Cabrach groundwater body, which underlies all areas of the Site on which development is proposed, was assessed by SEPA in 2020 to be of Good overall status, with "Good" quantitative status and "Good" chemical status.

9.3.24 According to BGS 1:625,000 hydrogeological mapping the Site is underlain by a Low Productivity aquifer in which flow is virtually all through fractures and other discontinuities.

Water Resources

Public Water Abstractions

9.3.25 The north east of the Site lies within a Surface Drinking Water Protection Zone[28] (Figure 9.6). It is noted that the Site is in the upper catchment of the Protection Zone, and scoping response from Scottish Water identifies that the point of abstraction for water supply is Cairnford Bridge, Huntly (on the River Deveron) which is located approximately 9 km north east from the Site and provides public water supply to Craighead Water Treatment Works (WTW). Scottish Water note that the Proposed Development is a sufficient distance from the intake such that that it is likely to be low risk, however care needs to be taken and mitigations must still be put in place to protect water quality and water quantity.

Private Water Supplies

9.3.26 Following a request for information to both Moray Council and Aberdeenshire Council, mapping of the locations of PWS known to the councils was provided to Ramboll (Figure 9.3.1 in Technical Appendix 9.3: Private Water Supply Assessment). PWS on or within a 250 m buffer of the Site, or within a 2 km radius of the Site and in potential downstream hydrological connection were identified for assessment of potential impacts. Detailed assessment of the potential for the Proposed Development is provided in Technical Appendix 9.3. Table 9.6 identifies PWS within the scope of assessment based on the criteria for assessment as set out above.

[28] Scotland's Environment Web. Available online: https://www.environment.gov.scot/ [Last accessed January 2022]

Table 9.6: PWS within Scope of Assessment

PWS ID	X	Y	Name	Buffer From Site	Local Authority
1	338327	832053	Tomballie	On-site	Moray
2	338335	832040	Tomballie	On-site	Moray
3	338096	831361	Cabrach Church	On-site	Moray
4	337736	832325	Ardluie, Cabrach	On-site	Moray
5	337746	832118	Kildonan, Cabrach	On-site	Moray
6	336091	833853	Ballochford, Cabrach	On-site	Moray
7	338684	833276	Easterton Huntly Moray	On-site	Moray
8	337736	832327	Ardluie Bungalow	On-site	Moray
9	336634	833241	Rhinturk Cabrach	On-site	Moray
10	339878	832481	Hillock of Echt	>250 m, <2 km	Moray
11	338133	831086	Inverharroch Cottage	<250 m	Moray
12	338464	831396	Lesmurdie Cabrach	<250 m	Moray
13	336228	832437	Todholes, Cabrach	<250 m	Moray
14	337190	831894	Cabrach Burntreble Cottage	<250 m	Moray
15	340407	833475	Cabrach Tomnaven	>250 m, <2 km	Moray
16	336537	829883	Grouse Inn	>250 m, <2 km	Moray
17	337504	830549	Grouse Inn	>250 m, <2 km	Moray
18	337855	830415	Grouse Inn	>250 m, <2 km	Moray
19	338068	831052	Inverharroch	<250	Moray
20	338596	830925	Inverharroch	>250 m, <2 km	Moray
21	339599	834102	Belcherrie	>250 m, <2 km	Moray
22	339178	833682	Succoth Cabrach	<250	Moray
23	338099	830620	Dalriach	>250 m, <2 km	Moray
24	338162	830676	Dalriach	>250 m, <2 km	Moray
25	341911	834776	Meikle Gowls,	>250 m, <2 km	Aberdeenshire
26	341925	834984	Back Of Hill	>250 m, <2 km	Aberdeenshire
27	341343	835057	Waterside Gouls	>250 m, <2 km	Aberdeenshire
28	341153	835144	Mill Of Lynebain	>250 m, <2 km	Aberdeenshire
29	341286	835301	Lynebain	>250 m, <2 km	Aberdeenshire
30	341290	835307	Lynebain Cottage	>250 m, <2 km	Aberdeenshire
31	341129	836143	Backside	>250 m, <2 km	Aberdeenshire
32	341582	836312	Tighnaird	>250 m, <2 km	Aberdeenshire
33	341591	836318	The Old School House	>250 m, <2 km	Aberdeenshire
34	341817	836643	Mains of Beldorney	>250 m, <2 km	Aberdeenshire
35	342090	836937	The Cottage	>250 m, <2 km	Aberdeenshire
36	342123	836959	Farm Managers House Beldorney	>250 m, <2 km	Aberdeenshire
37	342123	836959	Gardeners Cottage Beldorney	>250 m, <2 km	Aberdeenshire
38	342118	837073	Gamekeepers House Beldorney,	>250 m, <2 km	Aberdeenshire

Groundwater Dependant Terrestrial Ecosystems

9.3.27 Assessment of potentially groundwater dependent habitat areas, identified as potentially GWDTE was carried out by ecologists from Avian Ecology during fieldwork conducted in January 2021. NVC surveying was carried out in line with SEPA guidance for assessing the impacts of development proposals on groundwater abstractions and GWDTE[29] in order to classify vegetation communities as being of High, Moderate or Low potential for groundwater dependency.

9.3.28 Based on ecological surveying of potential GWDTE habitats, a number of vegetation communities were identified across the Site as being potentially groundwater dependent. Subsequent further hydrological assessment carried out by Ramboll (including site visits in March and July 2021), is detailed in Technical Appendix 9.2 (GWDTE Assessment). The assessment demonstrates that vegetation communities on-site are either in direct connection to surface water features or are likely to be rain-fed habitats and as such are not considered sensitive to alterations in groundwater flows.

Future Baseline

9.3.29 There is potential for climate change to impact on future baseline conditions. Climate change studies predict a decrease in summer precipitation and an increase in winter precipitation alongside slightly higher average temperatures. This suggests that there may be greater pressures on private water supplies in summer months in the future. However, summer storms are predicted to be of greater intensity. Therefore, peak fluvial flows associated with extreme storm events may also increase in volume and velocity. These climate change factors have been taken into account when considering the potential for likely significant effects.

9.4 Standard Mitigation

Embedded Mitigation

9.4.1 The Proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects (see Chapter 2 for further details).

9.4.2 Design considerations have been incorporated to avoid or minimise adverse effects upon hydrological and hydrogeological receptors, as set out below.

9.4.3 Site infrastructure would be set at a minimum 50 m buffer from watercourses (as identified in the OS 1:10,000 scale mapping and Site reconnaissance), unless crossing of a watercourse is required or, as part of the iterative design process set out in Chapter 2, development within a 50 m buffer is preferable in environmental terms (for example to avoid development on deep peat or priority habitat).

9.4.4 The design of the Proposed Development has been set out such that the number of watercourse crossings shall be minimised. Design of new watercourse crossings would maintain hydraulic connectivity and allow the free passage of fish and other wildlife beneath. Watercourse crossings would also be of sufficient size so as not to restrict or concentrate flows downstream and to convey flows during periods of heavy rainfall (e.g., 1 in 200-year event plus climate change allowance).

[29] Land Use Planning System SEPA Guidance Note 31. Available online: https://www.sepa.org.uk/environment/land/planning/guidance-and-advice-notes/ [last accessed January 2022]
National Vegetation Classification (NVC). Available online: https://jncc.gov.uk/our-work/nvc/ [Last accessed January 2022]

9.4.5 A minimum buffer of 250 m would be maintained from groundwater abstraction locations, as identified through information provided by Moray and Aberdeenshire Councils and any further information provided by residents.

9.4.6 The design of the Proposed Development has been set out so as to avoid areas of higher quality blanket bog and upland heath, and as such to minimise disturbance of surface water distribution across such areas. It has however, not been possible to entirely avoid areas of peatland habitats, due to the distribution of these habitat types within the Site boundary. The layout of infrastructure (e.g., wind turbines, tracks and substation) has sought to avoid areas of deeper peat, minimising the potential for impacts to habitat types with greater future restoration potential.

Good Practice Measures

9.4.7 The schedule of good practice measures set out below identifies measures that would be implemented through the CEMP and detailed assessment of further measures that would be implemented at hydrologically sensitive locations. Details of construction phase mitigation measures for the Proposed Development would be contained within the CEMP, an outline of which is provided in the Outline CEMP (OCEMP) (see Technical Appendix 2.1). The OCEMP includes information relating to all good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the construction and operation of the Proposed Development in line with current industry and statutory guidance.

9.4.8 A detailed CEMP would be prepared by the appointed contractor prior to the commencement of construction, in line with applicable SEPA regulation as set out in Section 9.2 of this chapter and in accordance with conditions applied to the Proposed Development by the Planning Authority.

Alteration to Surface Water Flows and Runoff

9.4.9 Details of construction phase SuDS would be included in the Pollution Prevention Plan (PPP) and the final CEMP, as required, to provide a surface water management and treatment train that would mitigate potential adverse impacts on the hydrology of the Site and surrounding areas during the construction phase of the Proposed Development. Measures would ensure that pre-development runoff rates are maintained and that rates of runoff to watercourses are not increased. A full SuDS solution would be developed prior to construction. Construction site plans and proposed drainage measures would form a PPP that would be compiled by the contractor.

9.4.10 At the limited number of locations where a track is required to cross a watercourse, or where other infrastructure is necessary within 50 m of a surface watercourse, either as described in this Chapter or as identified by the Ecological Clerk of Works (ECoW), the installation of SuDS measures would be supervised by the ECoW during the construction phase of works. The requirement for monitoring of water quality within watercourses downstream of the Proposed Development would be agreed with SEPA and Marine Scotland. Procedures for this would be detailed in the CEMP. Prior to works, baseline water quality monitoring would be carried out (both upstream and downstream) and repeated during the construction works at agreed intervals.

Sedimentation and Erosion

9.4.11 The CEMP would include measures to minimise potential adverse effects related to surface water and groundwater discharge, including impacts associated with dewatering which may arise from the excavation of the borrow pit and turbine foundations. Therefore, the contractor

would be required to meet regulatory requirements and implement best practice measures as set out in SEPA planning guidance.

9.4.12 It is anticipated that the Proposed Development would be subject to a construction site licence (under the CAR regulations).

9.4.13 Where required, interceptor ditches would divert waters to locations downstream of proposed excavation or soil disturbance works associated with the installation of turbine foundations, the development of construction compounds and batching plants, groundworks during the installation of the substation and the excavation of the borrow pit. These would be specified in a PPP that would be compiled by the contractor in accordance with SEPA guidance[30].

9.4.14 Sediment capture methods to be implemented at the Site would be detailed in the Drainage Impact Assessment and the CEMP. Such measures would ensure that sediment laden runoff would be directed to settlement ponds suitable for the containment of volumes of water and sediment as appropriate to the area of disturbed or excavated ground (taking in to account the potential for rainfall events). Water discharged from settlement ponds would be directed to vegetated areas and measures such as silt fences would ensure sediment loads are fully entrained.

9.4.15 A detailed Borrow Pit Assessment would be prepared prior to commencement including details of the proposed drainage layout at each location and details of methods by which stockpiled materials would be separated from surface runoff as far as practicably possible. An initial borrow pit assessment has been provided in Technical Appendix 2.2.

9.4.16 Where drains are installed, either temporarily during the construction phase or in association with the installation of site infrastructure, check dams would be installed at suitable intervals (as defined by the gradient of the drain) to reduce flow velocity and allow the settlement of sediment loads prior to discharge to watercourses. These would be detailed in the PPP.

Chemical Pollution

9.4.17 The potential for impacts on the water environment through the release of pollutants or sediments during the construction phase would be managed through the implementation of a CEMP (initial details as provided in the OCEMP: Technical Appendix 2.1). The CEMP would incorporate measures to ensure that the release of sediments or pollutants to the surrounding environment is avoided.

9.4.18 The storage of potentially contaminative materials (oils, cements/ grouts) would be carried out at least 50 m from watercourses. Fuels, oils or chemicals stored on-site would be sited over an impervious base and according with the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR).

GWDTEs

9.4.19 Hydrological and hydrogeological assessment of vegetation communities identified as potentially groundwater dependant (provided in Technical Appendix 9.2) finds that such vegetation communities on-site are either in direct connection to surface water features or are unlikely to be supported by groundwater supplies and as such are not considered sensitive to alterations in groundwater flows.

[30] Supporting Guidance (WAT-SG-75), Sector Specific Guidance: Construction Sites February 2018, URL: https://www.sepa.org.uk/media/340359/wat-sg-75.pdf [Last accessed 27 October 2021]

9.4.20 It is considered that the maintenance of quality and quantity in surface water distribution across habitats identified as potentially groundwater dependent would be important, as these areas are assessed to be predominantly supported by surface water supply. Suitable drainage and surface water measures would be implemented, utilising SuDS where possible, to maintain hydrological connectivity in peatland and wetland habitats and prevent deleterious impacts on surface water distribution, which would be addressed in a CEMP for the Site to be developed by the contractor.

Private Water Supplies

9.4.21 Assessment of the potential the Proposed Development to impact PWS is provided in Technical Appendix 9.3. Based on the design of the Proposed Development such that a suitable buffer is maintained from PWS and the implementation of good practice pollution and sediment control measures, it is concluded that the risk of potential impact to PWS as a result of the Proposed Development would be negligible.

Watercourse Crossings

9.4.22 Construction would be carried out in accordance with best SEPA practice[31] and SEPA Guidance for Pollution Prevention[32]. Splash boards and runoff diversion measures, including silt fencing adjacent and parallel to watercourses beneath bridges and at culvert crossings, would be used at all crossings during construction to prevent direct siltation of watercourses.

9.4.23 To ensure that all drainage measures employed during the construction phase of the Proposed Development are maintained appropriately and remain effective, the performance of the drainage measures would be monitored. The drainage management works would, therefore, be supervised by the ECoW and would be in accordance with the CEMP.

9.4.24 The detailed design of each watercourse crossing would seek to ensure hydraulic conveyance is maintained to prevent any restriction of flows, as well as allowing the free passage of mammals and aquatic ecology. Therefore, it is proposed that each watercourse crossing would have sufficient capacity to pass the climate change-adjusted 1 in 200 year flood including an allowance for partial blockage.

9.5 Summary of Sensitive Receptors

Scoped Out Receptors

9.5.1 An area in the north west of the Site drains to Dry Burn and the River Fiddich Areas of the Site on which development is proposed (as set out in Chapter 2: Development Description) are shown not to be in hydrological connection to the River Fiddich (Figure 9.2). The River Fiddich, which forms part of the River Spey Special Area of Conservation (SAC) is therefore not considered as a potential receptor in this assessment.

9.5.2 The Proposed Development is not within an area assessed by SEPA to be at risk of flooding from rivers. Very small, isolated areas of the Site (<1% of the total Site area) are assessed to comprise a high probability of surface water flooding, including some very limited areas of existing forestry tracks that would be upgraded as part of the Proposed Development. However, these areas are highly localised and are considered to represent a negligible flood risk at the Site and do not overlap with the Proposed Development footprint or areas of operation during construction. Detailed design of watercourse crossings to provide conveyance

[31] SEPA, 2010. Engineering in the Water Environment: Good Practice Guide, River Crossings.

[32] SEPA 2018. Works and Maintenance in or Near water: GPP5

of 1 in 200 (0.5%) annual probability flows (inclusive of an allowance for climate change and the potential for partial blockage) would be prepared by the contractor in accordance with SEPA licensing requirements. Measures to ensure that pre-development runoff rates are maintained and that rates of runoff to watercourses are not increased would be set out in a full SuDS solution that would be developed prior to construction by the appointed contractor. Therefore, detailed assessment of flood risk has been scoped out of this assessment.

9.5.3 The north east of the Site lies within a Surface Drinking Water Protection Zone[33]. It is noted that the Site is in the upper catchment of the Protection Zone, and scoping response from Scottish Water identifies that the point of abstraction for water supply is located approximately 9 km north east from the Site and provides public water supply to Craighead Water Treatment Works (WTW). Scottish Water note that the Proposed Development is a sufficient distance from the intake such that that it is likely to be low risk, however care needs to be taken and mitigations would still be put in place to protect water quality and water quantity. Based on the distance to the WTW and the implementation of standard mitigation as set out in section 9.4, public water supply is therefore not considered as a potential receptor in this assessment.

9.5.4 According to BGS 1:625,000 hydrogeological mapping the Site is underlain by a Low Productivity aquifer in which flow is virtually all through fractures and other discontinuities. Detailed assessment of potential impacts to the hydrogeology of the bedrock has therefore been scoped out of the EIA assessment.

Scoped In Receptors

9.5.5 Table 9.7 outlines the receptors scoped into the assessment.

Table 9.7: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Soils and Peat	Low to High	The majority of the Site is underlain by shallow peat deposits (<0.5 m depth) or are absent of peat deposits. There are areas of deep peat present in the central part of the Site, to the west of Brown Hill along the western boundary. Smaller pockets of deep peat are also noted along the northern boundary of the Site and on the slopes of Meikle Balloch Hill. This is generally consistent with the desk top information which indicates that the Site is underlain by Class 3, 4 or 5 peat soils. Some areas of Class 1 peat shown in the northern and central areas of the Site ('nationally important carbon rich soils, deep peat and priority peatland habitat'). There is the potential for changes to the water table or soil loss through excavation or erosion to lead to a reduction in carbon sequestration at the Site, however areas of high sensitivity peatland habitat at the Site are limited in extent due to the high degree of modification imposed by forestry land management. Conversely, there is the potential to boost carbon sequestration and storage by restoring areas of degraded heath or bog, potentially raising the water table in targeted areas and providing enhanced flood storage. Where carbon rich soil and deep peat with high conservation value are present on the Site they are considered to be of high sensitivity.
Watercourses and surface water features	High	Although flood risk as a receptor is scoped out, the surface water features (the River Deveron and Charach Water) to which surface water flows from the Site discharge are assessed to be of 'Good' overall condition under the WFD classification scheme, and are identified to support salmonid populations/ fisheries. The watercourses are therefore considered to be of high sensitivity based on the water quality and hydrological characteristics.
GWDTE	Medium	The underlying aquifer is assessed to be of Low Productivity and potential GWDTE vegetation communities are assessed in Technical Appendix 9.2 as likely to be rain-fed habitats and as such are not considered sensitive to alterations in groundwater flows. While such habitats remain sensitive to potential alterations

[33] Scotland's Environment Web. Available online: https://www.environment.gov.scot/ [Last accessed January 2022]

Table 9.7: Summary of Receptor Sensitivity		
Receptor	**Sensitivity**	**Justification**
		in surface water supplies, similar habitats are well distributed at the local and regional scale in similar or better condition.
Private Water Supplies	High	There is the potential for alteration in the quality or quantity of water supply to PWS through alteration of surface or groundwater supplies. PWS in the area of the Site may provide potable water supplies to individual or small groups of households.

9.6 Assessment of Likely Effects

Potential Construction Effects

Effects on Soils and Peat

9.6.1 The peat soils present and likely to be impacted by the Proposed Development were found to be generally dry/ semi-dry and in a state of weak to strong decomposition (see Technical Appendix 2.3). This is likely to be as a result of the presence of coniferous plantation and extensive artificial drainage across the Site, which has resulted in modification to the integrity and composition of the peat. Where the Site is dominated by commercial forestry, peat soils are considered to be of low sensitivity with respect to alterations to the hydrological regime as the hydrological regime is heavily modified in its current baseline state. The impact on these areas is considered to be of negligible to low magnitude and the effects not significant (negligible or minor) as the peat is in generally poor condition and highly modified, on the basis that water tables would not be altered.

9.6.2 On the basis of peat surveying carried out at the Site, a design strategy has been implemented such that most of the developable area of the Site has either no peat present or has a shallow depth of peat present (~88% <0.5 m in depth). These areas of shallow peat can be considered as organo-mineral soils.

9.6.3 Further peat surveying at the construction phase would allow micrositing of wind turbines away from any pockets of deeper peat into the shallowest areas, and would minimise impacts on peatland where possible within the micrositing tolerances.

9.6.4 Available evidence indicates that following afforestation of peat soils, there is a loss of peat carbon and a gain in tree carbon[34]. This is consistent with the situation at the Site, which noted dry peat and significant decomposition, indicative of oxidation and a loss of carbon that would not have been the case without forest ploughing, drainage and overplanting.

9.6.5 No turbines are proposed for the larger areas of deeper peat located in the central part of the Site, where water table is higher and vegetation layer intact (and therefore have high conservation value). There may be potential for some effects associated with infrastructure in these areas, e.g. where proposed new tracks transit across deeper, wetter peat. The significance of the effects would be **Minor** and not significant based on area of extent and would be minimised through the use of floating road construction (as described in Chapter 2: Development Description), and sub-track drainage to maintain hydrological connectivity.

9.6.6 Detailed assessment of the baseline condition of peat soils and a draft PMP are provided in Technical Appendices 2.3: Peat Depth Survey Results and 2.4: Draft Peat Management Plan.

[34] Douglas Campbell, Peter Robson Roxane Andersen, Russell Anderson, Steve Chapman, Neil Cowie, Ruth Gregg, Renée Hermans, Richard Payne, Mike Perks, Vicky West (2019*) Peatlands and Forestry, IUCN UK Peatland Programme's Commission of Inquiry on Peatlands*.

The design of the Site to take in to account potential impacts on peat resources, has been carried out in consultation with SEPA.

9.6.7 The draft PMP (Technical Appendix 2.4) describes principles and best practice methods to be used by the Applicant's infrastructure contractor when excavating, moving and reinstating peat. It includes a volumetric peat balance and contains requirements for the final PMP, that would be developed by the contractor post consent, prior to construction. A final PMP will be produced by the Applicant's infrastructure Contractor.

9.6.8 The sensitivity of soils and peat across the Site is assessed to vary from Low to High. Based on the avoidance of areas of deep peat through the design of the Proposed Development layout, the majority of the developable area would not include High sensitivity peat deposits, based on the peat survey and interpolated data. This includes Turbine 7 which was relocated as far as possible to avoid an area of deep peat. Whilst the turbine and hardstanding areas are likely to be located outside deep peat, there is potential that some supporting infrastructure would be located on deep peat. However, this has been kept to a minimum and mitigation measures as outlined in the PMP would be used to minimise potential impacts.

9.6.9 Taking into account the implementation of best practice measures and the avoidance of deep peat, the magnitude of impact is assessed to be small and therefore the potential effect on carbon rich soils and peat at the Site would be **Minor Adverse** and not significant.

Alteration to Surface Water Flows and Runoff

9.6.10 There is the potential to alter in-channel or overland flow regimes through excavations, disruption to artificial drains, exposure of bare earth or rock and the construction of new or upgraded watercourse crossings as well as the crossing of historic forestry or field drains and numerous field drains (see Technical Appendix 9.1). There is the potential for the Proposed Development to lead to a reduced response time to peak flows following heavy rainfall due to the presence of artificial land drainage and therefore this could lead to indirect effects on aquatic ecology, fluvial morphology upstream and downstream of the Site.

9.6.11 All of the watercourse crossings identified for the Proposed Development would be designed in compliance with CAR Regulations[35]. The design of watercourse crossings would also take account of the future 'with climate change' baseline, and to avoid altering the flow regime would be sized to convey a 1:200 year plus climate change flood event.

9.6.12 All drainage from constructed hardstanding areas would be managed through a SuDS as specified in Technical Appendix 2.1: OCEMP, to attenuate flow rate, manage the volume of runoff and ensure no degradation in water quality using measures such as v-notch weirs, check dams, silt traps and settlement ponds.

9.6.13 The proposed location of Turbine 1 is 95 m upslope of an area of habitat that has been identified as potentially groundwater dependent according to the NVC classification of the observed vegetation community. Hydrological and hydrogeological assessment of the location suggests that the area of habitat is located on an area of deep peat which is saturated as a result of surface water runoff and therefore, while this area is unlikely to be sensitive to alterations in groundwater flows, were a reduction in surface water volume or quality to occur, there is the potential for an adverse effect on the habitat.

9.6.14 In line with best practice measures, as would be implemented across the Proposed Development, during the construction phase surface water flows would be maintained across

[35] The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended

the footprint of development at Turbine 1 through the construction of a cut off/ interception drain at the upslope extent of development, and the conveyance of surface water runoff via circular culverts or a diversion drain and distributed suitably to vegetated areas downslope of the track and hardstand associated with the turbine. Surface water runoff from the turbine locations shall be conveyed from areas of hardstand or track, via SuDS measures such that runoff rates shall be maintained at pre-development rates and suitable settlement of any increase in sediment load as a result of construction activity.

9.6.15 At one location (the entrance track running in a north easterly direction from Rinturk Farm) proposed infrastructure runs parallel to, and within the 50 m buffer of a watercourse. The unnamed watercourse forms a field drain at its upper extent and runs in a straightened, engineered channel along a field boundary to Rinturk Farm, from where the watercourse runs parallel to the existing farm access track, to a culvert below the A941 and on to Burn Treble/ Charach Water. The proposed track in this area comprises a length of track to be upgraded which runs for approximately 380 m from the A941 to Rinturk Farm and a stretch of new track running from the existing access track to Rinturk Farm for approximately 300 m to the point at which the proposed track would cross a drain at the eastern extent of fenced, grazed ground. The proposed track is assessed to represent the most favourable of three access routes that were considered onto the Site during design, and makes use of an existing access route to Rinturk Farm. Along the section of proposed new track, fencing on the margin of the field provides a buffer of undisturbed ground to the watercourse of approximately 4 m to 5 m. The proposed access track would run on land currently in use for grazing a further 14 m from the stream. On the section of track to Rinturk Farm that would be upgraded, the proposed track runs within 5 m of the watercourse.

9.6.16 In line with SEPA consultation, the hardstanding area of Turbine 7 has been located to avoid areas of deep peat and is now situated within the 50 m watercourse buffer of two small tributaries of the Linn Burn. A minimum buffer of approximately 14 m is maintained to the north of the hardstand and a small stream/ forest drain and a minimum buffer of 24 m is maintained to the stream south of the hardstand location (Figure 9.1).

9.6.17 Across the majority of the Proposed Development, embedded mitigation and good practice measures, as set out in Section 9.4 and the OCEMP (Technical Appendix 2.1) would be implemented such that the effect on surface water flows and runoff would be **Negligible**, and therefore not significant.

9.6.18 There is the potential that where the Proposed Development encroaches to within a 50 m buffer, the proximity of construction activity to watercourses could constrain the implementation of standard mitigation and provide a reduced area over which surface runoff may disperse.

9.6.19 Based on the limited number of locations at which development is proposed within a 50 m watercourse buffer the magnitude of potential impacts relating to disruption of flow or increased runoff during construction is assessed as small for adverse effects. The sensitivity of surface water features within the study area is assessed to be high. Therefore, the potential for significant effects is considered to be **Minor Adverse** and not significant.

Sedimentation and Increased Erosion Rates

9.6.20 There is the potential to increase erosion and transport of sediment to watercourses as a result of watercourse crossing construction, vegetation and soil stripping, excavations and dewatering activities. Potential effects include indirect effects on aquatic ecology, fluvial morphology and PWS downstream of the Site.

9.6.21 Across the majority of the Proposed Development embedded mitigation and good practice measures, as set out in Section 9.4 and the OCEMP (Technical Appendix 2.1) would be implemented such that the effect on surface water flows and runoff would be Negligible, and therefore not significant.

9.6.22 A proposed section of new access track and a section of proposed upgraded track leading on to the site at Rinturk are within the 50 m buffer from a watercourse. There is the potential increased sediment loading could occur as a result of runoff from disturbed ground or material introduced for track construction. Areas of the proposed hardstanding and turbine pad of Turbine 7 are also within the 50 m watercourse buffer of tributaries to the Linn Burn.

9.6.23 There is the potential that where development encroaches to within a 50 m buffer, the proximity of construction activity to watercourses could constrain the implementation of standard mitigation and provide a reduced vegetated area over which treated water from construction areas could be discharged and distributed before flowing to a watercourse.

9.6.24 Based on the limited number of locations at which development is proposed within a 50 m watercourse buffer, the magnitude of impact is assessed as small. The sensitivity of surface water features within the study area is assessed to be high. Therefore, the effect is considered to be **Minor Adverse** and not significant.

Chemical Pollution

9.6.25 There is the potential to impact on receiving soils, groundwater and watercourse quality through the release of contaminated water and stored chemicals used on-site during construction works. Potential effects include effects on water quality and indirect effects on aquatic ecology. Pollution prevention measures specified in the OCEMP (Technical Appendix 2.1) would ensure compliance with SEPA Guidance[36], with all equipment, material and chemicals securely stored and bunded, where applicable, at least 50 m away from watercourses.

9.6.26 In addition, there is the potential to impact on watercourse chemistry. Catchments draining peat tend to be acidic. Disturbance of peat may therefore also result in increased acidification of draining waterbodies. In addition, deforestation can increase nitrogen mineralisation and nitrification, which can promote nitrate leaching and enhance acidity in waters draining some soils. The effect can last between two to five years after felling, depending upon the rate at which vegetation re-establishes. The filling of drainage ditches with fresh brash can also accentuate the effect by promoting leaching below the rooting zone. However, the Site is not located in any catchments classified as having vulnerability to acidification according to mapping published by Scottish Forestry[37]. Furthermore, coniferous woodland accounts for less than 20% of the area of the water catchments. Research shows that the effects of harvesting on surface water acidity are difficult to discern when 20% or less of a catchment is felled within any three-year period.

9.6.27 On the basis of the implementation of good practice measures and compliance with legal pollution prevention requirements, the magnitude of impact is assessed as None to Small. Therefore the potential effect would be **Minor Adverse** and not significant.

[36] Pollution Prevention Guidance 5 (published Version 1.2, 2018)

[37] Forestry Commission: Managing forests in acid sensitive water catchments. Available online: https://forestry.gov.scot/ [last accessed January 2022]

Effects on GWDTE

9.6.28 Excavation of soil and bedrock during the construction phase of the Proposed Development could cause localised disruption and interruption to groundwater flows. Interruption of such groundwater flows could potentially reduce the supply of groundwater water to GWDTEs thereby causing an alteration/ change in the quality or quantity of and/ or the physical or biological characteristics of the GWDTE. Contamination of groundwater could also cause physical or chemical contamination to the GWDTE.

9.6.29 The locations of potentially groundwater dependent habitats have been considered in the design layout for the Proposed Development and avoided where possible. As a result, the majority of areas that were classified as potentially groundwater dependent are not directly impacted or in hydraulic continuity with proposed infrastructure.

9.6.30 Therefore, there are only very limited areas where the Proposed Development could directly impact on the habitats initially identified as being potential GWDTE and where further assessment is justified.

9.6.31 The access route onto the Site, to the north east of Rinturk farm passes through an area classified as M23 (*Juncus effusus'/acutiflorus - Galium palustre* rush-pasture), assessed to be of High potential of groundwater dependence. The topography of this area is not indicative of a flush or an area of groundwater emergence and the extent of the drains at the boundary of the area suggest that groundwater levels are managed for agricultural purposes. An area of M23 classified habitat (*Juncus effusus'/acutiflorus - Galium palustre* rush-pasture) in direct connection to Green Burn (to the north of Craig Luie) is crossed by an access track to the north east of the Site. Another area of M23/ H12 habitat (*Juncus effusus'/acutiflorus - Galium palustre* rush-pasture, *Calluna vulgaris – Vaccinium myrtillus* heath) is present adjacent to the Linn Burn at the track crossing location between Turbine 5 and Turbine 10. The track crossings at these locations shall be perpendicular to the linear areas of habitat such that only a limited area would be affected and direct connection to a watercourse in both instances indicates that the degree of groundwater dependency of these areas is low.

9.6.32 In consultation with SEPA, it was identified that an area of M23 habitat (*Juncus effusus'/ acutiflorus - Galium palustre* rush-pasture) to the east of the proposed Turbine 1 location was potentially suggestive of a flush habitat. In order to determine the degree of groundwater dependency, the Site was inspected by Ramboll consultants and further GIS based assessment of the location was carried out in order to calculate the likelihood of surface water accumulation in this area. The area is observed to be on the lower, eastern slopes of Garbet Hill at the eastern extent of an area that was previously forestry plantation. The upper slopes of Garbet Hill are characterised by peat soils over which surface water flow is via ephemeral rills and runnels. The area of the potential GWDTE is directly underlain by a linear tongue of deep peat recorded to be of between 1.5 m and 2 m in depth (Technical Appendix 2.3: Peat Depth Survey Results). Surface water flow accumulation across the Site has been calculated through the use of Arcmap Hydrology tools, based on the use of OS 5 m DTM data, in order to derive likely overland flow paths. The north of the potential GWDTE is shown to receive surface water runoff via a flow path that runs in a southerly direction from the ridge between Garbet Hill and Craig Watch. The central area of potential GWDTE habitat comprises an area of surface water accumulation that receives distributed flows directly from Garbet Hill to the west, within which the likelihood of surface water accumulation is assessed to be within the 90th percentile of values across the study area. The southern extent of the habitat forms a flow path by which surface waters are conveyed to Green Burn.

9.6.33 Topography of this area suggests the habitat is supported by the accumulation of surface water flows and the resulting saturation of peat soils, rather than the emergence of groundwater from the underlying geology. Habitat in this area is therefore assessed to be of low sensitivity to alterations in groundwater flows, and mitigation measures identified in Section 9.5 of this chapter are based on the maintenance of both quality and quantity of surface water flows, in line with best practice measures as outlined in Technical Appendix 2.1: OCEMP.

9.6.34 Based on the limited area of peatland habitat that could be directly affected by the Proposed Development, the potential magnitude of any impact to vegetation communities identified in NVC surveying as potential GWDTE is assessed to be small. Detailed assessment of potentially groundwater dependent habitats (as identified through ecological NVC surveying) is provided in Technical Appendix 9.2 and takes in to account the hydrological and hydrogeological context of habitats to determine their potential sensitivity to alterations in groundwater supplies. The assessment also takes in to account the low productivity of the underlying aquifer and demonstrates that vegetation communities in the study area are either in direct connection to surface water features or are likely to be rain-fed habitats, and as such are considered of a low sensitivity to alterations in groundwater flows. Therefore the potential for adverse effect on GWDTE habitats as a result of alteration in groundwater flows is assessed to be **Negligible** and not significant.

9.6.35 While habitats identified through NVC surveying are unlikely to be groundwater dependent, such peatland habitats are of local/ regional significance and as such of a medium sensitivity overall. Therefore, the potential impact is considered to be **Minor Adverse** and not significant.

Effects on Private Water Supplies

9.6.36 In the absence of appropriate construction techniques and mitigation measures there could be potential for excavation of soil and bedrock to cause localised disruption and interruption to groundwater flow. Interruption of groundwater flow could potentially reduce the supply of groundwater to PWS thereby causing an alteration/ change in the quality or quantity of and/ or the physical or biological characteristics of the PWS. Contamination of groundwater could also cause physical or chemical contamination to the PWS.

9.6.37 There is also a potential for works to alter in-channel or overland flow regimes through excavations, disruption to artificial drains, exposure of bare earth or rock and the construction of new or upgrades to existing watercourse crossings. Such activity could affect water quality at PWS from surface water sources.

9.6.38 Nine (9) PWS abstraction sources are located on the Site. No PWS sources are located within 250 m of proposed infrastructure or development and therefore the Proposed Development is unlikely to impact groundwater flow and groundwater quality feeding PWS, in line with SEPA guidance[38] further detailed qualitative and/ or quantitative risk assessment is not required at these locations.

9.6.39 Full detail of PWS locations and assessment of potential impacts to PWS is provided in Technical Appendix 9.3 (Private Water Supply Assessment). Based on the distance from PWS to areas on which development is proposed the potential magnitude of any impact to PWS is assessed to be small, and groundwater resources are assessed to be of a low sensitivity.

[38] LUPS-GU31 , SEPA 2017 Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems

Therefore, in line with further assessment provided in Technical Appendix 9.3, the potential effect is considered to be **Negligible** and not significant.

Potential Operational Effects

Effects on Soils and Peat

9.6.40 There are not anticipated to be any impacts on soils and peat further to those identified during the construction phase and therefore there would be **No Effects**.

Alteration to Surface Water Flows and Runoff

9.6.41 There is the potential for hardstanding surfaces and compacted tracks and infrastructure to lead to increased rates of surface runoff, in turn leading to the potential for increased risk of surface erosion and downstream flood risk; however as described in Chapter 2: Development Description, the Proposed Development will incorporate a drainage design using SuDS principles in accordance with The SuDS Manual (C753) 2015[39].

9.6.42 There is the potential for infrastructure installed at the Site to present a barrier to near surface flows across the Site during the operational phase. Were cross drainage measures not appropriately installed, there is the potential for tracks to impede the movement of surface waters across blanket bog leading to the drying out or desiccation of areas dependent on water supply or retention.

9.6.43 On the basis that all watercourse crossings will be designed following best-practice, and the detailed drainage design will ensure pre-construction run-off rates are maintained from track and hardstanding areas (as set out in Technical Appendix 2.1: OCEMP). There are not considered to be any significant impacts on runoff volumes and rates or on fluvial morphology during the operational phase.

9.6.44 Based on the implementation of drainage measures across the Site during the construction phase that would remain in situ during the operational phase, the impact on surface water flows would be Small and therefore during the operational phase would be **Negligible** and not significant.

Sedimentation and Increased Erosion Rates

9.6.45 On the basis that all watercourse crossings will be designed following best-practise, and the detailed drainage design will ensure pre-construction run-off rates are maintained (as set out in the Technical Appendix 2.1: OCEMP) there are not considered to be any significant impacts on runoff volumes and rates or on fluvial morphology during the operational phase. The potential risk of the release of sediment from the activities relating to the operational phase of the Proposed Development is substantially lower than during construction because of the decreased levels of ground disturbance and the reinstatement of vegetation following the construction phase.

9.6.46 Based on the implementation of good practice measures in watercourse crossing and drainage design, decreased levels of ground disturbance and the reinstatement of vegetation during the operational phase, the magnitude of any change in sedimentation or erosion rates would be negligible and therefore the potential effect would be **Negligible** and not significant.

[39] URL: https://www.susdrain.org/resources/SuDS_Manual.html [Last accessed February 2022]

Chemical Pollution

9.6.47 Occasional turbine maintenance and repair would be required during the operational phase, which could involve the operation of plant on the Site.

9.6.48 On the basis that good practice management measures would be in place during operation, it is considered that there is no likely significant effect on receiving soils, groundwater and watercourse quality associated with the release of chemicals used on-site during maintenance works.

9.6.49 As the potential for adverse effects is substantially lower during the operational phase than the construction phase, there would be **No Effect**.

GWDTE

9.6.50 Assessment of hydrogeology at the Site shows that there is limited potential to permanently alter or disrupt groundwater flow. Alteration could occur to surface water flows and shallow groundwater in the soils, in particular through tracks constructed, drainage measures and turbine foundations. However, Technical Appendix 2.1: OCEMP, specifies that construction of Site infrastructure would incorporate measures to ensure the conveyance of shallow groundwater and surface water across the Site, such as the use of suitably graded sub-base aggregate on tracks, the use of floating track where areas of peat are crossed and cross drainage measures to ensure the continued distribution of surface water runoff. Therefore, the potential magnitude of effects would be none to small and the potential effect would be **Negligible** and not significant.

Effects on Private Water Supplies

9.6.51 The Proposed Development has been set out such that infrastructure shall be at a suitable buffer from private water supplies. Activities that would be carried out on the operational wind farm (such as the movement of vehicles across the Site and ongoing maintenance) would be very unlikely to lead to any detectable change in the quality or quantity of water supply to abstraction locations. There are not anticipated to be any impacts on soils and peat further to those identified during the construction phase, and therefore the potential magnitude of impact is considered to None and the effect on PWS during the operational phase would be **No Effect**.

Potential Decommissioning Effects

9.6.52 While the risks to water resources are similar to those identified during the construction phase, decommissioning shall additionally require the breaking up and removal of concrete structures and reinforcement (e.g. turbine bases, transformers substations or buildings); the excavation and removal of crushed rock, geotextile or geogrid reinforcement materials; lifting and removal of cables and the dismantling and laying down of turbine components prior to removal from the Site.

9.6.53 During the decommissioning phase there is the potential for construction activity to impair the condition of hydrological and hydrogeological resources on and downstream of the Site. NatureScot commissioned reporting[40] identifies those potential risks to ground and surface water environment may include the potential for:

[40] Welstead, J., Hirst, R., Keogh, D., Robb G. and Bainsfair, R. 2013, Scottish Natural Heritage: Research and guidance on the restoration and decommissioning of onshore wind farms. Available via SNH. http://www.snh.org.uk/pdfs/publications/commissioned_reports/591.pdf. [Accessed February 2022]

- Bank instability and increased erosion leading to effects on the quality of aquatic habitats and ecology;
- Establishing rapid drainage paths leading to the potential for increased pollution extent;
- The drainage of water dependent habitats;
- Sedimentation and pollution from suspended materials leading to effects on fisheries and protected habitats/ species;
- Spills of fuels and oils from vehicles, turbine gearboxes and transformers leading to effects on fisheries and protected habitats/ species; and
- Soil compaction leading to increased runoff and erosion potential leading to effects on fisheries and protected habitats/ species.

9.6.54 It is therefore anticipated that at the time of decommissioning, a CEMP would be implemented to the extent that infrastructure were fully or partially decommissioned.

Potential Cumulative Construction Effects

9.6.55 The potential for cumulative effects to occur as a result of the Proposed Development are assessed based on:

- The potential hydrological connection of other developments, which are the subject of a valid planning application;
- The potential for concurrent phases of construction with other developments with the potential for hydrological connection to the Site; and
- Applicable planning conditions with regards to the potential impact of other developments on the water environment.

9.6.56 Based on the above criteria Clashindarroch II Windfarm (in planning) and Garbet Windfarm (in planning) are considered with respect to potential cumulative effects.

9.6.57 It is considered that the Proposed Development alone would have negligible or minor adverse effects on hydrology, hydrogeology and soils at the Site and within downstream catchments, based on the assessment of potential effects provided in this chapter and Technical Appendices 2.3, 2.4, 9.1, 9.2 and 9.3. Effects associated with the Proposed Development when considered in the context of the downstream catchments as a whole would be further reduced and can be considered to be negligible adverse.

9.6.58 It is reasonable to assume that any cumulative development within downstream catchments would incorporate good practice drainage management measures into their respective designs, including temporary construction stage and permanent SuDS to manage the rate, quantity and quality of surface water run-off to a level where effects on the water environment would be negligible. It is considered that the addition of the Proposed Development (with negligible effects) would not give rise to significant cumulative effects when considered in combination with those developments and would therefore also be considered to be **Negligible** and therefore not significant.

Potential Cumulative Operational Effects

9.6.59 Were accidental spills or leaks of potentially polluting substances (for example fuels or oils) to occur on separate sites during operation at the same time there is the potential cumulative impacts could occur to surface waters. It should be noted that no bulk storage of such materials would be anticipated, and that such incidents would be limited to accidental release from service vehicles or equipment, or the failure of wind turbine gear boxes due to poor maintenance.

9.6.60 Were measures designed to prevent increased runoff rates on wind farm sites poorly maintained or damaged, there is the potential for altered drainage patterns to lead to increased runoff rates, which could lead to erosion of soils and increased downstream flood risk.

9.6.61 Based on the assessment of potential effects of the Proposed Development during the operational phase to be minor or negligible, when considered in the context of the downstream catchments as a whole, the potential for adverse cumulative effects would be further reduced and can be considered to be **Negligible**, and therefore not significant.

9.7 Mitigation

Mitigation during Construction

9.7.1 Embedded mitigation and principles of construction best practice in respect to potential impacts to watercourse crossings, GWDTE areas and PWS have been taken into account within the assessment of potential effects. Such measures are further set out in Technical Appendices 9.1, 9.2 and 9.3 respectively and details on the management of peat resources on the Site are detailed in Technical Appendices 2.3, 2.4 and 2.5 and no further mitigation is required.

9.7.2 General principles for control of surface runoff, pollution prevention and sediment control are set out below and further detailed in the OCEMP (Technical Appendix 2.1, sections 4.6: Management of Surface, Groundwater and Water Quality Monitoring Management Plan and 5.5: Watercourse Crossings). Construction Site plans and a detailed drainage layout plan (demonstrating proposed SuDS and other drainage mitigation measures) shall be prepared by the contractor and would be agreed with SEPA and the local authorities prior to construction.

9.7.3 It is anticipated that the Site would be subject to a construction site licence and as such proposed drainage measures would be implemented in line with SEPA licensing regulations[41].

Alteration to Surface Water Flows and Runoff

9.7.4 At the limited number of locations where a track is required to cross a watercourse, or where other infrastructure is necessary within 50 m of a surface watercourse, either as described in this chapter or as identified by the ECoW, the installation of SuDS measures shall be supervised by the ECoW during the construction phase of works. The requirement for monitoring of water quality within watercourses downstream of the Proposed Development would be agreed with Moray and Aberdeenshire Councils in consultation with SEPA and Scottish Water. Procedures for this would be detailed in the CEMP. Prior to works, baseline water quality monitoring shall be carried out (both upstream and downstream) and repeated during the construction works at agreed intervals.

9.7.5 At the section of new access track proposed to the north east of Rinturk Farm, which is approximately 18 m from a watercourse at its closest point, a cut off drain upslope of the proposed construction area and cross drains/ circular culverts shall ensure the continued conveyance of surface water runoff from upslope areas. Surface water runoff from the construction area of the track shall flow to SuDS measures such that runoff rates shall be maintained at pre-development rates and any excess sediment load shall be suitably entrained. Water discharged from cross drains or SuDS measures shall be distributed to a

[41] SEPA, Water run-off from construction sites. https://www.sepa.org.uk/regulations/water/pollution-control/water-run-off-from-construction-sites/ [Last accessed January 2022]l

suitable vegetated area to allow dispersion of flows and avoidance of any increase in erosion rates and entrainment of any discharged sediments. Following detailed design, micrositing of the proposed track within engineering constraints for the track would be carried out such that a suitable buffer is maintained from the watercourse at this location to allow the implementation of SuDS measures.

9.7.6 On the section of proposed upgraded track leading from Rinturk Farm to the A941 the camber and therefore direction of surface water runoff from the installed track should be to the west (away from the watercourse) such that sufficient area is provided for drainage and SuDS measures to serve the track, prior to downstream conveyance to the nearby watercourse. To further ensure surface water runoff rates to the watercourse from the upgraded section of track in very close proximity to the watercourse are not altered, a filter strip (comprising a trench backfilled with suitably graded rock material) would be installed at the eastern margin of the track to support infiltration of runoff or splash from the track, and as a secondary benefit provide entrainment were any sediment released from the track.

9.7.7 Where construction activity at Turbine 7 would take place within the 50 m watercourse buffer, a sufficient buffer would be maintained to allow the implementation of Suitable SuDS measures and would be implemented such that runoff rates would be maintained at pre-development rates and any excess sediment load would be suitably entrained. Where possible following detailed design, micrositing of the proposed Turbine 7 and hardstand would be carried out to support the avoidance of areas of deep peat, and maintain the maximum achievable buffer from watercourses.

9.7.8 Further details regarding the proposed mitigation measures would be provided at detailed design stage, in accordance with the principles set out above.

Sedimentation and Increased Erosion Rates

9.7.9 Where required, interceptor ditches shall divert waters to locations downstream of proposed excavation or soil disturbance works associated with the installation of turbine foundations, the development of construction compounds and batching plants, groundworks during the installation of the substation and the excavation of borrow pits

9.7.10 Sediment capture methods to be implemented at the Site would be detailed in the CEMP. Such measures shall ensure that sediment laden runoff would be directed to settlement ponds suitable for the containment of volumes of water and sediment as appropriate to the area of disturbed or excavated ground (taking in to account the potential for rainfall events). Water discharged from settlement ponds would be directed to vegetated areas and measures such as silt fences shall ensure sediment loads are fully entrained.

9.7.11 There is the potential for an increased risk of sediment laden runoff at the section of access track to the north east of Rinturk Farm, which is proposed within the 50 m buffer of a watercourse. Therefore, in addition to the measures set out in the CEMP and above, silt fencing should be installed along the lengths of the proposed track on which the proximity of construction does not allow the installation of sediment capture methods (settlement ponds) and subsequent distribution of sediment downstream of the construction site. Silt fencing would be installed (following best practice guidance[42]) prior to the commencement of construction and would remain in situ until the construction phase is completed and permanent drainage measures that shall serve the track are operational. Were the area

[42] SEPA, WAT_SG_29: Engineering in the Water Environment Good practice Guide, 2008. Available online: https://www.sepa.org.uk/media/150997/wat_sg_29.pdf [Last accessed January 2022]

available for the use of settlement ponds constrained, a series of purpose-built settlement tanks would be used to ensure any increased sediment load was prevented from running off from the construction area. At any locations where there are space restrictions such that there are limitations on the area over which potentially sediment laden surface water would runoff and disperse (the buffer strip of vegetation is less than 5-10 m[43]), mechanical filtration of potentially sediment laden runoff shall be carried out. Measures to mitigate the potential for the release of sediment laden water form this area during construction would be overseen by the ECoW, who would carry out and record daily inspection of the watercourse and sediment control measures during construction work to ensure no visible increase in sediment load occurs.

Chemical Pollution

9.7.12 The CEMP would set out procedures that would be followed were the accidental release of any pollutants from site plant and machinery to occur in proximity to a surface water feature. Immediately following appropriate on-site response, SEPA would be notified and consulted on appropriate clean up or remediation were such measures required.

Mitigation during Operation

9.7.13 A Site maintenance programme with regard to Site plant and infrastructure would be implemented by the successful contractor.

9.7.14 A maintenance schedule would be developed for all SuDS and drainage assets installed at construction stage to ensure that the function and benefit provided by the asset remains for the lifetime of the Proposed Development.

Mitigation during Decommissioning

9.7.15 With regards to the control of surface water runoff, sediments and potential pollutants, the mitigation employed during the decommissioning phase would be expected to be similar to that used during the construction phase.

9.7.16 At the point of full or partial decommissioning of the Proposed Development, the CEMP developed during the construction phase shall provide guidance for the management of risk to the water environment. The CEMP would be reviewed (along with any changes in legislation, climate, designations, habitats or water use) and used to plan decommissioning activity.

9.7.17 The potential for some infrastructure to remain in situ should be assessed, taking into account the potential disturbance to the surrounding area and the potential impacts were the backfill of excavations required (e.g. chemical effects of off-site material or the reconfiguration of established drainage pathways). Where infrastructure is retained it would be shown that to do so represents the best practicable environmental option.

9.7.18 Decommissioning shall be planned such that:

- Disturbance to undeveloped areas is minimised;
- Works are carried out from existing infrastructure and developed areas (e.g. working on existing pads, working back to access point);

[43] As specified in WAT-SG-29

- Where material is excavated it should be used as backfill where appropriate or removed from Site for re-use or recycling. Where areas are backfilled the creation of preferential drainage pathways should be avoided (e.g. through the use of clay bunds);
- The CEMP shall provide guidance with regards to the potential mobilisation of sediments and the attenuation of sediment rich waters;
- The CEMP shall provide guidance for the handling of potentially contaminative materials such as fuels and oils;
- In situ soils should be retained; and
- If a site is being repowered materials should be retained and re-used on-site as far as practicable.

9.8 Assessment of Residual Effects

Residual Construction Effects

Alteration to Surface Water Flows and Runoff

9.8.1 The potential for adverse impact on runoff volumes and rates and fluvial morphology through the alteration of drainage patterns would be mitigated through the implementation of best practice measures as outlined above and set out in the CEMP. The design of watercourse crossings and drainage features associated with infrastructure would be in line with CAR regulations and set out in a Construction Site License in consultation with SEPA and the Local Authority. Where encroachment to within a 50 m buffer from watercourses has been identified additional mitigation and monitoring measures have been set out to further reduce the potential magnitude of alteration to surface water flows and runoff to none. Therefore, the residual effect would be **Negligible** and not significant.

Sedimentation and Increased Erosion Rates

9.8.2 The potential for adverse impact on water quality and fluvial morphology associated with sediment-laden runoff or impacts on bank integrity is taken in to account in the design of the Proposed Development and the maintenance of a suitable buffer to watercourses from areas on which infrastructure is proposed. Furthermore, SuDS design shall ensure the capture of any additional sediment load that could be released in the construction phase. Where a section of access track is proposed within a 50 m buffer of a watercourse, the implementation of additional sediment control measures would be overseen by the ECoW, who would also carry out daily inspection of sediment control measures and the watercourse. Therefore, the residual effect would be **Negligible** and not significant.

Chemical Pollution

9.8.3 The potential for impacts on the water environment through the release of pollutants or sediments during the construction phase shall be managed through the implementation of a CEMP (as detailed in Technical Appendix 2.1 OCEMP). The CEMP shall incorporate measures to ensure that the release of sediments or pollutants to the surrounding environment is avoided. Therefore, the residual effect would be **Negligible** and not significant.

GWDTE

9.8.4 The potential for adverse impact on GWDTE habitats (which are shown in Technical Appendix 9.2 to be rain fed or rely on surface water runoff) would be managed through the implementation of suitable cross drainage measures and SuDS measures incorporated with on-site infrastructure. Therefore, the residual effect would be **Negligible** and not significant.

PWS

9.8.5 The potential for adverse impact on PWS would be avoided through the implementation of embedded mitigation and best practice measures set out in Section 9.4 of this chapter and Technical Appendix 9.3. PWS are shown not to be at risk of alterations to ground or surface water supplies as a result of the Proposed Development. Therefore, the residual effect would be **No Effect** and not significant.

Residual Operational Effects

9.8.6 The assessment has identified that there are no significant effects arising from the Proposed Development, taking in to account mitigation measures installed in the construction phase. Therefore, the residual effect would be **Negligible** and not significant.

Residual Decommissioning Effects

9.8.7 At the point of full or partial decommissioning of the Proposed Development, the CEMP developed during the construction phase shall provide guidance for the management of risk to the water environment. The CEMP would be reviewed (along with any changes in legislation, climate, designations, habitats or water use) and used to plan decommissioning activity. Assessment provided above sets out that no significant effects would occur as a result of decommissioning of the Proposed Development. Therefore, the residual effect would be **Negligible** and not significant.

Residual Cumulative Construction Effects

9.8.8 It is reasonable to assume that any cumulative development within downstream catchments would incorporate good practice drainage management measures into their respective designs, including temporary construction stage and permanent SuDS to manage the rate, quantity and quality of surface water run-off to a level where effects on the water environment would be negligible. It is considered that the addition of the Proposed Development (with negligible effects) would not give rise to significant cumulative effects when considered in combination with those developments and therefore the residual effect would be **Negligible** which is not considered significant.

Residual Cumulative Operational Effects

9.8.9 Based on the assessment of potential residual effects of the Proposed Development during the operational phase to be **Negligible,** when considered in the context of the downstream catchments as a whole the potential for adverse cumulative effects would be further reduced. Therefore no residual cumulative effects would occur.

9.9 Monitoring

Construction Phase Monitoring

9.9.1 The installation of mitigation measures set out in assessment and further detailed the CEMP shall be overseen and recorded by the ECoW. Daily visual inspection of sediment control measures and watercourse turbidity would be carried out by the ECoW during the construction of access track on to the Site, in proximity to Rinturk Farm.

Operation Phase Monitoring

9.9.2 The implementation of a maintenance schedule for all SuDS and drainage assets installed at construction stage to ensure that the function and benefit provided by drainage assets remains

for the lifetime of the Proposed Development. Therefore no ongoing monitoring is considered necessary.

9.9.3 As set out in the Peat Landslide Hazard and Risk Assessment (Technical Appendix 2.5), during the operational phase of the Proposed Development the Site maintenance programme would include monitoring of key infrastructure locations to check for signs of unexpected ground disturbance. Aspects to be checked for include:

- ponding on the upslope side of infrastructure Sites and on the upslope side of access tracks;
- subsidence and lateral displacement of tracks;
- changes in the character of natural or artificial peat drainage within a 50 m buffer strip of tracks and infrastructure (e.g. development of quaking bog, waterlogging of previously dry drains);
- blockage or underperformance of the installed Site drainage system;
- slippage or creep of stored peat deposits (including in restored peat cuttings); and
- development of tension cracks, compression features, bulging or quaking bog anywhere in a 50 m corridor surrounding the Site of any construction activities or site works.

9.9.4 This monitoring would be undertaken on a quarterly basis in the first year after construction, bi-annually in the second year after construction and annually thereafter. In the event that unanticipated ground conditions arise during construction, the frequency of these intervals should be reviewed, revised and justified accordingly, and a geotechnical risk register maintained by the operator.

Decommissioning Phase Monitoring

9.9.5 At the point of decommissioning, the implementation of the revised CEMP shall be overseen and recorded by the ECoW.

9.10 Summary

9.10.1 Table 9.8 provides a summary of the likely significant effects considered, proposed mitigation commitments and the residual effects.

Table 9. 8: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Effects on Soil and Peat	Implementation of detailed PMP to be prepared by the appointed contractor Implementation of good practice measures as outlined by the PMP, Peat Landslide Hazard Risk Assessment and CEMP Micrositing tolerances to be used in the event of encountering unexpected pockets of deep peat. Peat restoration, including rewetting via blocking of drains, would be undertaken in appropriate areas of the Site. Use of floating tracks over areas of deep peat.	Detailed PMP and CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition.	Minor Adverse, Not Significant

Table 9. 8: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Alteration to Surface Water Flows and Runoff	Drainage management proposals to ensure pre-construction rates/ volumes of run-off maintained. The drainage management works would be supervised by the ECoW.	CEMP, including detailed watercourse crossing proposals, to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	Negligible, Adverse, Not significant
Sedimentation and Increased Erosion	Drainage management proposals to ensure water quality is maintained through use of good practice silt mitigation. The drainage management works would be supervised by the Ecological Clerk of Works (ECoW).	CDEMP, including detailed watercourse crossing proposals, to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	Negligible, Adverse, Not significant
Chemical Pollution	The baseline review of PWS identified limited potential for effects on PWS. All runoff to be treated in accordance with SuDS principles. Where watercourse crossings are being installed or upgraded, best practice construction measures will be adopted to prevent contamination through the use of coffer dams and sediment isolation techniques. Petrol interceptors and spill kits will be utilised where chemical spillage is a possibility. In order to address any minor residual risk, a rapid response plan would be developed, which will ensure the rapid delivery of tankered water to those users affected and maintain this supply until problems are remedied.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	Negligible, Adverse, Not significant
Effects on GWDTE	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition.	Negligible, Adverse, Not significant
PWS	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition.	No Effect, Not significant
Operation			
Effects on Soil and Peat	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant

Table 9. 8: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Alteration to Surface Water Flows and Runoff	On-going maintenance for all proposed drainage measures on the site, particularly including water crossings and sustainable drainage features designed to manage water quality and runoff rate.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant
Sedimentation and Increased Erosion	On-going maintenance for all proposed drainage measures on the site, particularly including water crossings and sustainable drainage features designed to manage water quality and runoff rate.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant
Chemical Pollution	All ongoing maintenance to be carried out in accordance with pollution prevention guidance. No fuelling, storage of oils or laydown of plant to be carried out on-site	Maintenance schedule to be implemented by contractor	Negligible, Adverse, Not significant
Effects GWDTE	Site infrastructure would incorporate measures to ensure the conveyance of shallow groundwater and surface water across the Site, such as the use of suitably graded sub-base aggregate on tracks, the use of floating track where areas of peat are crossed and cross drainage measures to ensure the continued distribution of surface water runoff.	To be implemented as set out in construction phase mitigation above. Maintenance schedule to be implemented by contractor.	Negligible, Adverse, Not significant
PWS	Maintenance of Site drainage design in line with good practice measures.	To be implemented as set out in construction phase mitigation above. Maintenance schedule to be implemented by contractor	Negligible, Adverse, Not significant
Decommissioning			
Impacts due to construction activity assessed above).	A Decommissioning Plan would set out environmental protection measures and restoration principles which would be implemented. It is anticipated that similar mitigation as required during construction would be necessary.	Decommissioning measures to be approved with SEPA through CAR licensing.	Negligible, Adverse, Not Significant
Disturbance of established habitats or drainage pathways.	Minimisation of construction footprint during decommissioning. Excavated material re-used where possible, and potential for material to remain in situ where applicable assessed.	Decommissioning measures to be approved with SEPA through CAR licensing.	Negligible, Adverse, Not Significant
Cumulative Construction			
Potential cumulative impacts to receptors listed above	None required.	N/A	Negligible, Adverse, Not significant
Cumulative Operation			
No additional cumulative effects over and above those detailed above.	None required.	N/A	Negligible, Adverse, Not significant

10 Traffic, Transport and Access

10.1 Introduction

10.1.1 This chapter considers the likely significant effects on transport and access associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the existing access network and transport baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

10.1.2 The assessment has been carried out by Elaine Moran BEng (Hons), MSc, MCIHT, Pell Frischmann. She has over six years' experience preparing transport assessments for new developments. The technical reviewer of the traffic and transport assessment is Gordon Buchan BEng (Hons), MSc, CMILT, FCIHT, Divisional Director of Pell Frischmann. He has over 25 years' of undertaking transport assessment associated with new developments and has worked on renewable energy and energy distribution projects across the UK, Ireland and Northern Europe (refer to Technical Appendix 1.2).

10.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
  - Figure 10.1: Study Area Road Links;
  - Figure 10.2: ATC Traffic Count Location Plan;
  - Figure 10.3: Accident Location Plan; and
  - Figure 10.4: AIL and Construction Vehicle Delivery Routes.
- Volume 4: Technical Appendices
  - Technical Appendix 10.1: Transport Assessment; and
  - Technical Appendix 10.2: Abnormal Indivisible Load (AIL) Route Survey Report.

10.1.4 Figures and technical appendices are referenced in the text where relevant.

10.2 Assessment Methodology and Significance Criteria

Scope of Assessment

10.2.1 A high-level overview of the effects of the traffic movements has been considered in accordance with the Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA)) Guidelines for the Environmental Assessment of Road Traffic[1]. The document is referred to as the IEMA Guidelines in this chapter.

10.2.2 The methodology adopted in this assessment involved the following key stages:

- Determine baseline for traffic and transport;
- Review the Proposed Development for potential significant impacts;

[1] Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic

- Evaluate significance of effects on receptors;
- Identify mitigation; and
- Assess residual effects.

10.2.3 This chapter considers effects on the following:

- The existing baseline transport conditions of the study area surrounding the Site;
- The likely infrastructure requirements necessary to enable the Proposed Development;
- The likely effects and changes associated with the imposition of construction traffic on the local road network;
- The measures that would be required to mitigate against any potential significant effects of the temporary construction traffic; and
- The likely traffic conditions during the decommissioning phase of the Proposed Development.

10.2.4 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

10.2.5 The scope of the assessment has been informed by consultation responses summarised in Table 10.1 and the following guidelines/ policies:

- The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993)[2];
- Scottish Planning Policy[3];
- National Planning Framework 3 (2014)[4];
- Onshore Wind Turbines: Online Renewables Planning Advice (2014)[5];
- Transport Assessment Guidance (2012)[6];
- Planning Advice Note (PAN) 75[7];
- Moray Local Development Plan (2020)[8];
- Moray Onshore Wind Energy Non-Statutory Guidance (2020)[9];
- Aberdeenshire Local Development Plan (2017)[10]; and

[2] Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic

[3] Scottish Government (2014), Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy/documents/

[4] Scottish Government (2014), National Planning Framework 3. Available at: https://www.gov.scot/publications/national-planning-framework-3/

[5] Scottish Government (2014), Onshore wind turbines: planning advice. Available at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/

[6] Transport Scotland (2012), Transport Assessment Guidance. Available at: https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17_-_transport_assessment_guidance_final_-_june_2012.pdf

[7] Scottish Government (2005), Planning Advice Note 75. Available at: https://www.gov.scot/publications/pan-75-planning-for-transport/

[8] Moray Council (2020), Moray Local Development Plan (2020). Available at: http://www.moray.gov.uk/moray_standard/page_133431.html

[9] Moray Council (2020), Moray Onshore Wind Energy Non-Statutory Guidance 2020. Available at: http://www.moray.gov.uk/moray_standard/page_80938.html

[10] Aberdeenshire Council (2017), Aberdeenshire Local Development Plan 2017. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/

- Use of Wind Energy in Aberdeenshire: Guidance for Developers – Supplementary Planning Guidance (2005)[11].

Consultation

10.2.6 Table 10.1 summarises the consultation responses received regarding Traffic, Transport and Access and provides information on where and/ or how they have been addressed in this assessment.

10.2.7 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 10.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
The British Horse Society – 07 December 2020	Scoping Opinion	Horses are important and good for people so their safety and capacity to access safe off road hacking is a key consideration in terms of their welfare and the wellbeing of their riders and those who look after them. The response referred to: the importance of off-road riding opportunities; horse and rider safety on the road network; the rights of access under the Land Reform (Scotland) Act for horse riders; and economic contributing of equestrianism to the Scottish economy (equestrianism is worth £650 million to the Scottish economy annually with the Scottish Racing industry contributing £300 million and the rest of the industry generating £355 million).	This has been considered during the design process. Details of proposed new permanent access tracks on the Site are included in Chapter 2: Development Description. It is proposed that the access tracks would be left in place following construction to provide permanent access for maintenance, repairs and eventual decommissioning of the Proposed Development. Appropriate safety measures would be formulated into a Core Path Management Plan, as detailed in Section 10.5 of this Chapter.
Aberdeenshire Council – 22 January 2021	Scoping Opinion	The inclusion of a TA within the EIAR is supported.	A TA is provided in Technical Appendix 10.1.
		It is noted that the study area will be defined by the preferred abnormal load and construction traffic routes. Should the preferred routes be within the Aberdeenshire Council area, please get in contact to discuss this, along with the construction traffic management plan to identify any potential issues (i.e., planned road maintenance etc) prior to a formal application submission.	It is proposed that abnormal load and construction traffic routes would be within Aberdeenshire Council area. Details of the construction traffic route is presented in the TA in Technical Appendix 10.1 while the proposed AIL delivery route is presented in Technical Appendix 10.2. The access route arrangements for the AIL and construction vehicle deliveries will be detailed in the Construction Traffic Management Plan (CTMP) which will be agreed post consent and will be informed by discussions with Aberdeenshire Council and Moray Council.
		A consultation with Infrastructure Services (Transportation) has not raised any concerns with the content of the	Infrastructure Services (Roads Development) will be consulted in relation to the delivery routes

[11]Aberdeenshire Council (2005), Use of Wind Energy in Aberdeenshire: Guidance for Developers. Available at: https://www.aberdeenshire.gov.uk/media/5945/wind_developers06.pdf

Table 10.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		scoping report or the approaches outlined within it. A response is anticipated from Infrastructure Services (Roads Development). This will be forwarded at a later date as an addendum to this Scoping opinion.	detailed in the CTMP which will be agreed post consent.
Moray Council – 19 February 2021	Scoping Opinion	We confirm that the proposed methodology for dealing with your inability to collect representative traffic count information would be acceptable subject to sight of the historic data, including the data and Grid reference. It is also unclear where on the A941 in Dufftown the location of the count site, would this be Fife Street or Balvenie Street, or both.	The locations of the DfT traffic counters are shown in Figure 10.2. Details of the locations are provided in Section 10.3 of this chapter, as well as in Technical Appendix 10.1, where the coordinates of the counter locations are also provided. Baseline traffic data covers flows on Fife Street in Dufftown, flows for the A941 to the north (covering Balvine Street and route north of Dufftown). A route survey for the transport of abnormal loads, identifying potential constraint locations, and this is included within Technical Appendix 10.2.
		With respect to the swept path analysis, the A941 leading from the A920 to the site access has varying widths and in places narrow verges. Whilst abnormal load deliveries associated with the nearby Dorenell Wind Farm have used this road previously, we would seek swept path analysis for the entire length of this section of the A941 to identify the pinch points. Also if you have not already managed to do so we would advise undertaking a site visit when COVID-19 restrictions permit.	Details of pinch points along the A941 are presented in Technical Appendix 10.2. A site visit had already been undertaken in 2019 along the length of the public road which helped to inform the Route Survey Report and identify the areas of constraint.
Transport Scotland – 11 January 2021	Scoping Opinion	It is noted that the development will be accessed directly via the A941. As the A941 is part of the local road network, Transport Scotland has no comment to make on the actual access point itself.	Noted.
		The Scoping Report states that the forthcoming assessment will be based upon the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic and Transport Assessment Guidance. We note that the thresholds as indicated within the IEMA Guidelines are to be used as a screening process for the assessment. Transport Scotland is in agreement with this approach.	Noted. The assessment methodology is presented in this chapter.
		It is noted that any impacts associated with the operational and decommissioning phases of the development are to be scoped out of the Environmental Impact Assessment	Noted.

Table 10.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Issue Raised**	**Response/ Action Taken**
		Report (EIAR). We would consider this to be acceptable in this instance.	
		We note that accident traffic survey data for the A96(T) at Huntly will be obtained and used within the assessment. In addition, accident data for the A941 in the vicinity of the site access will be obtained to inform an accident review. Transport Scotland would request that an accident review of the A96(T)/ A920 junction is also provided.	This is detailed in the accident review outlined in Section 10.3: Accident Review of this Chapter and also with Technical Appendix 10.1. Figure 10.3 shows the locations of accidents recorded between January 2018 and December 2020.
		It should be noted that Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation will not have any detrimental effect on structures within the trunk road route path. A full Abnormal Loads Assessment report should be provided with the EIAR that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route.	The proposed AIL delivery route is presented in Technical Appendix 10.2 and shows pinch points along the route as well as proposed mitigation measures. It is expected that the design of the AIL accommodation works would form a planning condition post consent.

Potential Effects Scoped Out

10.2.8 The traffic effects during the operational phase of the Proposed Development are likely to be insignificant as expected traffic flows would be less than two vehicle movements per week, far below the recognised thresholds for triggering a formal transport assessment. As such, the effects during the operational phase are scoped out of the assessment.

10.2.9 The traffic effects during the decommissioning phase can only be fully assessed closer to that period, approximately 30 years on from the completion of the Site. As elements of the Proposed Development are likely to remain in situ (such as cable trenches, access tracks, etc.), the traffic flows associated with the decommissioning works would be lower than those associated with the construction phase. The construction phase therefore represents a worst case assessment and as such, no further assessment of the decommissioning phase has been considered at this point in time and has been scoped out of the assessment.

Method of Baseline Characterisation

Extent of the Study Area

10.2.10 The study area includes local roads that are likely to experience increases in traffic flows resulting from the Proposed Development and is described in Technical Appendix 10.1, Transport Assessment. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

10.2.11 The Proposed Development would take access directly from the A941 during construction and operation. An indicative layout of the proposed access junction is provided in Technical Appendix 10.1.

10.2.12 The access junction would be designed to accommodate all predicted loads and traffic for both the construction and operational phases of the Proposed Development.

10.2.13 The study area includes the principal routes from potential areas of material supply (quarries, readymix sources, etc.), the Site access junction, the trunk road network and abnormal load delivery route. It is also of sufficient size to include the main areas of workforce accommodation during the construction period.

Desk Study

10.2.14 The desk study involved reviews and identification of the following:

- Relevant transport planning policy;
- Accident data;
- Sensitive locations;
- Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- OS plans;
- Potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment; and
- Constraints to the movement of AILs through a Route Survey which includes swept path assessments.

Field Survey

10.2.15 A Site visit was undertaken in 2019 to inform the Transport Assessment (Technical Appendix 10.1) and Route Survey Report (RSR) (Technical Appendix 10.2).

Criteria for the Assessment of Effects

Criteria for Assessing the Sensitivity of Receptors

10.2.16 The IEMA 'Guidelines for Environmental Impact Assessment' (2005)[12] notes that the separate 'Guidelines of the Environmental Assessment of Road Traffic' (1993)[13] document should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

10.2.17 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.

10.2.18 The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in Table 10.2.

[12] Institution of Environmental Management and Assessment (IEMA) (2005) Guidelines for Environmental Impact Assessment

[13] Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic

Table 10.2: Classification of Receptor Sensitivity

Receptor	Sensitivity			
	High	**Medium**	**Low**	**Negligible**
Users of Roads	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures.	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.	Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.
Users/ Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities.	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Where a location is a small rural settlement, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

10.2.19 Where a road passes through a location, road users (pedestrian, cyclists, drivers, etc.) are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Criteria for Assessing the Magnitude of Change

10.2.20 The following rules, also taken from the IEMA Guidelines are used to determine which links within the study area should be considered for detailed assessment:

- Rule 1 – include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
- Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

10.2.21 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development. The impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidance states that, "severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery." Further, "Changes in traffic of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' [or minor, moderate and major] changes in severance respectively". However, the Guidelines acknowledge that "the measurement and prediction of severance is extremely difficult".
- Driver delay – the IEMA Guidelines note that these delays are only likely to be "significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.";
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major;

- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled. It is therefore considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity;
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and major changes respectively; and
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

10.2.22 While not specifically identified as a more vulnerable road user, cyclists are considered in similar terms to pedestrians.

Criteria for Assessing Cumulative Effects

10.2.23 A review of online planning applications was undertaken to identify any consented onshore wind farm or other significant developments within the vicinity of the Proposed Development which are to be considered as cumulative developments. In transport terms, only developments that have been consented can be assumed to be committed developments and thus be included in a cumulative assessment.

10.2.24 This review determined that planning permission for Hill of Towie II Wind Farm was deemed to be granted for proposals which comprises 16 wind turbines with a maximum blade tip height of 125 m. A review of the planning application documents suggests that construction traffic associated with Hill of Towie II Wind Farm will not impact the Proposed Development's study area as their construction vehicles would not be utilising any of the road links within the study area, and as such is not included in the cumulative development assessment.

10.2.25 Garbet Wind Farm comprises seven turbines up to 190 m blade tip height. In November 2021, Moray Council decided to refuse the application for planning permission.

10.2.26 Clashindarroch II Wind Farm proposals comprise 14 wind turbines with a maximum blade tip height of 180 m. In February 2021, Aberdeenshire Council decided to object to the application for planning permission.

10.2.27 Appeals have been lodged for Garbet Wind Farm and Clashindarroch II Wind Farm and both cases have been transferred to the Scottish Government's Planning and Environmental Appeals Division (DPEA) for examination. As the wind farms have not received planning permission, they cannot be considered within the cumulative assessment.

10.2.28 Clashindarroch Extension Wind Farm and Clashindarroch Extension 2 Wind Farm are currently in the scoping stage of the planning application. As the wind farm has not been granted planning consent, it cannot be included in the cumulative assessment.

10.2.29 Any effects of all four sites being constructed at the same time would be mitigated through the use of an overarching Traffic Management and Monitoring Plan and by introducing a phased delivery plan which would be agreed with the local council roads' department and Police Scotland.

10.2.30 The use of National Road Traffic Forecasts (NRTF) low traffic growth assumptions has provided a robust future year assessment scenario to account for the level of trip generation that can occur as a result of the types of local development that may occur within the study area and the effects of tourist traffic on the network.

Criteria for Assessing Significance

10.2.31 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact assessments are correlated and classified using a scale set out in Table 2.4 of Volume 11, Section 2, Part 5 of the Design manual for Roads and Bridges (DMRB) and summarised in Table 10.3.

Table 10.3: Significance of Effects

Receptor Sensitivity	Magnitude of Impacts			
	Major	**Moderate**	**Minor**	**Negligible**
High	Large	Large/ Moderate	Moderate/ Slight	Slight
Medium	Large/ Moderate	Moderate	Slight	Slight/ Neutral
Low	Moderate/ Slight	Slight	Slight	Slight/ Neutral
Negligible	Slight	Slight	Slight/ Neutral	Neutral

10.2.32 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be large or moderate. Where an effect could be one of Large/ Moderate or Moderate/ Slight, professional judgement would be used to determine which option should be applicable.

Limitations and Assumptions

10.2.33 The assessment is based upon average traffic flows in one month periods. During the month, activities at the Site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate as no Balance of Plant (BoP) contractor has been appointed and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc.).

10.3 Baseline Conditions

Current Baseline

Existing Traffic Conditions

10.3.1 Due to the impact of COVID-19 travel restrictions, it has not been possible to collect 2021 traffic survey data for use in the assessment. Historic data from 2019 was used from the UK Government Department for Transport (DfT) traffic flow database as agreed with Moray Council.

10.3.2 Existing traffic data was obtained from the Department for Transport (DfT) database for the following locations which are shown in Figure 10.2:

- 1: A96, at Huntly – DfT Count Point 11019;
- 2: A920, west of Cairnborrow – DfT Count Point 74322;
- 3: A941, Fife Street in Dufftown – DfT Count Point 10987;
- 4: A941, north of Dufftown – DfT Count Point 40989; and
- 5: A941, near the proposed Site access junction – DfT Count Point 30989.

10.3.3 Traffic information for 2019 was obtained for each of the DfT Count Point locations. The 2019 traffic data was then factored to 2021 traffic data by applying a National Road Traffic Forecast (NRTF) low growth. The NRTF low growth factor for 2019 to 2021 is 1.016.

10.3.4 The traffic information obtained from the DfT Count Points has allowed the traffic flows to be split into vehicle classes. The data was summarised into Cars/ Lights and HGVs (all goods vehicles >3.5 tonnes gross maximum weight).

10.3.5 Table 10.4 summarises the 24 hour average weekday traffic data collected at the Count Points.

Table 10.4: Existing Traffic Conditions (Weekday Average Two Way Flows)

Site Ref	Count Point Location	Cars & Lights	HGV	Total
1	A96, at Huntly	9,607	752	10,359
2	A920, west of Cairnborrow	1,212	213	1,425
3	A941, in Dufftown	1,899	99	1,997
4	A941, north of Dufftown	3,531	347	3,878
5	A941, near Site access	233	13	246

Please note minor variances due to rounding may occur.

Pedestrian and Cyclist Network

10.3.6 A number of Core Paths have been identified along the A941 near the Site, which are in the vicinity of the anticipated construction traffic route. These Core Paths comprise a combination of off-road paths and public roads/ roadside paths and are as follows:

- Core Path SP09 extends along B9009 Conval Street and A941 Fife Street and concludes near the A941/ Mortlach Church access junction. Core Path SP09 is approximately 1 km in length and is designated as a public road/ roadside path;
- Core Path SP08 is a combination of off-road paths and public roads/ roadside paths. Core Path SP08 commences near the A941 Fife Street/ Cowie Avenue junction and continues southwest bound along Cowie Avenue;
- Core Path IW01 is a combination of off-road paths and public roads/ roadside paths and connects with Core Path SP09 to provide a connection to the north to Mount Crescent;
- Core Path SP07 is designated as an off-road path which commences near the A941, approximately 240 m to the west of the A941/ A920 priority junction;
- To the south of Dufftown, Core Path SP29 is an off-road core path which commences in Bridgehaugh, near the A941. Core Path SP29 continues southwest through Glen Fiddich; and
- To the north of Auchmair, Core Path SP30 links the A941 to SP29 towards Cairngorms National Park.

10.3.7 A review of Sustrans' National Cycle Route (NCR) map (https://www.sustrans.org.uk/national-cycle-network) does not show any national cycle routes on the A941.

Accident Review

10.3.8 Road traffic accident data for the three-year period commencing 1 January 2018 through to the 31 December 2020 was obtained for the A941 in the vicinity of the Proposed Development, the A920 and near the A920/ A96 access junction.

10.3.9 This information was sourced from the online resource CrashMap.co.uk which uses data collected by police about road traffic crashes occurring on British roads where an accident occurred.

10.3.10 The statistics are categorised into three categories, namely "slight" for damage only incidents, "serious" for injury accidents and "fatal" for accidents that result in a death.

10.3.11 A summary of analysis of the accidents indicates that:

- A total of eight accidents were recorded along the A941 in the vicinity of the Proposed Development, the A920, between the A96 and A941, and near the A920/ A96 access junction within the three-year period. These are illustrated in Figure 10.3;
- Of the eight accidents, six were classified as serious and two were classified as slight. No fatalities were recorded along the links assessed as part of the accident review;
- A total of four accidents were recorded along the A941 between Rhynie, in the south east, and Rothes, to the north which were all recorded as serious. One of the incidents recorded was a single vehicle accident which involved a motorcycle, while another separate incident involved three vehicles which included HGVs and cars;
- No accidents were recorded along the A941, within and to the south of Dufftown, during the survey period;
- Two accidents were recorded along the A96, within 1 km of the A96/ A920 western access. Approximately 615 m to the north of the A96/ A920 western access, a slight accident was recorded at the A96/ B9022 junction which was recorded as slight and involved cars. A serious accident was recorded at the A96/ A920 eastern access and involved cars; and
- A total of two incidents were recorded along the A920, between the A96 and A941, of which one was classified as serious and one as slight. The accident classified as slight was a two vehicle collision involving cars. The accident classified as serious involved a car and resulted in a pedestrian casualty.

Future Baseline

10.3.12 It is anticipated that the construction of the Proposed Development is to commence at the earliest during 2024, if consent is granted.

10.3.13 To assess the likely effects during the construction phase, base year traffic flows were determined by applying NRTF low growth factors to the 2021 flows presented in Table 10.4.

10.3.14 The NRTF low growth factor for 2021 to 2024 is 1.016.

10.3.15 Table 10.5 shows the 2024 baseline traffic flows.

Table 10.5: Future Year Traffic Conditions (Weekday Average Two Way Flows)

Site Ref	Location	Cars & Lights	HGV	Total
1	1) A96, at Huntly	9,761	764	10,525
2	2) A920, west of Cairnborrow	1,231	217	1,448
3	3) A941, in Dufftown	1,929	100	2,029
4	4) A941, north of Dufftown	3,587	353	3,940
5	5) A941, near site access	236	13	250

Please note minor variances due to rounding may occur.

10.3.16 In the absence of the Proposed Development, it is anticipated that traffic growth along the A941 would occur as these links would experience increased traffic flows from other development pressures, tourism traffic and population flows.

Summary of Sensitive Receptors

10.3.17 A review of sensitive receptors has been undertaken within the study area. Table 10.2 details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has been provided, based upon the details contained in Table 10.6.

Table 10.6: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Huntly Residents	High	Where a location is a large rural settlement containing a high number of community and public services and facilities
Residents along A920	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Dufftown Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services
Residents along A941	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
A96 Users	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition
A920 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic
A941 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic
Core Path Users	High	Minor path used by walkers and cyclists, not constructed to accommodate HGV traffic flows

10.3.18 Based on the indicators which are stated within the IEMA Guidelines, the burgh of Dufftown and the town of Huntly are identified as sensitive receptors in this assessment. These locations will therefore be subject to 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the locations are subject to an increase in 10% of traffic.

10.3.19 All other locations within the study area are subject to 'Rule 1' and are assessed if traffic flows (or HGV flows) on highway links increase by more than 30%.

10.4 Assessment of Likely Effects

10.4.1 The assessment is based upon the construction effects that may occur within the study area. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development.

10.4.2 During the assumed 18 month construction period, the following traffic would require access to the Site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
- AILs consisting of the wind turbine components and heavy lift crane(s); and
- Escort vehicles for AIL deliveries.

10.4.3 Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive at the Site on low loaders.

10.4.4 The turbines are delivered in component sections for transport and should be assembled at the Site. The nacelle, hub, drive train, blade, tower sections are classified as AILs due to their weight and/ or length, width and height when loaded.

10.4.5 The components can be delivered on a variety of transport platforms with typical examples illustrated in Technical Appendices 10.1 and 10.2.

10.4.6 In addition to the turbine deliveries, two high capacity erection cranes would be needed to offload components and erect the turbines. The crane is likely to be a mobile crane with a capacity up to 1,000 tonnes that would be escorted by boom and ballast trucks to allow full mobilisation on-site. A smaller erector/ assist crane will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.

10.4.7 The resulting traffic generation profile is presented in Technical Appendix 10.1: Transport Assessment for review. The peak of construction occurs in month 8 with 115 HGV movements per day (58 inbound and 57 outbound[14]) and 44 Car/ Lights movements (22 inbound trips and 22 outbound trips). These figures on average indicate approximately five additional HGV inbound movements per hour on the network at the peak of construction activities.

10.4.8 The distribution of development traffic on the network would vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months would be as follows:

- All construction traffic enters the Site via the access junction on the A941;
- Deliveries associated with the batching of concrete on-site would arrive from the north via the A941;
- Sand and aggregate for use in the on-site batching plant would be sourced from local quarries. To provide a robust assessment, it is assumed that all material would be taken from a quarry located off the A941, to the north of the Site. The BoP contractor would confirm final quarry and material sourcing with Moray Council in the CTMP;
- Aggregate materials associated with the access tracks and hard standings would be sourced from a borrow pit on-site, however, to provide a robust assessment, it is assumed that 50% of the total aggregate would be sourced from local quarries. The nearest quarry to the Site is located to the east of Dufftown;
- Is it assumed that timber exported from the Site would travel along the A920 and A96, towards a suitable port;
- High Voltage (HV) deliveries associated with the HV electrical installation, control buildings, batteries, etc. would arrive via the A96, to the south;
- It is anticipated that staff working at the site would be based locally. It is assumed that 40% would arrive via Dufftown, 40% via Huntly and 20% via the A941, to the south; and
- General Site deliveries would arrive via the A96 and A920. These are generally smaller rigid HGV vehicles.

10.4.9 Loads relating to the turbine components would be delivered on the route illustrated in Figure 10.4 and described in Technical Appendix 10.2.

10.4.10 The access route for the AIL deliveries are as follows:

- Loads would depart the Port of Dundee via the east exit gate and continue over Stannergate Bridge to the roundabout, exiting onto Strips of Craigie Road;

[14] Note there is a difference between the inbound and outbound trips as this is as a result of rounding.

- Loads would continue straight at the roundabout onto the Kingsway using the existing island overrun areas;
- Loads would continue west on the Kingsway until the junction with the B960 where loads would exit the Kingsway and proceed around the roundabout to re-join the Kingsway eastbound;
- Loads would continue on the Kingsway before turning left onto the A90 and proceeding north;
- Loads would continue on the A90 until the Craibstone junction, exiting to proceed along the Craibstone Junction Link before turning left at the Craibstone Roundabout to join the A96 bound north west;
- Loads would exit the A96 at Huntly, turning left onto the westbound A920; and
- Loads would exit the A920 east of Dufftown, turning left onto the A941 and proceeding south to the proposed Site access.

Potential Construction Effects

10.4.11 To estimate the total trips through the study area during the peak of the construction phase, traffic was distributed through the network and combined with the 2024 Baseline traffic data. The resulting figures were compared with the weekday 2024 Baseline traffic to provide a percentage change in movements and are demonstrated in Table 10.7.

Table 10.7: 2024 Future Baseline + Construction Development – Flows and Impact

Site Ref	Location	Cars & Lights	HGV	Total	% Increase Cars & Lights	% Increase HGV	% Increase Total Traffic
1	A96, at Huntly	9,779	798	10,577	0.18%	4.48%	0.49%
2	A920, west of Cairnborrow	1,249	251	1,500	1.43%	15.79%	3.58%
3	A941, in Dufftown	1,947	100	2,047	0.91%	0.00%	0.87%
4	A941, north of Dufftown	3,605	353	3,958	0.49%	0.00%	0.45%
5	A941, near Site access	280	128	408	18.61%	853.27%	63.45%

10.4.12 The total traffic movements are not predicted to increase by more than 30% on all of the study network, with the exception of the A941 to the south of Dufftown, in the vicinity of the Site access.

10.4.13 The table shows that traffic movements would increase by a total of 63.5% and the HGV movements would increase by 853% along the A941, near the Site access. Whilst these increases are statistically significant, they are generally caused by relatively low total and HGV flows on this road which would see an additional 44 Cars and 115 HGV journeys every day. This represents a total of approximately five inbound HGV trips every hour which is not considered significant in terms of overall traffic flows.

10.4.14 It should also be noted the construction phase is transitory in nature and the peak of construction activities is short-lived.

10.4.15 A review of existing road capacity has been undertaken using the DMRB, Volume 15, Part 5 "The NESA Manual"[15]. The theoretical road capacity has been estimated for each of the road links for a 12-hour period. The results are summarised in Table 10.8.

[15] Highways Agency (2013) Table 5/3/1: NESA Road Categories, Link Speeds and Link Capacities, Volume 15 Section 1 Part 5 Traffic Modelling in NESA of the Design Manual for Roads and Bridges

Table 10.8: 2024 Future Baseline + Construction Development – Capacity Summary						
Site Ref	**Location**	**2024 Baseline Flow**	**2024 Base + Development Flows**	**Theoretical Road Capacity**	**2024 Base + Development Used Capacity %**	**Spare Road Capacity %**
1	A96, at Huntly	10,525	10,577	21,600	48.97%	51.03%
2	A920, west of Cairnborrow	1,448	1,500	21,600	6.94%	93.06%
3	A941, in Dufftown	2,029	2,047	19,200	10.66%	89.34%
4	A941, north of Dufftown	3,940	3,958	19,200	20.61%	79.39%
5	A941, near Site access	250	408	1,920	21.27%	78.73%

10.4.16 The results indicate that the Proposed Development would not affect road capacity and ample spare capacity exists within the trunk and local road network to accommodate construction phase traffic.

10.4.17 Assessments have been undertaken on the following receptors:

- A941 Users (Medium Sensitivity); and
- Core Path Users (High Sensitivity).

10.4.18 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Criteria for Assessing Significance section. Table 10.9 summarises the significance on the receptors for the construction phase.

Table 10.9: Construction Phase Effects Summary						
Receptors	**Severance**	**Driver Delay**	**Pedestrian Delay**	**Pedestrian Amenity**	**Fear & Intimidation**	**Accidents & Safety**
A941 Users	Large (Significant)	Moderate (Significant)	Moderate/ Slight (Not Significant)	Moderate/ Slight (Not significant)	Moderate (Significant)	Moderate (Significant)
Core Path Users	Large (Significant)	Negligible (Not Significant)	Moderate/ Slight (Not Significant)	Large /Moderate (Significant)	Moderate (Significant)	Moderate (Significant)

10.4.19 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be Large or Moderate. Where an effect could be one of Large/ Moderate or Moderate/ Slight significance, professional judgement would be used to determine which option should be applicable.

10.4.20 Following professional judgement, the assessment of significance suggests that the overall effects of construction traffic along the A941 are considered significant effects, prior to the application of mitigation measures. It is also considered that the overall construction effects on Core Path Users in the area would be significant.

Potential Operational Effects

10.4.21 It is predicted that during the operation of the Site there would be up to two vehicle movements per week for maintenance purposes. Also, there may be very occasional abnormal load movements to deliver replacement components in the unlikely event of a significant component failure.

Potential Decommissioning Effects

10.4.22 Prior to decommissioning of the Site, anticipated to be approximately 30 years from commissioning, a traffic assessment would be undertaken, and appropriate traffic management procedures followed.

10.4.23 The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that elements of infrastructure such as access tracks and electrical connections would be left in place and components may be broken up onsite to allow transport by reduced numbers of standard HGVs.

Potential Cumulative Construction Effects

10.4.24 There are no significant cumulative construction traffic effects. Should any of the Proposed Development schemes be consented and their construction activities coincide with work at the Proposed Development, any adverse cumulative impacts would be addressed by means of a traffic management plan.

Potential Cumulative Operational Effects

10.4.25 There are no significant cumulative operational traffic effects.

10.5 Mitigation

10.5.1 During the construction phase, total traffic levels are expected to exceed the IEMA Guidelines Rule 1, in that total traffic flows would exceed 30% for road users along the A941 near the site access as well as exceeding 30% of an increase in HGV flows along the A941 near the site access.

Mitigation during Construction

Construction Traffic Management Plan

10.5.2 During the construction period, a project website, blog or Twitter feed would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the site. This would be agreed with the local roads authority.

10.5.3 The following measures would be implemented during the construction phase through the CTMP:

- Where possible the detailed design process would minimise the volume of material to be imported to site to help reduce HGV numbers;
- A site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
- An AIL Traffic Management Plan;
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of Moray Council;
- Unless otherwise agreed with Moray Council and Aberdeenshire Council, normal site working hours would be limited to between 0700 and 1900 (Monday to Friday and 0700

and 1300 (Saturday) though component delivery and turbine erection may take place outside these hours;

- Appropriate traffic management measures would be put in place on the A941 to avoid conflict with general traffic and other road users, subject to the agreement of the road's authority. Typical measures would include HGV turning and crossing signs and banksman where necessary;
- Provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary speed limit of 20 mph for all construction vehicles through Dufftown; and
- All drivers would be required to attend an induction to include:
  - A tool box talk safety briefing;
  - The need for appropriate care and speed control;
  - A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
  - Identification of the required access routes and the controls to ensure no departure from these routes.

10.5.4 Moray Council and Aberdeenshire Council may request that an agreement to cover the cost of abnormal wear on its network is made.

10.5.5 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction phase. Any necessary repairs would be coordinated with local council's roads team. Any damage caused by traffic associated with the Proposed Development during the construction period that would be hazardous to public traffic would be repaired immediately and may be controlled using a Section 96 agreement or similar.

10.5.6 Damage to road infrastructure caused directly by construction traffic would be made good and street furniture that is removed on a temporary basis would be fully reinstated.

10.5.7 There would be a regular road review and any debris and mud would be removed from the carriageway using an on-site road sweeper to ensure road safety for all road users.

Abnormal Load Mitigation

10.5.8 Before the AILs traverse the route, the following tasks would be undertaken to ensure load and road user safety:

- Ensure any vegetation which may foul the loads is trimmed back to allow passage;
- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads;
- Confirm the police are satisfied with the proposed movement strategy;
- All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with the relevant roads authorities and police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods before peak times while general construction traffic would generally avoid the morning and evening peak periods;

- Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist);
- The location and numbers of signs would be agreed post consent and would form part of the wider traffic management proposals for the Proposed Development;
- Information on the turbine convoys would be provided to local media outlets such as local papers and local radio to help assist the public;
- Information would relate to expected vehicle movements from the A96, along the AIL delivery route along the A920 and A941 to the Site access junction. This would assist residents becoming aware of the convoy movements and may help reduce any potential conflicts;
- The Applicant would also ensure information was distributed through its communication team via the project website, local newsletters and social media. A police escort would be required to facilitate the delivery of the predicted loads. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible;
- The abnormal loads convoys would be no more than three AIL long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so; and
- The times in which the convoys would travel would need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

10.5.9 To enable access for AILs, modifications along the route would be necessary at a number of Points of Interest (PoI) which are described in Technical Appendix 10.2.

Abnormal Load Transport Management Plan

10.5.10 An Abnormal Load Transport Management Plan would be prepared to cater for all movements to and from the Site. This would include:

- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking;
- A protocol with other wind farm developers to manage possible crossover of abnormal load movements. This is not likely to be a major issue as there are limited Police Scotland escort resources and as such it is likely to be impossible for two sets of loads to move along the A920 or the A941 at the same time;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates such as popular local events etc.;
- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- Proposals to establish a Construction Liaison Committee to ensure the smooth management of the project/ public interface with the Applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Site Specific Mitigation Measures

10.5.11 The proposed borrow pit on-site is able to provide sufficient material for the construction of the majority of the access roads and turbine hardstands. The assessment described in this chapter assumes that they can only provide 50% of the required material to provide a robust assessment for Moray Council and Aberdeenshire Council to consider.

10.5.12 It is expected that the borrow pit would provide 100% which would reduce the potential impact on the road network from that assessed in this study.

On-site Measures delivered using a Core Path Management Plan

10.5.13 Along the route, consideration has been given to pedestrians, cyclists and horse riders alike due to potential interactions between construction traffic and users of the core path. These measures will be formulated into a Core Path Management Plan.

10.5.14 Users of the Core Path would be separated from construction traffic through the use of management measures including segregating pedestrians from construction traffic. Crossing points would be provided where required, with core path users having right of way. Appropriate Traffic Signs Manual Chapter 8[16] compliant temporary road signage would be provided to assist at these crossings for the benefit of all users.

10.5.15 The principal contractor would ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the core path and at crossing points. Advisory speed limit signage would also be installed on approaches to areas where core path users may interact with construction traffic.

10.5.16 Signage would be installed on the Site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians, cyclists and horse riders in the area. This would also be emphasised in the weekly tool box talks.

10.5.17 The British Horse Society has made recommendations on the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and would run away in panic if really frightened. Riders would do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

10.5.18 The main factors causing fear in horses in this situation are:

- Something approaching them, which is unfamiliar and intimidating;
- A large moving object, especially if it is noisy;
- Lack of space between the horse and the vehicle;
- The sound of air brakes; and
- Anxiety on the part of the rider.

10.5.19 The British Horse Society recommends the following actions that would be included in the Site training for all HGV staff:

- On seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- If the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);

[16] UK Government (2009 and 2020), Traffic Signs Manual Chapter 8. Available at: https://www.gov.uk/government/publications/traffic-signs-manual

- The vehicle should not move off until the riders are well clear of the back of the HGV;
- If drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- All drivers delivering to the site must be patient. Riders would be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

Staff Sustainable Access Plan

10.5.20 A Staff Travel Plan would be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures would include:

- Appointment of a Travel Plan Coordinator (TPC);
- Provision of public transport information;
- Mini-bus service for transport of site staff;
- Promotion of a car sharing scheme; and
- Car parking management.

Mitigation during Operation

10.5.21 In terms of the IEMA Guidelines, such a small number of traffic movements and the associated percentage uplift over Baseline traffic movements are not considered significant and therefore no mitigation is proposed or required.

Mitigation during Decommissioning

10.5.22 As decommissioning would result in fewer vehicle trips on the road network than the construction phase, the significance of any effects would not be greater. It can therefore be assumed that the assessment of the construction phase covers the worst-case scenario.

10.6 Assessment of Residual Effects

10.6.1 An evaluation of the potential effects of the increase in traffic on the study area roads used for construction traffic was undertaken. The summary of this assessment is provided in Table 10.10.

10.6.2 The assessment confirms the effects would be slight for both users of the core paths and of the A941 and that they would be not significant. The traffic effects are transitory in nature. No long-lasting detrimental transport or access issues are associated with the construction phase of the Proposed Development.

Residual Construction Effects

10.6.3 This section considers the assessment of traffic effects following the incorporation of the mitigation measures identified above.

10.6.4 Table 10.10 summarises the assessment of residual effects identified in the evaluation with mitigation in place.

10.6.5 It should be acknowledged that the assessment has focussed on the peak in construction traffic activities and that the percentage increases noted are high, given the relatively low level of HGV traffic on the existing network.

10.6.6 The construction period is transitory in nature and all impacts would be short lived and temporary. No significant residual effects are predicted during construction.

Residual Operational Effects

10.6.7 No residual operational effects are predicted as part of the Proposed Development.

Residual Decommissioning Effects

10.6.8 No residual decommissioning effects are predicted as part of the Proposed Development.

Residual Cumulative Construction Effects

10.6.9 No residual cumulative construction effects are predicted as part of the Proposed Development.

Residual Cumulative Operational Effects

10.6.10 No residual cumulative operational effects are predicted as part of the Proposed Development.

10.7 Monitoring

Construction Phase Monitoring

10.7.1 Monitoring during the construction phase would be in accordance with the CTMP.

Operation Phase Monitoring

10.7.2 No monitoring during the operation phase is required as part of the Proposed Development.

Decommissioning Phase Monitoring

10.7.3 No monitoring during the decommissioning phase is required as part of the Proposed Development.

10.8 Summary

10.8.1 The Proposed Development would lead to an increase in traffic volumes on a number of roads in the vicinity of the Site during the construction phase. Traffic volumes would fall off considerably outside the peak period of construction.

10.8.2 The Proposed Development would take access directly from the A941 during construction and operation. Abnormal Indivisible Loads would be delivered to the Site from the Port of Dundee.

10.8.3 The Study Area comprises the following road links:

- The A96, in the vicinity of Huntly;
- The A920, between Huntly and Dufftown; and
- The A941 between the north of Dufftown and the Site access.

10.8.4 The maximum traffic impact associated with the construction is predicted to occur in month 8 with 115 HGV movements per day (58 inbound and 57 outbound) and 44 Car/ Lights movements (22 inbound trips and 22 outbound trips). These figures suggest an average of approximately five additional HGV inbound trips per hour on the network at the peak of construction activities, which is not considered significant in terms of overall traffic flows.

10.8.5 No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development, as

background traffic movements are low, the links are of reasonable standard and appropriate mitigation is proposed.

10.8.6 The assessment of significance suggests that the overall effects of construction traffic along the A941 are considered significant, prior to the application of mitigation measures. It is also considered that the overall construction effects on Core Path Users in the area would be significant, prior to mitigation measures.

10.8.7 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are assessed to be slight or insignificant and they would occur during the construction phase only, they are temporary and reversible.

10.8.8 Traffic levels during the operational phase of the Proposed Development would be one or two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements may be left in situ and others broken up on-site.

10.8.9 The movement of AIL traffic would require small scale and temporary remedial works at a number of locations along the identified delivery route.

10.8.10 The summary of potential significant effects of the Proposed Development is presented in Table 10.10.

Table 10.10: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
A941 Users			
Severance	CTMP proposals	Implementation of CTMP via planning condition.	Slight, Adverse, Not significant
Driver Delay	CTMP proposals and improved signage	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Pedestrian Delay	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Pedestrian Amenity	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Fear & Intimidation	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Accidents & Safety	CTMP proposals and improved. Junction Design to Moray Council standards.	CTMP proposals, improved signage and develop signage strategy and agree works with Moray Council. Construction of Moray Council compliant access junctions.	Slight, Adverse, Not significant
Core Path Users			
Severance	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Driver Delay	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Pedestrian Delay	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant

Table 10.10: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Pedestrian Amenity	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Fear & Intimidation	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Accidents & Safety	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
Operation			
None	None	None	None
Decommissioning			
None	None	None	None
Cumulative Construction			
None	None	None	None
Cumulative Operation			
None	None	None	None

11 Noise and Vibration

11.1 Introduction

11.1.1 This chapter considers the likely significant effects with respect to the noise associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the noise baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects (including cumulative effects);
- describe the mitigation measures proposed to address any likely significant effects; and
- assess the residual effects remaining, following the implementation of mitigation.

11.1.2 The noise assessment was undertaken by TNEI Services Ltd. The assessment has been reviewed and approved by Jim Singleton. Jim is a Full Member of the Institute of Acoustics and holds the Diploma in Acoustics and Noise Control (refer to Technical Appendix 11.2).

11.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
  - Figure 11.1: Construction Noise Assessment Locations;
  - Figure 11.2: Operational Noise Monitoring and Assessment Locations;
  - Figure 11.3: Cumulative Turbine Locations; and
  - Figure 11.4: BESS Noise Assessment Study Area
- Volume 4: Technical Appendices
  - Technical Appendix 11.1: Construction Noise Report;
  - Technical Appendix 11.2: Operational Noise Report; and
  - Technical Appendix 11.3: Battery Energy Storage System Noise Report.

11.1.4 Figures and technical appendices are referenced in the text where relevant.

11.2 Assessment Methodology and Significance Criteria

Relevant Guidance

11.2.1 The scope of the assessment has been informed by the following guidelines/ policies:

- Planning Advice Note PAN 1/2011: 'Planning and Noise'[1];
- BS 5228-1: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open developments - Noise';
- Web Based Renewables Advice: 'Onshore Wind Turbines' (updated May 2014)[2];
- ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms';
- ISO 9613-2: 1996 'Acoustics - Attenuation of sound during propagation outdoors Part 2: General method of calculation';

[1] The Scottish Government, 2011. PAN 1/2011 Planning and Noise. Scotland: The Crown.

[2] The Scottish Government, 28 May 2014. Web Based Renewables Advice: 'Onshore Wind Turbines' – https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/. [Online]

- Institute of Acoustics 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (2013) (IOA GPG);
- BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound; and
- BS 8233:2014 *'Guidance on sound insulation and noise reduction for buildings'.*

11.2.2 Further information on the guidance above is included in Technical Appendix 11.2 and throughout this chapter as required.

Scope of Assessment

11.2.3 Wind farms have the potential to create noise during their construction and operational phases. This chapter assesses the potential noise impacts at the nearest noise sensitive receptors (NSRs); during each of the project phases.

11.2.4 The wind farm operational noise assessment has been undertaken in three stages:

- Stage 1 – Establish the 'Total ETSU-R-97 Noise Limits' which are applicable for all wind farm schemes in the area;
- Stage 2 – undertake noise predictions to determine whether predictions from the Proposed Development on its own are within 10 dB of the noise predictions from other wind turbines within the area. Where turbine predictions are within 10 dB then a likely cumulative noise assessment will be undertaken and the results compared to the 'Total ETSU-R-97 Noise Limits'; and
- Stage 3 – establish the 'Site Specific Noise Limits' for the Proposed Development (through apportioning the 'Total ETSU-R-97 Noise Limits', where required) and compare the noise predictions from the Proposed Development on its own against the 'Site Specific Noise Limits'.

11.2.5 The calculation of Site Specific Noise Limits is required to account for the fact that at some locations a proportion of the Total ETSU-R-97 Noise Limit has been allocated to, or could realistically be used by, other wind farm developments. The Site Specific Noise Limits are therefore set to fully take account of the existing cumulative baseline situation and would be suitable for use in noise related planning conditions.

11.2.6 An assessment has been undertaken against both sets of limits to demonstrate that the cumulative noise predictions can meet the Total ETSU-R-97 Noise Limits and also to show that the noise predictions from the Proposed Development can also meet the Site Specific Noise Limits derived for the Proposed Development.

Construction Noise Methodology

11.2.7 The construction noise assessment has been undertaken using guidance contained in BS 5228: Part 1 2009+A1:2014 [3]. The prediction of construction noise levels was undertaken using the calculation methodology presented in ISO 9613:1996[4], together with published noise data for appropriate construction plant. To undertake an assessment of the construction noise impact using relevant data from BS 5228: Part 1 2009+A1:2014, the following steps have been undertaken:

- identify noise sensitive receptors and select representative Noise Assessment Locations;

[3] British Standards Institute, 2014. Code of practice for noise and vibration control on construction and open sites. Noise. UK: BSI, 2014. BS 5228-1:2009+A1:2014

[4] (ISO), International Organisation for Standardisation. 1996. Acoustics – Attenuation of Sound During Propagation Outdoors: Part 2 – General Method of Calculation. Geneva: ISO, 1996. ISO 9613-2:1996

- identify applicable threshold of significant effects from BS 5228:1 2009+A1:2014;
- predict noise levels for various construction noise activities;
- compare predicted noise levels against the applicable threshold;
- where necessary, develop suitable mitigation measures to minimise any significant adverse effects during the construction phase; and, if required
- assess any residual adverse effects taking into account any identified mitigation measures.

11.2.8 Construction of the Proposed Development would be undertaken in several successive phases. During each phase the plant and equipment, and the associated traffic, would influence the noise generated. The selection of plant and equipment to be used would be determined by the main contractor and detailed arrangements for on-site management would be decided at that time. This assessment has therefore been based upon a typical selection of plant for a wind farm project of this size and with due regard to the traffic and transport assessment (Chapter 10). In view of this, the plant has been modelled operating at the closest point to each receptor for a given activity in each construction phase whereas in reality only certain plant would be working at the closest point meaning that the predictions use the worst case locations.

11.2.9 The core hours for construction activity will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 Saturday. There will be no working on Sundays and Public Holidays, however, it should be noted that out of necessity some activity outside of the core hours could arise, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair weather windows for the erection of turbine blades and the erection and dismantling of cranes. Any construction work outside these hours would be an exception and subject to approval by Moray or Aberdeenshire Councils.

11.2.10 Chapter 2: Development Description, describes the outline tasks that will be undertaken during the construction period, which is estimated to last 18 months. For the purposes of this assessment noise modelling has been undertaken for a number of construction scenarios, which simulate the likely overlap of several tasks that would occur throughout the construction period:

- Scenario 01: Forestry activities, including felling of trees and forwarding for transportation off-site.
- Scenario 02: Felling activities are still active. Track installation has now begun, with the initial upgrade works beginning on the entrance track up to the southern construction compound. Both construction compounds under construction.
- Scenario 03: Felling activities and track installation are still active. Work on the access track has been expanded to encompass more of the Site. The construction compounds are assumed to be active. Work has now begun within the borrow pit and construction of the met mast foundations and the hardstandings for Turbines 1, 2, 3 and 5 are underway.
- Scenario 04: Felling activities and track installation are still active. The construction compounds and the borrow pit are active and the batching plant is operational. Work has begun on the hardstandings for Turbines 4, 6, 7 and 8. Construction of the foundations for Turbines 1, 2, 3 and 5 are underway. Construction of the substation has now begun.
- Scenario 05: Track installation is still active. The construction compounds, batching plant and the borrow pit are active. Work has now begun on the hardstandings for Turbines 9,

10 and 11. Construction of the foundations for Turbines 4, 6, 7 and 8 are underway. Construction of the substation and potential BESS is ongoing.

- Scenario 06: The construction compounds are active. Erection of Turbines 1, 2, 3 and 5 and the met-mast is underway. Construction of the substation is ongoing and foundations for Turbines 9, 10 and 11 are being constructed.
- Scenario 07: The construction compounds are active and Turbines 9, 10 and 11 are being erected.

11.2.11 No construction activities are anticipated outside of core hours, however, a night-time scenario has also been modelled in case energy generation for lighting and similar is required on-site.

11.2.12 The noise-generating equipment assessed for each scenario is detailed in Technical Appendix 11.1: Construction Noise Report, which uses actual noise data measured at 10 m from the modelled noise sources. It is noted that for much of the working day the noise associated with construction activities would be less than predicted, as the assessment has assumed all equipment is constantly operating at full power and is located at the closest activity locations to each receptor, whereas in practice equipment load and precise location varies.

11.2.13 The assessment does not consider the noise impacts associated with decommissioning, as the plant and activities used for that phase are assumed to be similar in nature (and noise output) to those already considered in the modelled construction scenarios. Accordingly, if noise levels during the construction phases are acceptable, they should also be acceptable during decommissioning.

11.2.14 The assessment has assumed that gravity based foundations would be used on-site.

11.2.15 To protect the amenity of local residents, construction noise activities can be controlled under The Control of Pollution Act 1974 (COPA)[5], which is specifically concerned with the control of noise pollution. In particular, Section 60 Part III of the COPA refers to the control of noise on construction sites. It provides legislation by which a Local Authority can control noise from construction sites to prevent disturbance occurring. In addition, it recommends that guidance provided by BS 5228 should be implemented to ensure compliance with Section 60.

Operational Noise

11.2.16 The assessment has been undertaken in accordance with ETSU-R-*97 'The Assessment and Rating of Noise from Wind Farms'*[6] and current good practice. ETSU-R-97 provides a robust basis for determining acceptable noise limits for wind farm developments. Consequently, the test applied to operational noise is whether or not the calculated wind farm noise levels at nearby noise sensitive properties would be below the noise limits derived in accordance with ETSU R 97.

11.2.17 Limits differ between daytime and night-time periods. The quiet daytime criteria is based upon background noise levels measured during 'quiet periods of the day' comprising:

- All weekday evenings from 18:00 to 23:00;
- Saturday afternoons and evenings from 13:00 to 23:00; and
- All day Sunday 07:00 to 23:00.

[5] HM Government, 1974. Control of Pollution Act 1974 Chapter 40. London: Her Majesty's Stationery Office.

[6] ETSU for the DTI (Department of Trade and Industry), 1996 . The Working Group on Noise from Wind Turbines ETSU-R-97 The Assessment and Rating of Noise from Wind Farms'.

11.2.18 For the avoidance of doubt the limits set based upon the background data collected during the quiet daytime period apply to the entire daytime period (07:00 to 23:00).

11.2.19 Night-time periods are defined as 23:00 to 07:00 with no differentiation made between weekdays and weekends.

11.2.20 ETSU-R-97 recommends that wind farm noise for daytime periods should be limited to 5 dB(A) above the prevailing background or a fixed minimum level (FML) within the range 35 to 40 dB $L_{A90,10min}$, whichever is the higher. The precise choice of criterion level within the range 35 to 40 dB(A) depends on a number of factors, including:

- the number of dwellings in the neighbourhood of the wind farm (relatively few dwellings suggest a figure towards the upper end);
- the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure); and
- the duration and level of exposure to noise.

11.2.21 In addition, consideration should also be given to the FML already allocated to consented and operational wind farms in the immediate area.

11.2.22 The exception to the setting of both the daytime and night-time fixed minimum on noise limits occurs where a property occupier has a financial involvement in the wind farm development, then the fixed minimum limit can be increased to 45 dB(A) or a higher permissible limit above background during the quiet daytime and night-time periods.

11.2.23 Following consideration of the FML already allocated to other schemes in the area, the 'Total ETSU-R-97 Limits' for the Proposed Development operating in conjunction with other cumulative schemes has been set at 40 dB(A) or background plus 5 dB whichever is the greater during the daytime period and at 43 dB(A) or background plus 5 dB whichever is the greater during the night-time period. This 'Total' limit relates to noise from all wind farm developments in the area.

11.2.24 The daytime 'Site Specific Noise Limits' have been derived based on the lower FML of 35 dB(A), or background plus 5 dB whichever is the greater whilst taking account of the proportion of the noise limit that has been allocated to, or could theoretically be used by, other schemes.

11.2.25 For night-time periods the recommended limits are 5 dB(A) above prevailing background or a FML of 43 dB $L_{A90,10min}$, whichever is higher whilst taking account of the proportion of the noise limit that has been allocated to, or could theoretically be used by, other schemes.

11.2.26 In addition to ETSU-R-97, the recommendations included in the Institute of Acoustics *'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'* (2013) (IOA GPG)[7] have been considered in this assessment.

11.2.27 The aim of the operational noise assessment therefore is to establish the Total ETSU-R-97 Noise Limits, determine the likely impacts of the Proposed Development and other schemes at the nearest noise sensitive receptors, derive Site Specific Noise Limits and to establish whether the Proposed Development can meet those limits.

11.2.28 The exact make and model of turbine to be installed on the Site will be the result of a future tendering process should consent be granted. Achievement of the Site Specific Noise Limits determined by this assessment will be a key determining factor in the final choice of turbine for the Proposed Development. Predictions of wind turbine noise for the Proposed

[7] Institute of Acoustics, 2013. Good Practice Guidance on the application of ETSU-R-97 for wind turbine noise assessment.

Development were made, based upon the sound power level data for a single candidate wind turbine, the Siemens Gamesa SG6.6-155 6.6 MW with standard blades, as this is considered representative of the type of turbine that would be installed at the Site and is in accordance with the turbine parameters set out in Chapter 2: Development Description.

11.2.29 Noise predictions have been undertaken using the propagation model contained within Part 2 of International Standard ISO 9613-2, *'Acoustics – Attenuation of sound during propagation outdoors'* (ISO 1996)[8]. The model calculates, on an octave band basis, attenuation due to geometric spreading, atmospheric absorption and ground effects. The noise model was set up to provide realistic noise predictions, including mixed ground attenuation (G=0.5) and atmospheric attenuation relating to 70% Relative Humidity and 10ºC.

11.2.30 Typically wind farm noise assessments assume all properties are downwind of all turbines at all times (as this would result in the highest wind turbine noise levels). However, where properties are located in between groups of turbines they cannot be downwind of all turbines simultaneously, so it is appropriate to consider the effect of wind direction on predicted noise levels; the impact of directivity has been considered in the assessment.

11.2.31 In line with the IOA GPG (2013), an assessment has been undertaken to determine whether a concave ground profile correction (+3 dB) or barrier correction (-2 dB), is required due to the topography between the turbines and the noise sensitive receptors. Propagation across a valley (concave ground) increases the number of reflection paths, and in turn, has the potential to increase sound levels at a given receptor. Terrain screening effects (barrier corrections) act as blocking points, subsequently reductions in sound levels at a given receptor can potentially be observed. A concave ground and barrier correction was found to be required for a number of turbines at a number of receptors as detailed in Annex 6, Technical Appendix 11.2.

11.2.32 Information relating to operational noise such as Amplitude Modulation (AM), a potential characteristic of wind turbine noise and Low Frequency Noise (LFN) has been provided in Technical Appendix 11.2: Operational Noise Report. There is no evidence that LFN has adverse impacts on the health of wind farm neighbours and at the time of writing there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology that can be used to determine whether the effects of AM, should it occur, are likely to be significant.

Cumulative Construction Noise

11.2.33 There is potential for the construction of the Proposed Development to occur at the same time as the construction of the proposed Garbet and Clashindarroch II wind farms and on that basis an assessment has been undertaken to consider the potential cumulative construction noise impacts from these developments. No other construction activities for new or existing developments have been identified that might occur during the same time period.

11.2.34 The first stage of this cumulative assessment is to compare the predicted levels from the construction of the Proposed Development to the noise thresholds and establish the available margin. Where noise levels are predicted to be at least 10 dB below the threshold levels then no further assessment is required. This is because the influence of noise from the construction of the Proposed Development would be such that it could not increase the overall cumulative construction noise to above the threshold levels. If predicted levels are found to be within

[8] International Standards Organisation, 1996. *ISO9613:1996 'Acoustics – Attenuation of sound during propagation outdoors' – Part 2: General method of calculation.*

10 dB of the threshold levels then it is necessary to predict the cumulative noise levels from the construction of the neighbouring developments and compare this to the threshold level.

Cumulative Operational Noise

11.2.35 The need for a cumulative operational noise assessment was considered in accordance with the guidance contained within the IOA GPG (2013). Where predictions from the Proposed Development at a Noise Assessment Locations (NAL) were found to be within 10 dB of the cumulative noise levels from existing/ consented wind farms, a cumulative noise assessment has been undertaken. The noise assessment has been undertaken in three separate stages:

- Stage 1 – establish the 'Total ETSU-R-97 Noise Limits' for each NAL based on existing noise limits (should limits already be set for a nearby wind farm) or using the measured background noise levels to derive new limits;
- Stage 2 – undertake noise predictions to determine whether predictions from the Proposed Development on its own are within 10 dB of the noise predictions from other wind turbines within the area. Where turbine predictions are within 10 dB then a likely cumulative noise assessment will be undertaken and the results compared to the 'Total ETSU-R-97 Noise Limits'; and
- Stage 3 – establish the 'Site Specific Noise Limits' for the Proposed Development (through apportioning the 'Total ETSU-R-97 Noise Limits') and compare the noise predictions from the Proposed Development on its own against the 'Site Specific Noise Limits'.

11.2.36 All the turbines modelled, inclusive of those considered in the cumulative noise assessment (Stage 2), are summarised in Annex 6 of Technical Appendix 11.2: Operational Noise Report. Uncertainty in sound power data for the Proposed Development has been accounted for using the guidance contained within Section 4.2 of the IOA GPG (2013). The location of the wind turbines for the Proposed Development and the other schemes are shown on Figure 11.3: Cumulative Turbine Locations.

BESS Noise Methodology

11.2.37 The operational noise assessment for the BESS has been undertaken in accordance with BS 4142:2014 + A1:2019 *'Methods for rating and assessing industrial and commercial sound'*[9] with reference also made to guideline noise levels detailed within BS 8233:2014 *'Guidance on sound insulation and noise reduction for buildings'*[10].

11.2.38 The process of undertaking a BS 4142 assessment can be summarised as follows:

- Measure existing background sound levels at or close to the nearest NSRs for daytime and night-time periods;
- Predict the noise levels likely to be received at the NSRs from the Proposed Development;
- Add penalties, as required, to account for the characteristics of the sound source to determine the Rating Level;
- Compare the Rating Level with the measured background sound levels to assess the likelihood of adverse impacts; and
- If required, determine appropriate mitigation measures to reduce the Rating Level to within acceptable levels.

[9] British Standards Institute. BS4142:2014 + A1:2019 'Methods for Rating and Assessing Industrial and Commercial Sound', 2014.

[10] British Standards Institute. BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings', 2014.

11.2.39 The assessment requires that the context in which the sound occurs is considered and as such there is no definitive pass/ fail element defined. However, as a starting point the standard states:

"Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level from the rating level, and consider the following…

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

11.2.40 BS 8233 presents guideline internal ambient noise levels for daytime and night-time periods for a number of different building types; for residential developments these are based on guidelines issued by the World Health Organisation (WHO). In order to help provide context to the BS 4142 assessment, an assessment of the predicted noise levels against the BS 8233 guideline levels has also been made. In this case the most stringent of the BS 8233 levels have been used, which are 35 dB $L_{Aeq(16hour)}$ for daytime (07:00 to 23:00) and 30 dB $L_{Aeq(8hour)}$ for night-time (23:00 to 07:00).

11.2.41 As the BS 8233 criteria are for internal noise levels an allowance of 15 dB for the attenuation of a partially open window can be added to the internal levels to inform a set of external noise level limits. This allows a direct comparison between the predicted external levels and the internal guidelines.

11.2.42 Noise level predictions for the BESS have been calculated in accordance with ISO 9613-2:1996.

Consultation

11.2.43 Table 11.1 summarises the consultation responses received regarding noise and provides information on where and/ or how they have been addressed in this assessment.

11.2.44 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 11.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Comments Raised	Response/ Action Taken
Energy Consents Unit (ECU) (19 March 2021)	Scoping	Requested that the noise assessment be undertaken in accordance with the legislation and standard detailed in Section 3.8 of the scoping report. Also requested that the noise assessment be formatted as per Table 6.1 of the IOA GPG.	The noise assessment has been undertaken in accordance with these documents. Technical Appendix 11.2 (Volume 4) contains all the information requested in Table 6.1 of the IOA GPG.

Table 11.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Comments Raised	Response/ Action Taken
ECU (19 March 2021) which included a response from Aberdeenshire Council (AC) (22 January 2021)	Scoping	Confirmed that the noise assessment must be undertaken in accordance with ETSU-R-97, the IOA GPG and associated Supplementary Guidance Notes and Aberdeenshire Council advice which refers to Aberdeenshire Councils 'Wind Turbine Development: Submission Guidance Note.'	The operational noise assessment has been undertaken in accordance with ETSU-R-97 and the IOA GPG. The AC Submission Guidance Note refers to a reduced noise limit during the night-time period of 38 dB or background plus 5 dB whichever is the greater. The noise assessment for the Proposed Development has been undertaken in accordance with ETSU-R-97 which recommends that the night-time limit should be based on 43 dB or background plus 5 dB whichever is the greater. A set of noise limits based on the lower night-time limit recommended by AC has also been provided for information purposes in Annex 8 of Technical Appendix 11.2 (Volume 4).
Moray Council (MC) (Consultation letter sent 20 November 2020 and initial response received on 24 December 2020)	Direct consultation with Environmental Health Officer (EHO)	Agreed with the use of ETSU-R-97 and the IOA GPG but also requested that Moray Council's Wind Energy Guidance should also be considered. Provided initial comments on proposed monitoring locations, attendance at installation of the noise monitoring equipment, daytime fixed minimum noise limits and the use of available headroom.	The Council's Wind Energy Guidance Document has been considered when undertaking the noise assessment for the Proposed Development. Further feedback was received on each of the points initially raised and that is summarised further down in this table. A copy of all consultation and subsequent responses from MC is included within Annex 2 of Technical Appendix 11.2 (Volume 4).
Aberdeenshire Council (AC)(Consultation letter sent 20 November 2021 and initial response received on 4 December 2021)	Direct consultation with EHO	Agreed with the proposed methodology and suggested noise monitoring locations. Agreed with the principle to use available headroom, normally AC accept a 'rounding up' or 'rounding up plus 1 dB' margin above predicted noise levels.' Commented on some additional buildings that may need to be considered as noise sensitive receptors. Requested that AC be invited to attend the installation of the noise monitoring equipment and were happy with the initial cumulative list provided.	Where headroom was available (>5 dB margin between predicted levels from all the other schemes and the Total Noise Limit), a 2 dB margin above predicted levels has been applied. Further consultation was had with AC regarding potential noise sensitive receptors and this is summarised further below.
MC (29 March to 23 April 2021)	Additional consultation with EHO – status of a number of buildings to north of the Site (derelict/ abandoned/ uninhabitable)	The EHO visited the buildings to determine their status (Greens of Glenbeg, Newton of Glenmarkie and Glenmarkie) and confirmed that they did not need to be considered as noise sensitive receptors in the noise assessment.	The buildings 'Greens of Glenbeg, Newton of Glenmarkie and Glenmarkie' were not considered noise sensitive receptors in the noise assessment.
MC (1 April 2021)	Further feedback from the EHO on	The EHO stated the following: "I would see no objection or concern in relation to approach being	As detailed above, where headroom was available (>5 dB margin between predicted levels from all the other

Table 11.1: Consultation Responses			
Consultee and Date	**Scoping/ Other Consultation**	**Comments Raised**	**Response/ Action Taken**
	initial consultation letter submitted on 20 November 2021)	suggested here with +2 dB above predicted levels, where significant headroom has been identified. In relation to point 6 on limits then our approach is to look at, for daytime, the greater of L_{A90} of 35 dB of background sound level +5, and a night-time limit at the greater of L_{A90} 40 dB or background sound level +5. I understand from Aberdeenshire's perspective a lower night-time fixed limit of L_{A90} 38 dB is expected. I think in these circumstances, when considered in the context of the adjacent Garbet Hill, and other developments in the planning system at Clashindarroch, the limits suggested in 2 when considered cumulatively with these other developments, would give rise to a daytime cumulative value heading towards 40 dB, which is the maximum desirable."	schemes and the Total Noise Limit), a 2 dB margin above predicted levels has been applied. The Site Specific Noise Limits have been derived using a FML of 35 dB daytime and 43 dB night-time or background plus 5 dB whichever is the greater, whilst taking account of the noise limit that could theoretically be used by other schemes. The night-time noise limits have been derived based on Government Guidance which refers to ETSU-R-97 and the use of 43 dB or background +5 dB. A Total Noise limit (for all schemes to operate within) has been derived based on a fixed minimum noise of 40 dB daytime and 43 dB night-time or background plus 5 dB whichever is the higher. The night-time noise limits have been derived based on Government Guidance which refers to ETSU-R-97 and the use of 43 dB or background +5 dB. For information purposes a set of night-time Site Specific Noise Limits have also been included based on the lower night-time preferred limits of 38 dB from AC and 40 dB from MC. These are included within Annex 8 of Technical Appendix 11.2.
AC (28 April to 12 May 2021)	Additional consultation with EHO – status of a number of buildings to north of the site (derelict/ abandoned/ uninhabitable)	The Planning Department reviewed the information provided and concluded that a building known as 'Timberford' is abandoned and therefore did not need to be considered as a noise sensitive receptor. Additional information was requested regarding Chapel Hill and an Unknown Building located nearby.	The buildings Chapel Hill and the two unnamed buildings appear to be abandoned but it has not been possible to ascertain the owners intentions therefore for the purposes of the assessment they have been included as noise sensitive receptors. They are shown as NAL 18 to 20 on Figure 11.2.

Potential Effects Scoped Out

Decommissioning

11.2.45 Activities that occur during the decommissioning of the Proposed Development are unlikely to produce higher noise levels than those produced during the construction and many of the activities will be similar in nature. As such it is assumed that if construction noise levels are predicted to be below the threshold levels then decommissioning noise would also be within the threshold levels.

Blasting

11.2.46 The extent of any blasting requirement cannot be determined until intrusive site investigation tests are completed. Nevertheless should blasting be required, a series of tests would be undertaken by the appointed contractor in accordance with guidance outlined in BS5228-

2:2009+A1:2014[11]. In addition, blasts would be designed through appropriate specification of Maximum Instantaneous Charge (MIC) to ensure that vibration levels at the nearest NSRs would not exceed the guideline limits presented in BS 7385-2: 1993 '*The Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration*'[12] and BS 6472-2: 2008 'Guide to evaluation of human exposure to vibration in buildings. Blast-induced vibration'[13]. A condition should be attached to the consent to require compliance with these limits in the event that blasting is undertaken. Given the relative distances between the potential locations of blasting and the closest noise sensitive receptors, there is no reason to suggest that the guidance within BS7385-2: 1993 and BS 6472-2: 2008 would not be met, and therefore this issue can be scoped out of further detailed consideration.

Method of Baseline Characterisation

Extent of the Study Area

11.2.47 Prior to the commencement of the operational noise assessment, initial desktop noise modelling was undertaken using ReSoft WindFarm Release 4.2.1.7 (WindFarm) software in order to identify suitable locations at which to monitor background noise. A draft 18 wind turbine scoping layout was inputted into the 'WindFarm' software and using noise data for a candidate turbine representative of the type that could be installed at the Proposed Development, a noise contour plot was produced. The noise contour plot defined the extent of the study area for the operational noise assessment based upon a 35 dB(A) contour. Six background Noise Monitoring Locations (NMLs) were identified within the 35 dB(A) contour. An additional two monitoring locations located outside of the 35 dB contour were also identified in order to allow for any changes in design of the scheme. The actual NMLs are shown on Figure 11.2: Operational Noise Monitoring and Assessment Locations. More information on the NMLs can be found in Section 5 of Technical Appendix 11.2: Operational Noise Report.

11.2.48 There are a number of operational, consented and proposed (planning application submitted) wind farms located in proximity to the Proposed Development, these include:

- Dorenell Wind Farm (operational);
- Clashindarroch Wind Farm (operational);
- Hill of Towie Wind Farm (operational);
- Cairnborrow Wind Farm (operational);
- Hill of Towie II (consented);
- Clashindarroch II (at Appeal); and
- Garbet Wind Farm (at Appeal).

11.2.49 The wind farms detailed above have been considered as part of the cumulative operational noise assessment (Stage 2). The noise assessment has only considered wind farms which are operational, consented or in the planning process (full planning application submitted), therefore it has not considered schemes at pre-application stage such as Glenfiddich and Clashindarroch Extension. The wind farms were included within the assessment as the predicted levels from the individual schemes were found to be within 10 dB of the predicted

[11] British Standard BS5228-2: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' – Part 2: Vibration

[12] British Standard BS7385-2: 1993 'The Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration'

[13] British Standard BS6472: 2008 'Guide to evaluation of human exposure to vibration in buildings. Blast-induced vibration'

levels from the Proposed Development. Further information on the cumulative noise assessment can be found in Section 1.2.3 of Technical Appendix 11.2: Operational Noise Report (Volume 4).

Field Survey

11.2.50 The noise survey to determine the existing background noise environment at noise sensitive receptors neighbouring the Proposed Development was undertaken in accordance with the guidance contained within ETSU-R-97 and current good practice (IOA GPG).

11.2.51 Background noise monitoring was undertaken at five noise sensitive receptors. The NMLs were chosen by TNEI. An EHO from MC and AC was invited to the installation but only the EHO from MC was able to attend. The selection of the NMLs considered local noise sources such as boiler flues, watercourses and vegetation and the general location was agreed in advance with the EHO.

11.2.52 Background noise monitoring was undertaken over the period of March to May 2021, at the five NMLs, see Table 11.2: Summary of Noise Monitoring Locations (NMLs) and Figure 11.2 Operational Noise Monitoring and Assessment Locations. Details of the NMLs can be found within Technical Appendix 11.2: Operational Noise Report.

11.2.53 There was a software issue with the meters installed at NMLs 1 and 3 to 5 during the first month of monitoring which resulted in only one weeks' worth of data being collected at those locations. The issue was rectified during the Site visit and a full dataset was collected at each location during the second month of the survey. Permission to monitor at Wester or Easter Braetown could not be obtained therefore it was initially agreed with MC's EHO that the data collected at NML4 Easterton could be used to set noise limits at those locations as it was deemed to be representative of Easter and Wester Braetown. However following a review of the background noise data collected, the background data collected at NML1 Tighnaird was found to be slightly quieter and therefore that dataset was used as a proxy for Wester and Easter Braetown. No monitoring was undertaken at a building initially identified as Glenbeg as the building was later found to be derelict.

11.2.54 Simultaneous wind speed/ direction data were recorded within the Site at various heights using a LIDAR Unit. The location of the LIDAR used to collect wind data during the survey is shown on Figure 11.2 (grid reference 338727, 834756). The wind speed data collected at 104 m and 124 m on the mast were used to derive hub height wind speeds (125 m) which were standardised to 10 m height in accordance with good practice. Whilst the hub height of the candidate turbine modelled in this assessment is 122.5 m, using 125 m to standardise to 10 m is considered conservative as the higher the hub height assumed the higher the wind speed and the further the shift of the wind speed data over to the right of the wind speed axis. This has the overall effect of lowering limits over the wind speed range necessary to be assessed in accordance with ETSU-R-97.

11.2.55 Wind speed/ direction and rainfall data were collected over the same time scale and averaged over the same 10-minute periods as the noise data, to allow analysis of the measured background noise as a function of wind speed and wind direction. All data analysis was undertaken in accordance with ETSU-R-97 and the IOA GPG.

Table 11.2: Summary of Noise Monitoring Locations (NMLs)			
Receptor	**Easting**	**Northing**	**Elevation (m AOD)**
NML1 - Tighnaird	341569	836310	300
NML2 - Lynebain	341255	835330	255
NML3 - Belcherrie	340076	834061	300
NML4 - Easterton	339541	833034	308
NML5 - Rhinturk	336625	832908	368

11.2.56 In order to inform the BS 4142 assessment of the BESS, the baseline data recorded for the ETSU-R-97 assessment was filtered to only consider periods where windspeeds were low and no rainfall events were occurring.

Criteria for the Assessment of Effects

Criteria for Assessing Sensitivity of Receptors

11.2.57 For the purposes of this assessment, residential properties are considered to be noise sensitive receptors and all are considered to be of high sensitivity.

Criteria for Assessing Magnitude of Change - Construction Noise

11.2.58 BS5228-1:2009+A1:2014, Appendix E Part E.3.2 provides example thresholds of potential significant effect at dwellings when assessing the significance of construction noise effects and examples of acceptable threshold values for construction noise. For the purposes of this assessment, having due regard to the existing ambient noise levels measured during background noise monitoring for the operational noise survey around the Proposed Development, the Category A noise threshold values are applicable for all properties. This category has been utilised to assess the significance of the construction effects during each of the key construction phases.

Criteria for Assessing Magnitude of Change - Operational Noise

11.2.59 Planning Advice Note PAN 1/2011 'Planning and Noise' provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise. PAN 1/2011 refers to the web based planning advice on renewable technologies for Onshore Wind Turbines which states that ETSU-R-97 should be used to assess and rate noise from wind energy developments. ETSU-R-97 does not define a significance criteria or a framework to consider magnitude of effects but describes a framework for the measurement of wind farm noise and gives indicative noise levels considered to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on the development. Achievement of ETSU-R-97 derived noise limits ensures that wind turbine noise will comply with current Government guidance.

Criteria for Assessing Magnitude of Change - BESS Noise

11.2.60 The Technical Advice Note (TAN) associated with PAN1/2011 presents an example method of assigning a Magnitude of Impact for a BS 4142 assessment based on the change in noise level. It suggests that that a change in $L_{Aeq(t)}$ of up to 1 dB is negligible, between 1 dB and 3 dB is minor, between 3 dB and 5 dB is moderate and a change of above 5 dB is Major. It should be noted, however, that the TAN also states at 3.27 that the example provided may not be adequate on its own and that additional context is required to be considered. This is

in line with the BS 4142 assessment principal, which requires context to be considered rather than simply making an assessment against absolute values.

Criteria for Assessing Significance

Criteria for Assessing Significance – Construction Noise

11.2.61 The significance criteria adopted for this assessment are based on Appendix E part E.3.2 of BS5228-1:2009+A1:2014 as detailed in Section 2.3 of the Construction Noise Report (Technical Appendix 11.1: Construction Noise Report).

11.2.62 The criteria for determining the significance of construction noise effects, which use a noise metric of $L_{Aeq,T}$, are provided in Table 11.3: Construction Noise Significance Criteria. The L_{Aeq} is the A-weighted, equivalent continuous sound level in decibels measured over a stated period of time, ($L_{Aeq,T}$) where T is the length of the assessment period (Time).

Table 11.3: Construction Noise Significance Criteria

Significance of Effect	Significance Level	
	Not Significant	Significant
Category A Daytime (07:00 to 19:00) and Saturdays (07:00 to 13:00)	≤65 dB $L_{Aeq,\ T}$	>65 dB $L_{Aeq,\ T}$
Category A Evenings and Weekends (19:00 to 23:00)	<55 dB $L_{Aeq,\ T}$	>55 dB $L_{Aeq,\ T}$
Category A Night-Time (23:00 to 07:00)	<45 dB $L_{Aeq,\ T}$	>45 dB $L_{Aeq,\ T}$

Criteria for Assessing Significance – Operational Noise

11.2.63 Planning Advice Note PAN 1/2011 'Planning and Noise' provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise. PAN 1/2011 refers to the web-based planning advice on renewable technologies for Onshore Wind Turbines, which states that ETSU-R-97 should be used to assess and rate noise from wind energy developments. ETSU-R-97 does not define significance criteria, but describes a framework for the measurement of wind farm noise and gives indicative noise levels considered to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development. Achievement of ETSU-R-97 derived noise limits ensures that wind turbine noise will comply with current Government guidance.

11.2.64 In terms of the EIA Regulations, the use of the term "significance" in this EIAR, in relation to operational noise refers to compliance/ non-compliance with the ETSU-R-97 derived noise limits. For situations where predicted wind turbine noise meets or is less than the noise limits defined in ETSU-R-97, then the noise effects are deemed not significant. Any breach of the ETSU-R-97 derived noise limits due to the Proposed Development is deemed to result in a significant effect.

Criteria for Assessing Significance – BESS Noise

11.2.65 With due consideration to the level of sensitivity of the receptor (high), and the Significance of Effects descriptors detailed in the TAN, the level of significance is assessed as follows:

- A Major magnitude of impact is classed as a Large/ Very Large Significance of Effect
- A Moderate magnitude of impact is classed as a Moderate/ Large Significance of Effect
- A Minor magnitude of impact is classed as a Slight/ Moderate Significance of Effect

- A Negligible magnitude of impact is classed as a Slight Significance of Effect

Limitations and Assumptions

11.2.66 It has been assumed that the noise data collected during the background noise survey are representative of the typical baseline noise levels at the nearest noise sensitive receptors; the guidance in ETSU-R-97 and the IOA GPG has been followed by suitably experienced Acoustic Consultants to ensure that the data collected is as representative as possible.

11.2.67 A candidate wind turbine has been used for predictions of operational noise from the Proposed Development, whilst the final make and model of wind turbine to be used may differ from that presented in this assessment, operational noise levels would have to comply with the noise limits imposed by the Scottish Government, informed by this noise assessment.

11.2.68 As detailed previously, initially there was a software issue with the noise equipment installed at NMLs 1 and 3 to 5 during the first month of monitoring which resulted in only one weeks' worth of data being collected at those locations. The issue was rectified during the Site visit and a full dataset was collected at each location during the second month of the survey. Permission to monitor at Wester or Easter Braetown could not be obtained therefore it was initially agreed with MC's EHO that the data collected at NML4 Easterton could be used to set noise limits at those locations as it was deemed to be representative of Easter and Wester Braetown, however following a review of the datasets collected, the background data collected at NML1 Tighnaird (which is located closer to the two properties) was found to be slightly quieter and therefore that dataset was used as a proxy for Wester and Easter Braetown as it was deemed to be more conservative. The data collected at the monitoring locations was compliant with the requirements of the IOA GPG.

11.2.69 No other assumptions or data gaps have been identified.

11.3 Baseline Conditions

Current Baseline

11.3.1 The Proposed Development is located within a rural location where existing background noise levels at the noise sensitive receptors are generally considered to be low. The predominant noise sources in the area are wind induced noise (wind passing through vegetation and around buildings), local watercourses, farm animals and birdsong. At some receptors the soundscape is affected by some road traffic noise.

11.3.2 Tables 11.4 and 11.5 provide a summary of the background noise levels measured during the monitoring period during the ETSU-R-97 quiet daytime and night-time periods.

Table 11.4: Summary of Prevailing Background Noise Levels during Quiet Daytime Periods (dB(A))

Noise Monitoring Location	Wind Speed (ms^{-1}) as Standardised to 10 m Height											
	1	2	3	4	5	6	7	8	9	10	11	12
NML1 - Tighnaird	21.0	22.6	23.7	24.7	25.6	26.9	28.6	31.0	34.4	39.0	39.0 *	39.0 *
NML2 - Lynebain	28.1	28.1	28.1	28.3	28.8	29.5	30.4	31.5	32.7	34.1	35.7	37.3
NML3 - Belcherrie	27.6	27.9	28.1	28.4	28.8	29.6	30.8	32.7	35.3	38.8	38.8 *	38.8 *

Table 11.4: Summary of Prevailing Background Noise Levels during Quiet Daytime Periods (dB(A))

Noise Monitoring Location	Wind Speed (ms^{-1}) as Standardised to 10 m Height											
	1	2	3	4	5	6	7	8	9	10	11	12
NML4 - Easterton	30.4	30.4	30.4	30.4	30.4	30.8	31.6	32.9	34.8	37.4	37.4 *	37.4 *
NML5 - Rhinturk	25.0	25.0	25.9	27.4	29.3	31.3	33.1	34.5	35.1	35.1 *	35.1 *	35.1 *

**flatlined where derived minimum occurs at lower wind speeds and derived maximum occurs at higher wind speeds, see Section 5.8.4 of Technical Appendix 11.2.*

Table 11.5: Summary of Prevailing Background Noise Levels during Night-Time Periods (dB(A))

Noise Monitoring Location	Wind Speed (ms^{-1}) as Standardised to 10 m height											
	1	2	3	4	5	6	7	8	9	10	11	12
NML1 - Tighnaird	21.1	22.8	23.7	24.1	24.5	25.1	26.5	29	32.8	38.5	38.5 *	38.5 *
NML2 - Lynebain	28.9	29.2	29.4	29.5	29.5	29.7	30.0	30.7	31.7	33.3	35.4	38.3
NML3 - Belcherrie	28.6	29.3	29.3	29.0	28.6	28.7	29.6	31.7	35.3	40.8	48.7	48.7 *
NML4 - Easterton	30.5	30.5	30.5	30.5	30.5	30.5	30.6	31.2	32.3	34.1	36.8	36.8 *
NML5 - Rhinturk	25.3	25.3	25.3	25.4	25.7	26.4	27.6	29.4	31.8	31.8 *	31.8 *	31.8 *

**flatlined where derived minimum occurs at lower wind speeds and derived maximum occurs at higher wind speeds, see Section 5.8.4 of Technical Appendix 11.2.*

11.3.3 Background noise data recorded during periods of rainfall (including the preceding 10-minute period in line with IOA GPG) have been excluded from the dataset, as well as data following periods of heavy rainfall. Further information of the data recorded during the noise survey can be found in Section 5 of the Operational Noise Report (Technical Appendix 11.2). Although the operational wind farms in the area were not audible at any of the monitoring locations during the site visits, directional filtering has been undertaken to ensure operational wind turbine noise did not have an influence on the measured background noise levels (as per recommendations in Section 5.2 of the IOA GPG).

11.4 Future Baseline

11.4.1 It is possible that noise propagation and resulting noise immission levels could change over the life of the project due to climate change (as noise attenuation is influenced by air temperature, relative humidity and ground conditions). However, noise limits would be set for the lifetime of the project and the operator would be required to meet them for the duration of the consent. If climate change resulted in the exceedance of limits, turbine noise could be reduced through mode management measures. There are no other known current or predicted future processes (other than the Proposed Development) that are likely to change the baseline conditions.

Summary of Sensitive Receptors

Scoped Out Receptors

11.4.2 During the initial search to identify the closest receptors a number of buildings which appeared to be derelict, abandoned or uninhabitable were identified. As part of site survey work, some of these buildings were photographed and together with aerial photography, the photographs were used to try to determine the buildings' status. The identified buildings were located within both MC and AC boundaries. Consultation was undertaken with both Councils and MC agreed that the identified buildings within MC were derelict or abandoned (namely Newton of Glenmarkie, Glenmarkie and Greens of Glenbeg) and that they did not need to be considered as noise sensitive receptors. AC agreed with the exclusion of one building (Timberford) but requested that the other buildings (Chapel Hill and two unnamed buildings) be considered as noise sensitive receptors unless further evidence on their status could be provided. Chapel Hill and the two unnamed buildings appear to be abandoned but it has not been possible to ascertain the owner's intentions for the buildings, therefore for the purposes of the assessment they have been included as noise sensitive receptors. They are a shown as NAL 18 to 20 on Figure 11.2. A copy of the consultation letters and subsequent responses can be found in Annex 2 of Technical Appendix 11.2: Operational Noise Report.

Scoped In Receptors

11.4.3 The receptors considered as Noise Assessment Locations within the noise assessment are summarised in Tables 11.6 and 11.7 below.

11.5 Assessment of Likely Effects

Construction Noise

11.5.1 The Construction Noise Assessment Locations (CNAL) are summarised in Table 11.6: Summary of Construction Noise Assessment Locations below and are shown on Figure 11.1: Construction Noise Assessment Locations.

Table 11.6: Summary of Construction Noise Assessment Locations

CNAL	Easting	Northing
CNAL01 Backside	341064	836153
CNAL02 Mill of Lynebain	341194	835296
CNAL03 Belcherrie	340033	834094
CNAL04 Greenloan	339849	833907
CNAL05 Succoth	339606	833351
CNAL06 Easterton	339516	833044
CNAL07 Ardleuie	337448	832304
CNAL08 Rhinturk	336639	832954
CNAL09 Ballochford	335986	833709
CNAL10 Building SE of Greens of Glenbeg	340416	837360
CNAL11 Building NW of Chapel Hill	340620	837170

Table 11.6: Summary of Construction Noise Assessment Locations		
CNAL	**Easting**	**Northing**
CNAL12 Chapel Hill	340770	836922

Operational Noise

11.5.2 A total of 20 NSRs were chosen as representative NALs. The NALs chosen were generally the closest receptors to the Proposed Development and other wind farm developments. The NALs were selected as they provided the worst case predictions within each area when considering predictions from the Proposed Development alone and also cumulative predictions.

11.5.3 The NALs refer to the position in the curtilage of a property. Predictions of wind turbine noise have been made at each of the NALs as detailed in Table 11.7: Summary of Operational Noise Assessment Locations and shown on Figure 11.2: Operational Noise Monitoring and Assessment Locations. This approach ensures that the assessment considers the worst case (loudest) noise immission level expected at the NSR. Table 11.7 also details which NML has been used to set noise limits for each NAL.

Table 11.7: Summary of Operational Noise Assessment Locations					
Receptor	**Easting**	**Northing**	**Elevation (mAOD)**	**Approximate Distance to Nearest Craig Watch Turbine* (m)**	**Background Noise Data Used**
NAL1 – Wester Braetown	339430	838844	285	2,514 (T11)	NML1
NAL2 – Easter Braetown	339670	838996	292	2,644 (T11)	NML1
NAL3 – Backside	341064	836153	295	1,300 (T11)	NML1
NAL4 – Tighnaird	341552	836317	300	1,773 (T11)	NML1
NAL5 – Mill of Lynebain	341194	835296	256	1,730 (T9)	NML2
NAL6 – Belcherrie	340033	834094	300	1,347 (T7)	NML3
NAL7 – Greenloan	339849	833907	293	1,323 (T5)	NML3
NAL8 – Succoth	339606	833351	302	1,560 (T5)	NML4
NAL9 – Easterton	339516	833044	308	1,786 (T5)	NML4
NAL10 – Oldtown of Corinacy	339704	832100	276	2,617 (T2)	NML4
NAL11 – Milltown	338476	831436	268	2,669 (T2)	NML4
NAL12 – Ardlewie	337448	832304	320	1,826 (T2)	NML5
NAL13 – Rhinturk	336639	832954	368	1,723 (T2)	NML5
NAL14 – Ballochford	335986	833709	344	1,826 (T1)	NML5
NAL15 – Bridgehaugh	334047	835691	249	3,800 (T1)	NML5
NAL16 – Parkhead Steading	334727	837387	285	4,125 (T1)	NML1
NAL17 – Earnfold	336407	839244	238	4,325 (T10)	NML1
NAL18 – Building SE of Greens of Glenbeg**	340416	837360	296	1,190 (T11)	NML1
NAL19 – Chapel Hill**	340770	836922	311	1,142 (T11)	NML1

Table 11.7: Summary of Operational Noise Assessment Locations					
Receptor	**Easting**	**Northing**	**Elevation (mAOD)**	**Approximate Distance to Nearest Craig Watch Turbine* (m)**	**Background Noise Data Used**
NAL20 – Building NW of Chapel Hill**	340620	837170	310	1,171 (T11)	NML1
*Please note the distances to nearest turbines quoted above may differ from those reported elsewhere in the EIAR. Distances for the noise assessment are taken from the nearest turbine to the closest edge of the amenity area (usually the garden). **Please note these buildings are unoccupied and appear abandoned but their status could not be confirmed therefore they have been included as noise sensitive receptors for completeness.					

BESS Noise

11.5.4 Only one sensitive receptor is located within the study area of the BESS. The BESS Noise Assessment Location (BNAL) is summarised in Table 11.8: Summary of Battery Energy Storage System Noise Assessment Locations below and are shown on Figure 11.4: BESS Noise Assessment Study Area.

Table 11.8: Summary of Battery Energy Storage System Noise Assessment Location		
BNAL	**Easting**	**Northing**
BNAL1 - Rhinturk	336663	832981

Potential Construction Noise Effects

11.5.5 The construction noise impact results show that the predicted construction noise levels are below the Category A Threshold Levels as detailed in Table 11.3: Construction Noise Significance Criteria above at all CNALs for all assessment scenarios therefore there would be **no significant effects**. Full details of the modelling and assessment can be found in Technical Appendix 11.1: Construction Noise Report.

Potential Operational Noise Effects

Setting the Total ETSU-R-97 Noise Limits (Stage 1)

11.5.6 Based on the prevailing background noise levels, the Total ETSU-R-97 Noise Limits have been established for each of the NALs detailed in Table 11.7: Summary of Operational Noise Assessment Locations above. The Total ETSU-R-97 Noise Limits are as detailed in Table 6.3 and Table 6.4 of Technical Appendix 11.2: Operational Noise Report and have been based on an upper fixed minimum of 40 dB (daytime) or background plus 5 dB and 43 dB (night-time) or background plus 5 dB.

11.5.7 The prevailing background noise levels are detailed in Tables 11.4: Summary of Prevailing Background Noise Levels during Quiet Daytime Periods (dB(A)) and 11.5: Summary of Prevailing Background Noise Levels during Night-Time Periods (dB(A)) above and are shown on Figures A1.2a-A1.2e included in Annex 1 of Technical Appendix 11.2: Operational Noise Report.

Predicting the Likely Effects and the Requirement for a Cumulative Noise Assessment (Stage 2)

11.5.8 A likely cumulative noise assessment was undertaken at the 20 NALs detailed in Table 11.7: Summary of Operational Noise Assessment Locations above. The results of the cumulative

assessment are shown in Technical Appendix 11.2: Operational Noise Report, Tables 6.5 and 6.6. The tables detail the Total ETSU-R-97 Noise Limits and predicted likely cumulative wind turbine noise levels for ETSU-R-97 daytime hours and ETSU-R-97 night-time hours. The result of the likely cumulative noise assessment show that the Proposed Development can operate concurrently with the operational, consented or proposed wind farms near to the NALs, whilst still meeting the Total ETSU-R-97 Noise limits established in accordance with ETSU-R-97 at all NALs. There would be **no significant effects**.

Operational Phase - Derivation of Site Specific Noise Limits for the Development (Stage 3)

11.5.9 As summarised in Table 6.7 of in Technical Appendix 11.2: Operational Noise Report, for six NALs, operational noise from the other schemes would be at least 10 dB below the Total ETSU-R-97 Noise Limits established for the Proposed Development. At the receptors where cumulative wind turbine predictions for all other schemes is at least 10 dB below the Total ETSU-R-97 limits it would be appropriate to allocate the entire noise limit to the Proposed Development. This is appropriate as in such circumstances the other wind farms would use a negligible proportion of the Total ETSU-R-97 Noise Limit. As summarised in Table 6.7 of in Technical Appendix 11.2: Operational Noise Report, this approach was adopted at NALs 4, 5, 11 and 15 to 17.

11.5.10 For the other receptors, limit apportionment was required. Limit apportionment is a process whereby the Total ETSU-R-97 Limit is split with a portion allocated to the existing schemes and the remainder allocated to the Proposed Development. Where apportionment was required, cautious predicted noise levels were subtracted from the Total ETSU-R-97 Noise Limit to determine the 'residual limit' available for the Proposed Development.

11.5.11 The daytime Site Specific Noise Limits have been derived based on the lesser of:

- The residual limit; and
- The lower daytime fixed minimum noise limits (35 dB) or the background noise level plus 5 dB (whichever is greater).

11.5.12 As summarised in Table 6.7 of in Technical Appendix 11.2: Operational Noise Report (Volume 4), this approach was adopted at NALs 1 to 3, 6, 7 to 10, 12 to 14 and 18 to 20.

11.5.13 The Proposed Development's Site Specific Noise Limits were compared to the predictions of the Proposed Development operating on its own and the results are summarised in Technical Appendix 11.2: Operational Noise Report, Table 6.8 for the daytime and Table 6.9 for the night-time. The tables also show the exceedance level which is the difference between the predicted wind turbine noise level and the Site Specific Noise Limit at a given wind speed. A negative exceedance level indicates satisfaction of the noise limit. The Site Specific Noise Limits and predictions are also shown on Figures A1.4a – 4t in Technical Appendix 11.2: Operational Noise Report.

11.5.14 The assessment shows that the predicted wind turbine noise immission levels meet the Site Specific Noise Limits under all conditions and at all locations for both daytime and night-time periods at NALs 1 to 5 and 8 to 20 and there would be **no significant effects**.

11.5.15 At NALs 6 and 7, a minor exceedance (0.5 dB) of the Site Specific Noise Limit was predicted at a wind speed of 6 ms^{-1} when the turbines are modelled operating in full mode. At that windspeed, this would result in a **significant effect** for certain wind directions when the NALs are downwind of the wind turbines.

11.5.16 With regards to the BESS, the predicted BS 4142 Rating Level, dB $L_{Aeq(10mins)}$ is 1 dB above the background sound level for both daytime and night-time periods at one receptor

(Rhinturk), which BS 4142 concludes is below the indicator of an adverse noise impact, depending on the context.

11.5.17 The increase in L_{Aeq} noise level at this location will be less than 1 dB, therefore, the Magnitude of Impact is classed as negligible, and the **significance of effects is slight**.

11.5.18 At all other NSRs there would be no increase in noise level from the BESS and there would be **no significant effects**.

Potential Cumulative Effects

11.5.19 The predicted construction noise levels at all NSRs are significantly below the threshold levels (by at least 10 dB) such that any contribution from the Proposed Development would not increase the received noise levels attributable to other nearby construction activities above the threshold levels at any NSR. Accordingly, there would be **no significant cumulative construction noise effects.**

11.5.20 The result of the likely cumulative operational noise assessment show that the Proposed Development can operate concurrently with the operational, consented or proposed wind farms near to the NALs, whilst still meeting the Total ETSU-R-97 Noise limits established in accordance with ETSU-R-97 at all NALs. There would be **no significant cumulative operational noise effects.**

11.5.21 There are no other known developments or similar noise sources that might increase ambient sound levels at locations influenced by the BESS. Although a substation would be developed within the same compound as the BESS, noise level output from this is expected to be extremely low and would not contribute to overall noise output.

11.6 Mitigation

Mitigation during Construction

11.6.1 No significant effects resulting from construction noise are predicted. Nevertheless, a range of good practice measures would be detailed in the Construction Environmental Management Plan (CEMP) and employed to minimise noise impacts. At this stage of the development process, the assessment is based on a worst-case scenario, as a detailed construction programme is not available. An Outline CEMP is presented in Technical Appendix 2.1

11.6.2 Good site practices would be implemented to minimise the likely effects. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that would be employed on-site:

- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- Ensure that any extraordinary site work continuing throughout 24 hours of a day (for example, crane operations lifting components onto the tower) would be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid significant traffic flows;
- Ensure all vehicles and mechanical plant would be fitted with effective exhaust silencers and be subject to programmed maintenance;
- Select inherently quiet plant where appropriate - all major compressors would be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use;

- Ensure all ancillary pneumatic percussive tools would be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Instruct that machines would be shut down between work periods or throttled down to a minimum;
- Regularly maintain all equipment used on-site, including maintenance related to noise emissions;
- Vehicles would be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and
- Ensure all ancillary plant such as generators and pumps would be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures should be provided.

11.6.3 Should blasting be required, a series of tests would be undertaken by the appointed contractor in accordance with guidance outlined in BS5228-2:2009+A1:2014[14]. In addition blasts would be designed through appropriate specification of Maximum Instantaneous Charge (MIC) to ensure that vibration levels at the nearest NSRs would not exceed the guideline limits presented in BS 7385-2: 1993 'The Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration'[15] and BS 6472-2: 2008 'Guide to evaluation of human exposure to vibration in buildings. Blast-induced vibration'[16]. A condition should be attached to the consent to require compliance with these limits should blasting be undertaken.

Mitigation during Operation

11.6.4 The exact make and model of wind turbine to be used at the Proposed Development would be the result of a future tendering process. Achievement of the noise limits determined by this assessment would be a key determining factor in the final choice of wind turbines for the Site. In order to present a conservative assessment of noise immissions, predictions of wind turbine noise have been based upon sound power level data for the loudest wind turbine (the Siemens Gamesa SG6.6-155 6.6 MW with standard blades) currently being considered for the Site, and a noise prediction model procedure that can be considered to provide a realistic impact assessment. The assessment shows a marginal exceedance of the derived noise limits for a limited range of wind speeds (6 ms^{-1}) and wind directions at NALs 6 and 7 and as a result, the assessment presented here assumes a targeted use of mode management for a limited range of wind speeds and directions for daytime periods to demonstrate that the noise limits can be adhered to. Depending on the final turbine selected for the Site, blade type (this assessment models a standard blade) and confirmation of final warranted levels from the chosen manufacturer, mode management may or may not be required. It is anticipated that noise limits would be secured by an appropriately worded planning conditions.

11.6.5 No specific mitigation measures are proposed for the BESS.

[14] British Standard BS5228-2: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' – Part 2: Vibration

[15] British Standard BS7385-2: 1993 'The Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration'

[16] British Standard BS6472: 2008 'Guide to evaluation of human exposure to vibration in buildings. Blast-induced vibration'

11.7 Assessment of Residual Effects

Residual Construction Effects

11.7.1 Predicted wind farm construction noise levels are below the assessment criteria at all receptors, for all phases of construction. Due to the low background noise levels at some locations, elements of construction noise may be audible at the closest residential receptor for certain periods during the construction phases. There would be **no significant residual effects**, nevertheless good practice construction mitigation measures would be adopted which would further reduce noise emissions.

Residual Operational Effects

11.7.2 Predicted wind farm operational noise levels made for a candidate wind turbine and including implementation of mode management at windspeeds at 6 ms^{-1} lie below the Site Specific daytime and night-time Noise Limits at all the NALs. In addition, the cumulative noise predictions from the Proposed Development and other operational, consented and proposed wind farms lie below the Total ETSU-R-97 Noise Limits. Therefore, it is considered that there would be **no significant residual effects.**

11.7.3 At some locations, under some wind conditions and for a certain proportion of the time operational wind farm noise would be audible; however, it would be at an acceptable level in relation to the ETSU-R-97 guidelines and there would be **no significant residual effects**.

11.7.4 At one location, noise levels from the BESS may increase the ambient sound level by a small amount during periods of low wind speeds but this would be barely perceptible. At all other locations there will be no contribution from the BESS to the existing noise levels. There would be **no significant residual effects.**

Residual Cumulative Effects

11.7.5 The predicted construction noise levels at all NSRs are significantly below the threshold levels (by at least 10 dB) such that any contribution from the Proposed Development would not increase the received noise levels attributable to other nearby construction activities above the threshold levels at any NSR. Accordingly, there would be **no significant residual construction noise effects**.

11.7.6 Predicted cumulative wind farm operational noise levels at all the NALs lie below the Total ETSU-R-97 daytime and night-time Noise Limits. There would be **no significant residual operational noise effects.**

11.7.7 Noise levels from the BESS would only contribute to the ambient sound levels at one receptor. At this location, no other similar noise sources or proposed developments are anticipated. Accordingly, there would be **no significant residual noise effects**.

11.8 Monitoring

Construction Phase Monitoring

11.8.1 No monitoring would be required during the construction phase.

Operation Phase Monitoring

11.8.2 No monitoring would be required during the operational phase.

11.9 Summary

11.9.1 Predicted construction noise levels compared with the Category A criteria outlined in Section E.3 of BS5228: Part 1 2009+A1:2014 indicate that construction noise levels are within the guidelines considered acceptable at all receptors for all construction phases and therefore no significant effects are anticipated.

11.9.2 The guidance contained within ETSU-R-97 was used to assess the likely operational noise impact of the Proposed Development. Predicted levels and measured background noise levels indicate that for dwellings neighbouring the Site, wind turbine noise would meet the noise criteria established in accordance with ETSU-R-97, therefore the operational noise impact is not significant.

11.9.3 There are a range of wind turbine models that may be appropriate for the Proposed Development. If the proposal receives consent, further data would be obtained from the supplier for the final choice of wind turbine make and model to demonstrate compliance with the operational noise limits derived in this report.

Table 11.9: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Potential construction noise effects on noise sensitive receptors	No specific measures required other than standard good site practices.	These would be included in the detailed CEMP and delivered as a condition of consent.	Not Significant
Operation			
Potential operational noise effects on noise sensitive receptors (NAL 1 to 5, 8 to 20)	No specific measures required.	N/A	Not Significant
Potential operational noise effects on noise sensitive receptors (NAL 6 to 7)	Mode management for certain wind speeds and wind directions. Consideration of an alternative turbine or a turbine with a serrated trailing edge blade could eliminate the requirement for mode management.	Turbine control system	Not Significant
Decommissioning			
Potential decommissioning noise effects on noise sensitive receptors	No specific measures required other than standard good site practices which would be applicable at the time.	N/A	Not Significant
BESS			
Potential operational noise effects on noise sensitive receptors	No specific measures required.	N/A	Not Significant
Potential cumulative operational noise effects on noise sensitive receptors	No specific measures required.	N/A	Not Significant

Table 11.9: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Cumulative Construction			
Potential cumulative construction noise effects on noise sensitive receptors	No specific measures required.	N/A	Not Significant
Cumulative Operation			
Potential cumulative operational noise effects on noise sensitive receptors	No specific measures required.	N/A	Not Significant

12 Aviation and Telecommunications

12.1 Introduction

12.1.1 This chapter considers the likely significant effects on aviation and telecommunication receptors associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the aviation and telecommunications baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

12.1.2 This chapter is supported by Technical Appendix 12.1: Consultation with the Civil Aviation Authority. This is regarding the request for a reduced lighting scheme.

12.1.3 The assessment has been carried out by Malcolm Spaven, Director of Aviatica, a specialist consultancy with 25 years' experience of providing aviation and telecommunications advice to the wind energy industry (refer to Technical Appendix 1.2).

12.2 Assessment Methodology and Significance Criteria

Scope of Assessment

12.2.1 This chapter considers effects on:

- primary surveillance radars used for air traffic control, air defence and weather forecasting;
- aeronautical radio navigation aids;
- defence facilities;
- obstacle hazards to civil and military aircraft flying at low level; and
- fixed telecommunications links.

12.2.2 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative wind farm developments, which are the subject of a valid planning application. Operational developments and developments under construction are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

12.2.3 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

12.2.4 The scope of the assessment has been informed by consultation responses summarised in Table 12.1 and the following guidelines/ policies:

- Civil Aviation Authority (CAA), Safety Regulation Group, CAP 764: CAA Policy and Guidelines on Wind Turbines[1];

[1] Civil Aviation Authority (2016). Safety Regulation Group, CAP 764: CAA Policy and Guidelines on Wind Turbines. Online. Available at: CAP764 Issue6 FINAL Feb.pdf (caa.co.uk) [accessed 15/02/2022]

- CAA, Safety Regulation Group, CAP 670: Air Traffic Services Safety Requirements, Third Issue, Amendment 1/2019, 1 June 2019, Part B, Section 4[2];
- Scottish Government, Planning Circular 2/2003: Safeguarding of Aerodromes, Technical Sites and Military Explosive Storage Areas: The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosive Storage Areas) (Scotland) Direction 2003 (revised edition March 2016)[3];
- CAA, Safety & Airspace Regulation Group, Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150 m above ground level (agl), 1 June 2017[4]; and
- D F Bacon, 'A proposed method for establishing an exclusion zone around a terrestrial fixed radio link outside of which a wind turbine will cause negligible degradation of the radio link performance', Version 1.1, 28 October 2002[5].

Consultation

12.2.5 Table 12.1 summarises the consultation responses received regarding aviation and telecommunications and provides information on where and/ or how they have been addressed in this assessment.

12.2.6 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 12.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
Atkins, 6 November 2020	Pre-Scoping	The above application has now been examined in relation to UHF Radio Scanning Telemetry communications used by our Client in that region and we are happy to inform you that we have NO OBJECTION to your proposal.	No further action required.
Ofcom, 11 November 2020	Pre-Scoping	The Ofcom Spectrum Information Portal identifies two fixed telecommunications links within 3 km of the Site. These are Airwave microwave links running from Ardwell, south of the Site, to Succoth, then north to Glass.	This information has been included within the chapter.
Joint Radio Company (JRC), 16 December 2020	Scoping	In the case of this proposed wind energy development, JRC does not foresee any potential problems based on known interference scenarios and the data you have provided.	No further action required.

[2] Civil Aviation Authority (2019). CAP 670: Air Traffic Services Safety Requirements, Third Issue, Amendment 1/2019. Online. Available at: https://publicapps.caa.co.uk/docs/33/CAP670%20Issue3%20Am%201%202019(p).pdf

[3] Scottish Government (2016). Planning Circular 2/2003: Safeguarding of Aerodromes, Technical Sites and Military Explosive Storage Areas: The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosive Storage Areas) (Scotland) Direction 2003, Revision 1.0. Online. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2016/03/planning-circular-2-2003-scottish-planning-series-town-country-planning-0755923111/documents/00498308-pdf/00498308-pdf/govscot%3Adocument/00498308.pdf

[4] CAA, Safety & Airspace Regulation Group (2017). Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150 m above ground level. Online. Available at: https://publicapps.caa.co.uk/docs/33/DAP01062017_LightingWindTurbinesOnshoreAbove150mAGL.pdf

[5] D. Bacon (2002). A proposed method for establishing an exclusion zone around a terrestrial fixed radio link outside of which a wind turbine will cause negligible degradation of the radio link performance. Ofcom. Online. Available at: http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/fixed/Windfarms/windfarmdavidbacon.pdf

Table 12.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
NATS En Route plc (NERL), 17 December 2020	Scoping	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 further action required.
BT, 4 January 2021	Scoping	The Proposed Development indicated should not cause interference to BT's current and presently planned radio network.	No further action required.
Aberdeenshire Council, 22 January 2021	Scoping	It is reminded that aviation lighting of 2000cd and a lower 200cd should be shown within the visualisations of the development.	Please refer to Chapter 5: Landscape and Visual Impact Assessment
Defence Infrastructure Organisation, 14 February 2022	Pre-planning (Design Freeze)	The turbines will be 73.9 km from and detectable by the AD radar at Buchan. Wind turbines have been shown to have detrimental effects on the operation of radar. These include the desensitisation of radar in the vicinity and an increase in false alarm rate and a reduced probability of detection Excessive turbine proliferation within a specific locality can result in an unacceptable degradation of the radar's operational integrity. The Proposed Development will occupy Low Flying Area 14 within which military fixed wing aircraft are permitted to fly down to 250 feet (76.2 metres) above terrain features. The Proposed Development will cause a potential obstruction hazard to these military low flying training activities. To address this impact, it would be necessary for the development be fitted with MoD accredited aviation safety lighting in accordance with the Civil Aviation Authority, Air Navigation Order 2016.	The effects of the Proposed Development on the Buchan radar and military low flying are assessed in this Chapter. A lighting scheme comprising reduced visible lighting and infra-red lighting to meet MoD requirements has been submitted to the CAA (see Technical Appendix 12.1) and MoD for approval.
Civil Aviation Authority (CAA), 28 May 2022	Pre-planning	The CAA agrees a variation to the lighting requirements specified in the ANO Article for the Craig Watch Wind Farm, under provisions given in the Air Navigation Order (ANO) Article 222 section 6, as per the following: ▪ medium intensity steady red (2000 candela) lights on the nacelles of turbines T01, T02, T04, T05, T08, T09 and T11; ▪ a second 2000 candela light on the nacelles of the above turbines to act as alternates in the event of a failure of the main light; ▪ the lights on these turbines to be capable of being dimmed to 10% of peak intensity when the lowest visibility as measured at suitable points around the wind farm by visibility measuring devices exceeds 5km; ▪ infra-red lights to MoD specification installed on the nacelles of turbines T01, T02, T03, T04, T05, T06, T07, T08, T09, T10, T11. Intermediate level 32 candela lights are not required to be fitted on the turbine towers. We note the proposed intent to install an aircraft detection lighting system (ADLS) to the Craig Watch Wind Farm and we would be pleased to receive any detailed proposal for its use.	No further action required.

Method of Baseline Characterisation

Extent of the Study Area

12.2.7 The study areas for the aviation assessment were selected using the recommended distances set out in CAA guidance (CAP 764), modified to ensure that all radars with the range to detect wind turbines are included. The distances used are radii from the centre of the Site, as follows:.

- 150 km for air traffic control and air defence primary surveillance radars;
- 30 km for Meteorological Office rainfall radars;
- 20 km for secondary surveillance radars and aeronautical radio navigation aids;
- 30 km for licensed, certificated and Government aerodromes;
- 10 km for unlicensed aerodromes, airstrips and gliding sites.

12.2.8 The determination of the aviation baseline has also been informed by consultation responses from aviation stakeholders.

12.2.9 The study area for the telecommunications assessment was a 5 km radius around the Site. This was selected in order to capture all fixed telecommunications links with the potential to be affected by turbines on the Site.

Desk Study

12.2.10 The aviation baseline assessment was carried out by consulting the UK Aeronautical Information Publication, the UK Military Aeronautical Information Publication, civil and military aeronautical charts and Aviatica in-house databases of aviation infrastructure and assets.

12.2.11 The telecommunications baseline assessment was carried out by accessing the Ofcom Spectrum Information Portal; carrying out a map search for licensed telecommunications links in the vicinity of the Site; searching the Ofcom Wireless Telegraphy Register by OS grid reference; and consulting telecommunications operators.

Potential Effects Scoped Out

12.2.12 There are no Meteorological Office radars; secondary surveillance radars; aeronautical radio navigation aids; licensed, certificated and Government aerodromes; or unlicensed aerodromes, airstrips and gliding sites within the Study Area. Consequently, all of those aviation facilities have been scoped out of further assessment.

Criteria for the Assessment of Effects

12.2.13 Significance criteria for assessment of impacts on aviation and telecommunications, unlike those for environmental effects, are not based on the sensitivity of the receptor. Further, while magnitude of change can be determined in some circumstances, it typically does not provide a standardised metric on which to measure the significance of any effects. In this context, the significance of effects on aviation and telecommunications has been determined in this chapter by application of professional judgement, underpinned by consideration of the magnitude of change (where measurable), the regulations and procedures in place for ensuring that aviation and telecommunications infrastructure meets required performance standards, the safeguarding policies and practices in use by specific aviation and telecommunications stakeholders, and the consultation responses from those stakeholders.

12.2.14 Residual adverse effects of the Proposed Development on aviation and telecommunications are described as either none, negligible, minor, moderate or major. None, negligible or minor effects are categorised as not significant. Moderate or major effects are categorised as

significant. The criteria applied to define each of the significance categories in this chapter are set out in Table 12.2.

Table 12.2: Significance Criteria

Significance of Effect	Description
Major	Regular, frequent or permanent effects which require changes to existing operational and/ or technical practice in order to mitigate adequately, or which are not capable of being mitigated adequately.
Moderate	Periodic effects experienced which may require alterations to existing operational practice.
Minor	Occasional effects experienced which do not require any alteration of existing operational and technical practice.
Negligible	Normally no measurable change from baseline conditions; occasional, fleeting or very short term effects experienced which do not require any alteration of existing operational and technical practice.
None	No measurable change from baseline conditions.

Limitations and Assumptions

12.2.15 The aviation and telecommunications baseline described in this chapter is extant as at January 2022. The assessment assumes that there will be no significant changes to this baseline over the lifetime of the Proposed Development. This is a standard assumption for such assessments and is not considered to undermine its validity.

12.3 Baseline Conditions

Current Baseline

12.3.1 The Proposed Development is located in uncontrolled airspace extending from ground level to Flight Level (FL) 195 (approximately 19,500 feet above sea level). Above that level is Class C controlled airspace under the control of the NATS En Route (NERL) Scottish Area Control Centre at Prestwick. The uncontrolled airspace between ground level and FL 195 over the Site may be used by any civil or military aircraft without clearance from or radio contact with any air traffic control agency. The users of this airspace include military aircraft, including traffic to and from RAF Lossiemouth; aircraft inbound to and outbound from Aberdeen Airport; gliders; and occasional light civil aircraft.

12.3.2 Gliders have special access arrangements to the controlled airspace between FL 195 and FL 270 (approximately 27,000 feet above sea level) over the Site, on request, at weekends and on public holidays. This airspace is known as the Scottish Temporary Reserved Area (Gliders) North. When this airspace is activated, NERL controllers exclude all Instrument Flight Rules (IFR) traffic from the area. In addition, gliders operating in the airspace between FL 100 (approximately 10,000 feet above sea level) and FL 195 over the Site are exempt from the normal requirement for aircraft to carry and operate a secondary surveillance radar (SSR) transponder.

12.3.3 The Site is within the nominal 10 nautical mile (nm) width of two Upper Air Traffic Service (ATS) Routes, designated UN581 and UN591. These are used by transatlantic traffic at and above FL 250 between continental Europe and North America. Aircraft following these routes are under the control of the NERL Scottish Area Control Centre at Prestwick.

12.3.4 Air traffic control and air defence primary surveillance radars (PSRs) within 150 km of the Site are as follows:

- NERL Allanshill (60 km north east of the Site);
- NERL Perwinnes Hill (57 km south east of the Site);
- MoD Remote Radar Head Buchan (71 km east of the Site);
- MoD Leuchars Station (114 km south of the Site);
- Inverness Airport (63 km west north west of the Site); and
- RAF Lossiemouth (39 km north west of the Site).

12.3.5 NERL has confirmed in its scoping response that it has no concerns about the Proposed Development. Therefore, NERL radars and other facilities have been scoped out of further assessment.

12.3.6 The Site is beyond the instrumented range (60 nautical miles, 111 km) of the radar at Leuchars Station. Neither this nor the PSR at RAF Lossiemouth are referred to as a potential issue in the MoD's consultation response. Therefore, both PSRs have been scoped out of further assessment.

12.3.7 The Proposed Development is fully terrain-screened from the Inverness Airport PSR. That facility has therefore been scoped out of further assessment.

12.3.8 There are no Meteorological Office rainfall radars, secondary surveillance radars, aeronautical radio navigation aids, aerodromes, airstrips or gliding sites within the study area. Therefore, those facilities have been scoped out of further assessment.

12.3.9 The Site is located within a part of the UK daytime Military Low Flying System known as Low Flying Area (LFA) 14, where fixed wing military aircraft are permitted to fly as low as 250 feet above ground level. In the night low flying system, the Site is located within Allocated Region 1D, covering north east Scotland, where priority is given to fixed wing low flying.

12.3.10 The telecommunications fixed link baseline consists of a single microwave link, operated by Airwave, running from Ardwell, south of the Site, to a mast at Succoth, east of the Site, thence northwards to a mast at Invermarkie.

12.3.11 Atkins and JRC, operators of UHF scanning telemetry links for the water and power industries, have confirmed that there are no such facilities with the potential to be affected by the Proposed Development. Consequently, these assets are scoped out of further assessment.

Future Baseline

12.3.12 Future changes to the structure of, and operational rules for use of, the airspace in the vicinity of the Site are likely to occur as a result of the CAA's Airspace Modernisation Strategy[6].

12.3.13 Future technical change, which is encompassed by the Airspace Modernisation Strategy, is expected to lead to the withdrawal of primary surveillance radar for air traffic control purposes. It is also expected that a requirement for all aircraft to carry and operate electronic conspicuity equipment will be introduced, facilitating the employment of proximity-activated lighting systems for wind farms. The detail of these possible changes and how they might affect the aviation baseline in the vicinity of the Proposed Development are currently unknown.

[6] CAA (2022): Draft Airspace Modernisation Strategy 2022–2040, CAP 2298, January 2022.

Summary of Scope of Assessment

Scoped Out Receptors

12.3.14 Meteorological Office rainfall radars, secondary surveillance radars, aeronautical radio navigation aids, aerodromes, airstrips and gliding sites have all been scoped out of further assessment since there no such facilities within the Study Area.

12.3.15 NERL PSRs and the PSR at Inverness Airport have been scoped out of further assessment because they have been confirmed to have no line of sight to the Proposed Development.

12.3.16 The PSRs at Leuchars Station and RAF Lossiemouth have been scoped out of further assessment because they are not referred to as potentially affected receptors in the MoD's consultation response.

12.3.17 Scanning telemetry radio links are also scoped out of further assessment since consultation responses confirm that there are no such facilities within the Study Area.

Scoped In Receptors

12.3.18 The aviation and telecommunications receptors scoped into the assessment are:

- MoD Buchan PSR;
- military low flying; and
- the Airwave microwave link running to the south and east of the Site.

12.4 Assessment of Likely Effects

12.4.1 This section describes the potential significant effects on aviation and telecommunications which might occur as a result of the Proposed Development.

Potential Construction Effects

Primary Surveillance Radars

12.4.2 Primary surveillance radars used for air traffic control and air defence purposes are designed to process out stationary objects. Since the turbine rotors would not be rotating during the construction phase, the effect of the Proposed Development on the Buchan PSR would be **None**.

Military Low Flying

12.4.3 Tall structures located in military low flying areas may pose an obstacle to low flying military aircraft. This is particularly the case where the structures are located in valleys where military aircraft seek to fly to make use of terrain masking to avoid detection by radar. The Proposed Development is located along the top of a ridge, with the prominent valley of the River Deveron to the south.

12.4.4 The Proposed Development is located in a part of LFA 14 which is classified by the MoD as *"a low priority military low flying area less likely to raise concerns"* in relation to wind farm development[7].

12.4.5 The MoD consultation response of 14 February 2022 states that the Proposed Development would be a potential obstruction hazard to military low flying training activities in LFA 14, but that these effects would be mitigated by the provision of visible spectrum lighting in

[7] MoD (2011). Low Flying Consultation Zones, DE 090071. Sutton Coldfield.

accordance with the Air Navigation Order (ANO). It is concluded from the location of the Proposed Development, the MoD's declared status for the low flying area surrounding the Proposed Development, and from its consultation response, that the effect of the Proposed Development on military low flying would be **Negligible**.

Airwave Microwave Link

12.4.6 Any structures that infringe a specified zone around a fixed telecommunications link can degrade the performance of the link. The Airwave microwave link between Ardwell, Succoth and Invermarkie passes no closer than 2 km from any of the proposed turbine locations and would therefore be unaffected by the construction phase of the Proposed Development. As such the effect would be **None.**

Potential Operational Effects

Primary Surveillance Radars

12.4.7 The rotating blades of wind turbines can generate unwanted returns on primary surveillance radar displays and may also reduce the sensitivity of the radar in the airspace overhead the Proposed Development.

12.4.8 Radar line of sight modelling from the radar at Remote Radar Head (RRH) Buchan indicates that there may be some marginal line of sight to the rotating turbine blades, but that the line of sight is significantly constrained by terrain in the area approximately 8 to 12 km west of the radar head. The MoD, in its consultation response dated 14 February 2022, stated that the Proposed Development will be detectable by the AD radar at Buchan".

12.4.9 The PSR at RRH Buchan is a hybrid Lockheed-Martin Type 92 three-dimensional radar. It employs pencil beams in elevation to enable it to differentiate between targets in altitude as well as in azimuth. This gives the radar enhanced capability to differentiate unwanted primary-only radar returns from wind turbines, which typically occupy only the lowest elevation beam(s), from genuine aircraft targets, which mostly occupy the higher elevation beams. In 2014, the Type 92 radar at Buchan was the subject of a multi-million pound upgrade, funded entirely by wind energy developers, in which the radar data processing (RDP) equipment was replaced by the RDP of the more modern TPS-77 radar. This further enhanced the capacity of the Buchan radar to differentiate between wind turbine returns and aircraft and process out the former while continuing to display the latter. It also facilitated the use of Non-Auto Initiation Zones (NAIZs) in the Buchan radar. NAIZs prevent the radar from displaying new targets that appear for the first time within a specified area (such as over a wind farm) while continuing to display tracks that originate from outside the NAIZ area but track into it. The upgraded radar became operational in 2015.

12.4.10 Through consultation with the MoD, it is unclear which of the turbines in the Proposed Development they consider to be located within radar line of sight and is unclear what the 'cumulative effect' thresholds are for the Proposed Development. In addition, while it is known that the MoD considers some areas within line of sight of the Buchan radar as not being sensitive for air defence operations, it is not known whether the Site is within one of those areas. The Applicant is currently in discussions with MoD to determine the scale and significance of any radar line of sight from RRH Buchan radar and its operational significance. On the basis of the information available, the effect of the Proposed Development on the RRH Buchan PSR, prior to the application of any mitigation, is assessed as **Moderate**.

Military Low Flying

12.4.11 The potential effects on military low flying during the operational phase of the Proposed Development would be the same as during the construction phase and as such the effect would be **Negligible**.

Airwave Microwave Link

12.4.12 The potential effects on fixed telecommunications links during the operational phase of the Proposed Development would be the same as during the construction phase because the principal source of effects on fixed telecommunications links is from the turbine towers rather than rotating turbine blades. As such the effect would be **None**.

Potential Decommissioning Effects

12.4.13 The potential effects of the Proposed Development on aviation and telecommunications during the decommissioning phase would be the same as during the construction phase.

Potential Cumulative Construction Effects

Primary Surveillance Radars

12.4.14 The turbine rotors would not be turning during the construction phase. Consequently there would be no additional effects on the Buchan PSR from the Proposed Development over and above the effects generated by existing operational unmitigated wind farms in the surrounding area. Therefore the cumulative construction effects on PSRs are None.

Military Low Flying

12.4.15 Existing, consented and in-planning wind farms within 8 km of any turbine in the Proposed Development were considered in assessing the potential cumulative impact of the Proposed Development on military low flying. This was to ensure that all developments are captured where aircraft carrying out avoidance manoeuvres around one wind farm might then be forced to avoid another wind farm. The developments considered in this cumulative assessment are:

- Clashindarroch;
- Dorenell;
- Clashindarroch II; and
- Garbet.

12.4.16 The MoD classifies the whole of north east Scotland outside the Aberdeen Airport Control Zone and the coastal area around RAF Lossiemouth as a *"low priority military low flying area less likely to raise concerns".* Of the four wind farm projects that are included in the cumulative assessment:

- the MoD raised no objection to Clashindarroch;
- the MoD raised no objection to Dorenell;
- the MoD has objected to Clashindarroch II on low flying grounds but has stated that those concerns would be addressed by fitting lighting to the turbines; and
- the MoD has raised no objection to Garbet subject to two planning conditions, one of which would require lighting on the turbines to address effects on low flying.

12.4.17 It is standard practice for the MoD to request lighting on wind turbines in order to mitigate effects on military low flying. A proposed reduced lighting scheme has been submitted to the CAA and the MoD for approval (Technical Appendix 12.1).

12.4.18 The Proposed Development, the existing Dorenell and Clashindarroch wind farms and the proposed Clashindarroch II wind farm are all located on ridges of high ground well above and horizontally separated from the main valleys through the area, where the bulk of military low flying takes place. These developments are unlikely to have a cumulative impact on military low flying since they would not impinge on the normal low flying routes through the area.

12.4.19 Garbet is located in the valley of the Markie Water, immediately to the north of the Proposed Development. However this valley is unlikely to be selected as a low flying route since it climbs to a high point of 432 mAOD at its south west end. Thus, while a low flying military aircraft avoiding Garbet might be constrained by the presence of the Proposed Development, and vice versa, this is an unlikely scenario due to the low probability of aircrew selecting a route across either site. Additionally, Garbet is sufficiently close to the Proposed Development for the crew of low flying military aircraft to perceive the two developments as a single wind farm and avoid them accordingly.

12.4.20 It is concluded from the above assessment that the cumulative effect of the Proposed Development on military low flying, taking into account the combined effect of Garbet and the Proposed Development, is **Minor**.

Airwave Microwave Link

12.4.21 The Airwave microwave link will not be affected by other wind farms in the area and has been assessed as having no effects from the Proposed Development. Therefore the cumulative construction effects on this microwave link are **None**.

Potential Cumulative Operational Effects

Primary Surveillance Radars

12.4.22 Potential cumulative operational effects of the Proposed Development on the PSR at Buchan have been assessed in relation to cumulative wind farm developments within five nautical miles (nm) (9.26 km) of the Proposed Development, this being the minimum separation distance applied for aircraft in receipt of a Deconfliction Service in uncontrolled airspace. The following wind farm developments are located within 5 nm of the Proposed Development:

- the existing Clashindarroch wind farm;
- Clashindarroch II;
- the existing Dorenell wind farm[8]; and
- Garbet.

12.4.23 The existing Clashindarroch and Dorenell wind farms were consented with no objection from the MoD and no requirement for radar mitigation. Both have marginal line of sight from the RRH Buchan radar. It is concluded that the MoD considers any effects on RRH Buchan from the Clashindarroch and Dorenell wind farms as acceptable. Clashindarroch II is within line of sight of the RRH Buchan radar and has received MoD objections and is expected to be required to implement technical mitigation. The Garbet proposal has no line of sight from RRH Buchan and no MoD objection. The cumulative operational effect of the Proposed Development on the RRH Buchan radar, in the absence of any mitigation being applied for any of the four wind farms (the Proposed Development plus Dorenell, Clashindarroch and Clashindarroch II) is assessed as **Moderate.**

[8] Dorenell Extension and Variation are not considered since the applications for those developments were withdrawn in 2018.

Military Low Flying

12.4.24 The cumulative operational effects of the Proposed Development on military low flying would be the same as in the construction phase because any effects on low flying are driven by the existence of tall structures, not whether they have rotating turbine blades. As such the effect would be **Minor.**

Airwave Microwave Link

12.4.25 The cumulative operational effects of the Proposed Development on the Airwave microwave link are the same as in the construction phase and as such the effect would be **None**.

12.5 Mitigation

Mitigation during Construction

Military Low Flying

12.5.1 It is standard practice for the MoD to request a planning condition requiring the notification to the MoD of the positions and heights of all wind turbines in a development prior to the start of construction.

12.5.2 The construction of the Proposed Development is required by law to be notified to the MoD and the Civil Aviation Authority (CAA) prior to the start of construction, in accordance with Article 225A of the ANO[9]. This will ensure that the Proposed Development is marked on aeronautical charts and electronic aviation obstacle databases to enable aircrew to avoid the turbines.

12.5.3 Since all turbines in the Proposed Development exceed 150 magl to blade tip height, they are within scope of Article 222 of the Air Navigation Order, which requires all obstructions of 150 magl or more to be fitted with medium intensity steady red lights on the highest practicable point. Article 222 also permits the CAA to approve a lighting scheme other than medium intensity steady red lights on each turbine. ICAO Annex 14 provides for alternative lighting schemes to be designed on the basis of a special aeronautical study. In order to minimise the night-time visual impact of lighting on the turbines, a study has been conducted of the use of the night low level airspace in the vicinity of the Proposed Development area to explore the potential for reducing the number and intensity of lights on the turbines. The study concluded that:

- the Proposed Development is relatively small in area and number of turbines;
- almost all night low level air traffic in the area operates with Night Vision Imaging Systems and does not, therefore, require obstacles to be lit with visible spectrum lighting; and
- due to extensive high terrain and other wind farms in the vicinity, aircraft other than those operated by the military and emergency services are highly unlikely to be flying at low level at night in this area.

12.5.4 As a result of the study, the Applicant submitted a proposal to the CAA for a reduced lighting scheme (Technical Appendix 12.1) consisting of:

- 2000 candela lights on the nacelles of Turbines 1, 2, 4, 5, 8, 9 and 11;

[9] UK Government (2016). The Air Navigation Order 2016. Statutory Instrument 2016 No.765. Online. Available at: https://publicapps.caa.co.uk/docs/33/Law%202016-765%2003%20Feb%202022%20Version.pdf

- the 2000 candela lights would be capable of being dimmed to 200 candela when the visibility exceeds 5 km;
- all turbines would additionally be fitted with infra-red lights to MoD specifications; and
- there would be no lights in the mid-tower position.

The reduced lighting scheme was approved by the CAA in May 2022.

12.5.5 The Applicant is also evaluating the scope for other means of reducing the number and intensity of lights and the frequency with which they are switched on, for example by use of an aircraft proximity lighting activation system.

Mitigation during Operation

Primary Surveillance Radars

12.5.6 The standard mitigation for wind farms within line of sight of the RRH Buchan radar is the designation of a NAIZ over the wind farm area. It is expected that this would be implemented over Clashindarroch II should it receive planning consent. Any such, NAIZ would also mitigate effects on RRH Buchan from the existing unmitigated Clashindarroch wind farm. Should it be deemed necessary to provide mitigation for the effects of the Proposed Development on RRH Buchan, this would also be achieved by designation of a NAIZ over the Site. In cumulative terms, this would be likely to consist of a geographical extension of the NAIZ over Clashindarroch. It is concluded that the cumulative residual impact on the RRH Buchan PSR during the operation of the Proposed Development, following the implementation of NAIZ mitigation, is **Minor**.

Mitigation during Decommissioning

12.5.7 No mitigation is required in the decommissioning phase as there are no significant effects on aviation or telecommunications as a result of the decommissioning of the Proposed Development.

12.6 Assessment of Residual Effects

12.6.1 The residual effects of the Proposed Development on the RRH Buchan PSR would be **None** during construction and decommissioning and **Minor** during operation once mitigation has been applied.

12.6.2 The residual effects of the Proposed Development on military low flying, following implementation lighting and charting mitigation, would be **Negligible** during all phases of the Proposed Development.

12.6.3 The residual effects of the Proposed Development on the Airwave microwave link would be **None** both during all phases of the Proposed Development.

12.6.4 The cumulative residual effects of the Proposed Development on the RRH Buchan PSR would be **None** during construction and decommissioning and **Minor** during operation once mitigation has been applied.

12.6.5 The cumulative residual effects of the Proposed Development on military low flying, following implementation lighting and charting mitigation, would be **Negligible** during all phases of the Proposed Development.

12.6.6 The cumulative residual effects of the Proposed Development on the Airwave microwave link would be **None** both during all phases of the Proposed Development.

12.7 Summary

12.7.1 Table 12.3 outlines the residual effects on aviation and telecommunications facilities. There would be no significant residual effects on aviation or telecommunications as a result of the construction, operation or decommissioning of the Proposed Development.

12.7.2 Lighting in accordance with the ANO would be fitted to Turbines 1, 2, 4, 5, 8, 9 and 11. Infra-red lighting to MoD specifications would be fitted to all turbines. A lighting condition would provide flexibility for alterations to the lighting scheme prior to construction, to take account of emerging technology and regulation.

Table 12.3: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Primary Surveillance Radars	None	N/A	None, Not significant
Obstacle hazard to military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
Airwave Microwave Link	None	N/A	None, Not significant
Operation			
Degraded performance of RRH Buchan PSR	Non-Auto Initiation Zone if required	Secured by planning condition	Minor, Adverse, Not significant
Obstacle hazard to military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
Airwave Microwave Link	None	N/A	None, Not significant
Decommissioning			
Potential impact on aviation and telecommunication facilities within the study area.	None	N/A	None, Not significant
Cumulative Construction			
Primary surveillance radars	None	N/A	None, Not significant
Military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
Airwave microwave link	None	N/A	None, Not significant
Cumulative Operation			
Degraded performance of RRH Buchan PSR	Non-Auto Initiation Zone if required	Secured by planning condition	Minor, Adverse, Not significant
Military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
Airwave microwave link	None	N/A	None, Not significant

13 Socio-Economics

13.1 Introduction

13.1.1 This chapter considers the potential for significant effects associated with the construction, operation and decommissioning of the Proposed Development for socio-economic indicators and tourism. The specific objectives of the chapter are to:

- describe the current socio-economic baseline conditions;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- consider the potential effects, including direct, indirect and cumulative effects of the Proposed Development on socio-economics;
- identify measures, where appropriate, to mitigate any predicted significant effects; and
- assess the significance of any residual effects remaining, following the implementation of mitigation.

13.1.2 The assessment has been carried out by Catherine Mackenzie MSc MA PIEMA, a Senior Consultant of Ramboll UK Limited (Ramboll), with over 14 years' experience. There are no formally recognised standards, guidelines or methodologies for assessing wind farm effects on socio-economics for the purposes of an EIA. Therefore, the assessment has been based on professional judgement and published research, as detailed below.

13.2 Assessment Methodology and Significance Criteria

Scope of Assessment

13.2.1 This chapter considers the following potential socio-economic effects:

- direct employment and economic effects and the wider indirect effects associated with capital investment during construction and operation;
- operational employment expenditure in developing the Proposed Development;
- the contribution of Non-Domestic Rates (a tax which is paid on non-domestic property);
- potential impacts on population and demographics; and
- potential impacts on tourism and recreational activities and assets.

13.2.2 The chapter assesses the potential for cumulative effects arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational, under construction and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

13.2.3 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

Consultation

13.2.4 Table 13.1 summarises the consultation responses received regarding socio-economic factors and provides information on where and/ or how they have been addressed in this assessment.

13.2.5 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Table 13.1: Consultation Responses

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
Aberdeenshire Council 22 January 2021	Scoping	The proposal to scope-out effects on population and demographics (in terms of health, housing and education) and tourism and recreational locations is noted. Given that the potential effects on visual amenity from tourism and recreational facilities would be included within the landscape and visual amenity section of the EIAR, the scoping out of these effects is acceptable. Accommodation provision during the construction phase should be considered.	Potential effects on visual amenity from tourism and recreational facilities are included within the landscape and visual amenity section of the EIAR. Accommodation provision during the construction phase is considered in this socio-economics chapter of the EIAR.
Moray Council 19 February 2021	Scoping	Detailed assessment of impact should include consideration of the extent to which the proposal contributes to renewable energy generation targets, its effects on greenhouse gas emissions and net economic impact, including socio-economic benefits such as employment.	This chapter provides details of the potential socio-economic benefits of the Proposed Development, including employment and community benefit. The net economic impact of the Proposed Development has been considered, taking account of the cumulative schemes within 10 km of the Proposed Development. Details of the Proposed Development's contribution to renewable energy targets and its effects on greenhouse gas emissions are provided in within the Planning Statement.
British Horse Society 7 December 2020	Scoping	The response referred to: the importance of off-road riding opportunities; horse and rider safety on the road network; the rights of access under the Land Reform (Scotland) Act for horse riders; and economic contribution of equestrianism to the Scottish economy.	Details of proposed new permanent access tracks on the Site are included in Chapter 2: Development Description. It is proposed that the access tracks would be left in place following construction to provide permanent access for maintenance, repairs and eventual decommissioning of the Proposed Development.

Potential Effects Scoped Out

13.2.6 Based on the nature of the Proposed Development, its extent and the duration of both construction and operational phases, effects on population and demographics in terms of demand for housing, health or educational services is expected to be negligible or none at all. As such, these matters are scoped out of further consideration.

13.2.7 There are no tourism assets or destinations within the Site. Research undertaken by Visit Scotland[1] and BiGGAR Economics[2] suggests that there is no evidence that the presence of wind farm developments have an adverse effect on the tourism sector in Scotland.

1 Visit Scotland (2014), VisitScotland Position Statement - Wind Farms. Available online: https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/policies/visitscotland-position-statement---wind-farms---oct-2014.pdf [Accessed: 01/02/2022].

2 BiGGAR Economics (2017), Wind Farms and Tourism Trends in Scotland. Available online: https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf [Accessed: 01/02/2022].

13.2.8 The most comprehensive study of the potential effects of wind farms on tourism was undertaken by the Moffat Centre at Glasgow Caledonian University in 2008[3]. The study took into consideration potential impacts on tourism and concluded that, although there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall effect on tourism expenditure and employment would be very limited.

13.2.9 This study is now over a decade old and in the intervening time wind farms have become a more common feature in Scotland. As such, it would be expected that any adverse effects on the tourism economy would now be apparent.

13.2.10 BiGGAR Economics produced a study on the effect that onshore wind has on tourism employment in 2021[4]. The study, which analysed 16 onshore wind farms constructed between 2015 and 2019 in Scotland, reported on the effect these wind farms had on tourism employment at the national, regional, and local level.

13.2.11 In the study, tourism employment was considered over the period 2015 to 2019. During this period, the number of wind farms increased in Scotland and in almost all local authority areas, while employment in tourism also grew. The analysis found no correlation between tourism employment and the number of turbines at the national or local authority level.

13.2.12 The study also analysed the impact onshore wind has on tourism employment proximate to developments. Areas within 15 km of the wind farms constructed between 2015 and 2019 were analysed, comparing employment in tourism in 2015 and 2019, before the construction of the wind farms and after, allowing for the exclusion of construction impacts on tourism (such as wind farm related workers staying at local accommodation).

13.2.13 The study found no link between the development of a wind farm and employment in the tourism sector. Of the 16 local areas included in the study, 11 experienced an increase in tourism employment between 2015 and 2019. In 12 of the local areas, employment grew faster or decreased less than the rate for the corresponding local authority.

13.2.14 The 2021 study also reassessed 28 wind farms constructed between 2009 and 2015 analysed in a previous 2017 study[5], finding that, in the years following the construction of the 28 wind farms, 19 of the neighbourhood areas experienced an increase in tourism employment, including four areas where tourism employment had fallen between 2009 and 2015. In 16 local areas, employment grew quicker or decreased less than in the corresponding local authority area.

13.2.15 Overall, the conclusion of this study was that the published national statistics on employment in sustainable tourism demonstrate that there is no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at the local authority level, nor in the areas immediately surrounding wind farm developments. Therefore, there is no research evidence that shows fears of negative effects on Scotland's tourism economy have materialised as a result of wind farm developments.

[3] Glasgow Caledonian University, 2008. Economic impacts on wind farms on Scottish tourism: report. Online. Available at: Economic impacts of wind farms on Scottish tourism: report - gov.scot (www.gov.scot) [accessed 28/02/2022]

[4] BiGGAR Economics. (2021). Wind Farms & Tourism Trends in Scotland: Evidence from 44 Wind Farms.

[5] BiGGAR Economics. (2017). Wind Farms and Tourism Trends in Scotland.

13.2.16 The findings of this research are in accordance with those of the Scottish Parliament Economy, Energy and Tourism Committee in 2012[6], when they concluded that there is no robust, empirical evidence of a negative link between wind farm development and tourism.

13.2.17 Overall, there is no research evidence that shows an adverse effect on Scotland's tourism economy as a result of wind farm developments.

13.2.18 Additionally, the potential effects on visual amenity for tourism and recreational locations within 20 km of the Site, including recreational routes, has been assessed in the EIAR as part of the Landscape and Visual Amenity Assessment (Chapter 5). It is also not anticipated that the construction of the Proposed Development would entail significant road works, closures or diversions which would have potential to adversely affect access to tourism assets; therefore, no potential for significant effects is identified. As such, potential socio-economic impacts on tourism and recreational locations are scoped out of further consideration.

13.2.19 Effects arising during decommissioning have been scoped out of this assessment since they would be of a similar nature to construction effects, but of a smaller scale and shorter duration.

Method of Baseline Characterisation

Extent of the Study Area

13.2.20 The study area has been determined using standard best practice measures and professional judgement. Due to the potential large scale economic impacts of the Proposed Development, the study area has considered three different spatial scales (Neighbourhood, Local, National) to understand the effects at each spatial scale.

13.2.21 The following socio-economic study areas have been used for this assessment:

- Neighbourhood Area: Speyside Glenlivet and Huntly, Strathbogie and Howe of Alford Electoral Wards;
- Local Authority Area: Aberdeenshire Council and Moray Council Areas; and
- National: Scotland.

Desk Study

13.2.22 A desk-based study was undertaken to understand the baseline conditions relevant to the assessment in the areas listed above. The following has been undertaken:

- a review of national, local and neighbourhood data; and
- an analysis of socio-economic statistics for the relevant study areas.

13.2.23 Sources used include:

- National Records of Scotland (nrsscotland.gov.uk); and
- Scottish Government Statistics (from statistics.gov.scot).

13.2.24 Due to the nature of the socio-economic assessment, a field study was not considered necessary. The baseline for the socio-economic assessment is established through an analysis of socio-economic statistics and therefore a field study would not be beneficial.

Criteria for the Assessment of Effects

13.2.25 There are no recognised standards, guidelines or methodologies for assessing the effects of wind farms on socio-economics. Therefore, to identify the potential effects, the assessment

[6] Scottish Parliament Economy, Energy and Tourism Committee (2012). Report on the achievability of the Scottish Government's renewable energy targets.

is based on professional judgement of the degree of change likely to result from the Proposed Development.

13.2.26 The assessment of effects utilises data from the RenewableUK 2012 report on the economic effects of the onshore wind sector in the UK[7], which was subsequently updated in 2015[8], with a further report produced in 2019 on quantifying the benefits of onshore wind in the UK[9].

13.2.27 Although there are no recognised methodologies for assessing the socio-economic impact of wind farms, this approach is now recognised best practice, having been used in reports for the Scottish Government, UK Government and RenewableUK.

13.2.28 The following stages have been undertaken for the socio-economic assessment:

- estimate total expenditure;
- estimate the breakdown of expenditure into component contracts and subcontracts;
- estimate the impact on employment during construction and operation; and
- using the figures above to estimate the economic impact.

Criteria for Assessing the Sensitivity of Receptors

13.2.29 Effects on socio-economics are described as beneficial, neutral or adverse and are considered with reference to the value or sensitivity of the receptor, as described in Table 13.2.

Table 13.2: Sensitivity of Environmental Receptor

Sensitivity	Definition
High	Neighbourhood population, economy, and social and community infrastructure (especially where there is no available capacity and low resilience).
Medium	Local authority and regional population, economy, and social and community infrastructure (with some available capacity and medium resilience).
Low	National population, economy, and social and community infrastructure (with abundant available capacity and high resilience).

Criteria for Assessing the Magnitude of Change

13.2.30 The size or magnitude of each impact is determined as a predicted deviation from the baseline conditions during construction, operation and decommissioning, as described in Table 13.3.

Table 13.3: Magnitude of Impact on a Receptor

Magnitude of Impact	Criteria
Large	Substantial change to socio-economic context and/ or high number of receptors affected.
Medium	Noticeable change to socio-economic context and/ or medium number of receptors affected.
Small	Hardly perceptible change to socio-economic context and/ or low number of receptors affected.
None	No change to socio-economic context and no receptors affected.

[7] RenewableUK (2012), *Onshore Wind: Direct and Wider Economic Impacts*. Available online: https://www.gov.uk/government/publications/onshore-wind-direct-and-wider-economic-impacts [Accessed 01/02/2022].

[8] RenewableUK (2015), Onshore Wind: Economic Impacts in 2014. Available online: https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/onshore_economic_benefits_re.pdf [Accessed 01/02/2022]

[9] Vivid Economics (2019), *Quantifying benefits of onshore wind to the UK*. Available online: https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/media/Quantifying_the_Benefits_ofO.pdf [Accessed 01/02/2022].

Cumulative Effects

13.2.31 Operational, under construction and consented developments are considered as part of the baseline. Developments that are consented but not yet under construction and those that are the subject of valid planning applications have been considered as part of the qualitative cumulative impact assessment.

Criteria for Assessing Significance

13.2.32 The criteria outlined in Table 13.4: Summary of Significance Criteria have been used to assess the significance of effects. Major and moderate effects are categorised as significant. Minor and negligible are not significant.

Table 13.4: Summary of Significance Criteria

Effect	Description
Major	Major loss/ improvement to key elements/ features of the baseline conditions such that post development character/ composition of baseline condition will be fundamentally changed. For example, a major long-term alteration of socio-economic conditions or a major reduction/ improvement of recreational assets.
Moderate	Loss/ improvement to one or more key elements/ features of the baseline conditions such that post development character/ composition of the baseline condition will be materially changed. For example, a moderate long-term alteration of socio-economic conditions or a moderate reduction/ improvement in the recreational asset.
Minor	Changes arising from the alteration will be detectable but not material; the underlying composition of the baseline condition will be similar to the pre-development situation. For example, a small alteration of the socio-economic conditions or a small reduction/ improvement in the recreational asset.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a "no change" situation.

13.2.33 Table 13.5 illustrates how significance of effects are determined by comparison of the sensitivity of receptors with the magnitude of predicted impact.

Table 13.5: Significance Criteria

		Magnitude of Impact			
		None	**Small**	**Medium**	**Large**
Sensitivity of Receptor	**High**	No effect	Minor	Moderate	Major
	Medium	No effect	Minor	Minor	Moderate
	Low	No effect	Negligible	Negligible	Minor

Limitations and Assumptions

13.2.34 The assessment is based on the experience of comparable developments elsewhere and a review of the local socio-economic context. In order to maximise the beneficial economic effects associated with the Proposed Development it will be necessary for national, regional and local contractors to engage with the opportunities, as assumed in the assessment. The Applicant provides a significant opportunity for local businesses to get involved through the completion of a local supply register. This enables the Applicant to reach out to local businesses with an interest in the Proposed Development.

13.3 Baseline Conditions

Current Baseline

Operational Wind Farms

13.3.1 Several operational wind farms surround the Proposed Development: Clashindarroch wind farm is located approximately 3 km to the southeast, Dorenell is located approximately 3.5 km to the southwest. Hill of Towie, Edintore Wind Farm, Cairnborrow, Dummuie, Upper Wheedlemont Farm, Cairnmore, Riverstone Kinnoir Huntly, Midtown of Glass and Kildrummy are located between 5 km and 20 km of the Proposed Development.

Population and Demographics

13.3.2 There are several distributed settlements, villages and towns within the vicinity of the Proposed Development. The following key settlements have been identified within 20 km of the Site:

- Dufftown (Moray), approximately 8 km northwest of the Site;
- Craigellachie (Moray), approximately 14 km northwest of the Site,
- Huntly (Aberdeenshire), approximately 16 km northeast of the Site;
- Rhynie (Aberdeenshire), approximately 13.5 km southeast of the Site; and
- Aberlour[10] (Moray), approximately 14 km northwest of the Site.

13.3.3 The Moray side of the Site is located in the Speyside Glenlivet Electoral Ward, which includes the villages of Dufftown, Aberlour and Craigellachie, as shown on Figure 1.1: Site Location. In 2020, the population of this area was estimated to be 9,038, whilst the total population of the Moray Council area was estimated to be 95,710 (to the end of June 2020)[11]. The Moray population as a whole saw a slight (0.1%) decrease from 2019 to 2020. In general, the Moray population trend between 1998 and 2020 was one of increase, with an overall population increase of 10.9%. Over the same period, Scotland's population increased by 7.7%.

13.3.4 The Aberdeenshire side of the Site is located on the Huntly, Strathbogie and Howe of Alford Ward, which includes the town of Huntly and the village of Rhynie, as shown on Figure 1.1: Site Location. In 2020, the population of this area was estimated to be 16,484[12], whilst the total population of the Aberdeenshire Council area was estimated to be 260,780 (to the end of June 2020)[13]. The Aberdeenshire population as a whole saw a slight (0.2%) decrease from 2019 to 2020. In general, the population trend between 1998 and 2020 was one of increase, with an overall population increase of 15.3%.

13.3.5 Table 13.6 displays the estimated population projections from 2018 to 2043. It should be noted that population projections do not account for any variation caused by COVID-19. Between 2018 and 2043 the population of Aberdeenshire is expected to increase by 2.4% and decrease in Moray by 2.7%, whilst the population of Scotland in expected to increase by 2.5%. The population aged 0-15 and 16-64 are expected to decrease regionally and nationally, whilst the older population (65+) is expected to increase regionally and nationally.

[10] Also known as 'Charleston of Aberlour'

[11] https://www.nrscotland.gov.uk/files//statistics/council-area-data-sheets/moray-council-profile.html [Accessed 19/10/2021]

[12] https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2FS13002861 [Accessed 19/10/2021]

[13] https://www.nrscotland.gov.uk/files//statistics/council-area-data-sheets/aberdeenshire-council-profile.html [Accessed 19/10/2021]

Table 13.6: Population Projections, 2018-2043[14]						
	Aberdeenshire		**Moray**		**Scotland**	
	2018	2043	2018	2043	2018	2043
Total	261,470	267,796	95,520	92,966	5,438,100	5,574,819
0-15	18.7%	16.2%	16.9%	13.5%	16.9%	14.8%
16-64	62.2%	57.2%	61.7%	55.3%	64.2%	60.3%
65+	19.0%	26.6%	21.4%	31.2%	18.9%	25.0%

Economic Activity

13.3.6 Economic indicators for Moray and Aberdeenshire, compared against Scotland are presented in Table 13.7. The economic activity rate is lowest in Moray (57.3%) compared to Aberdeenshire (65.8%) and Scotland (61.1%). The unemployment rates in Aberdeenshire and Moray are lower than that of the country (3.6%). The gross weekly pay of full time employment in Moray is the lowest at £660.50, compared with Scotland at £701.70 and Aberdeenshire at £707.80.

Table 13.7: Economic Indicators, Q1 2020[15]			
	Aberdeenshire	**Moray**	**Scotland**
Economic Activity Rate (%)	65.8	57.3	61.1
Unemployment Rate (%)	2.4	3	3.6
Gross Weekly Pay (Full Time) (£)	707.80	660.50	701.70

Employment and Economy Sectors

13.3.7 The regional and national employment structure for the year Q1 2020[16] is provided in Table 13.8. Total employment in Moray is approximately 47,700 (77.4%) and in Aberdeenshire is approximately 136,800 (79.2%).

13.3.8 In Moray, 17.6% of the population are employed within the manufacturing sector and 17.6% in the human health and social work sector. Within Aberdeenshire, 14.4% of the population are employed within wholesale and retail trade and repair of motor vehicles and motorcycles and 12.1% within the manufacturing sector. These percentages are largely similar to that of Scotland with 13.5% employed within wholesale and retail trade and repair of motor vehicles and motorcycles and 16.0% in human health and social work activities. Moray and Aberdeenshire both have a higher proportion of the population employed within the manufacturing sector compared against the national average (6.8%).

13.3.9 Employment by sector for both local authority areas and Scotland is summarised in Table 13.8.

[14] Scottish Government. Statistics.Gov.Scot. Population Projections (2018-based). Online. Available at: statistics.gov.scot [Accessed 02/02/2022]

[15] Scottish Government. Statistics.Gov.Scot. Online. Available at: statistics.gov.scot [Accessed 02/02/2022]

[16] Employment data is from Q1 2020 and is therefore considered to be unaffected by COVID-19.

Table 13.8: Employment by Sector in Moray[17] and Aberdeenshire[18] (2020)			
Sector	**Percentage of Total (Moray)**	**Percentage of Total (Aberdeenshire)**	**Percentage of Total (Scotland)**
Manufacturing	17.6%	13.4%	7.2%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.7%	14.4%	13.9%
Human Health and Social Work Activities	17.6%	10.3%	16.6%
Professional, Scientific and Technical Activities	4.4%	11.3%	7.1%
Education	8.8%	8.2%	8.4%
Accommodation and Food Service Activities	7.4%	6.2%	7.2%
Construction	5.9%	7.2%	5.1%
Administrative and Support Service Activities	3.7%	5.2%	8.0%
Public Administration and Defence; Compulsory Social Security	6.6%	3.6%	6.5%

Accommodation

13.3.10 Accommodation opportunities are centred around villages near to the Site. Two B&Bs are located along the A920 approximately 2 km north of the Site, Alderwood B&B and Castle View B&B. One B&B is located approximately 1 km to the southwest of the Site along the A941, Laggan Farm B&B.

13.3.11 Dufftown is located approximately 8 km northwest of the Site. Within Dufftown there are a number of accommodation options including Scorrybreck B&B, Balvenie Street Self Catering, Tomnamuidh House B&B, Dunvegan B&B, Fournet House Guest House, Fife Arms Hotel, Commercial Hotel, Gowanbrae B&B, Davaar, Highland Spirit B&B, Little Robin B&B, Glenview B&B, Conval House B&B, Islas Cottage, Tap o'Noth Holidays, The Elms B&B and Dullan Brae Accommodation.

13.3.12 Huntly is located approximately 14 km east of the Site. Within Huntly there is a range of accommodation provision; Gordon Arms Hotel; Glenburn Guest House; and Castle House.

13.3.13 There is no accommodation provision within the Site boundary.

Future Baseline

13.3.14 No foreseeable changes to the baseline conditions described above with the potential to materially alter the conclusions of this assessment have been identified; therefore, the assessment is made with reference to the current baseline.

13.4 Assessment of Likely Effects

13.4.1 This section considers the socio-economic impact associated with the construction of the Proposed Development, as well as its operation and maintenance.

[17] https://www.nomisweb.co.uk/reports/lmp/la/1946157424/report.aspx#tabempunemp, [Accessed 16/02/2022]

[18] https://www.nomisweb.co.uk/reports/lmp/la/1946157406/printable.aspx, [Accessed 16/02/2022]

Potential Construction Effects

Employment and Expenditure

13.4.2 The Proposed Development would comprise up to 11 turbines, each with an anticipated capacity of between 6 – 7 MW (based on current 2022 wind turbine generator technology), resulting in an indicative total generating capacity of between 66 MW and 77 MW. Based on an estimated capital expenditure of £1 million per installed MW, the estimated capital costs of the Proposed Development would be approximately £66 million to £77 million[7,8].

13.4.3 This expenditure is split into four main categories of contracts:

- pre-construction;
- balance of plant;
- turbines; and
- grid connection[19].

13.4.4 Based on the estimates of capital expenditure, the largest proportion of capital expenditure (capex) would be on turbine related contracts, followed by balance of plant, grid connection and pre-construction.

13.4.5 The economic impact of the construction and development phase was estimated for Moray, Aberdeenshire and Scotland. In order to do this, the average values of each type of contract that might be secured in each of the study areas was determined based on RenewableUK research.

13.4.6 It is anticipated that from the construction costs of the Proposed Development, 12% could be spent in Aberdeenshire and Moray, 36% in Scotland and 47% in the UK[7,8].

13.4.7 In accordance with the RenewableUK research, it is anticipated that this value would be divided approximately as follows: planning and development (pre-construction) costs (10%), balance of plant (26%), turbines (58%) and grid connection costs (6%). The estimated division of the total capital spend (high estimate) is given in Table 13.9: Potential Construction and Development Expenditure by Study Area and Contract Type (£m).

Table 13.9: Potential Planning, Development and Construction Expenditure by Study Area and Contract Type (£m) – Low Estimate[7,8]

	Aberdeenshire and Moray	Scotland
Pre-Construction	0.79	2.38
Balance of plant	2.06	6.18
Turbine	4.59	13.78
Grid connection[20]	0.48	1.43
Total	7.92	23.77
Total (%) of Project Value	12%	38%

13.4.8 The value of the Proposed Development to the local economy could be increased by promoting awareness of the Proposed Development and associated opportunities among local

[19] Note that a grid connection for the Proposed Development does not form part of this application. If the Proposed Development is consented, a separate application will be undertaken for a grid connection.

[20] Note that a grid connection for the Proposed Development does not form part of this application. If the Proposed Development is consented, a separate application will be undertaken for a grid connection.

businesses. Throughout the pre-application process of the Proposed Development, significant consultation has been undertaken with the local communities and stakeholders as outlined within the pre-application consultation report (PACR). During construction of the Proposed Development the Applicant will continue to publish updates on the project website (www.craigwatch.co.uk) including any planned events. It is important to note, however, that economic contribution of the onshore wind sector varies over the lifecycle of an individual project.

13.4.9 Research from RenewableUK[7,8] provides information on how the employment supported through the lifecycle of an onshore windfarm peaks during the construction stage; however, benefits are still realised throughout the operations and maintenance stage. In addition to the capital expenditure, construction employment and spending in the local economy would provide some beneficial effects to the regional and Scottish economy.

13.4.10 Based on the same research, it is anticipated the construction phase would support between 164 and 191 jobs (based on 2.49 jobs per MW) and generate between approximately £10.5 and £12.2 million Gross Value Added (GVA) to the UK economy (based on £159,251 GVA per MW)[9].

13.4.11 Employment impacts during the construction and development phase are reported in job years, rather than full-time equivalents (FTEs) because the contracts would be short-term. Job years measures the number of years of full-time employment generated by a project. For example, an individual working on the Proposed Development for 18 months would be reported as 1.5 job years[7,8]. The construction of the Proposed Development would support approximately 246 to 286.5 job years.

13.4.12 The development and construction stage employment would generate indirect economic benefits through spending both locally and nationally. Based on an estimated salary cost of £34,613[21] (the average salary for employees in the onshore wind sector), it is estimated that up to approximately £6.6 million would be paid in salaries to people employed during the construction of the Proposed Development.

13.4.13 The Proposed Development would therefore generate an uplift in employment for the local area and national population, as a whole. The impact on the local authority area and regional population, identified as a medium sensitivity receptor, is considered to be of a medium magnitude and as such the effects would be **Minor Beneficial** and therefore considered not significant. The impact on the national population, a low sensitivity receptor, is considered to be of a small magnitude and as such the effect would be **Negligible Beneficial** and not considered significant.

Accommodation Provision

13.4.14 It is anticipated that construction personnel would require accommodation during the construction phase of the Proposed Development and it is assumed that there would be adequate accommodation capacity within the local area including within Dufftown and Huntly.

Potential Operational Effects

Employment and Expenditure

13.4.15 It is estimated that the annual operation and maintenance expenditure of the Proposed Development would equate to approximately £60,000 per MW [7,8]. With a capacity of between

[21] Department of Energy and Climate Change, RenewableUK (2012), Onshore Wind: Direct and Wider Economic Impacts.

66 MW and 77 MW, this would equate to an operational expenditure of approximately £3.96 million to £4.62 million per annum. It is estimated, using data from RenewableUK research, that from the operation and maintenance costs up to 42% would be spent within Aberdeenshire and Moray, 58% would be spent in Scotland and 87% would be spent in the UK[7,8].

13.4.16 It is estimated, based on research from RenewableUK, that the operational and maintenance phase of the Proposed Development would support between 28 and 33 jobs (based on 0.43 jobs per MW) and add between approximately £1.48 and £1.72 million GVA to the UK economy (based on £22,347 GVA per MW)[9].

13.4.17 The operational and maintenance phase employment would generate indirect economic benefits through spending both locally and nationally. Based on an estimated salary cost of £34,613[22] (the average salary for employees in the onshore wind sector), it is estimated that up to approximately £1.14 million per annum would be paid in salaries to people employed during the operation and maintenance of the Proposed Development.

13.4.18 The Proposed Development would therefore generate an uplift in employment, with the potential for direct and indirect benefits. The impact of employment and expenditure within the local area during the operation stage are considered to be of a small magnitude. The effect is assessed to be a long term, **Minor Beneficial** and not significant at the local and national levels.

Community Benefit

13.4.19 The Proposed Development would also generate a beneficial effect on the local economy as a result of community benefit funding provided by the Applicant. Standard industry practice is to provide annual community funding of £5,000 per MW during the operational life of the Proposed Development[23].

13.4.20 Based on a total installed capacity of 66 - 77 MW, the total community funding would be £330,000 to £385,000 per year, which would equate to approximately £10.89 to £12.71 million for a 33 year project lifetime. In addition, the Applicant is a member of both the Moray Chamber of Commerce and Aberdeenshire and Grampian Chamber of Commerce and would work with these organisations to share employment opportunities and organise meet-the-buyer events. Meet-the-buyer events would be secured by holding events on a voluntary basis and by taking advantage of paid-for membership benefits in the Chambers of Commerce. Both Chambers offer services such as business introductions, where they facilitate meetings with relevant suppliers seeking business opportunities. These meetings would also be advertised through a newspaper advert or similar.

13.4.21 In addition to delivering a community benefit fund, there is opportunity for a feasibility study to be carried out to deliver high speed fibre broadband to properties near the Site should there be local interest. This has potential to benefit local residents and businesses. The Applicant is continuing to explore options for shared ownership of the wind farm, opening up increased financial benefits for the local communities. These opportunities would be developed with the local community following the submission of the application.

[22] Department of Energy and Climate Change, RenewableUK (2012), Onshore Wind: Direct and Wider Economic Impacts.

[23] Department of Energy and Climate Change (2014), Community Engagement and Benefits from Onshore Wind Developments: Best Practice Guidance for England. Available online: Community Engagement and Benefits from Onshore Wind Developments: good practice guidance for England (publishing.service.gov.uk) [Last accessed 31/01/2022].

13.4.22 The neighbourhood is determined to be a high sensitivity receptor. This impact from the community benefit is considered to be of a large magnitude and is assessed as long term, **Major Beneficial** and significant at the neighbourhood level.

Non-Domestic Rates

13.4.23 The Proposed Development would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. These non-domestic rates, as shown in Table 13.9, would support the delivery of government services by providing an additional revenue stream.

13.4.24 An analysis of the rateable values paid by several wind farms in Scotland indicates that the average rateable value per MW is £23,100[24]. Given that the Proposed Development is expected to generate between 66 MW and 77 MW it is estimated that the total rateable value would be up to approximately £1.78 million. Given a poundage rate of £0.524 per £1 of rateable value[25] for business, it is estimated that the Proposed Development could contribute in the region of £0.80 – £0.93 million annually to public finances. However, the actual contribution would depend on variables such as the actual load factor and the potential for any relief from non-domestic rates.

Table 13.9: Non-Domestic Rates

Rateable value per MW (£)	23,100
Poundage rate (£)	0.524*
Annual Contribution (£m)	0.80 – 0.93
*52.4 pence paid by businesses with a rateable value more than £95,000	

13.4.25 Public sector finances, for which the non-domestic rates would support, is considered to be of low sensitivity. The impact of non-domestic rates is considered to be of a small magnitude and the effect is assessed as **Negligible Beneficial** and therefore not considered significant at the national level.

Cumulative Effects

13.4.26 The cumulative study area for this assessment is 10 km from the Site boundary on the basis that neighbourhood level cumulative effects would have the greatest magnitude of impact. The cumulative assessment considers wind farms that are in planning or consented but not yet operational, nor schemes at the scoping stage. Within 5 km of the Site the following wind farms are in planning: Garbet located adjacent to the north of the Site, and Clashindarroch II is located approximately 4 km east of the Site. Between 5 km and 10 km from the Site the following consented and in planning wind farms are considered: Hill of Towie II, Midtown of Glass, Meikleton of Ardonald and Bailiesward Farm.

Potential Cumulative Construction Effects

Expenditure

13.4.27 The local economic benefits of the cumulative development proposals, where available, have been identified and are presented in Table 13.10.

[24] Scottish Power Renewables (2019), Kilgallioch Extension Environmental Statement: Chapter 13 Socioeconomics Tourism and Recreation. Available online: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00001996 [Last accessed 16/02/2022].

[25] Scottish Government, 2022. 2022/23 Non-domestic tax rates. Online. Available at: https://www.mygov.scot/non-domestic-rates-guidance/2022-23-non-domestic-tax-rates [accessed 28/02/2022]

Table 13.10: Cumulative Wind Farms - Construction			
Cumulative Scheme	**Predevelopment and Construction Cost (£million)**	**Construction GVA UK (£million)**	**Construction Employment (Local Authority(s))**
Garbet	n/a	n/a	34.79-72.35 FTE
Clashindarroch II[26]	52.64	15.23	48 (person years)
Hill of Towie II[27]	4.46	n/a	n/a

13.4.28 The potential cumulative construction effects are considered to be of medium magnitude of impact at the neighbourhood level, small magnitude of impact at the local level; and small magnitude of impact at the national level. The Proposed Development, in combination with the cumulative schemes listed above and in Table 13.10, are considered to result in a short term, **Moderate Beneficial** and significant effect on the economy at the neighbourhood levels; short term, **Minor Beneficial** and not significant at the local level; and short term **Negligible Beneficial** and not significant at the national level.

Potential Cumulative Operational Effects

Employment and Expenditure

13.4.29 The local economic benefits of the cumulative development proposals, where available, have been identified and are presented in Table 13.11.

Table 13.11: Cumulative Wind Farms - Operation		
Cumulative Scheme	**Total Community Benefit per MW (£)**	**Non-domestic Rates (£million)**
Garbet	n/a - TBC	n/a
Clashindarroch II[26]	5,000	n/a
Hill of Towie II[27]	3,000	4.9

13.4.30 The potential operational cumulative construction effects are considered to be of medium magnitude of impact at the neighbourhood level; medium magnitude of impact at the local level; and small magnitude of impact at the national level. The Proposed Development, in combination with the cumulative schemes listed above and in table 13.11 are considered to result in a long term, **Moderate Beneficial** and significant effect on the economy at the neighbourhood level; long term, **Minor, Beneficial** and not significant at the local level; and long term, **Negligible, Beneficial** and not significant at the national level.

13.5 Mitigation

13.5.1 No significant adverse effects as a result of the Proposed Development during construction and operation have been identified. Therefore, no mitigation is identified as being required and no mitigation is proposed.

[26] Aberdeenshire Council Planning Portal, 2021. Clashindarroch II. Online. Available at: https://upa.aberdeenshire.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=Q41J9OCA01300. [accessed 25/02/2022]

[27] Moray Council Planning Portal, 2013. Hill of Towie II Online. Available at: https://publicaccess.moray.gov.uk/eplanning/applicationDetails.do?activeTab=summary&keyVal=MVUHMMBG02M00 [accessed 25/02/2022]

13.6 Assessment of Residual Effects

13.6.1 No change from pre-mitigation effects have been identified. A summary of residual effects is provided in Table 13.12: Summary of Potential Significant Effects of the Proposed Development.

Residual Construction Effects

13.6.2 The following residual effects have been identified for the construction stage of the Proposed Development:

- Employment and Expenditure (local level) – Short term, **Minor Beneficial**, not significant; and
- Employment and Expenditure (national level) – short term, **Negligible Beneficial**, not significant.

Residual Operational Effects

13.6.3 The following residual effects have been identified for the operational stage of the Proposed Development:

- Employment and Expenditure (local and national levels) – Long term, **Minor Beneficial**, not significant;
- Community benefit (neighbourhood level) – Long term, **Major Beneficial**, significant; and
- Non-Domestic Rates (national level) – Long term, **Negligible Beneficial**, not significant.

Residual Cumulative Effects

13.6.4 The following residual cumulative effects have been identified for the Proposed Development:

- Construction employment and expenditure (neighbourhood) – Short term, **Moderate Beneficial** and significant
- Construction employment and expenditure (local) – Short term, **Minor Beneficial** and not significant;
- Construction employment and expenditure (national) – Short term, **Negligible Beneficial** and not significant;
- Operational employment and expenditure (neighbourhood) – Long term, **Moderate Beneficial** and significant;
- Operational employment and expenditure (local) – Long term, **Minor Beneficial** and not significant; and
- Operational expenditure (national) – Long term, **Negligible Beneficial** and not significant.

13.7 Summary

13.7.1 This chapter considered the potential for effects on socio-economic indicators, including employment, economic activity, population and non-domestic rates.

13.7.2 The assessment has identified that the Proposed Development would support between 164 and 191 jobs during construction and 28 to 33 jobs during operation across the UK economy. Overall, the socio-economic effects of the capital investment, employment and GVA to the economy are considered to be beneficial (short term during construction, long term during

operation). In combination with other wind farm developments identified in the study area, the economic benefits are considered to contribute to a significant cumulative beneficial effect, at the neighbourhood level, on the Scottish economy.

13.7.3 The Proposed Development would also generate a beneficial effect on the local economy as a result of community funding provided by the developer with an estimated contribution of between £10.89 to £12.71 million during the operational life of the Proposed Development. Additionally, the Proposed Development would contribute to between £0.80 and £0.93 million annually to public finances.

The effects of the Proposed Development on visual amenity of tourism routes and recreation receptors are considered in Chapter 5: Landscape and Visual Amenity.

Table 13.12 Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Construction			
Employment and Expenditure (Aberdeenshire and Moray – local level)	None required	Not applicable	Minor, Beneficial, Not significant
Employment and Expenditure (Scotland – national level)	None required	Not applicable	Negligible Beneficial, Not significant
Operation			
Employment and Expenditure (Aberdeenshire, Moray and Scotland – local and national levels)	None required	Not applicable	Minor Beneficial, Not significant
Community Benefit (neighbourhood level)	None required	Not applicable	Major Beneficial, Significant
Non-domestic Rates	None required	Not applicable	Negligible Beneficial, Not Significant
Cumulative Construction			
Employment and Expenditure (neighbourhood level)	None required	Not applicable	Moderate Beneficial, Significant
Employment and Expenditure (Aberdeenshire and Moray (local level))	None required	Not applicable	Minor Beneficial, Not Significant
Employment and Expenditure (Scotland (national level))	None required	Not applicable	Negligible Beneficial, Not significant
Cumulative Operation			
Employment and Expenditure (neighbourhood level)	None required	Not applicable	Moderate Beneficial, Significant
Employment and Expenditure (Aberdeenshire and Moray (local level))	None required	Not applicable	Minor Beneficial, Not Significant
Employment and Expenditure (Scotland (national level))	None required	Not applicable	Negligible Beneficial, Not significant

14 Shadow Flicker

14.1 Introduction

14.1.1 This chapter considers the likely significant effects on shadow flicker associated with the construction, operation and decommissioning of the Proposed Development. Shadow flicker is a phenomenon caused by the moving shadow of the turbine rotor being cast over a narrow opening, such as a window or open door. The specific objectives of the chapter are to:

- describe the shadow flicker baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

14.1.2 The assessment has been carried out by Ramboll UK Limited (Ramboll). Lead author is Nathan Swankie, MSc BSc (Hons) MIEMA, Country Market Director. Mr Swankie has over 22 years of experience in environmental consultancy, specialising in Impact Assessment for renewable energy developments (refer to Technical Appendix 1.2 for further details).

14.1.3 This chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures:
  - Figure 14.1: Shadow Flicker Study Area and Receptors.
- Volume 4: Technical Appendices:
  - Technical Appendix 14.1: Shadow Flicker Modelling Output.

14.1.4 The figure and technical appendix are referenced in the text where relevant.

14.2 Assessment Methodology and Significance Criteria

Scope of Assessment

14.2.1 This chapter considers potential shadow flicker effects on properties within 10 rotor diameters (RD) of the proposed turbine locations. The Scottish Government web-based renewable advice for onshore wind turbines recommends that a separation between turbines and dwellings beyond 10 RD should avoid nuisance issues and annoyance to nearby residents[1]. The advice quotes:

"In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 RD), 'shadow flicker' should not be a problem."

14.2.2 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

14.2.3 Using proprietary specialist modelling software 'Windfarm' (RESoft Windfarm V5.0.1.2), an annual analysis of shadow flicker for the Proposed Development was carried out, taking into account the behaviour of the sun, the local topography and the turbine layout and dimensions.

[1] Scottish Government, Onshore Wind Turbines: Planning Advice, (2014). Available online from: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/. [accessed 16/02/2022]

14.2.4 It should be noted that the modelling analysis was performed using the following standard assumptions:

- the sun will always be visible during daylight hours (conservative assumption);
- the turbine blades are always turning at these times (conservative assumption);
- the alignment of the turbine rotor blades with respect to the sun's position will always produce maximum shadow casting (conservative assumption; it is unlikely that the wind, and therefore the rotor blades, will track the sun in practice);
- the analysis looks at shadow casting over the building from all directions rather than over vertical orientated windows only (conservative assumption);
- the intensity of the sun will be insufficient to cast strong shadows at elevations less than 2.0°;
- shielding due to features such as trees or other obstacles has not been taken into account; and
- terrain shielding, however, is modelled.

14.2.5 The significance of the shadow flicker effect to the surrounding properties has been assessed according to the Department of Energy and Climate Change (DECC) guidelines[2], stating:

"It is recommended that shadow flicker at neighbouring offices and dwellings within 500 m should not exceed 30 hours per year or 30 minutes per day".

Consultation

14.2.6 The EIA scoping report provided an opportunity for comments from consultees on shadow flicker, however, no consultation responses were received during this period on the scope and assessment of shadow flicker.

14.2.7 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Potential Effects Scoped Out

14.2.8 As shadow flicker is a phenomenon caused by the moving shadow of the turbine rotor being cast over a narrow opening, such as a window or open door, no shadow flicker effects from the construction or decommissioning of the Proposed Development are possible. Assessments of potential shadow flicker effects resulting from the construction and decommissioning of the Proposed Development has therefore been scoped out of the shadow flicker assessment.

14.2.9 Based upon a review of cumulative schemes, no properties identified as sensitive to shadow flicker from the Proposed Development are located within 10 RDs of any cumulative schemes. Therefore, no cumulative assessment was deemed necessary for the shadow flicker assessment.

14.2.10 A related visual effect to shadow flicker is that of reflected sunlight. Theoretically, should the light be reflected off a rotating turbine blade onto an observer then a stroboscopic effect could be experienced. In practice, a number of factors limit the severity of the phenomenon. Firstly, wind turbines have a semi-matt surface finish which means that they do not reflect light as strongly as materials such as glass or polished vehicle bodies. Secondly, due to the convex surfaces found on a turbine, the light would generally be reflected in a divergent manner.

[2] Department of Energy and Climate Change (2010) Update of UK Shadow Flicker Evidence Base. Available online from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48052/1416-update-uk-shadow-flicker-evidence-base.pdf [accessed 16/02/2022]

Thirdly, the variability in flow within a wind farm results in slightly differing orientation of rotor directions. Therefore, it is unlikely that an observer would experience simultaneous reflections from a number of turbines. Fourthly, as with shadow flicker, certain weather conditions and solar positions are required before an observer would experience the phenomenon. Therefore, it is concluded that the Proposed Development would not cause a material reduction to amenity owing to the reflected light, therefore the reflected light is scoped out and has not been considered in the assessment.

14.2.11 People with photosensitive epilepsy are usually sensitive to flickering light that is between 3 to 60 Herts (Hz); according to the NSP EN-3: Renewable Energy Infrastructure (2014)[3] 'the maximum frequency of the shadowing effect arising from commercial-scale wind turbines is less than 1 Hz'. Therefore, any potential shadow flicker effects arising from the Proposed Development are purely an effect on amenity, rather than having the potential to affect the health or wellbeing of occupants.

Method of Baseline Characterisation

Extent of the Study Area

14.2.12 The Shadow Flicker study area is comprised of a 10 RD (1,550 m) assessment area surrounding each proposed turbine, in accordance with the Scottish Government advice[1]. The DECC Guidance on Shadow Flicker[2] states that at UK latitudes only properties within 130 degrees either side of north of turbines can be affected by shadow flicker. To undertake the shadow flicker assessment specialist modelling software 'Windfarm' (RESoft Windfarm V5.0.1.2) has been used which accounts for the sun angle and movement. The study area is shown in Figure 14.1: Shadow Flicker Study Area and Receptors.

Desk Study

14.2.13 A desktop assessment was undertaken in June 2021 using Royal Mail address data and publicly available aerial and satellite images, in order to identify all residential properties and commercial properties located within the study area. Computer modelling was used to present the extent of shadow flicker to those properties for the Proposed Development, assuming a worst-case scenario and providing a very conservative (i.e., high) estimate.

Modelling Methodology

14.2.14 A modelling exercise was carried out for the Proposed Development using a 155 m rotor diameter[4]. The computer software 'WindFarm' was used to identify potential areas susceptible to shadow flicker, and the extent of shadow flicker impact caused. This software identifies the study area for the assessment based on candidate turbine dimensions and orientations, as well as model periods of predicted shadow flicker. The following model parameters were used:

- a candidate wind turbine with hub height of 122.5 m, a rotor diameter of 155 m and a tip height of 200 m[5];

[3] UK Government, Department of Energy and Climate Change, 2011. National Policy Statement for Renewable Energy Infrastructure (EN-3). Online. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf [accessed 16/02/2022]

[4] 155 m rotor diameter was used for EIAR purposes only.

[5] Parameters specified for the purposes of modelling potential shadow flicker only.

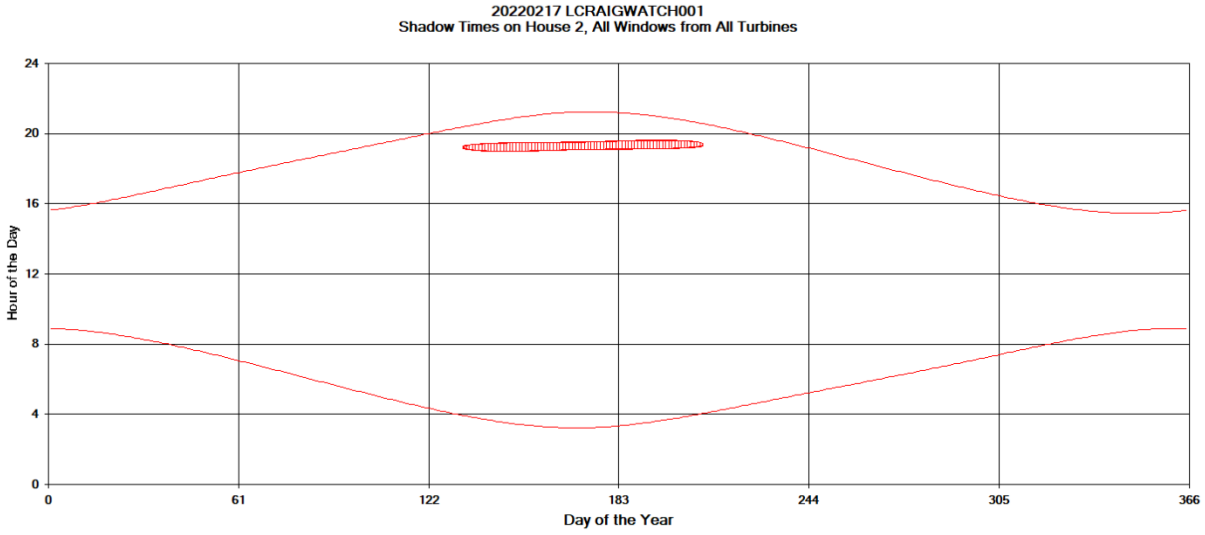
- the maximum distance of shadow flicker influence considered is 10 times the RD (155 m x 10 = 1,550 m);
- the centre of the window (viewing height) is 2 m above ground level;
- each property has 2 windows facing the Proposed Development[6];
- Each window is 1 m by 1 m;
- the calculation year of 2022;
- the maximum sun height of 2° above the horizon; and
- topography has been considered using 20 m grid spaced digital terrain model (DTM) data and the Earth's curvature has been accounted for.

Model Output

14.2.15 For each property within the study area, the model predicted the number of days per year, maximum hours per day, mean hours per day and total hours per year that the property would experience shadow flicker. The model output is presented in Table 14.1: Summary of Model Output.

14.2.16 In addition, the model has produced a graph illustrating the time of day and time of year shadow flicker effects could potentially arise for each property within the shadow flicker study area. An example graph for Property 2 (P2) is illustrated, Graph 14.1: Potential Shadow Flicker Effects at Property 2.

Graph 14.1: Potential Shadow Flicker Effects at Property 2



14.2.17 The area between the two red lines represents daylight hours over the course of a calendar year (calculation year 2022). The red circular areas represent times when the shadow flicker effects from the Proposed Development could potentially occur at this property. A similar graph for each of the four properties considered in the shadow flicker assessment is provided in Technical Appendix 14.1: Shadow Flicker Modelling Output.

[6] The assessment has adopted a conservative approach and as such 2 windows have been assumed for each property facing the Proposed Development as all properties are at an angle (SW facing or NW facing).

Criteria for the Assessment of Effects

14.2.18 No formal guidance is available regarding what levels of shadow flicker may be considered acceptable in Scotland. In the absence of this, the significance of the shadow flicker effect to the surrounding properties has been assessed according to the Best Practice Guidance Department of Energy and Climate Change (DECC) guidelines, which recommends that shadow flicker at neighbouring offices and dwellings should not exceed 30 hours per year or 30 minutes per day.

14.2.19 For the purposes of this chapter, values greater than 30 hours per year or 30 minutes per day are considered significant.

Limitations and Assumptions

14.2.20 A number of worst-case assumptions were made to generate the modelling output for the assessment. It should also be noted that even if shadow flicker impact does occur at a specific location, this does not imply that it would be witnessed. Potential receptors may be occupying a room on the other side of the house, which is not impacted, or indeed absent from the location altogether (e.g. at work, on holiday etc.) during the times of the shadow flicker events.

14.2.21 The use of these assumptions is considered to provide a precautionary basis for the purpose of this assessment.

14.2.22 The instances of shadow flicker would always be less than that predicted by the model. The occurrence of shadow flicker is only possible during the operation of the wind turbine (i.e., when the rotor blades are turning) and when the sky is clear enough for the sun to cast shadows. It is important to consider the following facts when making an assessment:

- Climatic conditions dictate that the sun is not always shining. Met Office data gives average annual sunshine hours for the east of Scotland to be 29% of total daylight hours[7], based on climate data from 1981-2010. Cloud cover during other times may obscure the sun and prevent shadow flicker occurrence. While some shadow may still be cast under slightly overcast conditions, no shadow at all would be cast when heavy cloud cover prevails.
- Objects such as trees or walls may surround windows and obscure the view of the turbine and hence prevent or limit shadow flicker.
- During operation, the turbine rotors would automatically orientate themselves to face the prevailing wind direction. This means the turbine rotors would not always be facing the affected window and in fact would sometimes be 'side-on' to the window. Very little of the blade movement would be visible during such occurrences and therefore the potential for shadow flicker is reduced.

14.3 Baseline Conditions

Current Baseline

14.3.1 The desk study identified four properties within the shadow flicker study area from the Royal Mail address data. The properties included in the assessment are shown in Figure 14.1: Shadow Flicker Study Area and Receptors.

[7] Calculated based on figures available at https://www.metoffice.gov.uk/public/weather/climate/ 1251.1 hours of sunshine a year, with an approximate total daylight hours of 4380 per year (1282.97/4380*100 = 29%) [accessed 16/02/20202]

14.3.2 The four properties within the shadow flicker study area are as follows:

- P1 - Greenloan Farmhouse located approximately 1.3 km east from Turbine 5;
- P2 – Belcherrie located approximately 1.4 km east from Turbine 5;
- P3 - Backside Farmhouse located approximately 1.3 km east from Turbine 11; and
- P4 - Craig Dorney Lodge located approximately 1.3 km east from Turbine 11.

Future Baseline

14.3.3 If a new property were to be constructed within the shadow flicker study area during the operational phase of the Proposed Development, this would create a potential new shadow flicker receptor. No consented or proposed residential developments have been identified within the shadow flicker study area on the Moray or Aberdeenshire Planning Portals at present.

14.3.4 In addition, if any of the existing properties within the study area were modified, for example, a new window or door was installed, or the property is extended, this could alter the individual property's sensitivity to shadow flicker. Again, no consented or proposed planning applications to modify existing properties within the shadow flicker study area have been identified on the Moray or Aberdeenshire Planning Portals.

14.3.5 There would be no further changes to the shadow flicker baseline if the Proposed Development does not take place.

14.4 Assessment of Likely Effects

14.4.1 The results of the shadow flicker model for the Proposed Development are detailed in Table 14.1: Summary of Model Output.

Table 14.1: Summary of Model Output

Property	Description	Easting	Northing	Days per Year	Max Hours	Mean Hours per Day	Total Hours per Year
P1	Greenloan Farmhouse	339850	833906	0	0.00	0.00	0.00
P2	Belcherrie	340053	834077	78	0.50	0.44	**34.6**
P3	Backside Farmhouse	341129	836143	42	0.48	0.37	15.6
P4	Craig Dorney Lodge	341099	836141	42	0.49	0.38	16.1

Note: **Bolded** text represent where the assessment indicates that the potential number of shadow flicker hours experienced at the receptor exceeds 30 hours per year and/ or 30 minutes per day (0.5 hours per day)

14.4.2 The assessment indicates that three properties could be subject to shadow flicker from the proposed turbines. Table 14.1 provides a summary of the results and Figure 14.1: Shadow Flicker Study Area and Receptors, details the house locations relative to the Proposed Development.

14.4.3 The results of the shadow flicker modelling conclude that P1 would not experience any shadow flicker from the Proposed Development.

14.4.4 P2, Belcherrie could experience the highest impact of shadow flicker on 78 days of the year, with a total of 34.6 hrs per year and a maximum duration of up to 30 minutes per day.

14.4.5 P3, Backside Farmhouse, and Property 4, Craig Dorney Lodge, would experience acceptable levels of shadow flicker in accordance with DECC guidance[2]. The shadow flicker levels at P3 and P4 would be less than 30 minutes per day and 30 hours per year.

14.4.6 The potential shadow flicker effects on the properties identified within the study area would be caused by two of the proposed 11 turbines: Turbine 5 and Turbine 11. Table 14.2 outlines the turbines with shadow flicker potential at each property.

Table 14.2: Turbines with Shadow Flicker Potential at Each Property

Property	Description	Turbine(s) with Potential Shadow Flicker Effects at Property	Shadow Flicker Days at Property (Per Turbine Per Year)*	Total Shadow Flicker Days at Property (Per Year)
P2	Belcherrie	Turbine 5	78	78
P3	Backside Farmhouse	Turbine 11	42	42
P4	Craig Dorney Lodge	Turbine 11	42	42

*No overlapping days (where more than one turbine would have the potential to cause shadow flicker effects at a property on the same day) have been identified

14.4.7 Out of the four properties located within the study area, only one property would experience a shadow flicker impact above the thresholds outlined in the DECC guidance[2]. It should be noted that the target thresholds of 30 hours per year and/ or 30 minutes per day are guidance.

14.4.8 Additionally, it should also be emphasised that this analysis provides an extremely conservative estimate of the extent that the properties would be affected by shadow flicker. Due to frequent cloud cover, low irradiance intensity, turbines not turning at all times and turbine rotors not being aligned with the sun in a way to cast maximum shadow onto the proposed property, the actual amount of shadow flicker affecting the aforementioned properties is likely to be much less.

14.4.9 As such, in the absence of mitigation, the impact of shadow flicker from the Proposed Development would be as follows:

- Property 1 would experience **no effect**;
- Property 2 would experience a **significant adverse** effect;
- Property 3 would experience a **non-significant adverse** effect; and
- Property 4 would experience a **non-significant adverse** effect.

14.5 Mitigation

14.5.1 The Applicant proposes that prior to the erection of the first turbine, a Wind Farm Shadow Flicker Protocol would be submitted to and approved in writing by the Local Planning Authorities. This would set out the protocol to be followed should a shadow flicker complaint be received from a receptor within the study area and potential mitigation measures. These mitigation measures may include the provision of internal or external screening at the property of the complainant, or programming of the turbines to minimise impacts. Operation of the Proposed Development would be undertaken in accordance with the Wind Farm Shadow Flicker Protocol. It is proposed that this is secured through an appropriate condition attached to the consent.

14.5.2 The Applicant anticipates that this mitigation would be secured by appropriately worded condition.

14.6 Assessment of Residual Effects

14.6.1 With appropriate mitigation measures in place the residual effects during operation of the Proposed Development would be:

- Property 1 - **no effect**;
- Property 2 - **no effect**;
- Property 3 – **no effect**; and
- Property 4 - **no effect**.

14.7 Monitoring

14.7.1 No monitoring is required as there are no significant residual effects as a result of the operation of the Proposed Development.

14.8 Summary

14.8.1 This chapter provides an assessment of the potential impacts on residential amenity resulting from shadow flicker from the Proposed Development. The shadow flicker assessment has been undertaken to consider the maximum tip height of 200 m and rotor diameter for the 155 m for the Proposed Development. A study area of 11 rotor diameters (1.55 km) around each turbine was considered and four receptors were found within the area potentially susceptible to shadow flicker within the study area.

14.8.2 There are no published guidelines in Scotland that define acceptable levels of shadow flicker. In the absence of specific guidelines, the assessment has considered the 'Department of Energy and Climate Change (DECC) guidelines'[2] which states that shadow flicker should not be allowed to exceed 30 hours per year or 30 minutes per day. As such, properties where shadow flicker would potentially exceed these thresholds would be subject to significant effects, in the absence of mitigation.

14.8.3 The assessment indicates that the potential number of shadow flicker hours experienced exceeds 30 hours per year or 30 minutes per day at one of the properties identified within the study area. In the absence of mitigation, shadow flicker effects are potentially significant for this property.

14.8.4 This analysis provides an extremely conservative estimate of the extent that the properties would be affected by shadow flicker. Due to frequent cloud cover, low irradiance intensity, turbines not turning at all times, the presence of intervening vegetation and turbine rotors not being aligned with the sun in a way to cast maximum shadow onto the proposed properties all of the time, the number of hours when shadow flicker would affect the aforementioned properties is anticipated to be far fewer.

14.8.5 Mitigation has been proposed by the Applicant to avoid significant shadow flicker effects. Table 14.3: Summary of Potential Significant Effects of the Proposed Development provides a summary of the effects. With appropriate mitigation measures in place the impact from shadow flicker is predicted to be non-significant for the Proposed Development.

Table 14.3: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Operation			
Disturbance to properties within the shadow flicker study area.	A shadow flicker protocol.	Prior to the erection of the first turbine a Wind Farm Shadow Flicker Protocol would be submitted to and approved in writing by the Local Planning Authorities. This would set out the protocol to be followed should a shadow flicker complaint be received from a receptor within the study area and potential mitigation measures. These mitigation measures may include the provision of internal or external screening at the property of the complainant, or programming of the turbines to minimise impacts.	No effect

15 Climate

15.1 Introduction

15.1.1 This chapter considers the likely significant effects on climate associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the climate baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

15.1.2 The assessment has been carried out by Ramboll UK Limited (Ramboll). Lead author is Nathan Swankie, MSc BSc (Hons) MIEMA, Country Market Director. Mr Swankie has over 22 years' of experience in environmental consultancy, specialising in Impact Assessment for renewable energy developments (refer to Technical Appendix 1.2 for further details).

15.1.3 This chapter is supported by Technical Appendix 15.1: Carbon Balance Assessment.

15.2 Assessment Methodology and Significance Criteria

Scope of Assessment

15.2.1 The EIA Regulations[1] include the requirement to consider likely significant effects on climate both in terms of greenhouse gas emissions and the impacts relevant to adaptation.

15.2.2 This chapter considers how the Proposed Development contributes to global atmospheric greenhouse gases and therefore considers the impact on climate change. This assessment quantifies the effect of the Proposed Development on climate change via the results of the carbon calculator[2]. The temporal scope of this assessment is the operational lifetime of the Proposed Development (assumed to be 33 years).

15.2.3 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

Legislation, Guideline and Policy

15.2.4 The scope of the assessment has been informed by the following legislation, guidelines and policies.

International

15.2.5 The Kyoto Protocol[3] to the United Nations Framework Convention on Climate Change (UNFCCC) commits state parties to reduce greenhouse gas (GHG) emissions.

[1] The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017

[2] SEPA. Online, Available at: https://informatics.sepa.org.uk/CarbonCalculator/index.jsp [accessed 17/02/2022]

[3] UNFCCC (2020) What is the Kyoto Protocol? Online. Available at: https://unfccc.int/kyoto_protocol [Last accessed 17/02/2022]

15.2.6 The Paris Agreement[4] builds upon the UNFCCC and sets out efforts for all nations to combat climate change and adapt to its effects.

15.2.7 The United Nations Emissions Gap Report 2021[5] compares where greenhouse gas emissions are heading against where they need to be and highlighting ways to close the gap.

15.2.8 The EIA Regulations[1] introduced the need to consider climate as part of EIA.

National

15.2.9 The Climate Change (Scotland) Act 2009 (the 2009 Act) amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[6] (the 2019 Act) established the context for Scottish Government action. The Scottish Ministers must ensure that the net Scottish emissions account for the net zero emissions target year is at least 100% lower than the baseline (the target is known as the 'net zero emissions target') by 2045. The interim target for 2020 is 56% and 75% by 2030. The 2019 Act requires local authorities to act in a way that contributes and helps deliver these emission targets.

15.2.10 The Scottish Government Climate Change Plan (CCP)[7] (2018 to 2032) sets out how Scotland will continue to improve resilience to climate change and reduce missions over the period to 2032. The CCP specifies the framework for Scotland's transition to a low-carbon economy and aligns with the Scottish Energy Strategy[8].

15.2.11 In December 2020, the 'Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on the Path to Net Zero' (CCP Update) was published. Building on the policy outcomes identified in the 2018 CCP, the CCP Update sets the Scottish Government's legislative commitment to reducing emissions by 75% by 2030 (compared with 1990) and to net-zero by 2045 in the context of a post-COVID green recovery.

15.2.12 The Scottish Government published its 'Programme for Scotland 2021 to 2022: A Fairer, Greener Scotland'[9]. The Programme was introduced amidst the ongoing process to lead the country out of the COVID-19 pandemic and much of the focus of the Programme is on the response to the challenges presented by this. The Programme states that the Scottish Government is committed to securing between 8 and 12 GW of installed onshore wind by 2030, recognising the vital role that this technology has to play in delivering the net zero commitment. As well as focussing on the delivery of net zero in relation to tackling climate change, the Programme also recognises the importance of renewable energy to the economic recovery post-COVID.

15.2.13 The Scottish Government published its 'Progress in Reducing Emissions in Scotland – 2021 Progress Report to the Scottish Parliament' (2021). The report assesses Scotland's overall

[4] UNFCCC (2015) Paris Agreement. Online. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement [Last accessed 17/02/2022]

[5] United Nations, Environment Programme. Emissions Gap Report 2021. Online. Available at: https://www.unep.org/resources/emissions-gap-report-2021 [accessed 17/02/2022]

[6] An Act of the Scottish Parliament to amend the Climate Change (Scotland) Act 2009 to make provision setting targets for the reduction of greenhouse gases emissions and to make provision about advice, plans and reports in relation to those targets. Available at: http://www.legislation.gov.uk/asp/2019/15/enacted [Last accessed 02/12/20]

[7] Scottish Government (2018) Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3) – summary. Available at: https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018-9781788516488/ [Last accessed 02/12/20]

[8] Scottish Government (2017) The future of energy in Scotland: Scottish energy strategy. Available at: https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/ [Last accessed 02/12/20]

[9] Scottish Ministers. The Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland, 2021'. Online. Available at: https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/ [accessed 17/03/2022]

progress in achieving its legislated targets to reduce greenhouse gas emissions. There are a number of key messages from this report including a recognition that the annual targets set for the 2020s will be very difficult to meet, even with strong climate policy support. Another message is that Climate policy in Scotland must focus on the transition required to net zero in order to make rapid progress by 2030 and that the focus must also be on implementation and delivery of real-world progress.

15.2.14 The Scottish Government addresses climate change in the context of planning through the National Policy Framework 3 (NPF3)[10]. While NPF3 does not set out the role of EIA in climate change mitigation and adaptation, it does acknowledge that the energy sector accounts for a significant share of the country's GHG emissions and states 'A Low Carbon Place' as a key planning strategy to help reduce Scotland's GHG emissions and adapt to and mitigate against climate change. National Planning Policy Framework 4 (NPF4) is under preparation, please refer to Chapter 4: Energy and Planning Legislation and Policy for more details.

15.2.15 In November 2021, the Scottish Government published its Draft Fourth National Planning Framework (Draft NPF4)[11]. The NPF4 is currently at draft and has not been formally adopted. The opening paragraphs of Draft NPF4 (page 3) state *"We have set a target of net zero emissions by 2045, and must make significant progress towards this by 2030. This will require new development and infrastructure across Scotland."*

15.2.16 Aberdeenshire Council (AC) adopted their climate strategy 'Climate Ready Aberdeenshire 2020-2030'[12] which sets out Aberdeenshire's climate change adaption and mitigation strategy.

15.2.17 Moray Council (MC) declared a climate emergency on the 26th of June 2019[13]. As part of the climate emergency MC have agreed a target of net-zero carbon emissions by 2030 with respect to council activities. As part of the Climate Emergency Declaration, it was agreed that a Climate Change Strategy would be developed and adopted by the Council. As part of this ongoing development work, the associated governance and responsibility of the strategy will be defined but is not currently finalised.

Consultation

15.2.18 No responses specifically on the scope of climate assessment were received as part of the pre-application scoping consultation.

Potential Effects Scoped-Out

15.2.19 The vulnerability of the Proposed Development to climate change hazards is considered to be low on the basis that the design has specifically included embedded mitigation to ensure that the significant effects are avoided or reduced to a tolerable level. Embedded mitigation includes but is not limited to Sustainable Drainage System (SuDS), ultrasonic anemometers and remote operational control system (controller and SCADA systems) which is linked to an ice detection application and fire detection and warning systems. Therefore, the assessment

[10] Scottish Government (2014). National Planning Framework 3. Online. Available at: https://www.gov.scot/publications/national-planning-framework-3/ [Last accessed 02/12/20]

[11] Scottish Government (2022). Draft National Planning Framework 4. Online. Available at: https://consult.gov.scot/local-government-and-communities/draft-national-planning-framework-4/ [last accessed 17/03/2022]

[12] Aberdeenshire Council, 2020. Climate Ready Aberdeenshire 2020-2030. Online. Available at: https://www.aberdeenshire.gov.uk/environment/green-living/climate-ready-aberdeenshire/ [accessed 03/03/2022]

[13] Moray Council, 2019. Climate Emergency Declaration. Online. Available at: EIR Request - Climate Emergency - Moray Council [accessed 31/03/2022]

of the vulnerability of the Proposed Development to climate change, climate change resilience has been scoped-out.

15.2.20 Carbon dioxide emissions from numerous sources globally, contribute cumulatively to cause climate change. As the Proposed Developments contribution is likely to be negligible compared to global carbon dioxide emissions, no further consideration of the Proposed Development's carbon dioxide emissions in combination with other sources of carbon dioxide (such as cumulative schemes) is considered necessary.

Method of Baseline Characterisation

Desk Study

15.2.21 A desk study was undertaken to ascertain the national carbon dioxide emissions (equivalent) statistics and Scottish Government carbon budgets.

15.2.22 National carbon dioxide emissions statistics are published by the UK Government[14] and contain historic emissions data covering 2005 to 2019 for all local authorities and councils.

15.2.23 Under the Climate Change Act 2008, the UK Government must set five-yearly carbon budgets, twelve years in advance, from 2008 to 2050. The 2009 Act required an 80% reduction in GHG emissions in Scotland by 2050, compared to the 1990 to 1995 baseline. The Scottish Government has since passed the 2019 Act[6] which has set net zero emissions target by 2045.

15.2.24 Applications under Section 36 of the Electricity Act 1989 are required to calculate potential carbon losses and savings on Scottish peatlands. The Scottish Government's carbon calculator tool allows a consistent and comprehensive assessment of the carbon impact of wind farm developments. The associated technical guidance[15] on how to use the carbon calculator was reviewed as part of the desk-study.

15.2.25 Further data sources used in the carbon balance assessment are set out in Technical Appendix 15.1: Carbon Balance Assessment. The assessment was informed by peat depth surveys completed specifically for the Proposed Development. Please refer to Technical Appendix 2.3: Peat Depth Survey Results; Technical Appendix 2.4: Peat Management Plan (PMP) and Technical Appendix 2.5: Peat Landslide Hazard and Risk Assessment (PLHRA) for further information.

Modelling Methodology

15.2.26 The modelling methodology followed for the carbon calculator is set out in Technical Appendix 15.1: Carbon Balance Assessment. The online version of the carbon calculator used was v1.6.1 and the reference number is Q7LP-N9DC-8AYZ v3.

Field Survey

15.2.27 As set out in Technical Appendix 2.3: Peat Survey Results, peat surveys were undertaken by Ramboll in January, March and July 2021. For more information, please refer to Technical Appendix 2.3: Peat Depth Survey Results.

15.2.28 The data obtained as part of the desk study and collected as part of the field work has been processed and interpreted to complete the impact assessment.

[14] UK Government. UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019. Online. Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 [accessed 17/03/2022]

Criteria for the Assessment of Effects

15.2.29 Applications under Section 36 of the Electricity Act 1989 are required to calculate potential carbon losses and savings on Scottish peatlands. The Scottish Government's carbon calculator tool compares the carbon costs of wind farm developments with the carbon savings attributable to the wind farm.

15.2.30 The carbon assessment methodology used is consistent with that published by the Rural and Environment Research and Analysis Directorate of the Scottish Government entitled 'Calculating carbon savings from wind farms on Scottish peatlands – a new approach'[15] and revised equations for GHG emissions[15].

Criteria for Assessing the Sensitivity of Receptors

15.2.31 Construction carbon emissions associated with the Proposed Development would be released to the atmosphere in Scotland. Therefore, the atmosphere is considered to be the receptor. In line with standard practice, the sensitivity of human and natural receptors is not considered within this assessment.

Criteria for Assessing the Magnitude of Change

15.2.32 The carbon calculator methodology calculates total carbon dioxide savings and payback time for the Proposed Development. The carbon payback time is the measurement indicator to assess the influence of the Proposed Development on climate change. The shorter the payback period, the greater the benefit the Proposed Development would have in displacing emissions associated with electricity generated by burning fossil fuels. The payback period has been calculated by using the total carbon cost (carbon loses) of the Proposed Development and dividing by the annual carbon gains from displaced fossil fuel power generation and any site improvements.

Criteria for Assessing Significance

15.2.33 To determine whether effects are significant under the EIA Regulations, it is appropriate to consider the sensitivity (value and resilience) of the receptor and magnitude of the impact, taking into account uncertainty. This is based on the professional judgement of the assessor.

15.2.34 The categories of significance which effects are assessed as are:

- negligible – no detectable or material change to a location, environment, species or sensitive receptor;
- minor – a detectable but non-material change to a location, environment, species or sensitive receptor;
- moderate – a material, but non-fundamental change to a location, environment, species or sensitive receptor; or
- major – a fundamental change to a location, environment, species or sensitive receptor.

15.2.35 Effects assessed can be both beneficial or adverse as a result of the Proposed Development and the impacts of climate change. Sensitivity of climate change receptors is inherently linked to the magnitude of change. Whilst receptors may be considered "high-value", a non-material magnitude of change would result in any effect being considered not significant.

[15] Nayak *et al.* (2008, 2010) and Smith (2011). Calculating Carbon Savings from Wind Farms on Scottish Peatlands - A New Approach. Available at: https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/pages/11/ [Last accessed 17/03/2022]

Limitations and Assumptions

15.2.36 Climate projections can be used to determine likely future trends in climate conditions in the locality of the Proposed Development through its lifetime. The climate trends included in this assessment are based on a range of GHG emissions scenarios which are subject to a degree of uncertainty. How the climate will react to different levels of emissions is also uncertain.

15.2.37 Data sources and assumptions used in the carbon balance assessment are detailed in Technical Appendix 15.1: Carbon Balance Assessment.

15.3 Baseline Conditions

Current Baseline

15.3.1 Technical Appendix 2.3: Peat Survey Results sets out the baseline for the peat conditions on-site. As the Site is currently largely undeveloped, baseline carbon emissions to the atmosphere are considered to be minimal, however it is widely acknowledged that peatlands sequester, and store carbon and the amount sequestered by peat bog varies depending on its condition. Much of the Site is dominated by commercially managed plantation forestry and it is considered that forestry planting has contributed to the sequester of carbon dioxide emissions. However, draining of the Site for the purposes of plantation forestry has caused drying, oxidation, erosion and release of particulate and dissolve organic carbon into watercourses. These resulted in an increased carbon release and likely outweighed its potential for carbon capture. It is also acknowledged that the carbon release to watercourses increases the potential for their acidification, a lack of pH buffering and a decrease in habitat suitability for aquatic species.

Future Baseline

15.3.2 The Digest of United Kingdom Energy Statistics (DUKES) 2021[16] provides details of the sources used in generation of electricity throughout 2020 by major power producers. Of a total of 55.6 million tonnes of oil equivalent (mtoe) generated in 2020 within the UK, 37.7% were generated by fossil fuels (natural gas, oil and coal), and 43.1% were generated from renewable resources. The remaining 19.2% is generated from other sources. These numbers demonstrate that fuels which emit high levels of carbon emissions are currently generating the majority of electricity within the UK.

15.3.3 The Scottish Government has set ambitious targets for reductions in GHG emissions. Most of Scotland's electricity requirements are currently met by renewable energy, with most of this growth over the past two decades attributed to a substantial increase in onshore wind developments. With the continued development of onshore wind farms, in the planning and pre-construction phases, it is anticipated that onshore wind farms will continue to make a sizeable contribution to the energy generated from renewable energy technologies within Scotland.

15.3.4 In the future, it is expected the GHG/ carbon intensity will continue to decline in Scotland due to legislative and policy changes and decarbonisation of industry, energy supply and transportation.

[16] Department for Business, Energy & Industrial Strategy (2020) Digest of United Kingdom Energy Statistics 2020: Chapter 5 Electricity. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1006701/DUKES_2021_Chapter_5_Electricity.pdf [Last accessed 17/03/2022]

Summary of Sensitive Receptors

15.3.5 Construction carbon emissions associated within the Proposed Development would be released to the atmosphere in Scotland. Therefore, it is considered to be the receptor. In line with standard practice, the sensitivity of human and natural receptors is not considered within this assessment.

15.4 Assessment of Likely Effects

Potential Construction and Operation Effects

15.4.1 The carbon calculator factors the construction, operational and decommission stage effects into the calculations. The below presents and discusses the results of the carbon calculator.

15.4.2 In terms of carbon savings, every unit of electricity produced by a wind farm development displaces a unit of electricity which would otherwise have been produced by a conventional (coal or gas) power station, and therefore presents carbon savings.

15.4.3 The carbon calculator presented in Technical Appendix 15.1: Carbon Balance Assessment sets out the potential annual carbon dioxide emission savings for the Proposed Development. Table 15.1 summarises the potential annual carbon dioxide emission savings for the expected scenario for the Proposed Development.

Table 15.1: Expected Carbon Savings for the Proposed Development (Expected Scenarios)

Fuel Source	Proposed Development Estimated Expected CO_2 saving (tCO_2yr^{-1})
Coal fired electricity generation	263,294
Grid mix electricity generation	72,572
Fossil fuel mix electricity generation	128,785

15.4.4 In terms of carbon losses, there is a carbon cost associated with the manufacturing, construction and installation of wind turbines for any wind farm development. Carbon losses also result from the need for extra capacity to back up wind power generation. The reduced carbon fixing potential and loss of organic soil matter via peat excavations during the construction phase result in carbon losses. The forest felling requirements for the Proposed Development also would result in carbon losses. It should be noted that forestry felling was not included within the carbon tool.

15.4.5 Removal of the conifer plantation for the construction of the Proposed Development would have a beneficial effect on the peatland habitats present within the Site. Currently the conifer plantation is causing degradation to the peatland habitats through lowering of the water table. This in turn is enabling oxidation of the peat to occur and the release of carbon dioxide (a key GHG) into the atmosphere, contributing to climate change. Restoration of the peatlands through removal of the conifer plantation and therefore raising of the water table as well as re-establishment of key peatland species, would change the degraded peatlands from a source of carbon dioxide release to one of capture, in turn aiding in reducing carbon dioxide emissions and tackling climate change.

15.4.6 Table 15.2 summarises the carbon losses of the expected scenario for the Proposed Development.

Table 15.2: Expected Carbon Losses for the Proposed Development (Expected Scenarios)	
Fuel Source	**Proposed Development Estimated Total CO_2 losses (tCO_2 eq.)**
Losses due to turbine life (e.g. manufacture, construction, decommissioning)	67,747
Losses due to back-up	47,221
Losses due to reduced carbon fixing potential	1,067
Losses from soil organic matter	3,282
Losses due to dissolved organic carbon and particulate organic carbon leaching	8
Losses due to felling forestry	124,396
Total losses of Carbon Dioxide	**243,722**

15.4.7 The carbon payback time is the measurement indicator to assess the influence of the Proposed Development on climate change. The shorter the payback period, the greater the benefit the Proposed Development would have in displacing emissions associated with electricity generated by burning fossil fuels and with the carbon losses associated with the Proposed Development. The payback period is calculated by using the total carbon cost (carbon loses) of the Proposed Development and dividing by the annual carbon gains from displaced fossil fuel power generation and any site improvements.

15.4.8 Table 15.3 summarises the carbon payback period for all scenarios for the Proposed Development.

Table 15.3: Carbon Payback Period for the Proposed Development (All Scenarios)		
Generation Type	**Scenario**	**Proposed Development Estimated Carbon Payback Period (years)**
Coal-fired electricity generation	Expected	0.9
	Minimum	0.5
	Maximum	1.7
Grid-mix of electricity generation	Expected	3.3
	Minimum	1.9
	Maximum	6.1
Fossil fuel - mix of electricity generation	Expected	1.9
	Minimum	1.1
	Maximum	3.4

15.4.9 The carbon payback period is considered to be **Negligible Beneficial** environmental effect that is not significant under the EIA Regulations.

15.5 Mitigation

Mitigation during Construction and Operation

15.5.1 All potential climate change effects during construction and operation are mitigated by topic-specific mitigation measures and there would be no resulting significant effects as a result of the construction or operation of the Proposed Development. Therefore, no additional mitigation measures to address the impact of climate change are proposed beyond those described in the remainder of the EIAR. The Applicant is committed to delivering the

mitigation set out in the EIAR including the Outline Construction Environmental Management Plan (OCEMP) (Technical Appendix 2.1), Outline Habitat Management Plan (OHMP) (Technical Appendix 7.5), PMP (Technical Appendix 2.4) and compensatory planting (Technical Appendix 2.6: Forestry Impact Assessment).

Mitigation during Decommissioning

15.5.2 Decommissioning would be undertaken in line with best practice measures and guidance which would be relevant at the time of decommissioning (in >33 years' time). It is assumed for the purposes of this assessment decommissioning mitigation measures would be along similar lines to those used for the construction phase of the Proposed Development.

15.6 Assessment of Residual Effects

Residual Construction, Operation and Decommission Effects

15.6.1 The following residual effects have been identified for the construction, operation and decommissioning stages of the Proposed Development:

- Atmosphere – negligible, beneficial, not significant.

15.7 Monitoring

15.7.1 No monitoring is required beyond that identified in the remaining technical assessment chapters of this EIAR.

15.8 Summary

15.8.1 As required by the EIA Regulations, a high level climate assessment has been prepared to support the Proposed Development application. The scope of this assessment includes the influence of the Proposed Development on climate change – a quantification of the effect of the Proposed Development on climate change via the results of the carbon calculator.

15.8.2 The results of the carbon calculator calculated the estimated carbon payback period of the Proposed Development fossil fuel – mix of electricity generation to be 1.9 years. The carbon payback period is considered to be a negligible, beneficial environmental effect that is not significant under the EIA Regulations.

15.8.3 All potential climate change effects are mitigated by topic-specific mitigation measures and there are no resulting significant effects as a result of the Proposed Development. Therefore, no additional mitigation measures to address the impact of climate change are proposed beyond those described in the remainder of the EIAR. The Applicant is committed to delivering the mitigation set out in the EIAR including the OCEMP, OHMP, PMP and compensatory planting.

15.8.4 A summary of the potential predicted residual effects of the Proposed Development are presented in Table 15.4.

Table 15.4: Summary of Potential Significant Effects of the Proposed Development			
Likely Significant Effect	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Construction, Operation and Decommissioning			
Atmosphere	None required	Not applicable	Negligible, Beneficial, Not Significant

16 Summary and Schedule of Mitigation

Introduction

16.1.1 The purpose of this chapter is to summarise the mitigation measures proposed in each of the technical chapters to avoid, reduce or offset impacts which could otherwise give rise to significant residual environmental effects. In addition, some good practice environmental management measures and commitments have been proposed to further reduce environmental effects, which are not considered to give rise to likely significant effects with or without mitigation.

16.1.2 A summary of these measures are provided in Table 16.1 along with the residual effects for each technical assessment. It is anticipated that the mitigation measures outlined in this table would be secured through appropriately worded conditions of consent.

16.1.3 The main aim of the design process was to 'design out' the potential for significant environmental effects as far as possible and embedded mitigation in the form of design solutions is presented in Chapter 3: Design Evolution and Alternatives, in particular Table 3.1 which provides a detailed review of mitigation achieved through design. As such these measures have not been replicated here.

16.1.4 Most of the pre-construction and construction phase mitigation would be delivered through a Construction Environmental Management Plan (CEMP). The outline content of the proposed CEMP is provided in Technical Appendix 2.1: Outline CEMP. Further details on specific measures to be included in the final CEMP are contained in each of the technical chapters of the Environmental Impact Assessment Report (EIAR), where relevant.

16.1.5 Throughout the EIAR, technical disciplines have considered the likely significant effects of the Proposed Development with consideration of embedded mitigation and commitments. Where significant effects have been identified, additional mitigation is proposed to minimise these effects.

16.1.6 Technical Appendix 16.1 presents a detailed schedule of the embedded mitigation, additional mitigation and commitments made by the Applicant.

Table 16.1: Summary of Residual Effects and Mitigation Measures				
Topic	**Potential Effect (without Mitigation)**	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
Construction (and Decommissioning)				
Landscape and Visual	Construction			
	Potential significant effects on landscape fabric	Phased felling and construction and reinstatement/ replanting, to limit the geographical extent of disturbance at any given time and to ensure rapid establishment of replacement planting and landscaping. Felling and replanting requirements are set out in Technical Appendix 2.6: Forestry Impact Assessment. Effective management of the construction project, using experienced contractors and measures set out in Technical Appendix 2.1: Outline CEMP.	Forest Management Plan to deliver the forestry felling and replanting in Technical Appendix 2.6: Forestry Impact Assessment. Forestry Management Plan to be delivered as a condition of consent. The CEMP would be finalised and delivered as a condition of consent.	Moderate, Adverse (not significant)
	Potential significant effects on landscape character	Phased felling and construction and reinstatement/ replanting, to ensure rapid establishment of replacement planting and landscaping. Relatively short duration of construction activities. Effective management of the construction project, using experienced contractors and measures set out in Technical Appendix 2.1: Outline CEMP.	Forest Management Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the Landscape and Visual Impact Assessment (LVIA).	Moderate, Adverse (not significant)
	Potential significant effects on designated landscapes	All working areas would be restricted as far as practicable to the specified areas and demarcated to keep affected areas to a minimum and prevent incursion of Site plant into non-construction locations. Material storage/ temporary stockpiles would be retained for the shortest duration practicable and would be sited to avoid visual intrusion to	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Moderate, Adverse (not significant)

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		neighbouring receptor locations, with particular regard to avoidance of sky-lining such features in views from sensitive landscapes such as Glen Rinnes.		
	Potential significant effects on visual amenity	Material storage/ temporary stockpiles would be retained for the shortest duration practicable and would be sited to avoid visual intrusion to neighbouring receptor locations, with particular regard to avoidance of sky-lining such features in views from neighbouring low-lying receptor locations such as the valley landscape to the south of the Site (the route of the A941), or the sensitive landscapes of Glen Rinnes, Glen Fiddich and the Deveron Valley. The profile of the final excavation void of the borrow pit would also be carefully considered to avoid unsightly exposed faces and the formation of a steeply graded rim.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Moderate, Adverse (not significant)
	Cumulative Construction			
	Cumulative construction effects on landscape fabric as well as landscape character and amenity of the Site	None required	Not applicable	Not significant
	Decommissioning			
	None	Decommissioning has been scoped out.		
Cultural Heritage	Construction			
	Potential direct impact on known non-designated Assets 19, 165, 166, 169, 173-175	Demarcating of remains if required. Watching brief on ground breaking works which will cross or be located in	Planning Condition with scope agreed by Written Scheme of	Minor to Negligible, Adverse, though offset, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	and 178.	the vicinity of these assets and recording of any remains. The watching brief would particularly relate to Assets 19 and 173-175 located within a proposed compensatory planting area.	Investigation	
	Possible impact upon hitherto unknown archaeological remains.	Walkover survey following felling in forestry area but prior to commencement of construction to identify the extent of survival of known remains and demarcating of remains if required, to be secured by planning condition. Watching brief on ground breaking works which will cross or be located in the vicinity of any assets identified during walkover survey and recording of any remains. Outwith forestry areas a representative proportion of ground works, in areas of relatively greater archaeological potential, would be subject to an archaeological watching brief during ground-breaking works.	Planning Condition with scope agreed by Written Scheme of Investigation	Moderate to Negligible, Adverse, though offset, Not significant
	Potential impacts upon non-designated assets (Assets 33, 35, 36, 44, 50, 52, 59, 67, 77, 78, 163 and 178) within areas proposed for enhancement as part of the Habitat Management Plan (HMP).	Fencing of the assets under archaeological supervision prior to commencement of enhancement works and prohibiting of any planting within the fenced areas.	Planning Condition with scope agreed by Written Scheme of Investigation	No effect
	Cumulative Construction			
	Potential cumulative impact on known and unknown archaeological remains within the Site.	Demarcating of remains if required. Watching brief on ground breaking works which would cross or be located in the vicinity of these assets and recording of any remains. Walkover survey following felling in	Planning Condition with scope agreed by Written Scheme of Investigation	Negligible, Adverse, though offset, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		forestry area but prior to commencement of construction to identify the extent of survival of known remains and demarcating of remains if required, to be secured by planning condition. Watching brief on ground breaking works which would cross or be located in the vicinity of any assets identified during walkover survey and recording of any remains. Outwith forestry areas a representative proportion of ground works, in areas of relatively greater archaeological potential, would be subject to an archaeological watching brief during ground-breaking work.		
	Decommissioning			
	Potential impact on heritage assets close to infrastructure.	None required unless the decommissioning extends beyond the construction footprint. Otherwise demarcation of archaeological assets in close proximity to working areas would ensure that accidental damage resulting from plant movement is avoided.	Decommissioning Management Plan	Neutral, Not Significant
Ecology	Construction			
	River Spey Special Area of Conservation (SAC)	None required – no route to impact	Not Applicable	No effect, Not Significant
	Blanket Bog	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
	Dry Modified Bog	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Acid Dry Dwarf Shrub Heath	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP, to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
	Otter	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP (including species protection plan (SPP) if required, and an ecological clerk of works (ECoW) presence during construction), to be agreed post-consent and prior to commencement of construction.	Minor/ Negligible Adverse, Not Significant
	Water vole	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP.	Implementation of a CEMP (including SPP if required, and ECoW presence during construction), to be agreed post-consent and prior to commencement of construction.	Minor Adverse, Not Significant
	Cumulative Construction			
	Otter	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the CEMP. HMP to provide enhancement and biodiversity benefit.	Implementation of a CEMP (including SPP if required, and ECoW presence during construction) and HMP, to be agreed post-consent and prior to commencement of construction.	Negligible Adverse, Not Significant
	Decommissioning			
	All-important ecological features assessed herein	Embedded mitigation and good practice	Via approved decommissioning protocols, to be approved prior to decommissioning.	Not significant
Ornithology	Construction			
	Tips of Corsemaul and Tom Mor special protection area (SPA) and site of special scenic interest (SSSI) & Common gull (breeding) – Displacement/	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Negligible Adverse, Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Disturbance			
	Common Gull – Displacement/ Disturbance	Not required. Embedded mitigation.	Through the iterative design of Proposed Development.	Negligible Adverse, Not Significant
	Hen harrier – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the construction breeding bird protection plan (CBBPP).	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
	Goshawk – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Minor Adverse, Not Significant
	Black grouse (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Minor Adverse, Not Significant
	Curlew (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
	Golden plover (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
	Lapwing (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
	Cumulative Construction			

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding), Hen harrier, Goshawk, Black grouse, Curlew (breeding), Golden plover (breeding), Lapwing (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through the iterative design of Proposed Development. Through a CEMP and CBBPP, agreed post consent and prior to construction commencing.	Negligible Adverse, Not Significant
	Decommissioning			
	Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation.	Through scheme design of Proposed Development.	Not Significant
	Hen harrier – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through scheme design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
	Goshawk – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through scheme design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
	Black grouse (breeding) – Displacement/ Disturbance	Not required. Embedded mitigation and good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP, and minimise risk of displacing lekking birds.	Through scheme design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
	Curlew (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through scheme design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
	Golden plover (breeding) –	Not required. Good practice protocols included as part of the CEMP to ensure	Through scheme design of	Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Displacement/ Disturbance	legislative compliance for breeding birds as part of the CBBPP.	Proposed Development. Through a CEMP and CBBPP, agreed post consent.	
	Lapwing (breeding) – Displacement/ Disturbance	Not required. Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Through scheme design of Proposed Development. Through a CEMP and CBBPP, agreed post consent.	Not Significant
Hydrology, Hydrogeology and Geology	Construction			
	Effects on Soil and Peat	Implementation of detailed peat management plan (PMP) to be prepared by the appointed contractor Implementation of good practice measures as outlined by the PMP, Peat Landslide Hazard Risk Assessment and CEMP Micrositing tolerances to be used in the event of encountering unexpected pockets of deep peat. Peat restoration, including rewetting via blocking of drains, would be undertaken in appropriate areas of the Site. Use of floating tracks over areas of deep peat.	Detailed PMP and CEMP to be submitted to and approved by the local planning authority (LPA)/ Scottish Environment Protection Agency (SEPA) to be secured by an appropriately worded planning condition.	Minor Adverse, Not Significant
	Alteration to Surface Water Flows and Runoff	Drainage management proposals to ensure pre-construction rates/ volumes of runoff maintained. The drainage management works would be supervised by the ECoW.	CEMP, including detailed watercourse crossing proposals, to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	Negligible, Adverse, Not significant
	Sedimentation and Increased Erosion	Drainage management proposals to ensure water quality is maintained	CEMP, including detailed watercourse crossing proposals,	Negligible, Adverse, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		through use of good practice silt mitigation. The drainage management works would be supervised by the ECoW.	to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	
	Chemical Pollution	The baseline review of private water supplies (PWS) identified limited potential for effects on PWS. All runoff to be treated in accordance with sustainable drainage systems (SuDS) principles. Where watercourse crossings are being installed or upgraded, best practice construction measures will be adopted to prevent contamination through the use of coffer dams and sediment isolation techniques. Petrol interceptors and spill kits will be utilised where chemical spillage is a possibility. In order to address any minor residual risk, a rapid response plan would be developed, which will ensure the rapid delivery of tankered water to those users affected and maintain this supply until problems are remedied.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition and the application for a Construction Site License by the contractor.	Negligible, Adverse, Not significant
	Effects on Groundwater Dependent Terrestrial Ecosystems (GWDTE)	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition.	Negligible, Adverse, Not significant
	PWS	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	CEMP to be submitted to and approved by the LPA/ SEPA to be secured by an appropriately worded planning condition.	No Effect, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Cumulative Construction			
	Potential cumulative impacts to receptors listed above	None required	Not applicable	Negligible, Adverse, Not significant
	Decommissioning			
	Impacts due to construction activity assessed above).	A Decommissioning Plan would set out environmental protection measures and restoration principles which would be implemented. It is anticipated that similar mitigation as required during construction would be necessary.	Decommissioning measures to be approved with SEPA through CAR licensing.	Negligible, Adverse, Not Significant
	Disturbance of established habitats or drainage pathways.	Minimisation of construction footprint during decommissioning. Excavated material re-used where possible, and potential for material to remain in situ where applicable assessed.	Decommissioning measures to be approved with SEPA through CAR licensing.	Negligible, Adverse, Not Significant
Traffic, Transport and Access	Construction			
	A941 Users			
	Severance	Construction Traffic Management Plan (CTMP) proposals	Implementation of CTMP via planning condition.	Slight, Adverse, Not significant
	Driver Delay	CTMP proposals and improved signage	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Pedestrian Delay	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Pedestrian Amenity	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Fear & Intimidation	CTMP proposals	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Accidents & Safety	CTMP proposals and improved. Junction Design to Moray Council standards.	CTMP proposals, improved signage and develop signage	Slight, Adverse, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
			strategy and agree works with Moray Council. Construction of Moray Council compliant access junctions.	
	Core Path Users			
	Severance	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Driver Delay	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Pedestrian Delay	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Pedestrian Amenity	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Fear & Intimidation	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Accidents & Safety	CTMP – core path users management plan	CTMP proposals and improved signage scheme.	Slight, Adverse, Not significant
	Cumulative Construction			
	None	None required	Not applicable	None
	Decommissioning			
	None	Decommissioning is scoped out.		
Noise and Vibration	Construction			
	Potential construction noise effects on noise sensitive receptors	No specific measures required other than standard good site practices.	These would be included in the detailed CEMP and delivered as a condition of consent.	None
	Cumulative Construction			
	Potential cumulative construction noise effects on noise sensitive receptors	No specific measures required.	Not applicable	None

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Decommissioning			
	Potential decommissioning noise effects on noise sensitive receptors	No specific measures required other than standard good site practices which would be applicable at the time.	Not applicable	None
Aviation and Telecommunications	Construction			
	Primary Surveillance Radars	None required	Not applicable	None
	Obstacle hazard to military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
	Airwave Microwave Link	None required	Not applicable	None
	Cumulative Construction			
	Primary surveillance radars	None required	Not applicable	None
	Military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
	Airwave microwave link	None required	Not applicable	None
	Decommissioning			
	Potential impact on aviation and telecommunication facilities within the study area.	None required	Not applicable	None
Socioeconomics	Construction			
	Employment and Expenditure (Aberdeenshire and Moray – local level)	None required	Not applicable	Minor, Beneficial, Not significant
	Employment and Expenditure (Scotland – national level)	None required	Not applicable	Negligible Beneficial, Not significant
	Cumulative Construction			
	Employment and Expenditure (neighbourhood level)	None required	Not applicable	Moderate Beneficial, Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Employment and Expenditure (Aberdeenshire and Moray (local level))	None required	Not applicable	Minor Beneficial, Not Significant
	Employment and Expenditure (Scotland (national level))	None required	Not applicable	Negligible Beneficial, Not significant
	Decommissioning			
	None	Decommissioning is scoped out.		
Shadow Flicker.	Construction			
	None	Construction is scoped out.		
	Cumulative Construction			
	None	None required	Not applicable	None
	Decommissioning			
	None	Decommissioning is scoped out.		
Climate	Construction, Operation and Decommissioning			
	Atmosphere	None required	Not applicable	Negligible, Beneficial, Not significant
Operation				
Landscape and Visual	Operational			
	Potential significant effects on landscape fabric relating to loss of characteristic land cover	Replacement planting to meet the requirements set out in Technical Appendix 2.6: Forestry Impact Assessment.	Forest Management Plan to deliver the forestry felling and replanting in Technical Appendix 2.6: Forestry Impact Assessment. Forestry Management Plan to be delivered as a condition of consent.	None
	Effects on landscape character	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the 13 landscape character type (LCTs) assessed, significant residual effects (including cumulative effects) were predicted in parts of the

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
				following LCTs: • LCT 292 – Open Upland (Major adverse); • LCT 32 – Farmed and Wooded River Valleys (Major adverse); • LCT 27 – Farmed Moorland Edge (Major/ Moderate adverse); • LCT 28 – Outlying Hills and Ridges (Major adverse); • LCT 289 – Upland Farmed Valleys (Major/ Moderate adverse); • LCT 294 – Upland Valleys (Major adverse); • LCT 123 – Smooth Rounded Hills (in-combination cumulative effects only - Major/ Moderate adverse); and • LCT 291 - Open Rolling Upland (in-combination cumulative effects only - Major adverse).
	Effects on Landscape Designations and Classifications	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the designations and landscape classifications assessed, significant residual effects (including cumulative effects) were predicted in parts of the following: • Ben Rinnes SLA (Major/ Moderate adverse) • Deveron Valley SLA (Aberdeenshire) (Major adverse) It should be noted that none were considered to undermine the integrity of either designation.
	Effects on the amenity of settlements	Aviation lighting on turbines to be operated in accordance with mitigation	Adoption of siting and design priorities, as described in	Localised significant residual effects (including cumulative effects) were

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Section 5.6: Mitigation of the LVIA.	predicted in parts of Dufftown (Major/ Moderate adverse) Such effects are not anticipated to be ubiquitous or pervasive in each settlement.
	Transportation Routes	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the routes assessed, significant effects (including cumulative effects) were predicted on discrete sections of the following highways: • A920 (Major adverse) • A941 (Major/ Moderate adverse) • B9009 (Major/ Moderate adverse) • Local road to east of the Site (Major/ Moderate adverse)
	Recreational Routes	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	No nationally or regionally important recreational routes would be significantly affected. However, significant effects (including cumulative effects) were predicted on parts of the following Core Paths which are of local importance: • SP03 (Major/ Moderate adverse) • SP04 (Major/ Moderate adverse) • SP30 (Major adverse)
	Cumulative Operation			
	Potential significant cumulative effects on landscape fabric relating to loss of characteristic land cover	None required	Not applicable	None
	Effects on landscape character	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the	Of the 13 LCTs assessed, significant residual cumulative effects were predicted in parts of the following

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		Appendix 5.8: Lighting Assessment	LVIA.	LCTs: • LCT 292 – Open Upland (Major adverse); • LCT 32 – Farmed and Wooded River Valleys (Major adverse); • LCT 27 – Farmed Moorland Edge (Major/ Moderate adverse); • LCT 28 – Outlying Hills and Ridges (Major adverse); • LCT 123 – Smooth Rounded Hills - Major/ Moderate adverse); • LCT 289 – Upland Farmed Valleys (Major/ Moderate adverse); • LCT 290 Upland Moorland and Forestry (Major/ Moderate adverse); • LCT 294 – Upland Valleys (Major adverse); and • LCT 291 - Open Rolling Upland Major adverse).
	Effects on Landscape Designations and Classifications	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the designations and landscape classifications assessed, significant residual cumulative effects were predicted in parts of the following: • Ben Rinnes SLA (Major/ Moderate adverse) • Deveron Valley SLA (Aberdeenshire) (Major adverse) Significant cumulative in-combination effects were predicted across some areas of the CNP (Major/ Moderate adverse). It should be noted that none were considered to undermine the

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
				integrity of either designation.
	Effects on the amenity of settlements	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Localised significant residual cumulative effects were predicted in parts of Dufftown (Major/ Moderate adverse) Such effects are not anticipated to be ubiquitous or pervasive in the settlement.
	Transportation Routes	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	Of the routes assessed, significant cumulative effects were predicted on discrete sections of the following highways: • A920 (Major adverse) • A941 (Major/ Moderate adverse) • B9009 (Major/ Moderate adverse) • Local road to east of the Site (Major/ Moderate adverse)
	Recreational Routes	Aviation lighting on turbines to be operated in accordance with mitigation set out in Section 5 of Technical Appendix 5.8: Lighting Assessment.	Adoption of siting and design priorities, as described in Section 5.6: Mitigation of the LVIA.	No nationally or regionally important recreational routes would be significantly affected. However, significant residual cumulative effects were predicted on parts of the following Core Paths which are of local importance: • SP03 (Major/ Moderate adverse) • SP04 (Major/ Moderate adverse) • SP30 (Major adverse)
Cultural Heritage	Operation			
	Impacts on the settings of Scheduled Monuments at Craig Dorney hillfort and Auchindoun Castle (Assets 20 and 115)	None required	Not applicable	Moderate, Adverse, Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Impacts on the settings of designated assets (Scheduled Monument Assets 111, 114, 118, 120 and Listed Building Assets 125-126, 130, 133-136, 138, 140, 143, 144, 147, 150-156 and 158-159) and upon the setting of the non-designated asset at Drywells (Asset 44).	None required	Not applicable	Minor to Negligible, Adverse, Not significant
	Cumulative Operation			
	Potential impact on the settings of the designated Scheduled Monument Craig Dorney hillfort (Asset 20) and Auchindoun Castle (Asset 115)	Not required	Not applicable	Moderate, Adverse, Significant
	Potential impact on the settings of designated assets (Scheduled Monuments at Assets 114, 118, 120 and Listed Buildings at Assets 126 and 147) and upon the setting of the non-designated asset at Drywells (Asset 44).	Not required	Not applicable	Minor to Negligible, Adverse, Not significant
Ecology	Operation			
	Habitats (blanket bog, dry modified bog and acid dry dwarf shrub heath)	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the Operational Management Plans. HMP to provide enhancement and biodiversity benefit.	Implementation of a HMP, to be agreed post-consent and prior to commencement of construction.	Beneficial, Not Significant
	Species (otter and wild cat)	Specific mitigation not required. Embedded mitigation and good practice protocols included as part of the	Implementation of a HMP, to be agreed post-consent and prior to commencement of construction.	Beneficial, Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
		Operational Management Plans. HMP to provide enhancement and biodiversity benefit.		
	Bat species	Specific mitigation not required.	Maintaining a stand-off distance between turbine blades and potential bat features to reduce collision risk.	Minor, Adverse (collision)/ Negligible Adverse (all other impacts), Not Significant
	Cumulative Operation			
	Bats	Specific mitigation not required.	Maintaining a stand-off distance between turbine blades and potential bat features to reduce collision risk.	Minor, Adverse, Not Significant
Ornithology	Operation			
	Tips of Corsemaul and Tom Mor SPA and SSSI & Common gull (breeding) – Displacement	Not required	Through the iterative design of Proposed Development.	Minor Adverse, Not Significant
	Common gull (breeding) – Collision mortality	Not required	Not applicable	Negligible Adverse, Not Significant
	Hen harrier – Displacement	Not required	Not applicable	Negligible, Adverse, Not Significant
	Hen harrier – Collision mortality	Not required	Not applicable	Minor, Adverse, Not Significant
	Goshawk – Displacement	Not required	Not applicable	Minor, Adverse, Not Significant
	Goshawk – Collision mortality	Not required	Not applicable	Minor, Adverse, Not Significant
	Black grouse – Displacement	Not required	Not applicable	Minor, Adverse, Not Significant
	Black grouse – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Curlew – Displacement	Not required	Not applicable	Negligible, Adverse, Not Significant
	Curlew – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Golden plover – Displacement	Not required	Not applicable	Negligible, Adverse, Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Golden plover – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Lapwing – Displacement	Not required	Not applicable	Negligible, Adverse, Not Significant
	Lapwing – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Cumulative Operation			
	Common gull (breeding) – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Hen harrier – Collision mortality	Not required	Not applicable	Minor, Adverse, Not Significant
	Goshawk – Collision mortality	Not required	Not applicable	Minor, Adverse, Not Significant
	Curlew – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
	Golden plover – Collision mortality	Not required	Not applicable	Negligible, Adverse, Not Significant
Hydrology, Hydrogeology and Geology	Operation			
	Effects on Soil and Peat	Drainage management proposals to ensure groundwater flow, hydraulic continuity and water quality is maintained.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant
	Alteration to Surface Water Flows and Runoff	Ongoing maintenance for all proposed drainage measures on the site, particularly including water crossings and sustainable drainage features designed to manage water quality and runoff rate.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant
	Sedimentation and Increased Erosion	Ongoing maintenance for all proposed drainage measures on the site, particularly including water crossings and sustainable drainage features designed to manage water quality and runoff rate.	To be implemented and monitored by the site operator, through operational maintenance schedule.	Negligible, Adverse, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Chemical Pollution	All ongoing maintenance to be carried out in accordance with pollution prevention guidance. No fuelling, storage of oils or laydown of plant to be carried out on-site	Maintenance schedule to be implemented by contractor	Negligible, Adverse, Not significant
	Effects GWDTE	Site infrastructure would incorporate measures to ensure the conveyance of shallow groundwater and surface water across the Site, such as the use of suitably graded sub-base aggregate on tracks, the use of floating track where areas of peat are crossed and cross drainage measures to ensure the continued distribution of surface water runoff.	To be implemented as set out in construction phase mitigation above. Maintenance schedule to be implemented by contractor.	Negligible, Adverse, Not significant
	PWS	Maintenance of Site drainage design in line with good practice measures.	To be implemented as set out in construction phase mitigation above. Maintenance schedule to be implemented by contractor	Negligible, Adverse, Not significant
	Cumulative Operation			
	No additional cumulative effects over and above those detailed above.	None required	Not applicable	Negligible, Adverse, Not significant
Traffic, Transport and Access	Operation			
	None	None required	Not applicable	None
	Cumulative Operation			
	None	None required	Not applicable	None
Noise and Vibration	Operation			
	Potential operational noise effects on noise sensitive	No specific measures required.	Not applicable	Not Significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	receptors (NAL 1 to 5, 8 to 20)			
	Potential operational noise effects on noise sensitive receptors (NAL 6 to 7)	Mode management for certain wind speeds and wind directions. Consideration of an alternative turbine or a turbine with a serrated trailing edge blade could eliminate the requirement for mode management.	Turbine control system	Not Significant
	Battery Energy Storage System (BESS)			
	Potential operational noise effects on noise sensitive receptors	No specific measures required.	Not applicable	Not Significant
	Potential cumulative operational noise effects on noise sensitive receptors	No specific measures required.	Not applicable	Not Significant
	Cumulative Operation			
	Potential cumulative operational noise effects on noise sensitive receptors	No specific measures required.	Not applicable	Not Significant
Aviation and Telecommunications	Operation			
	Degraded performance of Remote Radar Head (RRH) Buchan Primary Surveillance Radars (PSR)	Non-Auto Initiation Zone if required	Secured by planning condition	Minor, Adverse, Not significant
	Obstacle hazard to military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
	Airwave Microwave Link	None required	Not applicable	None
	Cumulative Operation			
	Degraded performance of RRH Buchan PSR	Non-Auto Initiation Zone if required	Secured by planning condition	Minor, Adverse, Not significant

Table 16.1: Summary of Residual Effects and Mitigation Measures

Topic	Potential Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
	Military low flying	Pre-notification of turbine positions and heights; lighting	Secured by planning condition	Negligible, Adverse, Not significant
	Airwave microwave link	None required	Not applicable	None
Socioeconomics	Operation			
	Employment and Expenditure (Aberdeenshire, Moray and Scotland – local and national levels)	None required	Not applicable	Minor Beneficial, Not significant
	Community Benefit (neighbourhood level)	None required	Not applicable	Major Beneficial, Significant
	Non-domestic Rates	None required	Not applicable	Negligible Beneficial, Not Significant
	Cumulative Operation			
	Employment and Expenditure (neighbourhood level)	None required	Not applicable	Moderate Beneficial, Significant
	Employment and Expenditure (Aberdeenshire and Moray (local level))	None required	Not applicable	Minor Beneficial, Not Significant
	Employment and Expenditure (Scotland (national level))	None required	Not applicable	Negligible Beneficial, Not significant
Shadow Flicker (potential to be scoped-out, depending on final wind farm design).	Operation			
	Disturbance to properties within the shadow flicker study area.	A shadow flicker protocol.	Prior to the erection of the first turbine a Wind Farm Shadow Flicker Protocol would be submitted to and approved in writing by the Local Planning Authorities. This would set out the protocol to be followed should a shadow flicker complaint be received from a receptor within the study area and potential mitigation measures. These mitigation	No effect

Table 16.1: Summary of Residual Effects and Mitigation Measures				
Topic	**Potential Effect (without Mitigation)**	**Mitigation Proposed**	**Means of Implementation**	**Outcome/ Residual Effect**
			measures may include the provision of internal or external screening at the property of the complainant, or programming of the turbines to minimise impacts.	
	Cumulative Operation			
	None	None required	Not applicable	None
Climate	Operation			
	Atmosphere	Please refer to Climate construction and operation, above.		

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