



# Culachy Wind Farm Environmental Impact Assessment Report

November 2023



# Contents

## Volume 1: Written Statement

<u>Chapter</u>	<u>Title</u>
1	Introduction
2	Site Selection and Design Iteration
3	Proposed Development Description
4	Approach to EIA
5	Planning and Energy Policy
6	Landscape and Visual Impact Assessment
7	Ornithology
8	Ecology
9	Hydrology, Geology and Hydrogeology
10	Cultural Heritage
11	Noise
12	Traffic and Transport
13	Socio- Economics, Tourism and Recreation
14	Aviation
15	Schedule of Environmental Commitments
16	Summary of Residual Effects

## Volume 2: Figures

<u>Figure</u>	<u>Title</u>
<b>Introduction</b>	
Figure 1.1	Site Location Plan
Figure 1.2	Site Layout Plan
<b>Site Selection &amp; Design Iteration</b>	
Figure 2.1	Layouts A-B



Figure 2.2	Layouts C-D
Figure 2.3	Layouts E-F
Figure 2.4	Layouts F-G
Figure 2.5 (a-d)	Proposed Development and Onsite Constraints
Figure 2.6	Site Access Tracks Design Iteration
Figure 2.7	Site Context with Layout Footprints
Figure 2.8	Local Landscape and Visual Context
Figure 2.9	Local Context with Proposed Development ZTV
Figure 2.10	Local Context CZTV Proposed Development (Final Layout) and Layout A (Scoping Layout)
Figure 2.11	Local Context CZTV of Proposed Development and Beauty Denny Line
Figure 2.12 (a-h)	Comparative Wirelines: Scoping Layout and Final Layout

### **Proposed Development Description**

Figure 3.1	Environmental Designations within 10km
Figure 3.2	Proposed Development and Enhancement Areas
Figure 3.3	Indicative Wind Turbine Elevation
Figure 3.4	Indicative Turbine Foundation
Figure 3.5	Indicative Turbine Hardstandings
Figure 3.6	Indicative Site Access Junction
Figure 3.7	Indicative Track and Drainage Arrangement
Figure 3.8	Indicative Directional Signage
Figure 3.9	Indicative Construction Compound
Figure 3.10	Indicative Batching Plant
Figure 3.11	Indicative Underground Cabling
Figure 3.12	Indicative Substation Compound Layout and Elevations
Figure 3.13	Indicative Substation Building Elevations
Figure 3.14	Indicative BESS Layout and Elevations



## Landscape and Visual Impact Assessment

Figure 6.1	Site Location and Study Area
Figure 6.2	The Proposed Development
Figure 6.3	Landform
Figure 6.4	Landscape Character
Figure 6.5	Landscape Designations
Figure 6.6	Landscape Character & Designations
Figure 6.7	Principle Visual Receptors (45km)
Figure 6.8	Principle Visual Receptors (20km)
Figure 6.9	Blade Tip ZTV with Viewpoints (45km)
Figure 6.10	Blade Tip ZTV with Viewpoints (20km)
Figure 6.11	Hub Height ZTV with Viewpoints (45km)
Figure 6.12	Hub Height ZTV with Viewpoints (20km)
Figure 6.13	Horizontal Angle Blade Tip ZTV
Figure 6.14	Blade Tip ZTV and Landscape Character
Figure 6.15	Blade Tip ZTV and Landscape Designations (45km)
Figure 6.16	Blade Tip ZTV and Landscape Designations (20km)
Figure 6.17	Blade Tip ZTV and Principle Visual Receptors (45km)
Figure 6.18	Blade Tip ZTV and Principle Visual Receptors (20km)
Figure 6.19	Cumulative Wind Farm Broad Search Area (60km)
Figure 6.20	Cumulative Wind Farm Locations (45km)
Figure 6.21 (a)	CZTV: Proposed Development + Operational and Under Construction Wind Farms within 45km
Figure 6.21 (b)	CZTV: Proposed Development + Consented Wind Farms within 45km
Figure 6.21 (c)	CZTV: Proposed Development + Bunloinn Windfarm
Figure 6.21 (d)	CZTV: Proposed Development + Corriegarth 2 Windfarm
Figure 6.21 (e)	CZTV: Proposed Development + Cloiche Windfarm
Figure 6.21 (f)	CZTV: Proposed Development + Tomchrasky Windfarm



## **Ornithology**

Figure 7.1	Site Boundary & Study Areas
Figure 7.2	Vantage Points & Viewshed: 2012-2014
Figure 7.3	Vantage Points & Viewshed: 2021-2022
Figure 7.4	Designated Sites within 20km
Figure 7.5 (a-b)	Black Grouse Lek Locations & Activity
Figure 7.6	Flight Activity: Black Grouse
Figure 7.7 (a-b)	Flight Activity: Golden Eagle
Figure 7.8	Raptor Activity
Figure 7.9	Flight Activity: Hen Harrier
Figure 7.10	Flight Activity: Merlin
Figure 7.11	Flight Activity: Osprey
Figure 7.12	Flight Activity: Peregrine Falcon
Figure 7.13	Flight Activity: Red Kite
Figure 7.14	Wader Activity
Figure 7.15	Flight Activity: Golden Plover
Figure 7.16	Wildfowl Activity
Figure 7.17	Flight Activity: Greylag Goose
Figure 7.18	Flight Activity: Pink-footed Goose
Figure 7.19	Flight Activity: Whooper Swan

## **Ecology**

Figure 8.1	Designated Sites & Ancient Woodland within 5km
Figure 8.2	Carbon and Peatland Map 2016
Figure 8.3 (a-t)	National Vegetation Classification - Survey Area and Survey Results
Figure 8.4 (a-t)	Ground Water Dependant Terrestrial Ecosystems (GWDTEs)
Figure 8.5 (a-c)	Protected Species Survey Areas and Results
Figure 8.6 (a-c)	Anabat Locations & Preliminary Bat Roost Assessment



- Figure 8.7 Overall Risk Assessment 2022 Common Pipistrelle
- Figure 8.8 Overall Risk Assessment 2022 Soprano Pipistrelle
- Figure 8.9 (a-b) Electrofishing Survey Points and Barriers to Migration
- Figure 8.10 Outline Biodiversity Enhancement Management Plan

### **Hydrology, Geology and Hydrogeology**

- Figure 9.1 Study Area
- Figure 9.2 (a-c) Watercourse Crossings (1:25,000)
- Figure 9.3 (a-c) Watercourse Crossings (Aerial)
- Figure 9.4 Bedrock Geology
- Figure 9.5 Superficial Geology
- Figure 9.6 (a-c) Phase 1 & 2 Peat Depth Sample & Coring Locations
- Figure 9.7 (a-f) Phase 1 & 2 Peat Depth Sample Results
- Figure 9.8 (a-f) Phase 1 & 2 Interpolated Peat Depth
- Figure 9.9 Hydrological Catchments
- Figure 9.10 Watercourse Buffers
- Figure 9.11 Hydrological Constraints
- Figure 9.12 (a-o) Proposed Development Infrastructure and Peat Excavations
- Figure 9.13 (a-k) Ground Water Dependent Terrestrial Ecosystems (GWDTEs)

### **Cultural Heritage**

- Figure 10.1 Heritage Assets and CHVP Locations within ISA
- Figure 10.2 Heritage Assets at North of ISA
- Figure 10.3 Heritage Assets in Centre and South of ISA
- Figure 10.4 Heritage Assets within 2km OSA
- Figure 10.5 (a) SM6143 and SM6142 in Relation to ZTV
- Figure 10.5 (b) SM6141 and SM6140 in Relation to ZTV
- Figure 10.5 (c) SM6140 and SM6128 in Relation to ZTV

### **Noise**

- Figure 11.1 Study Area & Noise Sensitive Receptors



## Traffic and Transport

Figure 12.1	Study Area
Figure 12.2	Traffic Count Locations
Figure 12.3	Personal Injury Accident Plan
Figure 12.4	Abnormal Indivisible Load Routes
Figure 12.1	Study Area

## Volume 3: Landscape and Cultural Heritage Visualisations

### Figure                      Title

#### Landscape and Visual Impact Assessment

Figure 6.22 (a-d)	Viewpoint 1: Corrieyairack Pass
Figure 6.23 (a-d)	Viewpoint 2: General Wades Military Road
Figure 6.24 (a-f)	Viewpoint 3: Corrieyairack Hill
Figure 6.25 (a-g)	Viewpoint 4: Carn a' Chuilinn
Figure 6.26 (a-g)	Viewpoint 5: Carn Dearg
Figure 6.27 (a-e)	Viewpoint 6: Fort Augustus, Car Park Adjacent to A82
Figure 6.28 (a-e)	Viewpoint 7: Fort Augustus near Church Road
Figure 6.29 (a-d)	Viewpoint 8: Loch Lundie
Figure 6.30 (a-d)	Viewpoint 9: A82 North of Fort Augustus
Figure 6.31 (a-g)	Viewpoint 10: An Suidhe
Figure 6.32 (a-f)	Viewpoint 11: Great Glen Way, Carn an Doire Mhoir
Figure 6.33 (a-i)	Viewpoint 12: B862 An Suidhe Car Park
Figure 6.34 (a-d)	Viewpoint 13: Burach
Figure 6.35 (a-e)	Viewpoint 14: Ben Tee
Figure 6.36 (a-g)	Viewpoint 15: Meall Dubh
Figure 6.37 (a-f)	Viewpoint 16: A87, Loch Garry
Figure 6.38 (a-f)	Viewpoint 17: Meall Fuar-mhonaidh
Figure 6.39 (a-e)	Viewpoint 18: Toll Creagach



- Figure 6.40 (a-b) Viewpoint 19: Alltsigh Loch Ness
- Figure 6.41 (a-f) Viewpoint 20: Meallan Odhar
- Figure 6.42 (a-f) Viewpoint 21: Beaully-Denny track
- Figure 6.43 (a-b) Viewpoint A: Loch Ness
- Figure 6.44 (a-b) Viewpoint B: Craig Meagaidh
- Figure 6.45 (a-b) Viewpoint C: Ben Nevis
- Figure 6.46 (a-b) Viewpoint D: Coire Odhar Beag
- Figure 6.47 (a-j) Sequential Wirelines

### **Cultural Heritage**

- Figure 10.6 (a-h) Viewpoint 1: SM6143 Corrieyairack Pass, military road, Connachie Burn to Culachy
- Figure 10.7 (a-f) Viewpoint 2: SM6142 Corrieyairack Pass, military road, Black Burn to Connachie Burn
- Figure 10.8 (a-f) Viewpoint 3: SM6141 Corrieyairack Pass, military road, Allt Lagan a'Bhainne to Black Burn
- Figure 10.9 (a-f) Viewpoint 4: SM6140 Corrieyairack Pass, military road, watershed to Allt Lagan a'Bhainne
- Figure 10.10 (a-f) Viewpoint 5: SM6128 Corrieyairack Pass, military road, Allt Ruadh to watershed
- Figure 10.11 (a-c) Viewpoint 6: Corrieyairack Pass, General Wades Military Road

## **Volume 4: Appendices**

<b><u>Appendix</u></b>	<b><u>Title</u></b>
------------------------	---------------------

### **Introduction**

- |              |  |
|--------------|--|
| Appendix 2.1 | Design Evolution and Response Provided to SEPA |
|--------------|--|

### **Proposed Development Description**

- |              |  |
|--------------|--|
| Appendix 3.1 | Outline Construction Environmental Management Plan (oCEMP) |
| Appendix 3.2 | Outline Outdoor Access Management Plan (OAMP)              |
| Appendix 3.3 | Forestry Assessment  |

### **Approach to EIA**





- Appendix 4.1 Scoping Report
- Appendix 4.2 Scoping Opinion (Redacted)
- Appendix 4.3 Gatecheck Report
- Appendix 4.4 Additional Consultation (Redacted)

### **Landscape and Visual Impact Assessment**

- Appendix 6.1 Methodology
- Appendix 6.2 Wild Land Assessment
- Appendix 6.3 Visual Assessment of Visible Aviation Lighting
- Appendix 6.4 The Highland Council Onshore Wind Energy Supplementary Guidance Assessment

### **Ornithology**

- Appendix 7.1 Ornithology Surveys
- Appendix 7.2 Confidential Ornithology Appendix
- Appendix 7.3 Golden Eagle Population Model

### **Ecology**

- Appendix 8.1 National Vegetation Classification & Habitats Survey
- Appendix 8.2 Protected Species Survey Report
- Appendix 8.3 Bat Survey Report
- Appendix 8.4 Fish Habitat and Electro-fishing Survey
- Appendix 8.5 Draft Species Protection Plan (DSPP)
- Appendix 8.6 Outline Biodiversity Enhancement Management Plan (oBEMP)

### **Hydrology, Geology and Hydrogeology**

- Appendix 9.1 Peat Landslide Hazard and Risk Assessment
- Appendix 9.2 Draft Peat Management Plan (DPMP)
- Appendix 9.3 Peat Probing and Coring Report
- Appendix 9.4 Carbon Calculator
- Appendix 9.5 Watercourse Crossing Assessment
- Appendix 9.6 Private Water Supply Risk Assessment



Appendix 9.7 Borrow Pit Desktop Assessment

### **Cultural Heritage**

Appendix 10.1 Cultural Heritage Baseline and Stage 1 Setting Assessment

Appendix 10.2 Cultural Heritage Gazetteer

### **Noise**

Appendix 11.1 Correspondence with The Highland Council's EHO

### **Traffic and Transport**

Appendix 12.1 Transport Assessment and Route Survey Report

### **Aviation**

Appendix 14.1 CAA agreed Lighting Scheme (Redacted)

## **Volume 5: The Highland Council Visualisations Landscape & Visualisations (THC Visuals)**

### **Figure**

### **Title**

Figure 6.48 Viewpoint 1: Corrieyairack Pass

Figure 6.49 Viewpoint 2: General Wades Military Road

Figure 6.50 Viewpoint 3: Corrieyairack Hill

Figure 6.51 Viewpoint 4: Carn a' Chuilinn

Figure 6.52 Viewpoint 5: Carn Dearg

Figure 6.53 Viewpoint 6: Fort Augustus, Car Park Adjacent to A82

Figure 6.54 Viewpoint 7: Fort Augustus near Church Road

Figure 6.55 Viewpoint 8: Loch Lundie

Figure 6.56 Viewpoint 9: A82 North of Fort Augustus

Figure 6.57 Viewpoint 10: An Suidhe

Figure 6.58 Viewpoint 11: Great Glen Way, Carn an Doire Mhoir

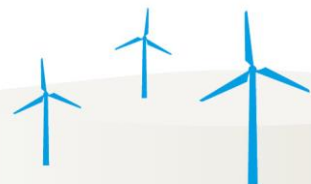
Figure 6.59 Viewpoint 12: B862 An Suidhe Car Park

Figure 6.60 Viewpoint 13: Burach

Figure 6.61 Viewpoint 14: Ben Tee

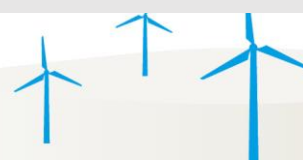


- Figure 6.62 Viewpoint 15: Meall Dubh
- Figure 6.63 Viewpoint 16: A87, Loch Garry
- Figure 6.64 Viewpoint 17: Meall Fuar-mhonaidh
- Figure 6.65 Viewpoint 18: Toll Creagach
- Figure 6.66 Viewpoint 19: Alltsigh Loch Ness
- Figure 6.67 Viewpoint 20: Meallan Odhar
- Figure 6.68 Viewpoint 21: Beaully-Denny track

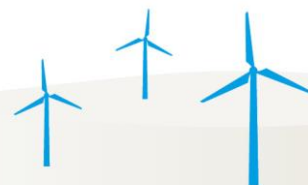


# List of Abbreviations

Abbreviation	Description
AADT	Annual Average Daily Traffic
ACoW	Archaeological Clerk of Works
AGER	Advisory Group on Economic Recovery
AGL	Above Ground Level
AIL	Abnormal Indivisible Loads
AMP	Access Management Plan
ANO	Air Navigation Order
AOD	Above Ordnance Datum
ATC	Automatic Traffic Count
ATS	Air Traffic Service
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BDMP	Bird Disturbance Management Plan
BDOHL	Beaulieu Denny Overhead Line
BEMP	Biodiversity Enhancement Management Plan
BESS	Battery Energy Storage System
BNG	British National Grid
BNL	Basic Noise Level
BoCC	Birds of Conservation Concern
BoP	Balance of Plant
BPM	Best Practicable Means
BS	British Standard
BTO	British Trust for Ornithology
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication (UK CAA)
CCC	Committee on Climate Change
CCP	Climate Change Plan
cd	Candela
CEA	Cumulative Effect Assessment



CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CLVIA	Cumulative Landscape and Visual Impact Assessment
CMS	Construction Methodology Statement
CO2	Carbon Dioxide
CRAA	Collision Risk Analysis Area
CRM	Collision Risk Model
CTMP	Construction Traffic Management Plan
CZTV	Cumulative Zone of Theoretical Visibility
dB	Decibels
DDS	Deer Distribution Survey
DECC	Department of Energy & Climate Change
DEMP	Decommissioning Environmental Management Plan
DfT	Department for Transport
DMOY	do-minimum opening year
DMP	Drainage Management Plan
DMRB	Design Manual for Roads and Bridges
DPEA	Planning and Environmental Appeals Division
DSFB	District Salmon Fisheries Board
DSFY	do-something future year
DSOY	do-something opening year
DTM	Digital Terrain Model
DWPA	Drinking Water Protected Area
EASA	European Aviation Safety Agency
ECoW	Environmental Clerk of Works
ECU	Energy Consents Unit
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ELC	European Landscape Convention
ESDAL	Electronic Service Delivery for Abnormal Loads
EU	European Union
GBDVS	Great Britain Day Visitor Survey



GCR	Geological Conservation Review
GDL	Gardens and Designed Landscape
GEPM	Golden Eagle Population Model
GET	Golden Eagle Topographical
GHG	Greenhouse Gas
GIS	Geographical Information System
GLVA3	Guidelines for Landscape and Visual Impact Assessment third edition
GLVIA3	Guidelines for Landscape and Visual Impact Assessment: Third Edition
GPG	Good Practice Guide
GVA	Gross Value Added
GW	Gigawatt
GWDE	Groundwater Dependent Terrestrial Ecosystems
GWh	Gigawatt hour
GWMR	General Wade's Military Road
ha	Hectares
HES	Historic Environment Scotland
HFoV	Horizontal Field of View
HGV	Heavy Goods Vehicle
HIE	Highlands and Islands Enterprise
HRA	Habitats Regulation Appraisal
HV	High Voltage
HwLDP	Highland Wide Local Development Plan
HZTV	Horizontal angle Zone of Theoretical Visibility
ICAO	International Civil Aviation Organization
IEF	Important Ecological Feature
IEMA	Institute of Environmental Management of Assessment
ILP	Institution of Lighting Professionals
IMFLDP	Inner Moray Firth Local Development Plan
INNS	Invasive non-native species
IoA	Institute of Acoustics
IOF	Important Ornithological Feature
ISO	International Organization for Standardization
JNCC	Joint Nature Conservation Committee



Job years	The number of years of employment generated by a project
km	Kilometres
kV	Kilovolt
kWh	Kilowatt hour
LCA	Landscape Character Area
LDP	Local Development Plan
LI	Landscape Institute
LPA	Local Planning Authority
LVIA	Landscape Visual Impact Assessment
m	Metres
MoD	Ministry of Defence
mph	Miles per hour
ms-1	Meters per second
MW	Megawatt
NATS	National Air Traffic Services
NBN	National Biodiversity Network
NCI	Nature Conservation Importance
NCR	National Cycle Route
NHZ	Natural Heritage Zone
NNR	National Nature Reserve
NPF	National Policy Framework
NPF4	National Planning Framework 4
NS	NatureScot
NSA	National Scenic Area
NSRs	Noise Sensitive Receptors
NTS	Non-Technical Summary
NVC	National Vegetation Classification
NWG	Noise Working Group
OBEMP	Outline Biodiversity Enhancement Management Plan
OEMP	Operation Environment Management Plan
ONS	Office for National Statistics
OS	Ordnance Survey
OWESG	Onshore Wind Energy Supplementary Guidance



OWPS	Onshore Wind Policy Statement
PAC	Pre-Application Consultation
PAN	Planning Advice Note
PLHRA	Peat Landslide and Hazard Risk Assessment
PMP	Peat Management Plan
PPP	Pollution Prevention Plan
PRoW	Public Right of Way
PWS	Private Water Supply
RLDP	Replacement Local Development Plan
ROCs	Renewables Obligations Certificates
RSPB	Royal Society for the Protection of Birds
RVAA	Residential Visual Amenity Assessment
S36	Section 36 Electricity Act 1989
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SEPA	Scottish Environment Protection Agency
SERAD	Scottish Executive Rural Affairs Department
SES	Scottish Energy Strategy
SGN	Supplementary Guidance Note
SLA	Special Landscape Area
SLR	Single-Lens Reflex
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SPP	Scottish Planning Policy
SQ	Special Quality
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
TAN	Technical Advice Note
THC	The Highland Council
TMP	Traffic Management Plan
TMZ	Transponder Mandatory Zone
TTA	Tactical Training Area





UK	United Kingdom
UKBAP	United Kingdom Biodiversity Action Plan
UN	United Nations
VP	Viewpoint
WANE	Wildlife and Natural Environment
WCX	Watercourse Crossing
WEWS	Water Environment and Water Services
WFD	Water Framework Directive
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

