Scottish & Southern Electricity Networks

TRANSMISSION

Dunoon to Loch Long 132 kV OHL Rebuild

Environmental Impact Assessment Report

Volume 2 | Main Report

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LIST OF ABBREVIATIONS

AADT	Average Annual Daily Traffic
ABReC	Argyll Biological Records Centre
ACoW	Archaeological Clerk of Works
AOD	Above Ordnance Datum
ASNW	Ancient Semi-Natural Woodland
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BCE	Before Common Era
BCT	Bat Conservation Trust
BGL	Below Ground Level
BGS	British Geological Survey
BNG	Biodiversity Net Gain
BoCC	Birds of Conservation Concern
BPM	Best Practicable Means
BPP	Badger Protection Plan
BSBI	Botanical Society of Britain and Ireland
BSI	British Standards Institution
BTO	British Trust for Ornithology
CAR	Controlled Activities Regulations
CDM	Construction Design and Management
CE	Common Era
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CoWRP	Scottish Government's Control of Woodland Removal Policy
CRA	Collision Risk Assessment
CSBGCSG	Central Scotland Black Grouse and Capercaillie Study Group
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
DMRB	Design Manual for Roads and Bridges
DTM	Digital Terrain Model
EcIA	Ecological Impact Assessment
ECoW	Environmental Clerk of Works
ECU	Scottish Government Energy Consents Unit
EIA	Environmental Impact Assessment

EIA Report	Environmental Impact Assessment Report
EPS	European Protected Species
EZoI	Ecological Zone of Influence
FRA	Flood Risk Assessment
FISA	Forest Industry Safety Accord
GCR	Geological Conservation Review
GDL	Gardens and Designed Landscapes
GEMP	General Environmental Management Plan
GIS	Geographic Information System
GVLIA 3	Guidelines for Landscape and Visual Impact Assessment 3rd Edition
GWDTE	Groundwater Dependent Terrestrial Ecosystems
ha	hectares
HCA	Habitat Condition Assessment
HER	Historic Environment Record
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Appraisal
IEF	Important Ecological Features
IEMA	Institute of Environmental Management and Assessment
IOF	Important Ornithological Features
IUCN	International Union for Conservation of Nature
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LEPO	Long-Established woodlands of Plantation Origin
LLTNP	Loch Lomond and the Trossachs National Park
LNCS	Local Nature Conservation Sites
LNR	Local Nature Reserve
LTFP	Long Term Forest Plan
LoD	Limit of Deviation
LU	Landscape Unit
LVIA	Landscape and Visual Impact Assessment
MOD	Ministry of Defence
NBN	National Biodiversity Network
NCN	National Cycle Network

NCR	National Cycle Route
NNR	National Nature Reserve
NPF4	National Planning Framework 4 (Scotland)
NSR	Noise sensitive receptors
NTS	Non-Technical Summary
NVC	National Vegetation Classification
OC	Operational Corridor
OHL	Overhead Line
OS	Ordnance Survey
PAO	Preliminary Alignment Options
PAWS	Plantations on Ancient Woodland Sites
PIA	Personal Injury Accident
PPG	Pollution Prevention Guidance
PWS	Private Water Supply
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SBL	Scottish Biodiversity List
SCT	Seascape Character Types
SEPA	Scottish Environment Protection Agency
SHEP	Scottish Historic Environment Policy
SLQ	Special Landscape Qualities
SM	Scheduled Monument
SNH	Scottish Natural Heritage (NatureScot is the operating name of Scottish Natural Heritage)
SPP	Scottish Planning Policy
SpPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
SU	Seascape Unit
SUDS	Sustainable Drainage Systems
SWT	Scottish Wildlife Trust
s37	Section 37 of the Electricity Act 1989
TA	Transportation Assessment
UKFS	United Kingdom Forestry Standard
UKHab	UK Habitat Classification
VP	Vantage Point

WFD	Water Framework Directive
WoSAS	West of Scotland Archaeology Service
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

1. INTRODUCTION

1.1 Overview of the Proposed Development

1.1.1 This Environmental Impact Assessment Report has been prepared by WSP on behalf of Scottish Hydro Electric Transmission 'the Applicant', who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), owns, operates and develop the high voltage electricity transmission system in the north of Scotland and remote islands. In this EIA Report, the Applicant and SSEN Transmission are used interchangeably unless the context requires otherwise, The EIA Report has been prepared to accompany an application for consent under section 37 of the Electricity Act 1989[1] ("the 1989 Act").

1.1.2 The Applicant is seeking consent under section 37 (s37) of the Electricity Act 1989 to construct and operate a double circuit steel structure 132 kV overhead transmission line ("OHL") between their existing Dunoon Substation and Tower 15 of the existing line, located to the west of the Loch Long crossing (hereafter referred to as the Proposed Development) extending approximately to 18 km. In addition, the Applicant is seeking consent for three temporary diversions of the existing 132 kV OHL, to facilitate safe construction of the proposed OHL alignment at these locations.

1.1.3 The Applicant is also seeking deemed planning permission under section 57 of the Town and Country Planning (Scotland) Act 1997 for certain elements of the project, or ancillary works required to facilitate its construction and operation. These ancillary works will include:

- the formation of access tracks (permanent, temporary, and upgrades to existing tracks) and the installation of bridges, culverts, and borrow pits to facilitate access;
- the upgrade of existing, or creation of new, bellmouths at public road access points;
- working areas around infrastructure to facilitate construction;
- formation of flat areas from which the conductor will be pulled during construction, which will contain earthed metal working surfaces referred to as Equipotential Zones (EPZs);
- formation of temporary works compounds and work areas from which the helicopter operations can be safely operated;
- tree felling and vegetation clearance to facilitate construction and operation of the Proposed Development;
- measures to protect road and water crossings during construction (scaffolding etc.); and
- works at the existing 132/33 kV Dunoon substation to facilitate connection of the proposed replacement OHL.

1.1.4 The electricity transmission project is referred to as the Dunoon to Loch Long 132 kV OHL Rebuild Project (and hereafter also referred to as "the Proposed Development"). The Proposed Development is required to replace existing assets that are approaching the end of their operational life and provide additional capacity on the transmission network for new renewable generation. Following completion of the Proposed Development, the existing 132kV OHL between the existing Dunoon Substation and Tower 15 of the existing 132kV overhead line ("the Existing OHL") would be dismantled and removed. An overview of the Proposed Development is show on **Figure 3.1 Site Layout**.

1.1.5 An Environmental Impact Assessment ("EIA") has been undertaken for the Proposed Development in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to assess the likely significant effects of the Proposed Development. The findings of the EIA are presented in this EIA Report, including the measures which would be taken to prevent, reduce and, where possible, offset predicted likely significant adverse effects.

[1] UK Government (1989). The Electricity Act 1989. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents

1.2 Background

1.2.1 The Applicant owns and maintains the electricity transmission network across the north of Scotland and holds a transmission licence under the 1989 Act. In terms of section 9 of the 1989 Act, the Applicant has a statutory duty to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and a separate duty to facilitate competition between current and new generators of electricity.

1.2.2 Dunoon is currently connected to the wider electricity transmission network by the Existing OHL which comprises of a double circuit 132 kV overhead line (OHL), supported on steel lattice towers between the Applicant's existing Dunoon Substation, located west of Sandbank on Holy Loch and a substation, belonging to SP Transmission plc (SPT) located north-west of Garelochhead, (**Figure 1.1 Site Location**).

1.2.3 The existing OHL crosses Loch Long with a 1.4 km span, supported by four special structures (those comprising two very tall steel lattice towers on either side of Loch Long with two very heavy tension towers behind those tall towers) forming the crossing. As the existing OHL crosses Loch Long it passes between Transmission Network Operator areas. The transmission line to the west of the Loch Long crossing connecting to Dunoon Substation is within the Applicants licenced area, whilst the OHL on the east of the Loch Long crossing is within SP Transmission's licenced area.

1.2.4 The existing OHL west of the Loch Long crossing is supported by steel lattice towers which are coming towards the end of their operational life. The OHL route crosses some very steep and exposed terrain and has a very high fault rate associated with it during high winds due to the design of tower used in the original build. The Applicant has established a requirement to replace the existing OHL to ensure security of supply.

1.2.5 The following works are also required to complete the full refurbishment of the existing OHL, however they are being consented under different regimes, do not require section 37 consent, and therefore do not form part of the Proposed Development. They will however be considered in terms of cumulative development as discussed in **Chapter 5 Methodology**.

- any upgrades required to the special crossing structures or their foundations (T12 - T15);
- reconductoring of the existing Loch Long crossing, replacing the wires which carry the current and the associated fittings and fixtures, but reusing the four existing special structures which support the Loch Long crossing span. This reconductoring is subject to separate consent under the Marine (Scotland) Act 2010[2]; and
- removal of the existing OHL conductors and dismantling of redundant towers.

1.3 Project Need

1.3.1 SSEN Transmission has a licence obligation to invest in its existing assets to maintain network health and condition; thus improving operational flexibility and resilience in line with SSEN Transmission's goal to aim for 100% transmission network reliability for homes and businesses. SSEN Transmission also has a statutory duty under the Electricity Safety Quality and Continuity Regulations 2002[3] to ensure that the electricity transmission network is fit for purpose. This strategic grid reinforcement is deemed to be essential for maintaining long-term security of electricity supply supporting sustainable economic development.

1.3.2 Due to the need to replace existing assets as a result of their deteriorating age and condition, the Applicant is progressing the Proposed Development to maintain the necessary transmission capacity in

[2] Scottish Government (2010). The Marine (Scotland) Act 2010. Available at: https://www.legislation.gov.uk/asp/2010/5/contents
[3] UK Government (2002). The Electricity Safety, Quality and Continuity Regulations 2002. Available at: https://www.legislation.gov.uk/uksi/2002/2665/contents/made

accordance with the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS).

1.3.3 The Scottish Government has published the revised draft for the National Planning Framework 4 (NPF4)[4], which is due to be adopted in February 2023 and which supersedes and replaces NPF3[5]. The need for a high voltage electricity transmission network is included within the Revised Draft of NPF4 as "*New and/or replacement upgraded on and offshore high voltage electricity transmission lines, cables and interconnectors of 132kv or more*". The NPF4 confirms that the Proposed Development is required to support the delivery of an enhanced high voltage electricity transmission grid which is identified as vital in meeting national targets for electricity generation, statutory climate change targets and the security of energy supply. Further information is provided in the Planning Statement which accompanies this s37 application

1.3.4 The Proposed Development has also been recommended to '*Proceed*' by the Electricity System Operator (ESO) through the Network Options Assessment (NOA) in 2017/18[6], 2018/19[7] and 2019/20[8].

1.3.5 The Proposed Development is technically and economically justified to meet the current and future requirements of the Applicant and the wider UK transmission system.

1.4 Legislative Requirements

1.4.1 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[9] (hereafter referred to as the EIA Regulations) contain two schedules. Schedule 1 lists projects where Environmental Impact Assessment (EIA) is mandatory. Schedule 2 lists projects where EIA may be required, where the proposed development is considered likely *'to have significant effects on the environment by virtue of factors such as its nature, size or location'* (EIA regulations, Part 1, Regulation 2(1)).

1.4.2 The Proposed Development falls within the following Schedule 2 definitions of the EIA Regulations:
"(2) an electric line installed above ground-
(a) with a voltage of 132 kilovolts or more;
(b) in a sensitive area"

1.4.3 A request for a Scoping Opinion was made to the Energy Consents Unit (ECU) of the Scottish Government under Regulation 12 of the EIA Regulations in February 2022. A Scoping Report (**Appendix 4.2: Scoping Report**) was submitted to support the request, which sought input from both the ECU and statutory and non-statutory consultees regarding the information to be provided within this EIA Report.

1.4.4 The Scoping Opinion of the Scottish Ministers was issued in July 2022 confirming the scope of the EIA Report. Further details of this are contained in **Chapter 4: EIA Consultation and Scope** and accompanying appendices.

[4] Scottish Government (2022). Revised Draft National Planning Framework 4. Available at: https://www.transformingplanning.scot/national-planning-framework/revised-draft-npf4/
[5] Scottish Government (2019). National Planning Framework 3: monitoring report (2019). Available at: https://www.gov.scot/publications/national-planning-framework-3-monitoring-report/pages/3/
[6] National Grid (2018). Network Options Assessment 2017/2018. Available at: https://www.nationalgrideso.com/document/106481/download
[7] National Grid (2019). Network Options Assessment 2018/2019. Available at: https://www.nationalgrideso.com/document/137321/download
[8] National Grid (2020). Network Options Assessment 2019/2020. Available at: https://www.nationalgrideso.com/document/162356/download
[9] Scottish Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, No.101.

1.5 Contents of the Environmental Impact Assessment Report

1.5.1 The EIA Report consists of the following volumes:

- Volume 1 – Non-Technical Summary;
- Volume 2 – Environmental Impact Assessment Report;
- Volume 3 – Figures; and
- Volume 4 – Technical Appendices.

1.6 EIA Quality

1.6.1 In line with Regulation 5 (5) of the EIA Regulations, the EIA Report and all technical assessments have been undertaken by a suitably qualified project team. A statement outlining the relevant expertise/ qualifications for the discipline leads is provided as follows:

- **Sarah McMonagle (EIA Project Manager, WSP):** Member of the Institute of Environmental Management and Assessment and Chartered Environmentalist, Sarah has worked in environmental consultancy for 16 years and is experienced in undertaking EIAs and other environmental studies. She is a specialist in the energy sector; having a strong track record of electricity transmission, renewables and conventional power station developments across Scotland.
- **Andy Follis (Landscape and Visual Lead, WSP):** Chartered Member of the Landscape Institute, Andy has approaching 40 years' experience as a landscape architect, working at all stages from strategic planning to detailed mitigation design and construction. He has worked on EIAs and LVIAs for major linear developments for some 25 years and over the last 20 years has developed a particularly strong track record of electricity transmission design and assessment for all three British transmission network operators.
- **Anita Hogan (Ecology Lead, WSP):** Chartered Ecologist, Chartered Environmentalist, Full Member of Chartered Institute of Ecology and Environmental Management, BSc in Zoology and MSc in Ecology. Anita has over 18 years of experience as an ecological consultant with a strong track record in the energy sector across Scotland.
- **Robbie Watt (Ornithology Lead, WSP):** Associate member of the Chartered Institute of Ecology and Environmental Management with 12 years' experience as an ecological consultant. Robbie is an ornithology specialist with extensive experience assessing the potential impacts of energy projects on birds, particularly across upland habitats in Scotland.
- **Kevin Patton (Cultural Heritage Lead, WSP):** Member of the Chartered Institute for Archaeologists, Kevin has over 14 years of experience as a heritage professional conducting assessments for EIA and advising and undertaking mitigation against archaeological and heritage issues. He has expertise in linear infrastructure assessment on highways and electrical infrastructure throughout Scotland and Ireland.
- **Stuart Bone (Hydrology and Hydrogeology Lead, WSP):** Chartered Environmentalist and Chartered Water and Environmental Manager through the Chartered Institution of Water and Environmental Management, also Practitioner within the Institute of Environmental Management and Assessment. Stuart has over 20 years of relevant consultancy experience across multiple sectors, with 16 years' experience in delivering and leading soil and water related EIA projects in the energy sector for transmission and renewables projects.
- **Esteban Olmos (Noise and Vibration Lead, WSP):** Member of the Institute of Acoustics, Chartered Environmentalist, Qualified Project Manager. MSc in Acoustics. Esteban has over 18 years of experience as a noise consultant advising on a variety of projects including noise impact and vibration from electrification projects.

- **Paul Schofield (Forestry Lead, Galbraith):** Professional Member of the Institute of Chartered Foresters. Paul has worked in the private forestry sector for over 20 years and has a proven track record in forest planning and delivering complex woodland management and establishment projects for estate clients all over Scotland.
- **Stephen Cochrane (Traffic and Transport Lead, WSP):** Chartered Member of The Chartered Institute of Logistics and Transport (CILT), Member of The Chartered Institute of Highways and Transportation (MCIHT) and with a BSc (Hons) degree in Construction and Project Management, and an HND in Civil Engineering, with over 20 years' experience. Stephen has developed a wide range of experience in the field of Environmental Impact Assessments for Access, Traffic and Transport works.

IEMA Quality Mark

1.6.2 The coordination, compilation and procedural review of the EIA Report are in line with the requirements outlined by the Institute of Environmental Management & Assessment (IEMA)'s Quality Mark scheme.

1.6.3 As with environmental assessment, good practice in the preparation of the EIA Report is defined in a number of sources, with more specific issues covered by EIA Report review checklists. Many of these checklists are very detailed and go to some length. In terms of widely applicable and practical guidance, the IEMA Quality Mark scheme provides best practice review criteria against which all EIA reports are evaluated.

1.6.4 Best practice guidance as set out within the IEMA Quality Mark scheme requires identification of key limitations affecting the EIA process and the resultant EIA Report. Limitations in methods are identified and discussed particularly where this is likely to affect the outcomes of the assessment. As with any environmental assessment, there will be elements of uncertainty. Where relevant these are identified and reported, together with a statement on any implications on the assessment and conclusions.

1.7 Notifications

1.7.1 Notice will be served to the relevant planning authority, in this case Argyll & Bute Council and Loch Lomond and Trossachs National Park Authority, of the application to the Scottish Ministers for consent under s37 of the Electricity Act 1989.

1.7.2 In accordance with the Electricity (Applications for Consent) Regulations 1990, and Regulation 14 of the EIA Regulations, the application and this EIA Report will be advertised in the following local newspapers:

- Dunoon Observer & Argyllshire Standard.

1.7.3 It will also be advertised in the following regional newspaper:

- Edinburgh Gazette.

1.7.4 The s37 application, including this EIA Report and associated documents, will be available for viewing at the following public locations:

Dunoon Library, Queens Hall, 9 Argyll St, Dunoon, PA23 7HH

1.7.5 The EIA Report can also be viewed via the ECU's website:

www.energyconsents.scot

1.7.6 Electronic versions of the application, including this EIA Report are available to download from SSEN Transmission's website:

https://www.ssen-transmission.co.uk/projects/dunoon/

1.7.7 This EIA Report is available in other formats if required. For details including costs contact:

Dan Thomas, Consents & Environmental Manager, SSEN Transmission, dan.thomas@sse.com

2. CONSIDERATION OF ALTERNATIVES

2.1 Introduction

2.1.1 A capability study of the OHL to see if it was suitable for upgrading with larger conductors was previously carried out in February 2019[10], associated with a request to connect to the electricity transmission system at Dunoon Grid Supply Point (Substation) which has subsequently been withdrawn. The outcome of this study shows that almost half of the steel lattice towers were in an unsatisfactory condition. Records for the existing OHL line show poor performance in terms of electrical faults that even refurbishing and reconductoring the existing OHL would not resolve. Therefore, in order to ensure security of supply and meet current clearance standards, a new double circuit OHL requires to be constructed to replace the existing OHL.

2.2 Development Considerations

2.2.1 The Applicant has obligations under section 9 of the 1989 Act to "*develop and maintain an efficient, co-ordinated and economical system of electricity transmission*"'.

2.2.2 As a licence holder under the Electricity Act 1989, the Applicant "*In formulating any relevant proposals… to generate, distribute, supply or participate in the transmission of electricity*" is required, under Schedule 9 to:

- "*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
- *"do what [it] 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".*

2.2.3 Under the terms of its transmission licence, the Applicant is obliged to comply with the NETS SQSS[11], which provides the criteria for the planning and design of the transmission system. The NETS SQSS requires the Applicant to provide a transmission connection capable of withstanding single circuit faults without loss of supply and without disconnection of generation stations. Furthermore, the Construction (Design and Management) Regulations 2015 (CDM Regulations)[12] require that the design aims to minimise hazards and reduces risks during construction.

2.2.4 The refurbishment of the existing steel lattice towers, or an on-line rebuild were considered unviable options. To ensure security of supply to the Dunoon area during the construction phase, the existing OHL needs to remain in situ and therefore a rebuild of the OHL offline is required. Where replacement of single structures or limited sections of rebuild on or near the existing OHL alignment are required, temporary diversions can be installed.

2.2.5 It was considered that the rebuild of the OHL at a suitably safe offset from the existing OHL would be constrained by existing features along the route, and would not likely be the optimal route for the replacement OHL, noting the best route may have already been utilised in the original build, avoiding constraints along the route. As such, in light of the above, and given that a significant part of the rebuild the OHL passes through a National Park, it was considered that the proposals should be subject to a detailed routeing and consenting process, allowing for full stakeholder engagement during the process.

[10] WSP, Scottish & Southern Electricity Networks (2019). Dunoon Reconductoring, Stage 2 Line Modelling and Simplified Design Study, February 2019

[11] National Electricity Transmission System Security and Quality of Supply Standard, Version 2.4, (2019). Available at: https://www.nationalgrideso.com/codes/security-and-quality-supply-standards?code-documents

[12] UK Government (2015).The Construction (Design and Management) Regulations 2015. Available at: https://www.legislation.gov.uk/uksi/2015/51/contents/made

2.2.6 The rebuild of the replacement OHL between the two connection points was therefore subject to SSEN Transmission's Routing Guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above'[13] (hereafter referred to as 'SSEN Transmission's Routeing Guidance'). The Holford Rules (**Appendix 2.1**), provide guidance relating to the routeing of overhead electricity transmission lines. Whilst the principles set out in the Holford Rules continue to inform OHL routeing, SSEN Transmission's Routeing Guidance broadens the basis for routeing decisions to reflect contemporary practice, and shows how environmental, land, technical and economic considerations are identified and appraised at each stage of the routeing process.

2.2.7 Taking account of these obligations, the Applicant has considered technical, economic and environmental factors in evaluating the alternatives for the Proposed Development, with the aim of identifying a solution that meets the objectives of the Proposed Development which is 'technically feasible and economically viable' and 'which causes the least disturbance to the environment and to the people who live, work, visit and recreate within it'.

2.3 Summary of Routeing Process

2.3.1 The approach to alignment selection, in identifying and assessing alternative OHL routes, is informed by the staged approach set out in the SSEN Transmission's Routeing Guidance.

2.3.2 The guidance splits a project into the following stages:

- Pre-Routeing Activities: Selection of proposed connection option;
- Stage 1: Corridor Selection;
- Stage 2: Route Selection;
- Stage 3: Alignment Selection; and
- Stage 4: EIA and consenting.

2.3.3 As permitted under the guidance, the Proposed Development was subjected to the Routeing process from Stage 2, as it was considered due to predefined connection points, limited length, and topographical constraints only one feasible corridor existed within which Route options could be sought (see **Figure 2.1 Corridor**).

2.4 Alternatives

2.4.1 The EIA Regulations require the Applicant to report upon the reasonable alternatives that were studied and the main reasons for the choice of the development, taking into account the environmental effects. The following alternatives have been considered during project development:

- The "do-nothing" scenario;
- Underground cable and subsea cable options; and
- Alternative OHL routes and alignments for the Proposed Development.

"Do-Nothing" Scenario

2.4.2 The "do-nothing" scenario would result in continuing poor performance of an ageing asset, with increased faults occurring during periods of adverse weather. A capability study was undertaken in February 2019 of the existing OHL to see if it was suitable for upgrading. The outcome of this study shows that almost half of the existing towers were in an unsatisfactory condition. Records for the existing OHL line show poor performance in terms of electrical faults that refurbishing and reconductoring the existing OHL would not resolve these issues. In order to ensure security of supply

[13] Scottish & Southern Electricity Networks, 2020. PR-NET-ENV-501: Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above

and meet current standards, a new line is required to replace the existing OHL. The do-nothing scenario has therefore been deemed to not be a suitable alternative.

Underground cable and subsea cable options

2.4.3 Different geographical connection options were considered. A study was undertaken in September 2020[14] to assess the feasibility of underground cable and subsea cable options to provide a new connection. Due to the terrain of the area the installation of an underground cable would prove challenging and result in increased risks compared to rebuilding the existing OHL. These solutions would also introduce maintenance challenges when compared to rebuilding the OHL; in the event of a fault on an OHL, the fault can usually be identified and rectified in a matter of hours/ days whereas a fault in an underground or subsea cable could take much longer to fix, potentially weeks/ months, which may compromise the electricity supply to Dunoon. In addition, the estimated costs associated with these solutions would be significantly greater than the costs associated with the rebuilding of the existing OHL. Therefore underground and subsea cables have been deemed unsuitable as an alternative to the OHL rebuild and have not been progressed.

2.4.4 During the consultation as part of the routeing process in the Ballochyle area, the community challenged the Applicant as to whether cabling past the Ballochyle area would be a feasible alternative to the rebuild of the OHL. A cost comparison was undertaken which demonstrated the alternative was factorially more expensive and this option was not pursued on this basis, as it did not align with the Applicants statutory duty to develop and maintain an efficient, and economical system of electricity transmission. Further details are provided below in paragraph 2.4.17.

2.4.5 Taking this into account SSEN Transmission has determined that a double circuit OHL is the preferred technological solution for this project, replacing the existing double circuit OHL.

Alternative routes and alignments for the Proposed Development

2.4.6 Alternate routes and alignments have been considered and are described below.

2.4.7 A preliminary environmental study area, hereafter known as the 'corridor', was identified within which the identification and assessment of route options could be completed (see **Figure 2.1 Corridor**). This corridor encompassed a range of feasible route options between the existing Dunoon Substation and Tower 15 (the crossing tower to the west of Loch Long).

2.4.8 The corridor was defined by the geography of the area between the two connection points i.e. the Dunoon Substation and Tower 15 to the west of the existing Loch Long crossing. It was constrained to the west by Loch Eck and to the east by Loch Long. At the northern end it extended slightly north of Tower 15 to encompass the low point on the ridge, northeast of Glen Finart. At the southern end, the corridor extended approximately 3 km west of Strath Eachaig and slightly south of the existing Dunoon Substation.

Routes

2.4.9 Route options were identified having regard to the most notable environmental and technical constraints (see **Figure 2.2 Route Options**). Considerations included a review of the steps outlined in the Holford Rules and SSEN Transmission plc's Routeing Guidance[15]. Whilst the routeing process was environmentally design-led, fundamental technical constraints such as terrain were considered as part of the process.

[14] WSP (2020), Dunoon OHL Replacement, Cable Options Report
[15] Scottish & Southern Electricity Networks, 2020. PR-NET-ENV-501: Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above

2.4.10 At Route Selection stage it was recognised that finding an acceptable alignment across the settled valleys of Glen Finart and Strath Eachaig would be particularly challenging. These settled straths and glens were identified as 'nodes' where further detailed study was necessary to minimise potential environmental effects. This was undertaken at the Alignment Selection stage.

2.4.11 After multifactorial comparison of route options following Stage 2 in the SSEN Transmission routeing process a Preferred Route was identified, which followed, and adjoined the west of the existing line along its route.

2.4.12 Following public and stakeholder consultation in October and November 2020, the majority of responses preferred a route in close proximity to the existing OHL and highlighted the requirement to balance different sensitivities and receptors in the selection of the Route. Several responses referred to concerns regarding specific receptors and their comments were considered in the further assessment work that has been undertaken; the outcomes of the consultation were presented in a Route Selection Report on Consultation[16]. The Proposed Route was selected following the feedback received from the consultation process and subsequent further assessment. It was recognised that the Proposed Route runs through a sensitive environment with challenging terrain. However, the Proposed Route was selected on the basis that it is considered to provide an optimum balance of environmental, technical and economic factors.

2.4.13 After the routeing stage was completed, and during the following alignment stage, the Proposed Route was altered in the northern section due to engineering and access safety concerns associated with the steep terrain of the northern section of the OHL. More detail can be found in the following section (paragraph 2.4.17) and **Appendix 4.3 Northern Alignment Consultation.**

Alignments

2.4.14 Alignment options were identified within the Proposed Route through consideration of environmental and technical constraints (see **Figure 2.3 Alignment Options and Preferred Alignment**). The nodes within the Proposed Route, due to their flatter easier terrain being more suitable for temporary diversions, provided the potential for the replacement OHL alignment to cross the existing OHL or to use the existing alignment through these areas. As for the routeing stage, considerations included the Holford Rules and SSEN Transmission plc's Routeing Guidance.

2.4.15 To inform the options appraisal an indicative 50 m Limit of Deviation (LoD) (i.e. 50 m micrositing of tower positions) was applied to the alignment options. This LoD did discount constraints such as the existing overhead line, environmental constraints and terrain.

2.4.16 After multifactorial comparison of alignment options following Stage 3 in the SSEN Transmission routeing process a Preferred Alignment was identified.

2.4.17 Throughout the alignment stage consultation period and beyond, SSEN Transmission engaged with stakeholders and the community though meetings on site and virtually. These discussions were taken into consideration as part of the decision-making process. Following this engagement, SSEN Transmission refined the Preferred Alignment to reflect these discussions, the resultant alignment being referred to as the Proposed Alignment (the alignment for which s37 consent is being sought). **Figure 2.4 Alignment Refinement** illustrates both the Preferred and Proposed Alignments. The main changes were as follows:

- In the Ballochyle region the alignment was moved further up the hill, away from residential receptors. However, this was identified as encroaching on Private Water Supply (PWS) catchments supplying a significant number of properties in the local community. Concern was also raised on increased Landscape and Visual impact with the elevated position at which the line crossed the hill,

[16] SSEN Transmission (April 2021). Report on Consultation - Route Selection, Dunoon to Loch Long 132 kV OHL Rebuild

on receptors including tourists leaving Sandbank, Dunoon on the A815. To accommodate the identified concerns, the Preferred Alignment was then revised and moved further down the hillside, coming backdown to Strath Eachaig sooner, reducing potential subsequent impacts on PWS (as Proposed Alignment now beneath the identified PWS sources), forestry and the wider landscape and visual aspect. The resulting Proposed Alignment follows the existing OHL alignment more closely than the Preferred Alignment in this section. It is noted that alignment of the existing OHL in this section traverses through the strath beneath Ballochyle and has a compromised alignment with four angles, crossing the Little Eachaig River three times, and with structures in close proximity to the river. By moving the OHL rebuild up the hill and behind residential receptors, these negative features of the exiting OHL are removed. During the refinement stage consideration was also given to undergrounding a short section within the valley floor at Ballochyle. This was not taken forward as it was not considered that the visual effects of the OHL alignment in this region were of significant magnitude to outweigh the maintenance challenges and costs associated with an underground cable as described above.

- In the northern section from Glen Finart to the Loch Long crossing the OHL alignment was changed significantly, with a switch to an alignment mostly on the east of the existing OHL, much lower on the hillside and closely following an existing forestry access, contouring around the hillside. This change was made due to the engineering and safety constraints associated with this section of the Preferred Alignment over steep terrain, with access for construction and ongoing maintenance being a key consideration. For the adjacent sections of OHL alignment, the preference was to keep it located to the west of the existing OHL to reduce engineering topographical challenges at the Loch Long anchor tower and reduce impacts on better quality deciduous woodland habitats on the edge of Glen Finart; two crossings of the exiting OHL were therefore required. The resultant alignment through this northern section is much lower on the hill, reducing the impact from the sky lined towers on most receptors within Glen Finart. It was noted however that the alignment was routed through a mostly coniferous woodland block and would have significantly greater forestry impacts. A subsequent refinement to the alignment was made within this section following discussions with the landowner to reduce impacts on forestry operations.

2.4.18 The resultant Proposed Alignment was chosen because it avoided, where possible, physical, environmental and amenity constraints, was most likely to be acceptable to stakeholders, and was economically viable, considering factors such as altitude, slope, ground conditions and access.

2.4.19 The parameters of the Proposed Development are as described in **Chapter 3: Description of the Proposed Development**.

2.4.20 For further detail refer to **Appendix 4.1 Alignment Report on Consultation Document**.

2.5 Summary

2.5.1 The Applicant has considered a number of alternatives in determining the key parameters of the Proposed Development.

2.5.2 The “do nothing” scenario (i.e. no replacement to the existing 132 kV OHL) would result in continuing poor reliability circuits serving Dunoon and wider communities, with an ageing asset that fails to meet SSEN Transmission’s statutory duty under the Electricity Safety Quality and Continuity Regulations 2002 to ensure that the electricity transmission network is fit for purpose.

2.5.3 Alternative technical options have been considered as part of the proposal, with the decision taken to exclude underground cable and subsea cable options. This is due to installation, maintenance and cost challenges being greater than when compared to rebuilding the existing OHL.

2.5.4 Alternate routes and alignments have been considered for the Proposed Development, with a preferred route and alignment being selected following an environmental, cost and engineering analysis, and informed through consultation with the general public and key stakeholders.

2.5.5 The Proposed Development is described in full in **Chapter 3: Description of the Proposed Development.**

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This chapter provides a description of the key components and information regarding the construction, operation and maintenance of the Proposed Development.

3.2 The Proposed Development

3.2.1 The Proposed Development for which Section 37 Consent and deemed planning permission is sought comprises of:

- the erection and operation of a replacement twin circuit 132 kV OHL, supported by steel lattice towers, between the existing Dunoon Substation and existing Tower 15, to the west of the Loch Long crossing; and
- the erection and operation of temporary single circuit wood pole 132 kV OHL diversions, to facilitate safe erection of the replacement OHL, close to, or on the existing OHL alignment.

3.2.2 The proposed alignment of the replacement OHL is hereafter referred to as the 'proposed OHL alignment' and is illustrated in **Figure 3.1 Site Layout**; it is approximately 18 km in length and will be supported by steel lattice towers as is the existing OHL, however the Proposed Development will be of more modern design.

3.2.3 The proposed OHL alignment and position of the towers has been determined following the applicant's OHL Routeing Guidance[17] and through consultation with effected stakeholders. To strike a balance between providing certainty between the location of the proposed OHL alignment and any environmental impacts, and the need for some flexibility over individual tower locations and accesses, Limits of Deviation (LoD) have been defined (see **Section 3.3** below) within which the proposed OHL alignment will be constructed. No towers will be located outside the LoD described.

3.3 Ancillary Development for which Deemed Planning Permission is sought

3.3.1 The following works would be required as part of the Proposed Development, or to facilitate its construction and operation:

- the formation of access tracks (permanent, temporary, and upgrades to existing tracks) and the installation of bridges and culverts to facilitate access;
- the upgrade of existing, or creation of new, bellmouths at public road access points;
- working areas around infrastructure to facilitate construction;
- formation of flat areas from which the conductor will be pulled during construction, which will contain earthed metal working surfaces referred to as Equipotential Zones (EPZs);
- formation of temporary works compounds and work areas from which the helicopter operations can be safely operated;
- tree felling and vegetation clearance to facilitate construction and operation of the Proposed Development, to comply with the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002[18];
- measures to protect road and water crossings during construction (scaffolding etc.); and
- works at the existing 132/33 kV Dunoon Substation to facilitate connection of the proposed replacement OHL.

[17] Scottish & Southern Electricity Networks (2020). PR-NET-ENV-501: Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above

[18] UK Government (2002). The Electricity Safety, Quality and Continuity Regulations 2002

3.3.2 These different forms of ancillary development are described in further detail in this chapter and where appropriate are illustrated in **Figure 3.1 Site Layout** and **Figure 3.5 Helicopter Flight Paths**.

3.4 Associated Works

3.4.1 Other associated works are required to facilitate construction of the Proposed Development, or would occur as a consequence of its construction and operation. These works, listed below, do not form part of the description of the Proposed Development and are therefore not included in the application for statutory consents. On that basis they are therefore not assessed in detail in this EIA Report. However, further detail on some of these elements is provided where available, as noted within the relevant chapters. The associated works are:

- removal of redundant towers and OHL of existing transmission line (note that a cumulative assessment is included within the EIA report for these works);
- reconductoring and refurbishment of the existing Loch Long crossing between existing Tower 12 and Tower 15 (note that a cumulative assessment is included within the EIA report for these works);
- modification of the existing 11 kV and 33 kV distribution network in some areas to accommodate the proposed OHL. These works are likely to comprise short sections of undergrounding within the vicinity of the Proposed Development, and would be undertaken by Scottish Hydro Electric Power Distribution (SHEPD). Consent would be sought by SHEPD as required;
- borrow pits and quarries may be required to source stone for the construction of access tracks. Indicative locations and a preliminary appraisal of the potential environmental impacts associated with these works has been included within the assessment chapters where applicable;
- temporary construction compounds would be required along the proposed OHL alignment to facilitate its construction. The final location and design of temporary site compounds would be confirmed by the Principal Contractor and separate planning permissions would be sought as required; and
- public road improvements would be required in some areas to facilitate construction traffic. These are largely expected to be undertaken under permitted development rights held by Argyll and Bute Council. All public road improvement works will be approved by Argyll and Bute Council and individual traffic management plans agreed before works commence.

3.5 Limits of Deviation

3.5.1 Investigation of sub-surface and geotechnical conditions have not been undertaken at this stage in reporting. It is possible therefore that individual tower locations or other infrastructure might alter following geotechnical investigation and detailed design (referred to as micro siting). The Limit of Deviation (LoD) is the maximum distance a proposed structure can be microsited within.

3.5.2 Consideration is given to the following principles in defining the LoD for the Proposed Development:

- presumption towards the proposed OHL alignment whilst providing flexibility for micro-siting during the detailed design phase;
- presumption towards avoiding sensitive environmental features and minimising impacts on land use; and
- presumption towards avoiding residential properties.

3.5.3 The LoD on the proposed OHL alignment is 50 m, allowing for each proposed tower to be microsited up to 50m from its proposed location.

3.5.4 It is possible that further engineering analysis at the detailed design stage might alter the required heights of towers necessary to maintain statutory ground clearance, therefore a vertical LoD parameter is included to allow a height adjustment of up to +/- 20% of the proposed tower heights.

3.5.5 For proposed access tracks, the LoD is 50 m either side from that indicated to allow for changes required associated with detail design or avoidance of sensitive constraints etc.

3.6 Description of OHL Infrastructure

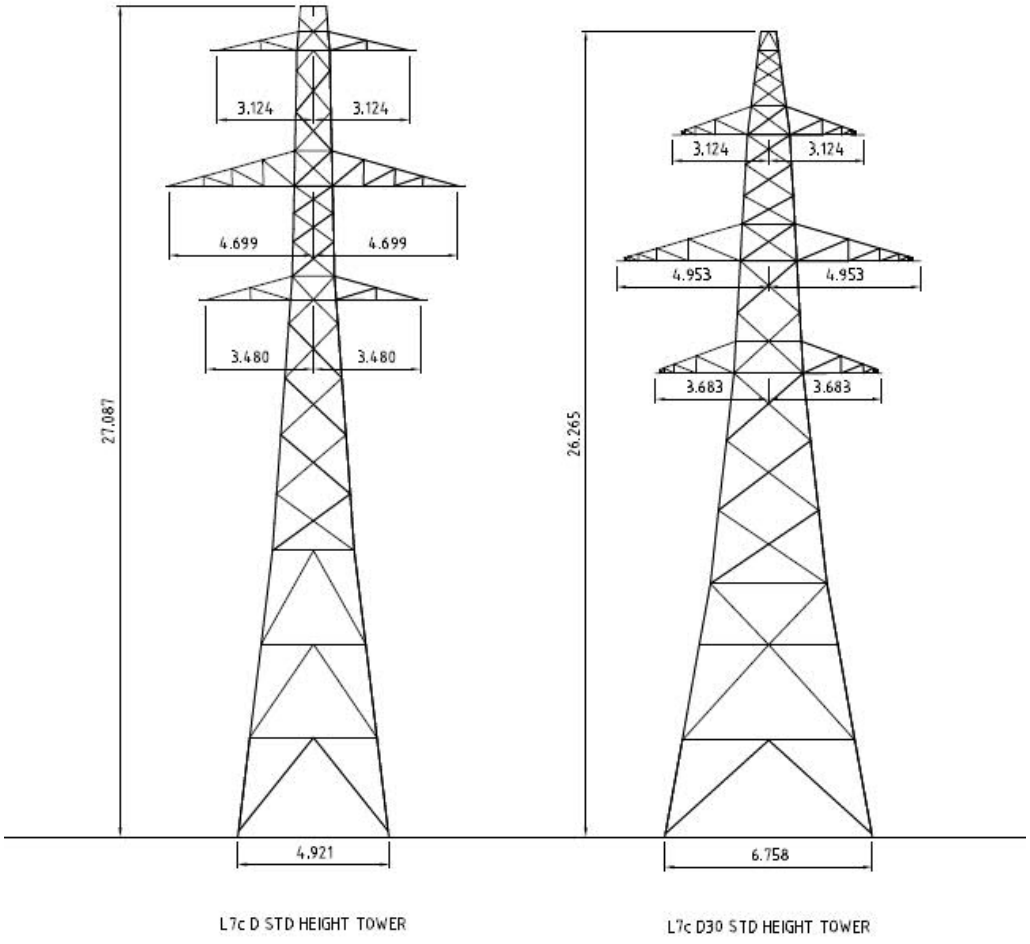
3.6.1 The s37 application identifies the anticipated tower locations (subject to micro siting within the proposed LoD) along the proposed OHL alignment. The following additional OHL design information has been assumed for the purposes of the EIA.

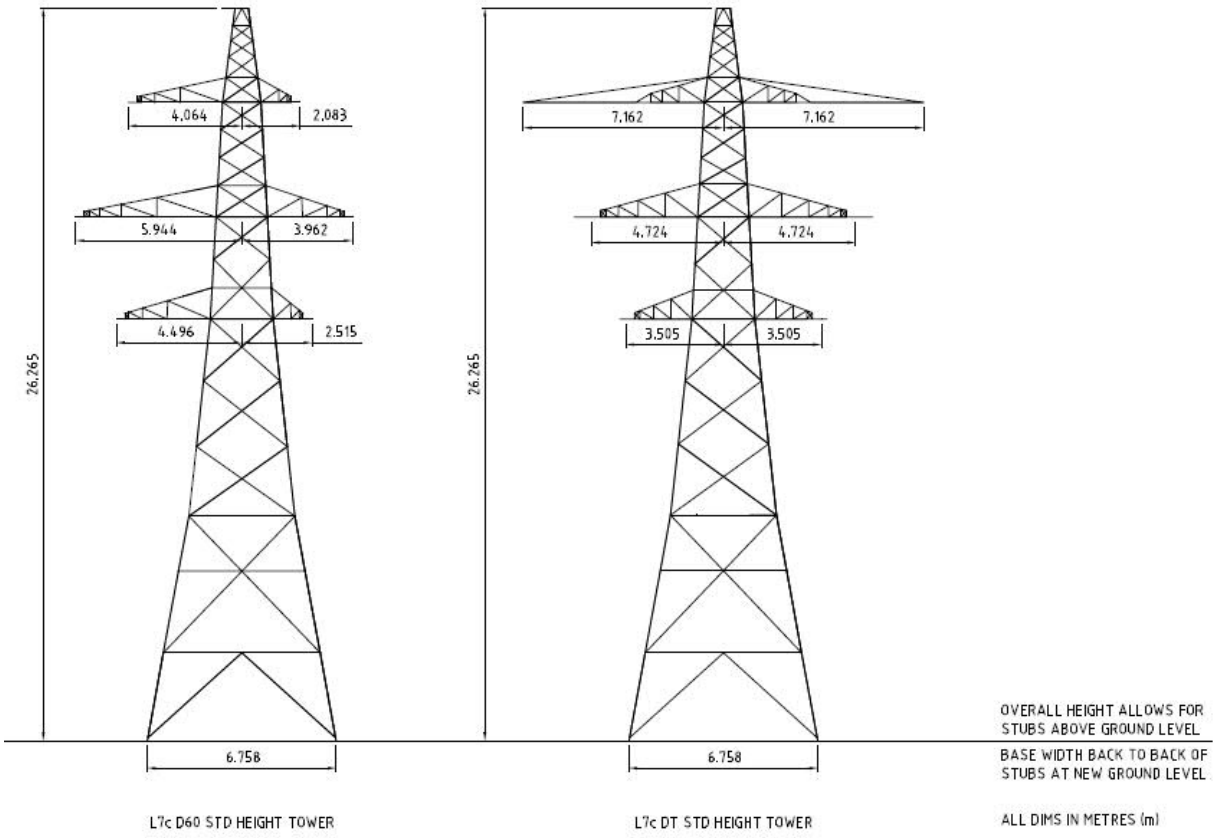
3.6.2 Details on the specific locations, heights, span lengths, and types of towers are provided in **Appendix 3.1 Tower Schedule**.

Steel Lattice Towers

3.6.3 The towers to be used for the Proposed Development will be constructed from fabricated galvanised steel and will be grey in colour. The Proposed Development will use a 'L7(c)' series of lattice steel tower (as shown in **Plate 2.1** below), which can vary in height between 23 m and 44 m (which allows for potential extensions required to maintain conductor ground clearances). The maximum proposed tower height, based on the current assessments is 38.5 m and will be re-assessed on agreement of the final alignment at detailed design stage.

Plate 2.1: Typical Steel Lattice Standard L7(c) Suspension Tower Design





3.6.4 Three basic types of tower are proposed as OHL support structures within the Proposed Development, as follows:

- suspension towers: These are used for straight sections of OHL where there is no need to manage uplift loads on the support structure;
- angle/ tension towers: These are used either for straight sections, where there is a need to manage uplift pressures on the support structure, or where there is a need to change the direction of the OHL alignment; and
- terminal towers: Proposed at Dunoon Substation, from which the termination of the OHL to the substation is made.

3.6.5 A total of 77 towers are proposed to be constructed between existing Tower 15 at the Loch Long crossing and the Dunoon Substation as part of the Proposed Development. Tower locations, structure heights (above ground level), and structure footprints (area bounded by the four legs) are provided in **Appendix 3.1 Tower Schedule.**

Conductors and Span Length

3.6.6 Towers will carry two circuits, each with three phase conductors supported from insulators attached to the horizontal cross arms on both sides of each steel lattice tower. Insulators are proposed to be glass, but can also be made of other material, either porcelain, or composite materials.

3.6.7 An earth wire conductor with a fibre optic core (referred to as Optical Ground Wire or OPGW) will be suspended between tower peaks, above the phase conductors.

3.6.8 The span length (distance between towers) will vary depending on topography, constraints, and land usage. The current average span from the initial assessment is 228 m with maximum span of 309 m along the preferred alignment.

3.6.9 The diameter of the conductors will range from 20 mm to 25 mm.

Termination

3.6.10 At the southern end of the proposed OHL alignment, the last tower (Tower 77) will tie into the existing Dunoon Substation. The current terminal tower within the substation will be removed, and the last tower of the proposed OHL (proposed terminal tower) will be outwith the substation fence. The conductors (downleads) will tie into new structures within the substation.

3.6.11 A temporary single circuit diversion on wood pole supports will be required to facilitate removal and replacement of the terminal structure whilst maintaining supply to Dunoon and wider communities; this and other faciliatory works within the substation will be progressed as deemed consent under the s37 application. On removal of the temporary wood pole diversion, improved access around the substation to the new terminal tower is proposed to be retained for operational, maintenance and repair requirements.

3.6.12 To make room for the temporary 132 kV wood pole diversion connecting to the substation, 33 kV wood pole lines in this area are proposed to be moved or undergrounded.

Substation works

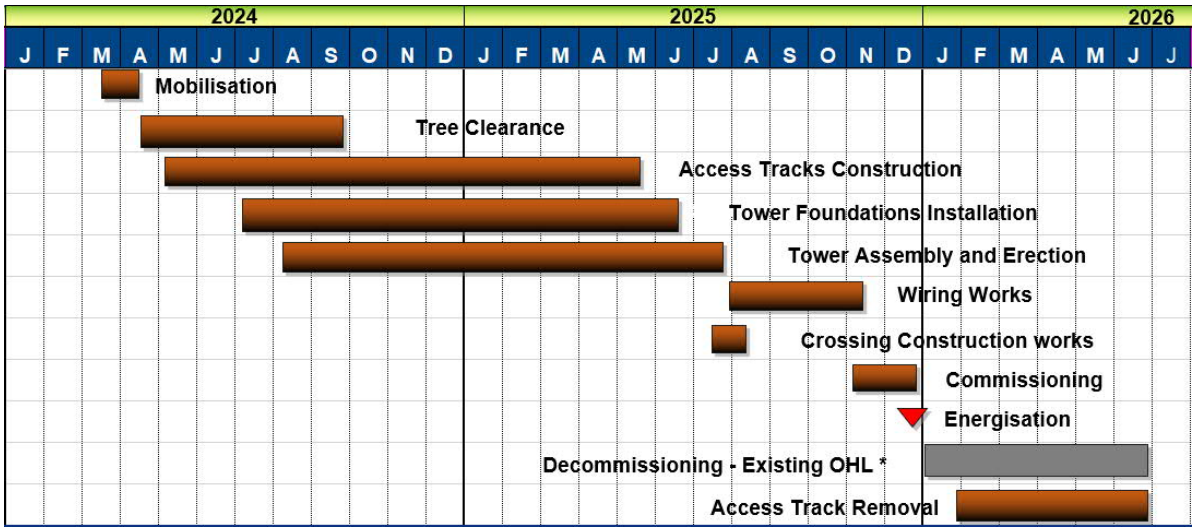
3.6.13 Works are proposed within the existing Dunoon 132/33 kV Substation to update the connection of the proposed OHL to the substation to meet current specification, and in so doing improve the safety and network security of the Proposed Development and wider network in operation. There are no proposed changes to the transformers or changes to the operational boundary of the substation as part of the Proposed Development, although other projects are known to exist associated with proving Electric Vehicle charging points for use by SSEN Operatives and upgrading the security at the site.

3.7 Construction Programme

3.7.1 It is anticipated that construction will commence in 2024 (subject to consents and approvals being granted). A provisional construction period of 30 months in total is anticipated, with energisation of the project scheduled for 2026.

3.7.2 The detailed construction phasing and programme would be subject to change as the design progresses and also due to necessary consents and wayleaves being agreed. **Table 3-1** presents the high-level construction phasing.

Table 3-1 Construction programme



* Considered a cumulative development within this EIA Report

3.8 Construction practices and phasing

Phase 1 - Enabling works

Distribution

3.8.1 Works will be required to the existing distribution network infrastructure which are crossed by the proposed OHL. These works will entail moving or undergrounding the existing 33 kV, 11 kV or low voltage OHL in areas where the proposed OHL alignment crosses the existing asset, or where the removal of the existing OHL may interfere with safe operation of these lines.

Road Improvements and Access

3.8.2 Safe construction access will be required to each tower construction site for delivery of materials, plant, fittings, fixtures, working platforms and operatives. Access requirements to each tower depend on the tower type and the construction operations required at that tower e.g. whether a crane is required, or whether a helicopter build is proposed, or the type of foundation appropriate to the ground conditions.

3.8.3 Many individual tower sites will be accessible from public roads and existing farm/ forestry tracks. The location of individual towers has been developed along the proposed OHL alignment to utilise (where possible) existing accesses, however access spurs from these tracks may be required.

3.8.4 Many of the existing accesses have been identified as requiring upgrade to bring them to a standard required for delivery of the type of plant and volume of materials required to construct the Proposed Development. The extent of upgrade required varies along the proposed OHL alignment and is illustrated in **Figure 3.1 Site Layout.**

3.8.5 Existing road junctions will be utilised where possible, where field, forestry or farm tracks exist, however some formation of new or upgraded access junctions will require formation in agreement with Argyll and Bute Council roads department.

3.8.6 Access track upgrades, construction and ground protection can be undertaken in a number of ways. The preferred method for each site will be selected by the Principal Contractor based on the suitability to withstand expected construction loads, cause the least environmental damage and be installed/ recovered at the lowest cost.

3.8.7 The range of construction accesses proposed include:

- patching/ upgrade of existing access tracks;
- installation or modification of permanent access track routes to new tower locations to assist with ongoing operation, maintenance and repair of the proposed asset, and where land use/ land management activities can accommodate or benefit from this;
- installation of temporary metal or plastic roadway panels (e.g. Trackway, or Terrafirma etc);
- installation of temporary stone roads with or without a geo-textile fabric base; or
- use of specialised low ground bearing pressure vehicles.

Existing Accesses upgrade and repair

3.8.8 Where possible, the Proposed Development seeks to use existing access track networks to facilitate construction. Approximately 41.48 km of existing access tracks require upgrading to make suitable for safe construction access. These upgrades vary in extent, from filling of potholes, to adding additional layers of aggregates to the running surface, in some cases requiring additional geotextile or geogrids as well as stone to be added to the track structure. Some accesses such as those requiring widening of the running surface may also require changes to drainage arrangements. During use, the access tracks may require ongoing maintenance to ensure a suitable running surface is maintained.

New Permanent Access Tracks

3.8.9 New permanent access tracks will be required for the inspection, maintenance and repair of the proposed OHL alignment during its operation. These permanent access tracks are subject to further design and landowner agreement; however, where agreement to retain an access is not acquired, the access will be removed and the ground will be reinstated through a methodology and standard agreed with the landowner (see Temporary Stone Road section below in 3.8.11). The access routes shown are current best options identified, but subject to Site Investigation and detailed design, and may be subject to change (within the specified LoD) to achieve favourable gradients or avoid identified constraints. See **Figure 3.2 Typical Access Track Sections** for illustrations of typical track design under different circumstances. Approximately 10.77 km of new permanent access track will be required to be installed.

Temporary Tracks

3.8.10 Approximately 8.53 km of temporary access track will be required to be installed using one of the following construction methods:

- **Temporary Stone Roads**: Temporary stone roads on a geo-textile fabric base may be used in locations to facilitate safe construction vehicular access to tower locations for construction, but no permanent access is required, or nearby access is sufficient for ongoing operation of the Proposed Development. All temporary stone roads will be removed and reinstated on completion of construction.
- **Temporary Roadway Panels**: Metal or plastic interlocking roadway panels (e.g. Trackway, Terrafirma or similar) can be installed over existing access tracks or to form new access for the duration of construction works. Metal panels are also used at winch and tensioner positions to form EPZs (see **paragraph 3.3.1**) to protect against induced voltages from adjacent lines or lightning strike running along the conductors during stringing operations.

  The delivery/ installation vehicle would travel to the site loaded with panels and may also pull a trailer loaded with additional panels. The panels are usually unloaded and laid individually directly from the delivery/ installation vehicle using the Hiab crane device mounted on the vehicle. The first panels would be laid onto the access then the wagon would drive onto the panels and advance along the access, installing additional panels to extend the 'road' as it proceeds.

- **Specialist Low Ground Bearing Pressure Vehicles**: Vehicles with low ground bearing pressure tyres or with rubber tracks may be employed for certain lightweight operations e.g. taking small quantities of material or a small team of operatives to remote sites where no track exists. Additional access protection may not be needed if these operations can be carried out without leaving track marks, usually only possible in dry conditions.

Access Junctions/ Bellmouths

3.8.11 Formation of one temporary and one permanent new bellmouth/ junction upgrade within the existing road network are required. A further 12 existing bellmouths will be utilised, which are anticipated to require minimal upgrade work. Typical bellmouth layouts are provided in **Figure 3.3 Typical Bellmouth Layout**, and their locations are shown on **Figure 3.1 Site Layout**. Deemed consent will be sought for access tracks and junction upgrades as part of the s37 consent application.

Borrow Pits

3.8.12 To minimise the volume of imported material brought onto the Proposed Development site and any associated environmental impact, pending agreements, borrow pits will be used to source aggregate for construction of the Proposed Development, where suitable material is found to be present. A borrow pit is an area where material has been excavated for use at another location. Two borrow pit search areas have been identified, as illustrated on **Figure 3.1 Site Layout Plan**.

3.8.13 Whilst some associated activities such as crushing and processing of aggregate have been assessed, no allowance for blasting has been made, and as such the Principal Contractor would be responsible for producing and agreeing any associated blast plans.

Watercourse Crossings

3.8.14 Watercourses have been avoided in the design of the proposed tower positioning and associated accesses as far as possible, although due to the linear nature of Proposed Development and topographical challenges, some watercourse crossings will be required associated with proposed tower accesses. The design of the crossings will be agreed by the Principal Contractor as part of the detailed design, following best practice in consultation with the Scottish Environment Protection Agency (SEPA). Appropriate authorisations will be obtained by the Principal Contractor, as required. Typical designs are provided in **Figure 3.4 Typical Watercourse Crossing Sections.**

3.8.15 All watercourse crossing engineering works (including both temporary and permanent watercourse crossings) will be in compliance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011[19] and will follow best practices in line with SEPA guidance. Further discussion on the water crossings proposed as part of the Proposed Development is provided in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils.**

Forestry

3.8.16 The proposed OHL alignment has sought to avoid and minimise impacts on woodlands/ forestry where possible, however due to the study area being heavily forested and challenging topography along the route, impacts on forestry are unavoidable.

3.8.17 Where the proposed OHL alignment passes through woodland or forested areas (and elsewhere), an Operational Corridor is established which is defined by the area which during the life of trees growing, they could grow to a height which would compromise the safe operation of the OHL. Trees are therefore removed within the Operational Corridor to facilitate construction and ensure continued safe operation of the OHL.

[19] Scottish Government (2011). The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available at: https://www.legislation.gov.uk/ssi/2011/209/contents/made

3.8.18 In general, an Operational Corridor of 81 m through plantation woodland and 60 m through broadleaf woodland has been applied within which trees are to be permanently removed to ensure safe operation of the proposed OHL alignment; additional forestry removal has also been included for new access track formation with a corridor of 20 m. Where there are new temporary access tracks or for the temporary line diversions, tree re-planting will sought to be undertaken following commissioning of the OHL and removal of the temporary development. The requirements and undertaking of felling will be in close consultation with Forestry and Land Scotland, Scottish Forestry and are documented in **Chapter 12 Forestry**.

3.8.19 As a result of the construction of the Proposed Development, there would be a net loss of woodland area. The area of stocked woodland in the study area would decrease by approximately 70.09 hectares. In order to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy[20] offsite compensation planting will be required. The Applicant is committed to providing appropriate compensatory planting. The extent, location and composition of such planting will be agreed with Scottish Forestry and will take into consideration any revision to felling and restocking plans prior to the commencement of operation of the Proposed Development.

Site Compounds

3.8.20 It is currently anticipated that there will be one main compound required to facilitate construction works (including office provision), the location of which will be confirmed by the Principal Contractor(s) and therefore will not be known nor considered in the EIA Report. Potential impacts from the compounds will be minimised and controlled via the Construction Environmental Management Plan (CEMP), which will be prepared and implemented by the Principal Contractor.

3.8.21 In addition, it is likely that a 'rolling' arrangement for the provision of small sub yards, offices and welfare facilities will be required at convenient positions along the proposed OHL alignment, with activity at these sites varying, in accordance with the phase of works at that location. The use of smaller multiple yard sites would minimise the quantity and lengths of journeys required to supply to and recover from each work area. There will also be welfare and parking facilities at each tower working area during foundation and tower erection.

3.8.22 The obtaining of any necessary planning consent or other authorisations required for the site compounds will be the responsibility of the Principal Contractor.

Temporary Diversions

3.8.23 Where the proposed OHL is on the same alignment or in close proximity to the existing OHL, to facilitate safe construction of replacement towers and OHL works, a single circuit diversion will be required. The temporary diversion moves one circuit of the existing OHL a safe distance away to allow construction of the new OHL; this circuit is then re-energised, and the other circuit is then taken under outage to allow the works on the tower to take place. This maintains the network with at least one circuit in operation and is the planned approach for the Proposed Development.

3.8.24 The proposed temporary circuit diversions will use single circuit wood pole 132 kV lines (often referred to as trident lines), as illustrated in **Photo 3.1**. The nominal height of wood pole is usually 10-12 m and will be confirmed by the Principal Contractor(s) at the detailed design stage. To allow the continued transmission connection to Dunoon, all temporary trident diversions are proposed on the eastern circuit, thus keeping a single operational transmission circuit in place during construction. Temporary diversion of the existing OHL will be required at the following locations as illustrated in **Figure 3.1 Site Layout**:

- Adjacent to the existing Dunoon Substation;

[20] Forestry Commission Scotland (2009). The Scottish Government's Policy on Control of Woodland Removal. Edinburgh

- Puck's Glen; and
- Glen Finart.

Photo 3.1: Illustrative image of temporary wood pole.

3.8.25 The works will take approximately five days for each diversion location to establish the diversion and move the conductors under single circuit outage. The diversion will then be re-energised and remain in place for the time required to carry out any associated works (anticipated to be a maximum of one year). Once the proposed OHL is energised, the temporary wood pole diversions would be removed along with the redundant towers on the existing OHL.

3.8.26 The alignment of the temporary diversions will be subject to micrositing within the LoD by the Principal Contractor(s) during the detailed design stage, depending on factors such as ground conditions and constraints. The majority of temporary diversions are proposed within 100 m of the existing OHL.

Phase 2 – Construction works

Tower Foundations

3.8.27 Different approaches to forming foundations may be used, subject to ground conditions at each tower location. These are likely to comprise:

- spread type e.g. concrete pad and chimney; or
- piled type e.g. driven concrete, tube and micro pile; or augered.

3.8.28 Foundation types and designs for each tower will be confirmed following detailed geotechnical investigation at each tower position. All tower positions will require foundations at each leg. The foundation type is expected to be a combination of conventional (concrete pad and chimney), and piled type. This assumption is based on an initial geotechnical desktop survey and the anticipated different construction methodologies required due to the varying terrain. Dimensions of pad and chimney foundations will be confirmed following micrositing, but usually consist of formation to depths of between 2.5 m and 4 m below ground level (bgl) and will typically be in the order of 4 m x 4 m in plan size for each tower leg. The foundation is located beneath the ground with a layer of soil covering it of sufficient depth for habitats to reinstate. The permanent footprint above ground is approximately 1 m x 1 m and referred to as the 'muff'. The structure footprint for each tower, i.e. the area of the tower base bounded by the four legs, is presented in **Appendix 3.1 Tower Schedule.**

3.8.29 Where ground conditions indicate deep peat (>1.5 m/ 2.0 m) or near surface rock, mini-piles and rock anchors may be more appropriate engineering solutions. Mini-pile solutions typically involve installing up to six piles (each between 150 mm and 300 mm diameter) below each tower leg. The piles are

encompassed within a near surface pile cap, upon which the tower leg rests. The piles normally extend into the existing bedrock to satisfy both compression and uplift design loadings. Pile depths can extend up to 25 m. Where near surface rock is evident, rock anchors are normally employed. Rock anchors do not require a sacrificial caisson, and the pile cap normally rests on the bedrock. The pile cap is secured to the bedrock by interconnecting mini-piles.

3.8.30 For the purposes of the EIA Report it has been assumed that individual tower foundations and associated construction activities will require a working area of approximately 2,500 m^2 (50 m x 50 m) around each individual tower location for a crane build and 750 m^2 (25 m x 30 m) for a helicopter build. The exact dimensions of the working area around each tower will be confirmed following micrositing and further design by the Principal Contractor(s).

3.8.31 Where encountered, topsoil (including peat) will be stripped from the tower working area to allow installation of tower erection pad(s) as necessary in order to accommodate construction plant. Concrete is likely to be brought to site ready-mixed, although tower locations with difficult and remote access may require limited batching on site. Helicopter delivery of concrete is also a possibility in remote, difficult to access locations. Once the concrete has been cast and set, the excavation will be backfilled, using the original excavated material where possible.

3.8.32 It is anticipated that formation of each tower foundation will take approximately four weeks. **Photo 3.2** provides an illustrative image of tower foundation construction.

Photo 3.2: Illustrative Image of Tower Foundation Construction

Tower Construction

3.8.33 Tower construction can commence two weeks after the foundations have been cast, subject to weather conditions and concrete curing rates. Tower steelwork will be delivered to each tower construction site either as individual steel members or as prefabricated panels, depending on the method of installation and the available access.

Crane Build

3.8.34 If a crane is to be used for tower erection the size of the construction area adjacent to the tower will typically be approximately 50 m x 50 m. This will accommodate a crane pad formed alongside the

position of the tower. This is constructed out of crushed stone, geogrid and geotextiles to form a level stable base on which the crane can safely work.

3.8.35 Once the foundations and lower tower section have been constructed, the top section of the structure is built on the ground at the site before being lifted into position by telehandler or crane.

Helicopter Build

3.8.36 **Figure 3.4 Helicopter Flight Paths** shows the details of the towers proposed for installation by heavy lift helicopter, which are sites on steep gradients. This method avoids having to carry out large volumes of cut and fill to create steelwork assembly areas as required for crane builds, with construction areas therefore smaller at approximately 25 m x 30 m. Helicopter build also reduces access requirements since a crane is otherwise the largest piece of plant required at a tower construction site. Delivery of concrete to tower sites by helicopter may also reduce access requirements since limitations on accessible gradients by concrete waggons is also a consideration. **Photo 3.3** provides an illustrative image of a helicopter being used for OHL construction.

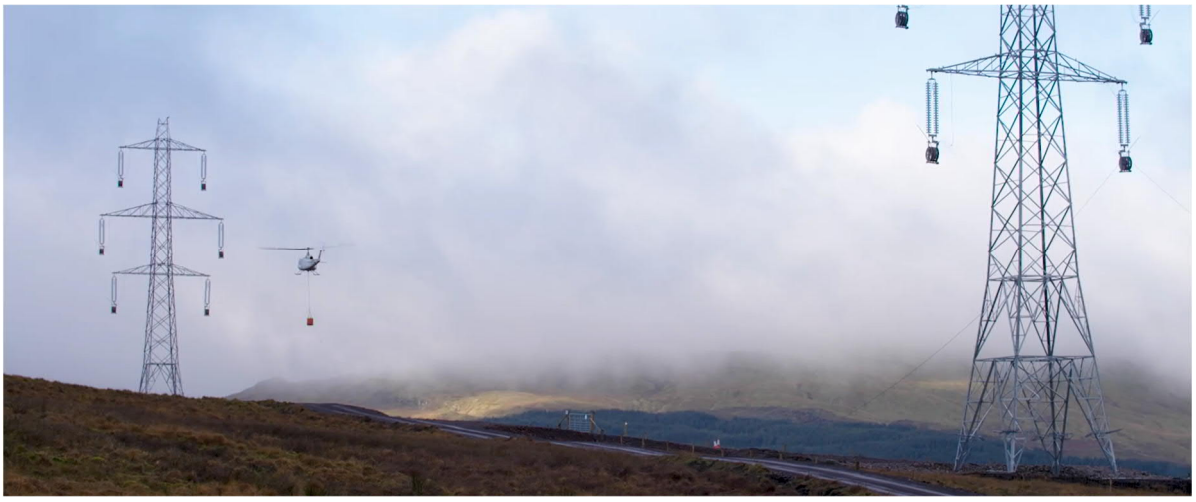


Photo 3.3: Helicopter being used for OHL construction

3.8.37 The Applicant has identified and assessed some of the few available areas within the vicinity of the proposed OHL alignment that could be suitable to be used for compound areas to assemble the towers prior to flying out to position, these are also illustrated on **Figure 3.4 Helicopter Flight Paths**.

3.8.38 All towers to be flown out will be assembled into sections lighter than four tonnes. The assembled sections will be flown out and using the helicopter they will be landed into position/ erecting the tower (typically two to four lifts per tower depending on tower type and height). **Appendix 3.4 Helicopter Flight Schedule** provides further detail on the number of helicopter flights anticipated.

Conductor Stringing

3.8.39 Prior to stringing the conductors, temporary protection measures, (normally netted scaffolds) will be required across public roads and existing access tracks. **Photo 3.4** provides an illustrative image of temporary scaffolding.

Photo 3.4: Illustrative Image of Temporary Construction Scaffolds

3.8.40 Conductor stringing equipment (i.e. winches, tensioners and ancillary equipment) are set out at EPZs at either end of pre-selected sections of the OHL. They are usually placed approximately one tower height from the angle tower which terminates the section being pulled. The principle is to retain EPZ landforms, although there is potential to landscape these areas; they have been considered to be permanent features for the purpose of this assessment.

3.8.41 Pilot wires will be pulled through the section to be strung. These will be hung on blocks (wheels) at each suspension tower and connected to a winch and tensioner at the respective end of the section. The winch, in conjunction with the tensioner is used to pull the pilot wires between the structures. The conductor is pulled via the pilot wires through the section under tension to avoid contact with the ground and any underrunning obstacles. Once the conductor has been strung between the ends of the section, it is then tensioned and permanently clamped at each tower.

3.8.42 Helicopters will also be used during the conductoring phase along the entire length of the proposed OHL alignment to introduce a pilot wire (or 'bonds') which will then be used to pull the conductors and earth wires through.

Phase 3 - Commissioning

3.8.43 The OHL and support towers will then be subject to an inspection and snagging process. This allows the Principal Contractor and the Applicant to check that the works have been built to specification and are fit to energise. The Proposed Development will also go through a commissioning procedure for the switchgear, communications and protection controls through the substations at Dunoon and Whistlefield before the circuits will be energised and the proposed OHL alignment becomes operational.

Phase 4 – Dismantling the existing OHL

3.8.44 As discussed in **Chapter 1 Introduction**, this element of the works is being consented under a different regime and therefore does not form part of the Proposed Development. It has been considered in terms of cumulative development as discussed in **Chapter 5 Methodology.**

Phase 5 – Reinstatement

3.8.45 Following commissioning of the Proposed Development, all construction sites will be reinstated. Reinstatement will form part of the contract obligations for the Principal Contractor and will include the removal of all temporary wood pole diversions, temporary access tracks, all work sites around the tower locations and the re-vegetation of all construction compounds etc.

3.8.46 Reinstatement principles are detailed in the Applicant's General Environmental Management Plans (GEMPs).

Reinstatement of Tower Access Routes

3.8.47 Reinstatement of excavated temporary stone tracks will involve the replacement of subsoil and topsoil, and grading and installation of drainage, as required, with turves replaced vegetation side up. Where required, donor turves may be sourced from adjoining areas to replace lost turves and provide a mosaic from which vegetative cover of the established species are able to recover. Where there are insufficient turves, the ground will be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Temporary tracks placed on top of the existing ground level (of floated construction type) may not require any reinstatement measures after removal of the stone and geotextile base.

Reinstatement of Tower Sites

3.8.48 Topsoil will be stored within the working area for each tower during construction. Where possible, turfs will be removed and stored on top of the topsoil bunds for use in the reinstatement. Sub-soils removed to enable the construction of the foundations will be temporarily stockpiled in separate bunds within the working area.

3.8.49 Each site will be allowed to re-vegetate naturally wherever possible.

Reinstatement of Temporary Wood Pole OHL

3.8.50 On completion of the works the temporary diversion conductors will be lowered and removed for recycling and the temporary wood pole diversion structures removed with the ground reinstated. If agreeable with landowners, there may opportunity to re-purpose several wood poles in-situ for housing ecology enhancement features such as owl boxes.

Reinstatement of Construction Compound(s)

3.8.51 Construction compound site(s) will be made good at the end of construction with all buildings and materials removed and soils appropriately reinstated.

3.9 Construction Employment and Hours of Work

3.9.1 Employment of construction staff will be the responsibility of the Principal Contractor but the Applicant encourages the Principal Contractor to make use of suitable labour and resources from areas local to the location of the works.

3.9.2 It is envisaged that there will be a number of separate teams working at the same time at different locations within the Proposed Development corridor. The resource levels will be dependent on the final construction sequence and will be determined by the Principal Contractor.

3.9.3 Construction activities will, in general, be undertaken during daytime periods only. For weekdays, this will involve work between approximately 07:00 to 19:00 in the summer and 07:30 to 17:30 (or as daylight allows) in the winter. Seven day working will be required due to the phased nature of the works, limitations of outage availability and working patterns of some contractors.

3.9.4 Any variation in these working hours will be agreed in advance with the local planning authority.

3.10 Construction Traffic

3.10.1 Construction of the Proposed Development will give rise to regular numbers of staff transport movements, with small work crews travelling to and from work site areas. The construction compounds will have a safe area for parking away from public roads.

3.10.2 Vehicle movements will be required to construct temporary or upgraded access roads; deliver the foundation and tower components and conductor materials to the site and deliver and collect materials and construction plant from the main site compound and to individual tower locations.

3.10.3 The Principal Contractor will determine where access is required, and for which items of plant, and prepare Traffic Management Plans in consultation with the Applicant and the local authorities. Traffic Management Plans will describe all mitigation and signage measures that are proposed on the public road accesses based on access maps and subsequent site assessments.

3.10.4 Temporary traffic lights may be required at some locations (e.g. for delivery of scaffold materials or formation of new road access points). For minor tracks and other crossings, the installation of appropriate warning signs and provision of staff with stop/ go boards to control any passing traffic may be adequate.

3.10.5 **Table 3-2** below provides indicative worst-case traffic movements for the main construction transportation needs. It assumes that all stone will be imported, however the proposal is to use on-site borrow pits where suitable stone is available, and agreements are met. In addition, there will be vehicle movements associated with timber felling and removal. Details of all traffic movements, including forestry, are presented in **Chapter 13 Traffic and Transport**.

Table 3-2: Anticipated Construction Traffic Movements on the Public Highway

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 1: A885 High Road (between the A815 and the existing Dunoon Substation)	1,954	766	1,188
Link 2: B836 (between A815 and A886)	9,100	3,724	5,376
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	3,766	1,570	2,196
Link 4(a): A815 (from Dunoon to the A83(T))	37,188	17,851	19,337
Link 4(b): A815 South (from Toward to the B836)	15,938	7,651	8,287
Link 5: A880 Shore Road (between A815 at Ardberg and Ardentinny)	12,280	6,748	5,532
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	31,972	16,602	15,370
Link 7: A83(T) between Inveraray and Tarbet	78,539	38,438	40,100

3.11 Construction Environmental Management

3.11.1 All works will be done in accordance with the following.

General Environmental Management Plans

3.11.2 General Environmental Management Plans (GEMPs) have been developed by the Applicant. The following GEMPs are considered relevant to this project and are provided in **Appendix 3.2 – SHE Transmission plc GEMPs**:

- Oil Storage and Refuelling;
- Soil Management;
- Working in or near Water;
- Working in Sensitive Habitats;
- Working with Concrete;
- Watercourse Crossings;
- Waste Management;
- Contaminated Land;
- Private Water Supplies;
- Forestry;
- Dust Management;
- Biosecurity on Land;
- Restoration; and
- Bad weather.

Species Protection Plans

3.11.3 Species Protection Plans (SpPPs) have been developed by the Applicant and have been agreed with NatureScot (formerly Scottish Natural Heritage (SNH)). The following SpPPs are considered relevant to this project and are in **Appendix 3.3 – SHE Transmission plc SpPPs**:

- Badger;
- Bat;
- Bird;
- Fresh Water Pearl Mussel;
- Otter;
- Red squirrel; and
- Pine marten.

Construction Environmental Management Plan (CEMP)

3.11.4 A CEMP will be prepared and implemented by the Principal Contractor. This document will detail how the Principal Contractor will manage the site in accordance with all commitments and mitigation detailed in this EIA Report, statutory consents and authorisations, and industry best practise and guidance. **Chapter 14: Schedule of Mitigation** provides a schedule of the committed mitigation measures included in this report.

3.11.5 The CEMP will also reference the aforementioned GEMPs and SpPPs. The implementation of the CEMP will be managed on-site by a suitably qualified and experienced Environmental Clerk of Works (ECoW), with support from other environmental professionals as required. SSEN Transmission will also audit and inspect environmental performance to ensure compliance to legislation, conditions and best practices, in line with their ISO 14001 accredited Environmental Management System.

3.12 Operation and Management of the Transmission Connection

3.12.1 In general, an OHL requires very little maintenance. Regular inspections are undertaken to identify any unacceptable deterioration of components so that they can be replaced before failure.

3.12.2 The Operational Corridor of the OHL is also monitored through periodic inspection to identify growth of trees which may compromise the resilience of the OHL. Where trees are identified which could pose a

risk to the safe operation of the line in the future, these are felled. Removal of other vegetation, e.g. Gorse and Rhododendron, may be required to ensure the area under the conductors is clear so access can be taken and to facilitate safe maintenance or repair in the event of failure.

3.12.3 From time to time, inclement weather, storms or lightning can cause damage to either the insulators or the conductors. If conductors are damaged, short sections may have to be replaced. Insulators and conductors are normally replaced after about 40 years, and towers painted every 15 to 20 years.

3.12.4 In the event of a fault on the line, delivery of working platforms may be required to tension towers to allow the towers to be safely worked on. These platforms can be delivered on large tracked all-terrain vehicles. In steep areas, it is required to retain access formation to these tension towers to ensure that safe access can be made.

3.12.5 If a section of damaged conductor is to be replaced, a new conductor may be pulled through a section, as such it is required to maintain some of the earth work formations made during construction to ensure there is a safe suitable area to create EPZs.

4. EIA CONSULTATION AND SCOPE

4.1 Introduction

4.1.1 This chapter describes the pre-application consultation and EIA scoping process that was undertaken to determine the scope of the EIA, and sets out the consultation that has been undertaken to date.

4.2 Pre-Application Consultation

4.2.1 Best practice in EIA encourages consultation and engagement with stakeholders early in the process, with advice and input from key consultees being sought at the early design stages of a project, to inform decisions about the Proposed Development.

4.2.2 Stakeholder consultation has been ongoing since the early stages of the project and has continued throughout the EIA process. Further information on consultation undertaken for each environmental topic assessment is available in each topic's respective chapter of this EIA Report.

4.3 Stakeholder Consultation

4.3.1 Stakeholder consultation has been ongoing since initial project inception (June 2020). Early consultation focused on route selection, with full consultation taking place in October, November and December 2020.

4.3.2 SSEN Transmission consulted on the preferred alignment in August 2021 seeking input from a range of statutory and non-statutory organisations, in particular explaining the rationale for the selection of the preferred alignment. Public exhibitions were held virtually via the project website with the consultation period opening on Wednesday 25th August 10am-1pm and continued to Thursday 26th August 5pm-7pm and Wednesday 8th September 5pm-7pm.

4.3.3 Following consideration of the responses received, a further review of key design parameters was completed in order to address feedback received from the consultation, and to arrive at the Proposed Alignment.

4.3.4 Responses to the Consultation Document and public exhibitions were recorded in a separate Report (**Appendix 4.1 Alignment Report on Consultation Document**).

4.3.5 **Chapter 2: Consideration of Alternatives** summarises how the design for the Proposed Development was modified in response to the representations received.

4.4 Scoping

4.4.1 An EIA Scoping request was issued to the ECU on 16th February 2022 (see **Appendix 4.2: EIA Scoping Report**).

4.4.2 Following submission of the EIA Scoping request, a change in the alignment in the northern section necessitated re-consultation with the ECU and key consultees. Whilst there were no changes in the proposed EIA Scope (or supporting Scoping request report), a revised figure highlighting the alternative area in which the proposed alignment was being considered was submitted and circulated to the consultees. Details of this are provided in **Appendix 4.3: Northern Alignment Consultation**.

4.4.3 A Scoping Opinion was provided by the ECU on 19th July 2022 and is included in **Appendix 4.4: EIA Scoping Opinion.** This opinion included additional responses as a result of the change in the northern section.

4.4.4 The responses contained within the Scoping Opinion and re-consultation, have been considered in detail during the EIA process. A summary of the key points raised in the Scoping Opinion and how they have been addressed is provided in **Appendix 4.5: Gatecheck Report**.

4.5 Gatecheck

4.5.1 In accordance with the requirements of the gate checking procedures for Applications under s37 of The Electricity Act 1989, a Gatecheck Report was issued to the ECU on the 29th November 2022.

4.5.2 The purpose of the Gatecheck Report is to outline consultations with statutory and non-statutory consultees, engagement with the local community and how matters raised during the scoping process have been addressed in the EIA Report. Statutory stakeholders are invited to comment on the Gatecheck Report to ensure they are satisfied with the approach taken within the EIA Report prior to submission of the application.

4.5.3 A copy of the Gatecheck Report is provided in **Appendix 4.5: Gatecheck Report**. Responses to the Gatecheck report confirmed the acceptability of the EIA assessment approach taken within the EIA Report.

4.6 Potentially Significant Issues

4.6.1 In response to the consultation received through both the scoping process and the ongoing stakeholder consultation exercise, issues relating to the following key environmental areas associated with the Proposed Development have been identified as the most relevant to the Proposed Development and are therefore addressed in the EIA and discussed in the EIA Report:

- Chapter 6: Landscape and Visual Impact;
- Chapter 7: Ecology and Nature Conservation;
- Chapter 8: Ornithology;
- Chapter 9: Cultural Heritage;
- Chapter 10: Hydrology, Hydrogeology, Geology and Soils;
- Chapter 11: Noise and Vibration;
- Chapter 12: Forestry; and
- Chapter 13: Traffic and Transport.

4.7 Scoped-out Issues

4.7.1 It is unlikely that there would be significant effects on the following topic receptors and therefore they were scoped out from further consideration within the EIA process. Where a topic is not scoped out entirely a chapter is included in the EIA Report with appropriate explanation provided. Individual elements scoped out of any particular topic are detailed in the relevant technical chapter. For detail regarding the justification for scoping out the following topics see **Appendix 4.2: EIA Scoping Report**.

- Land Use;
- Recreation and Tourism;
- Air Quality and Climate Change;
- Material Assets and Waste;
- Population and Human Health;
- Major Accidents and Disasters;
- Electric and Magnetic Fields; and
- Radio and TV Interference.

5. METHODOLOGY

5.1 Introduction

5.1.1 This chapter sets out the approach that has been taken to complete the EIA of the Proposed Development, including reference to legal requirements, best practice and the assessment of parameters.

5.1.2 This EIA Report contains the information specified in Schedule 4 of the EIA Regulations. The approach to the assessment has been informed by current best practice guidance, including the following:

- Planning Circular 1 2017: The Town and Country Planning (Environmental Impact Assessment) Regulations 2017;
- Historic Environment Scotland and Scottish Natural Heritage's 'Environmental Impact Assessment Handbook' 2018[21]; and
- IEMA's guidance documents on EIA practice including Delivering Proportionate EIA[22]; Environmental Impact Assessment Guide to Shaping Quality Development[23] and Environmental Impact Assessment Guide to: Delivering Quality Development[24].

5.1.3 Consistent with Part 1 of Schedule 4 to the EIA Regulations, the aspects of the environment likely to be significantly affected by the Proposed Development have been identified. In particular, this focused on potential impacts upon landscape and visual, cultural heritage, hydrology, hydrogeology, geology and soils, ecology and nature conservation, ornithology, noise and vibration, forestry and traffic and transport and the inter-relationship between the above factors.

5.1.4 The overarching technical assessment methodology is summarised in the flow diagram below, **Chart 5.1**. An overview of the guidance and methodology adopted for each technical study is provided within the respective technical chapters of this EIA Report (**Chapters 6-13**).

5.2 Identification of Baseline

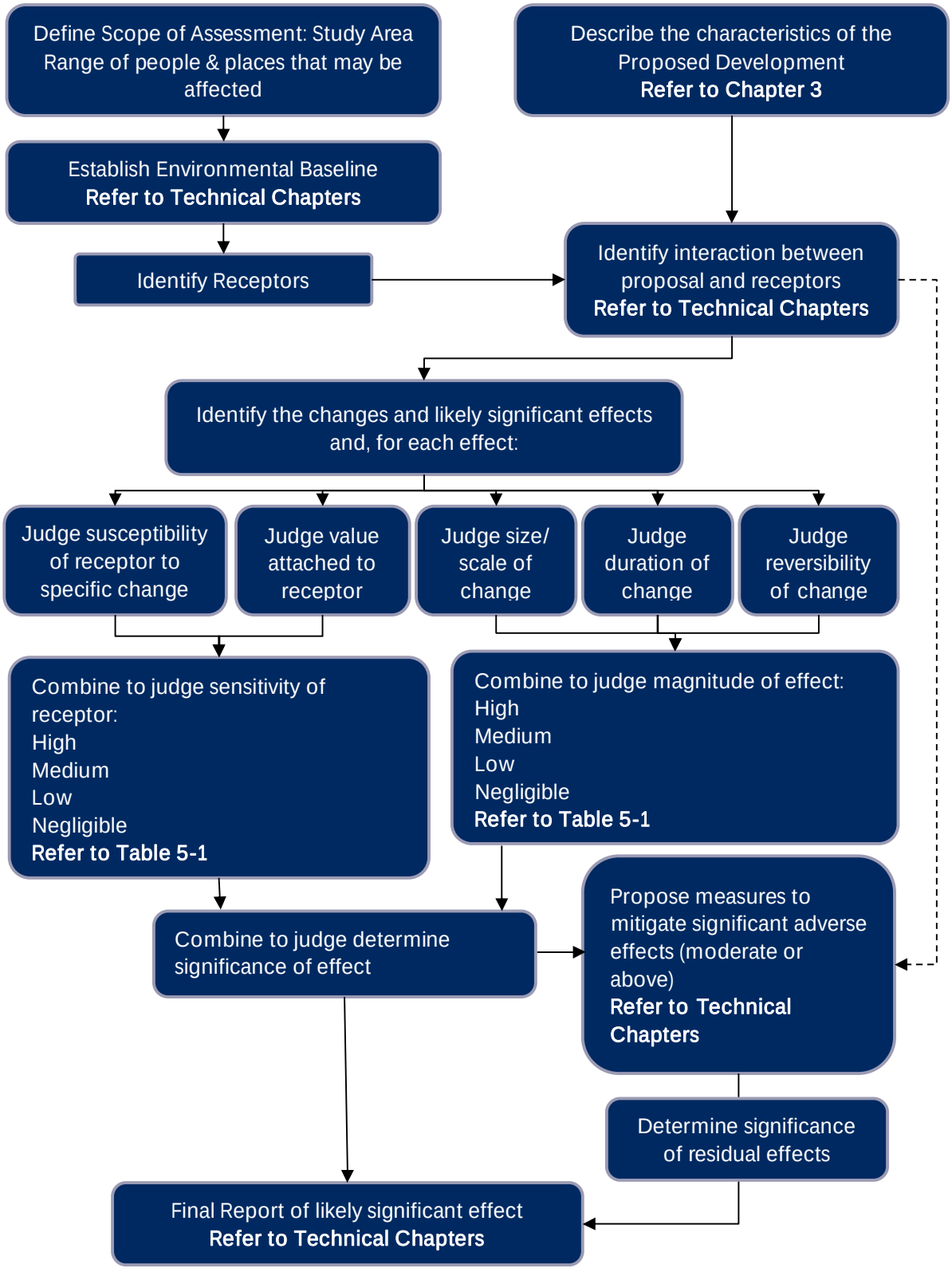
5.2.1 To identify the scale of likely significant effects as a result of the Proposed Development, it is necessary to establish the existing baseline environmental conditions and their sensitivities.

5.2.2 The baseline scenario was established through the following methods, where relevant:

- site visits and surveys;
- desk-based studies;
- review of existing information;
- modelling;
- review of relevant national and local planning policies;
- consultation with the relevant statutory consultees; and
- identification of Sensitive Receptors.

[21] Historic Environment Scotland and Scottish Natural Heritage (SNH) (2018). Environmental Impact Assessment Handbook.
[22] IEMA (2017). Delivering Proportionate EIA.
[23] IEMA (2015). Environmental Impact Assessment Guide to Shaping Quality Development.
[24] IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

Chart 5.1: Summary of Methodology for Environmental Effect



5.3 Assessment of Likely Significant Environmental Effects

5.3.1 For the purposes of this EIA Report the terms used in the assessment are generally defined as follows:

- Impact – is specific and defined as the action being taken, for example, cutting down trees;
- Effect – is defined as the change resulting from that action, for example, loss of habitat;
- Temporary - where the effect occurs for a limited period of time and the change at a defined receptor can be reversed;
- Permanent - where the effect represents a long-lasting change at a defined receptor which is not reversable;
- Direct - where the effect is a direct result (or primary effect) of the Proposed Development;
- Indirect - a knock-on (or secondary) effect which occurs within or between environmental components, may include effects on the environment which are not a direct result of the Proposed Development, often occurring away from the proposals or as a result of a complex biological or chemical pathway;
- Secondary – an induced effect arising from the actions or presence of a project, such as changes to the pattern of future land use or improvements to local road networks;
- Cumulative - these effects may arise when more than one development of a similar scale and nature combine to create a potentially greater impact than would result from the proposed development alone (see also **Section 5.5** below);
- Beneficial – an effect beneficial to one or more environmental receptors; and
- Adverse – a detrimental, or negative, effect on one or more environmental receptors.

5.3.2 Where a more appropriate definition of the above terms is applicable to a technical discipline this is clearly outlined with the technical **Chapters 6-14**.

5.3.3 The result of the assessment is the determination of whether the likely effect of the Proposed Development on the receptor in the study area would be significant or not significant.

5.3.4 Several criteria have been used to determine whether or not the likely environmental effects of the Proposed Development will be deemed 'significant'. The effects have been assessed quantitatively where possible. Generally, the significance of effects has been assessed using one of more of the following criteria:

- international, national and local standards;
- sensitivity of receiving environment;
- extent and magnitude of the effect; and
- reversibility and duration of the effect.

5.3.5 Where no published standards exist, the assessments presented in the technical chapters describe the professional judgements (assumptions and value systems) that underpin the attribution of significance. For certain technical topics, such as ecology, widely recognised published significance criteria and associated terminology have been applied and these are presented in the technical chapters and associated appendices where relevant.

5.3.6 The assessment of significance has considered the magnitude of change (from the baseline conditions), the sensitivity of the affected environment/ receptors and (in terms of determining residual effects) the extent to which mitigation and enhancement will reduce or reverse adverse effects. In addition, further influences such as those listed below have been factored into the assessment using professional judgement:

- likelihood of occurrence;

- geographical extent;
- the value of the affected resource;
- adherence of the proposals to legislation and planning policy; and
- reversibility and duration of the effect.

5.3.7 The magnitude (scale) of change for each effect has been identified and predicted as a deviation from the established baseline conditions, for the construction and operational phases of the Proposed Development. The scale used high, medium, low, and negligible criteria, as outlined in **Table 5-1** below and defined within **Chapters 6-13**. As the Proposed Development concerns construction of permanent infrastructure required for the continuing safe supply of electricity to the wider community, with a view to maintain, repair for perpetuity, or upgrade if required, decommissioning of the Proposed Development is not considered applicable and is scoped out of the EIA. Decommissioning of the existing OHL will be included within the cumulative assessment as discussed in **Section 5.5**.

5.3.8 The sensitivity of the receptor/ receiving environment to change has been determined using professional judgement, consideration of existing designations (such as Sites of Special Scientific Interest (SSSIs)) and quantifiable data, where possible. The scale used high, medium, low, and negligible criteria, as outlined in **Table 5-1** below and defined within **Chapters 6-13**.

5.3.9 Each effect has been assessed taking account of the predicted magnitude of change and the sensitivity of the receptor as shown in **Table 5-1** below to determine an overall significance.

Table 5-1: Matrix for Determining the Significance of Effects

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

5.3.10 Major and moderate effects are considered to be significant in the context of the EIA Regulations. Minor and negligible effects are not considered significant.

5.3.11 Specific criteria have been adopted for certain technical assessments in accordance with widely recognised EIA guidelines published by professional bodies (such as for landscape and visual impact assessment and the assessment of ecological effects). Where applicable, these are provided in the respective technical chapters.

5.3.12 Where no published standards exist, the assessments presented in the technical chapters describe the professional judgements (assumptions and value systems) that underpin the attribution of significance. For certain technical topics, such as ecology, widely recognised published significance criteria and associated terminology have been applied and these are presented in the technical chapters and associated appendices where relevant.

5.3.13 The characteristics of an effect will vary depending on the duration of the activity causing the effect, the sensitivity of the receptor and the resultant change. It is therefore necessary to assess whether the effect is temporary or permanent; beneficial and adverse, and indirect or direct. Effects that are temporary are usually reversible and generally confined to the construction period.

5.4 Identification of Mitigation Measures

5.4.1 Following the initial assessment, mitigation measures have been recommended to prevent, reduce or remedy any potentially significant adverse environmental effects identified. Such measures will be implemented during detailed design, construction and/or operation of the Proposed Development. Each technical chapter details the measures recommended to mitigate any identified significant effects, and a summary of the recommended mitigation measures is provided in **Chapter 15: Schedule of Environmental Mitigation.**

5.4.2 Following the implementation of mitigation measures, an assessment of the significance of any residual effects has been undertaken. Where appropriate and proportionate, monitoring measures have been included. The findings are presented in each technical chapter of this EIA Report.

5.5 Cumulative Effects

5.5.1 There are two aspects to Cumulative Effects, defined as follows:

- In-combination effects: The combined effect of the Proposed Development together with other reasonably foreseeable developments (taking into consideration effects at the site preparation and earthworks, construction and operational phases); and
- Effects Interactions: The combined or synergistic effects caused by the combination of a number of effects on a particular receptor (taking into consideration effects at the site preparation and earthworks, construction and operational phases), which may collectively cause a more significant effect than individually. A theoretical example is the culmination of disturbance from dust, noise, vibration, artificial light, human presence and visual intrusion on sensitive fauna (e.g. certain bat species) adjacent to a construction site.

5.5.2 A search for other developments was undertaken on 12th July 2022 which considered developments recorded as requiring an EIA within 5 km of the OHL which have been submitted or approved within the last 5 years; it is considered that developments beyond this distance are unlikely to have cumulative impacts with the Proposed Development. No applicable developments were identified.

5.5.3 Elements of the wider project not covered by this EIA Report have been included for completeness and will be considered in the cumulative assessment; they are presented in **Table 5-2** and **Figure 5.1: Cumulative Developments**. Argyll and Bute Council and the Loch Lomond and the Trossachs National Park (LLTNP) Authority were consulted regarding the following list of cumulative developments. A response was received from LLTNP Authority which was taken into consideration (within the parameters set in paragraph 5.5.2) and Argyll and Bute Council confirmed on 1st November 2022 that they were unaware of any other major/significant developments either consented or subject to application which require to be included.

Table 5-2 Other developments considered in the cumulative assessment

Name	Description	Location in relation to the Proposed Development	Status
Reconductoring and refurbishing the Loch Long Crossing	• Intrusive foundation investigation for towers 12 and 15 followed by foundation upgrade works – no change in tower heights; • Reconductoring phase conductors between towers 12 and 15; a pulling position to be located at tower 12 and a	East from the northern most point of the Proposed Development	Deemed consent under SSEN Transmissions' Operational Licence Marine (Scotland) Act 2010 for marine crossing works between Mean High Water Springs (MHWS).

Name	Description	Location in relation to the Proposed Development	Status
	typical equipotential zone (EPZ) of approximately 36m x 18m x 45m; • Replacement of the earthwire, conductor and earthwire insulator fittings between towers 12 and 15; and • Access track upgrade to tower 12.		
Decommissioning of the existing OHL	Removal of the existing OHL from (and including) Tower 16 to Dunoon Substation.	Adjacent to the Proposed Development	Permitted Development under The Town and Country Planning (General Permitted Development) (Scotland) Order 1992[25]; Class 40(1)(f) "*any other development carried out in, on, over or under the operational land of the undertaking*."

5.5.4 Planning applications for smaller scale developments have been identified within 5 km of the Proposed Development. Where these will result in the addition of new future receptors, these receptors have been considered within the assessment where appropriate, specific examples include:

- fifteen holiday dwellings at Barnacabber Farm, Ardentinny (application reference 2013/0328/DET);
- Five residences south-west of Holy Loch Farm Cottage, Sandbank (application reference 19/00708/PP);
- forty holiday caravan pitches, Hunters Quay, Dunoon (application reference 18/02596/PP); and
- four residences Hillcrest Robertson Terrace, Sandbank (application reference 19/01594/PP).

5.5.5 In addition, the cumulative effects of the *Phtophthora ramorum* works in the area have been considered within **Chapter 6 Landscape and Visual** and **Chapter 10 Forestry.**

5.5.6 The individual technical chapters present the findings of the assessment of cumulative effects of the Proposed Development with other schemes. A summary of these effects and an assessment of cumulative effect interactions arising from the Proposed Development on certain sensitive receptors are described in **Chapter 14: Cumulative Assessment**.

5.6 Assumptions and Limitations

5.6.1 The key assumptions and limitations that have been identified in undertaking the EIA Report are set out below:

- baseline conditions have been established from a variety of sources, including historical data, and site survey, but due to the dynamic nature of certain aspects of the environment, conditions will change during the construction and operation of the Proposed Development;
- information received by third parties is complete and up to date; and
- the design, construction and completed stages of the Proposed Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge.

[25] Scottish Government (1992). The Town and Country Planning (General Permitted Development) (Scotland) Order 1992. Available at: https://www.legislation.gov.uk/uksi/1992/223/schedule/1/made

5.6.2 Assumptions and limitations specific to certain topics are identified in the appropriate technical **Chapters 6-13**.

6. LANDSCAPE AND VISUAL IMPACT

6.1 Introduction

6.1.1 This chapter reports the assessment of likely significant effects on the landscape and on visual amenity arising from the Proposed Development. It is not intended to be read as a standalone assessment, reference should be made to the introductory chapters of this EIA Report (**Chapters 1 - 5**). The majority of the Proposed Development lies within Loch Lomond and The Trossachs National Park (LLTNP), hereafter referred to as 'the National Park', and therefore the chapter includes an assessment of the likely effects on the special qualities of the National Park.

Landscape

6.1.2 Landscape assessment considers the effects of change and development on landscape as a resource in its own right.

6.1.3 The character of the landscape derives from a combination of physical factors, natural processes, and human intervention. Landscape effects are a combination of the physical changes to the fabric of the landscape arising from the Proposed Development and perceptual changes – the way these physical changes alter how the landscape is perceived.

6.1.4 The landscape assessment considers the effect of the Proposed Development on the landscape, including effects on significant individual elements of the landscape where appropriate, as well as effects on characteristic combinations or patterns of elements and how these are seen to affect its character and quality.

Visual

6.1.5 Visual assessment is concerned with the general visual amenity of people who may be affected by the Proposed Development and their perception and responses to changes in these views, and specific views, where appropriate.

6.1.6 Visual effects arise from changes in the composition and character of views available in the area affected. The assessment considers the likely change that would be experienced, including the effects both on specific views and on general visual amenity – the pleasantness of the view or outlook – that the people affected enjoy.

6.1.7 For the purposes of assessment, whilst it is the people living, working, passing through or enjoying recreational activities in the area who actually see the views and enjoy the visual amenity, it is the places they may occupy that are mapped and described as the visual receptors.

6.1.8 This chapter is accompanied by the following figures and appendices:

- Figure 6.1 Zone of Theoretical Visibility
- Figure 6.2 NatureScot National Landscape Character Assessment
- Figure 6.3 LLTNP Landscape Character Types and Landscape Designations
- Figure 6.4 Landscape Units and Landscape Character Types
- Figure 6.5 Visual Receptors
- Figure 6.6 Visual Appraisal Photographs
- Figure 6.7 Viewpoint A: Sealladh Buidhe
- Figure 6.8 Viewpoint C: Dun Daraich Fort, Glen Finart
- Figure 6.9 Viewpoint E: Beinn Ruadh
- Figure 6.10 Viewpoint H: Benmore Gardens

- Figure 6.11 Viewpoint J: A815, Strath Eachaig
- Appendix 6.1 Landscape and Visual Methodology
- Appendix 6.2 LCT Assessments within the Landscape and Seascape Units
- Appendix 6.3 Assessment of LCTs that make up each landscape unit

6.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

6.2.1 As noted above, this chapter reports the assessment of likely significant effects on the landscape and on visual amenity arising from the Proposed Development, during construction and operation. The assessment takes into consideration the requirement to form, and maintain, an Operational Corridor along the proposed OHL alignment. It describes the assessment methodology, the baseline conditions at the proposed OHL alignment and in the area that may be affected, and the mitigation that has been built into the design.

6.2.2 The assessment analyses the landscape and considers its sensitivity to the development proposed. The assessment defines the extent to which the Proposed Development is likely to be visible and identifies the range and type of people (or places they may occupy) likely to be affected, which are illustrated by a representative sample of views.

6.2.3 The assessment reports on the residual effects of the Proposed Development taking into account committed mitigation.

6.2.4 The visual assessment includes consideration of residential receptors including individual properties where these are isolated and groups of properties where development is clustered. It should be noted that a significant effect on an isolated residential receptor is an effect on their private visual amenity whereas a significant effect on a settlement as a whole may involve a degree of effect on the public good.

6.2.5 This assessment has been carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment', 3rd Edition 2013 (GLVIA3)[26]. Photography has been undertaken and visualisations created in accordance with Landscape Institute guidance[27].

Extent of the Study Area

6.2.6 The study areas for the landscape and visual assessments are initially defined by the extent to which the Proposed Development may be visible (the visibility study, see Zone of Theoretical Visibility (ZTV), below) cut off at a certain distance to ensure a focus on potentially significant effects.

6.2.7 The study area for the visual assessment is directly based on the results of the visibility study as by definition, visual effects can only occur where at least some part of the development is visible.

6.2.8 The study area for the landscape assessment is informed by the visibility study and covers the full extent of the wider landscape around it which the Proposed Development may influence in a significant manner (as per GLVIA3 paragraph 5.2).

6.2.9 The 'cut-off' distances for the study area reflect the fact that the Proposed Development is a replacement OHL rather than the introduction of a new line to an unaffected area, and studies that have been undertaken into the perceptibility of steel lattice tower OHLs.

[26] Landscape Institute and Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment, 3rd Edition
[27] Landscape Institute (2019). Visual Representation of development proposals, Technical Guidance Note 06/19

6.2.10 These perceptibility studies[28] concluded that steel lattice tower overhead lines can be noticeably visible from up to 10 km distance. The line is a replacement one, however the new towers would be slightly taller than the existing, and they would also be brighter and thus more noticeable until the galvanising weathers. This is anticipated to take several years. For these reasons a precautionary approach has been taken and the cut-off distance for the visual search area was originally defined as 10 km from the proposed new towers.

6.2.11 The Proposed Development would not change the nature of effect on the landscape, as the areas are already affected by the presence of an OHL. However, it may alter the magnitude of effect locally and may change the extent of areas most affected at a local scale. The landscape study area is therefore cut off at a distance of 3 km from the proposed new towers in order to ensure a focus on potentially significant effects. Where landscape receptors fall within the study area, either wholly or partially, the assessment of landscape effects considers the effect on landscape receptors as a whole.

6.2.12 The study area for the cumulative assessment is the same as the visual study area.

6.2.13 The first step in the assessment was to establish the ZTV: the area from which the Proposed Development may be visible. The ZTV was produced by computer modelling using the ArcGIS viewshed analysis tool. The proposed tower positions were overlain on a digital terrain model (DTM) and 'lines of sight' generated to show where these points may be seen from and thus the places from which the Proposed Development may be visible assuming 'bare ground' with no account taken of the screening effects from features such as trees or buildings.

6.2.14 The ZTV used the Ordnance Survey Terrain 5 DTM[29], and allows for a viewer eye height of 1.6 m. The ZTV is shown on **Figure 6.1 Zone of Theoretical Visibility**.

Viewpoints

6.2.15 The ZTV was used to identify potential viewpoints from a range of distances and directions, to give a representative sample of the likely views of the Proposed Development to illustrate this assessment, and to illustrate key and important views.

6.2.16 The viewpoints agreed with the statutory consultees to illustrate this assessment are shown on **Figure 6.1 Zone of Theoretical Visibility** and listed in **Paragraph 6.3.57**, in the baseline section below.

6.2.17 It should be noted that the assessment is not limited to consideration of the effects from the viewpoints illustrated.

Consultation Undertaken to Date

6.2.18 Consultation has taken place with a number of stakeholders; summaries of the responses are provided in **Table 6-1**.

Table 6-1 – Consultation Undertaken to Date

Organisation	Type of Consultation	Response	How response has been considered
LLTNP Authority	Scoping Response	Effects on seascape (or coastal) character should also be considered with respect to potential effects on Loch Long.	Loch Long Seascape Units have been included in the assessment.

[28] Mark Turnbull Landscape Architects (2015). Perceptibility of Overhead Steel Lattice Transmission Towers, Collected Papers
[29] With some small distant areas patched in with the Terrain 50 DTM

Organisation	Type of Consultation	Response	How response has been considered
LLTNP Authority	Scoping Response	Photomontages of all the viewpoints within the National Park would be welcomed.	13 viewpoint locations were originally identified, with visualiastions proposed from five locations. The viewpoints were increased to a final total of 15 in response to consultation, eight of which are located within the National Park. An additional viewpoint was included at the request of LLTNP Authority after the change to the northern alignment (Viewpoint A) and an additional viewpoint from Dun Daraich Fort was included at the request of HES (Viewpoint C). The proposed visualisations and methodology were reviewed in light of the response from LLTNP Authority, with viewpoints selected that best illustrated the Proposed Development within the National Park, with visualisations prepared from five locations. The visualisations were prepared as 180º views (2 frames of 90º) and wirelines as well as photomontages to best represent the nature of views of the Proposed Development. These include: Viewpoint A: Forestry Track, Sealladh Buidhe, this additional view was included at the request of LLTNP. Viewpoint C: Dun Daraich Fort, Glen Finart, this represents views of the Proposed Development from Glen Finart floor, and a similar, but more open view of the Proposed Development than viewpoint B, and is from a more sensitive receptor. Therefore visualiastions from viewpoint B were not included. Viewpoint E: Summit of Beinn Ruadh, located within the National Park and the open hilltops that represent open, panoramic views from part of the National Park that has stronger wild land characteristics. Viewpoint H: Benmore Botanic Garden, taken from a viewpoint located within the National Park and Garden and Designed Landscape (GDL). Viewpoint J: A815, Little Eachaig Bridge, Strath Eachaig, although not located within the National Park itself, it provides a good vantage point to understand the effect of the Proposed Development on Puck's Glen and Strath Eachaig and is more appropriate than Viewpoint I which is constrained by existing vegetation and the poximity of the viewpoint to the Proposed Development. There are additional viewpoints within the National Park that have not been modelled as they predominantly serve to describe the wider existing baseline and no significant visual effects were likely to arise such that the inclusion of visualisations would be proportionate: Viewpoints B, D, F and L. Viewpoint I was not modelled due to the proximity of the viewpoint and the proposed OHL and the nature of the existing vegetation and terrain that prevented an open, clear view of the Proposed Development.

Organisation	Type of Consultation	Response	How response has been considered
			The Forest Design Plans (see Appendix 12.2) include visualisations of the proposed OHL from three locations and help to supplement the visualisations prepared above, albeit they include additional felling beyond the scope of this assessment.
LLTNP Authority	Scoping Response	The cumulative assessment needs to consider nearby felling operations, in particular the significant amount of felling due to take place to remove larch trees infected with *Phytophthora ramorum*.	Larch felling operations have been included in the cumulative assessment, with current felling forming part of the existing baseline, where appropriate.
LLTNP Authority	Scoping Response	The potential for redundant sections of the existing OHL corridor to deliver landscape and ecological enhancement of the whole project should also be explored as part of the EIA Report.	Noted.
NatureScot		NatureScot advised that the assessment takes account of all elements of the project, including the works required both within and outwith the OC.	The assessment considers all element of the project, including temporary and permanent elements within and outwith the OC.
HES		Historic Environment Scotland required that the EIA Report provide wireframes and/or photomontages with respect to the route crossing Glen Finart in the vicinity of Dun Daraich Fort.	An additional viewpoint, viewpoint C, was included and wirelines and photomontages were prepared from this viewpoint for **Chapter 6: Landscape and Visual** and **Chapter 9: Cultural Heritage**.
ScotWays		ScotWays identified that the Heritage Paths project promotes routes: *Old Road through Strath Eachaig* (HP109) and *Puck's Glen* (HP110) for their historic interest and the old routes cross or are close to the Site.	The assessment includes potential effects on these routes.

Method of Baseline Data Collation

6.2.19 Information has been gathered primarily from desk study and site surveys.

6.2.20 Relevant publications that have been taken into consideration include:

- NatureScot's Scotland Landscape Character Types[30];
- NatureScot's LLTNP Landscape Character Assessment Landscape Evolution and Influences[31];
- Scottish Natural Heritage's (SNH) LLTNP Landscape Character Assessment[32];
- SNH's 2010 The Special Landscape Qualities of LLTNP[33];
- Historic Environment Scotland's Inventory Garden & Designed Landscapes[34]; and
- Online mapping including Ordnance Survey maps, Google Earth Pro and Google Street View.

6.2.21 Site surveys were carried out in November 2019 for the routeing and alignment stages of the Proposed Development, and in March and May 2022 for this assessment. Weather conditions were generally dry and clear, with a slight reduction in long-distance visibility towards the end of the day in March.

Determining Magnitude of Change and Sensitivity of Receptors

6.2.22 This section provides an overview of the LVIA methodology. Further details are provided in **Appendix 6.1 Landscape and Visual Methodology**.

6.2.23 The sensitivity of landscape and visual receptors is arrived at by separately considering the receptor value and the susceptibility of the receptor to the change proposed. The magnitude of landscape and visual change depends upon a combination of factors including:

- the size, scale and nature of change in relation to the context;
- the geographical extent of the area influenced; and
- its duration and reversibility.

6.2.24 Professional judgement is used to combine sensitivity and magnitude to gauge the level of effect and determine whether it is significant or not with a clear rational for the overall judgement.

Landscape Sensitivity

6.2.25 The value of a landscape may be indicated by its designation or recognition through national or local consensus, and its quality including cultural associations, scenic or aesthetic qualities, such as National Parks. The absence of a landscape designation does not preclude an area being considered important. The European Landscape Convention, to which the UK is a signatory, promotes a people-centred approach and the need to take account of all landscapes, not just those that might be considered special. Local value may be indicated by local cultural or natural heritage records, works of art or levels of use.

6.2.26 Landscape susceptibility considers the ability of the receptor to accommodate the specific proposed change and the resulting consequences on the maintenance of the baseline situation. Susceptibility and value are combined such that that a combination of high susceptibility and high value is likely to result in the highest sensitivity, whereas a low susceptibility and low value is likely to result in the lowest level of sensitivity. As noted in GLVIA3[26] there can be complex relationships between the value attributed to a landscape and its susceptibility to change, which can be particularly important when considering change in designated landscapes.

[30] NatureScot (2019). Scottish Landscape Character Types Map and Descriptions. Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions
[31] NatureScot (2019). Landscape Character Assessment LLTNP Landscape Evolution and Influences
[32] Scottish Natural Heritage (2010). LLTNP Landscape Character Assessment
[33] Scottish Natural Heritage (2010). Commissioned Report 376 – The Special Landscape Qualities of LLTNP
[34] Historic Environment Scotland (online) https://portal.historicenvironment.scot/designation/GDL00056

Visual Sensitivity

6.2.27 Value attributed to visual amenity relates to the level of recognition of the view, from highly celebrated nationally known views to views of no particular recognition. Susceptibility to the proposed change for visual receptors relates to the location of the person and their occupation, such as residents at home being highly susceptible, to low or negligible susceptibility for people using indoor facilities where the nature of the surroundings is irrelevant to their activity for example.

6.2.28 As with landscape, susceptibility and value are combined to form a judgement about the visual sensitivity of a given receptor. Whilst a valued view may serve to increase the overall sensitivity of the visual receptor, a low value would not necessarily reduce sensitivity. Visual receptors considered highly susceptible to the proposed change are normally considered to be of high sensitivity unless there are features associated with the value of the view that lead to a reduction in sensitivity.

Assessing Magnitude of Change

6.2.29 The magnitude of landscape and visual change depends on a combination of factors including size, scale and nature of change in relation to the context, the geographical extent of the area influenced; and its duration and reversibility.

Level of Effect and Significance

6.2.30 Professional judgement is used to combine sensitivity and magnitude to gauge the level of effect and determine whether it is significant or not. The level of effect (and thus significance) will vary depending on the circumstances, the type and scale of development proposed, the baseline context and other factors.

6.2.31 The gradations of magnitude of change and level of effect used in the assessment represent a continuum, which are described on a four-point scale: major; moderate; minor; and negligible. Where appropriate, this assessment uses intermediate descriptors where the assessor considers that the effect falls between the levels.

6.2.32 Effects can be either beneficial or adverse and in some cases neutral (neither beneficial nor adverse) and effects assessed as moderate or greater are considered to be significant in terms of the EIA Regulations.

Limitations and Assumptions

6.2.33 The assessment has been carried out by assuming the worst case of greatest visibility i.e. on a clear, bright winter's day with no screening from deciduous foliage.

6.2.34 The ZTV is based on 'bare ground' and does not take into account the screening effects of built form, forestry, vegetation, distance, and visibility (e.g. weather conditions). All of which can prevent or reduce visibility.

6.2.35 The assessment of visual effects on residential receptors has been undertaken from publicly accessible locations only. Assumptions have therefore been made on the main outlooks and importance of views from these properties.

6.3 Baseline Conditions

Baseline Landscape and Seascape Conditions

6.3.1 The landscape of the Study Area for the Proposed Development is broadly characterised by steep-sided, craggy topped mountains and hills, divided by deep glens, some of which contain narrow lochs, opening into broader straths.

6.3.2 The character changes from north to south, with the area north of Strath Eachaig being more rugged, with steeper slopes and crags, whilst to the south of the Strath the landscape is more rounded with gentler slopes. The eastern edge of the landscape is bound by sea lochs: Loch Long to the north-east and Holy Loch to the south-east.

Topography and Hydrological Features

6.3.3 The proposed OHL alignment is broadly characterised by steep-sided, craggy topped mountains and hills, divided by deep glens, some of which contain narrow lochs, opening into broader straths. To the north, the Cowal uplands rise up to 657 m Above Ordnance Datum (AOD) at Creachan Mòr, with peaks ranging between 400 m to 600 m. The landform falls steeply down to Loch Goil to the north and Loch Long to the east.

6.3.4 Glen Finart is a deep u-shaped glen and Strath Eachaig is a broad, flat-bottomed strath that extends from Loch Eck down to Holy Loch.

6.3.5 To the south, meandering rivers contrast with the surrounding slopes, which rise up to 504 m AOD at Bishop's Seat, just beyond the Study Area boundary.

Land Cover

6.3.6 Extensive conifer plantations dominate the lower slopes and enclose the settled areas, whilst the upper hillsides are predominantly open moorland, with rock outcrops on upper slopes and summits. Mixed through the plantations are remnants of native deciduous woodland, generally birch-dominated on the upper slopes and burn sides and oak woodland on the lower slopes.

6.3.7 Parts of Strath Eachaig are characterised by the mature and unusual conifers associated with Benmore Botanic Gardens and the Kilmun Arboretum.

6.3.8 Rivers are a prominent feature on the glen and strath floors, which are farmed.

Land Use

6.3.9 Settlement is mainly confined to narrow strips along the loch edges, valley bottoms, and the flatter land of Strath Eachaig. Mountain and hill tops form landmark features. The Study Area encompasses the villages and hamlets of Sandbank, Coulport, Glenkin, Clachaig, Kilmun, Rashfield, the cluster of properties at the River Eachaig Bridge and Ardentinny, as well as scattered residential properties, campsites and holiday parks in the straths and glens. Main roads through the area include the A815 extending south from Loch Eck, the A885 and A880 in the vicinity of Sandbank, and the B836. The cycle route from Dunoon to Portavadie (formerly National Cycle Route 75) runs through the southern part of the Study Area.

Designated and Protected Landscapes

National Parks

6.3.10 The National Parks in Scotland are established under the provisions of the National Parks (Scotland) Act 2000. The Act sets out four National Park aims to:

- conserve and enhance the natural and cultural heritage of the area;
- promote sustainable use of the natural resources of the area;
- promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the area by the public; and
- promote sustainable economic and social development of the area's communities.

6.3.11 Where these aims conflict, the National Park authority must prioritise the first of these aims.

6.3.12 As illustrated in **Figure 6.2 NatureScot National Landscape Character Assessment, Figure 6.3 LLTNP Landscape Character Types** and **Landscape Designations and Figure 6.5 Visual Receptors**, the majority of the Study Area falls within the LLTNP which was established in 2002.

6.3.13 NatureScot Commissioned Report 376 *The Special Qualities of the Loch Lomond and The Trossachs National Park* [35] identifies that the National Park is composed of a number of landscapes of differing character, each with their own special qualities. The Study Area lies within the Argyll Forest Landscape Area.

Forest Parks

6.3.14 Forest Park is not a formal designation, it is a 'badge' or 'label' originally attributed by the Forestry Commission to areas of attractive forest under its control. It is used by Forestry and Land Scotland to promote forest areas of particular attractive quality and tourist and informal recreation interest. The Argyll Forest Park (hereafter called the 'Forest Park') was established in 1935 and overlaps with the National Park. Within the Study Area it covers the area between the River Eachaig and Loch Long.

Inventory of Gardens and Designed Landscapes (GDLs)

6.3.15 The Inventory of GDLs is maintained by Historic Environment Scotland, so GDLs are considered cultural heritage assets and are appraised as such. Those that are also popular tourist attractions or particularly distinctive local landscapes are considered in their present-day context in this chapter.

6.3.16 The Benmore GDL occupies parts of the hillside where Glen Massan meets Strath Eachaig and much of the strath between Uig and Benmore Home Farm, close to the southern end of Loch Eck. The hillsides of the GDL and parts of the strath are now Benmore Botanic Garden (see **Figure 6.2 NatureScot National Landscape Character Assessment**) and is located adjacent to the Proposed OHL alignment.

Argyll and Bute Areas of Panoramic Quality

6.3.17 Local Authorities may designate landscapes considered to be of regional importance for their scenic qualities through a Local Development Plan. Argyll and Bute Council have designated regionally important landscapes as Areas of Panoramic Quality (APQ). The Loch Long (Coast) APQ is located approximately 2 km to the north-east.

Landscape Character

National Landscape Character Types

6.3.18 The entire Study Area falls within the Cowal and Bute Landscape of Scotland (54) according to the Landscapes of Scotland map by SNH (now NatureScot), which is described as *"a picturesque area of well-wooded, steeply sloping hills and ridges which enclose a series of sea lochs*".

6.3.19 The landscape character of the Study Area has been assessed several times in reports for Scottish Natural Heritage (SNH, now NatureScot), initially in 1996 as part of the Argyll & Firth of Clyde Landscape Character Assessment (LCA)[36], then the area covered by the LLTNP was assessed in 2005 for the LLTNP LCA[37] which was revised and updated in partnership with the LLTNPA in 2010.

6.3.20 In 2019 NatureScot reviewed and consolidated the various local and regional assessments commissioned since the late 1980s to produce a national landscape character map and database. Part

[35] Scottish Natural Heritage and Loch Lomond and The Trossachs National Park Authority (2010). The special landscape qualities of the Loch Lomond and The Trossachs National Park. Scottish Natural Heritage Commissioned Report, No.376 (iBids and Project no 648). Available at: https://www.nature.scot/naturescot-commissioned-report-376-special-landscape-qualities-loch-lomond-and-trossachs-national

[36] Scottish Natural Heritage (1996). Landscape Assessment of Argyll and the Firth of Clyde: Nature Scot Review 78

[37] Scottish Natural Heritage (2010). Landscape Character Assessment: Loch Lomond and the Trossachs National Park REV140

of the consolidation included devising a consistent level of scale and detail between assessments undertaken at different times and scales.

6.3.21 The NatureScot national dataset LCTs traversed by the Proposed Development (listed from north to south) are:

- LCT 38 – Open Ridges;
- LCT 250 - Steep Ridges and Hills;
- LCT 253 - Straths and Glens; and
- LCT 34 - Steep Ridges and Mountains.

6.3.22 In addition, there are there are two NatureScot national dataset LCTs within the landscape study area but not traversed by the new line:

- LCT 252 – Upland Glens – Loch Lomond & the Trossachs, and
- LCT 265 - Settled Coastal Fringe.

6.3.23 Although the Proposed Development may be perceived from parts of these, the introduction of the rebuild is considered unlikely to affect their character. They are therefore not considered further.

6.3.24 **Figure 6.2 NatureScot National Landscape Character Assessment** shows the ZTV overlain on the NatureScot National LCTs, and **Appendix 6.2 Landscape Character** summarises the key characteristics of the three NatureScot national LCTs traversed by the Proposed Development.

LLTNP Landscape Character Types

6.3.25 In the National Park area, the LLTNP 2010 Assessment considered the landscape at a relatively fine grain and the units of landscape character are smaller than those in the current national map and database. As agreed through the Scoping Report, the assessment has been undertaken using the smaller scale LLTNP LCTs, with reference made to the more recent, broader-scale NatureScot LCTs as appropriate.

6.3.26 The LLTNP LCTs traversed by the Proposed Development (listed from north to south) are:

- LCT 11 Forested Glen Sides
- LCT 2 Forested Hills
- LCT 1 Open Hills
- LCT 14 Farmed Strath and Glen Floors
- LCT 6 Wooded Upland Glens

6.3.27 There are three LCTs within the landscape study area not traversed by the new line, but which may be affected by the Proposed Development:

- LCT 15 Forested Strath and Glen Floors
- LCT 4 Open Upland Glens
- LCT 20 Sea Loch Shore Fringes

6.3.28 In addition, there are two LCTs within the landscape study area not traversed by the new line from which the Proposed Development may be perceived, but to a very limited extent such that they are considered unlikely to be affected:

- LCT 17 Loch Shore Fringes
- LCT 19 Sea Loch Foreshores

6.3.29 To ensure consistency across the whole study area, the landscape of the area outwith the National Park, between Strath Eachaig and Sandbank was analysed and the LLTNP LCTs extended south at a similar level of detail, as illustrated by **Figure 6.4: Landscape Units and Landscape Character Types**.

Landscape Units

6.3.30 **Figure 6.4: Landscape Units and Landscape Character Types** shows the ZTV overlain on the LLTNP LCTs and the LCT extended south beyond the National Park, and **Appendix 6.2 Landscape Character** summarises the key characteristics of the LCTs traversed by, or considered potentially affected by, the Proposed Development.

6.3.31 As evidenced by the contrasting level of detail and differing boundaries between the LLTNP 2010 Assessment and the 2019 national LCT database, the landscape can be considered, and its character differentiated, at different scales. Considering the various assessments and the scale at which the landscape is experienced when travelling slowly through the study area, for the purposes of this assessment the landscape has been divided into the following distinct areas each with their own sense of place, referred to as landscape units (LUs) to avoid confusion with the various LCTs:

- Coulport (open ridges defining eastern edge of Loch Long);
- Creachan Mòr (the open high ground north of Glen Finart and the forested flank of Loch Long);
- Glen Finart (the farmed glen floor and the enclosing forested and wooded glen sides);
- Stronchulin (the open high ground between Glen Finart and Strath Eachaig and the forested upper valley of the Stronchulin Burn);
- Strath Eachaig (the farmed and forested strath floor and the enclosing forested hillsides);
- Eachaig to Finbracken (the rolling forested hills from the valley of the Little Eachaig to Finbraken Hill); and
- Sandbank (the settled sea loch shore fringe and the farmed, forested and wooded glen sides above the A885 around the substation, with forested hills beyond).

6.3.32 It should be noted that the boundaries between the character units are transitions not hard and sharp lines. For example, where the glen side stops, and the hillside starts is a more a matter of perspective than a matter of fact.

6.3.33 Similarly, each of these landscape units is composed of smaller areas of diverse character: the floor of Glen Finart and its enclosing forested hillsides have characters in themselves but are experienced together as an enclosed valley giving onto Loch Long.

6.3.34 At Strath Eachaig, Puck's Glen Arboretum and Heritage Trail and Benmore Botanic Gardens have particularly high value and are considered in more detail.

6.3.35 These landscape units are described in detail as part of the landscape assessment, **Section 6.9**, below.

Coastal and Seascape Character

6.3.36 The Study Area includes Holy Loch and part of Loch Long, and **Figure 6.1 Zone of Theoretical Visibility** illustrates that there is potential intervisibility between the Proposed Development and the lochs, in particular Loch Long. Consultation has identified the need to assess the potential effects of the Proposed Development on the seascape character of Loch Long.

6.3.37 SNH, now NatureScot, undertook a Coastal Character Assessment[38] which identifies, describes, and maps Scotland's coasts at a very broad scale, identifying 13 National Coastal Character Types. Type 10: Outer Firth with Islands falls within the Study Area, which incorporates the coastal edges of Loch Long and Holy Loch, extending along the eastern coastlines of the Bute and Cowal peninsula and the Isle of Arran and the opposite mainland.

[38] Scottish Natural Heritage (2018). Guidance Note: Coastal Character Assessment version 1a . Available at https://www.nature.scot/sites/default/files/2018-07/Guidance%20Note%20-%20Coastal%20Character%20Assessment.pdf

6.3.38 A Seascape/ Landscape Assessment of the Firth of Clyde[39] was prepared in 2013 and includes an assessment of Loch Long, one of 13 Seascape Areas that were identified.

6.3.39 Loch Long is described as extending northwards from the Head of the Firth of Clyde from Strone Point on the western shore and Barons Point on the eastern shore of the loch. The loch is nearly 24 km long and becomes increasingly enclosed and steep sided as it extends towards Arrochar.

6.3.40 On-shore development is irregularly distributed, with long sections of steep sided coast difficult to access. Massive structures are associated with Ministry of Defence (MOD) infrastructure at Coulport and the oil terminal at Finnart, contrasting with narrow, often linear settlements at Cover, Ardentinny, Blairmore and at the head of the loch at Arrochar. There is a considerable amount of forestry on the glen sides.

6.3.41 There are a number of moorings and temporary anchorages within the loch but being a Dockyard Port much of the loch is subject to restrictions. Oil tankers and MOD vessels as well as recreation craft frequent the loch.

6.3.42 The loch forms a marine 'gateway' to the National Park and part of the western shore of Loch Long has been designated an Area of Panoramic Quality by Argyll and Bute Council.

6.3.43 The Seascape/ Landscape Assessment subdivided Loch Long into 8 coastal character areas, 5 of which are of relevance to this assessment:

- Strone Point to north of Blairmore;
- North of Blairmore to Shepherd's Point;
- Shepherd's Point to Coilessan;
- Finnart oil terminal to Coulport; and
- Coulport to Barons Point.

6.3.44 The Seascape/ Landscape Assessment identifies key issues which should be considered when assessing the landscape and visual implications of development in Loch Long, which include:

- *"The experience from the sea, which reveals the loch in sequence, which is very different from the road network, which tends to only permit experience of the loch in disconnected fragments."*

6.3.45 For the purposes of this assessment the seascape of Loch Long Seascape Unit (SU) has been grouped into the following two distinct seascape character types (SCT) each with their own sense of place:

- Loch Long Mouth SCT (the wider and more open mouth of Loch Long between the Clyde and Glen Finart/ Coulport); and
- Loch Long SCT (the narrower and more enclosed section of Loch Long between Glen Finart and Loch Goil/ Portincaple).

Loch Long Mouth SCT

6.3.46 The Loch Long Mouth SCT incorporates the following three coastal areas identified in the Seascape/ Landscape Assessment that make up the wider and more open mouth of Loch Long between the Clyde and Glen Finart/ Coulport:

- Strone Point to north of Blairmore: *"The mouth of Loch Long becomes wider and more strongly associated with the head of the Firth of Clyde..., with the scale of the seascape becoming more expansive further south. The loch is contained by low relief and gently graded slopes on the eastern*

[39] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde

shore, and steeper slopes on the western side."[40] *"The sea is widely overlooked by housing and the A-road, and the coast is very visible from other coasts across the loch."*[41]

- North of Blairmore to Shepherd's Point: *"Loch Long is approximately 2 km wide at this point, contained by gentle slopes and low relief to the east, which creates only a limited sense of enclosure when viewed from the west side of the loch or from the water. This western edge is more strongly contained by steep slopes."*[42] *"From the sea, the main visual focus is along the length of the loch."*[43]
- Coulport to Barons Point: Smooth, sweeping bays lead to the mouth of Loch Long and the coast is continuously settled. There are panoramic views along this coast, which is relatively open and visible from the B833, with sustained views of the sea and the wider panorama of the western end of the Clyde.

6.3.47 **Figure 6.4 Landscape Units and Landscape Character Types** shows the ZTV overlain on the LU and SU and **Appendix 6.2 Landscape Character** summarises the key characteristics of the three coastal areas that fall within the Loch Long Mouth SU.

Loch Long SCT

6.3.48 The Loch Long SCT incorporates part of the following two coastal areas identified in the Clyde Marine Plan that comprise the narrower and more enclosed section of Loch Long between Glen Finart and Loch Goil/ Portincaple:

- Shepherd's Point to Coilessan: *"Steep,wooded slopes contain the narrower stretch of the loch as it reaches inland towards Arrochar. A consistent feature along this entire length is the visibility of large scale development in the east coast, which is easily overlooked from this shore. This stretch of loch also frames the 'gateway' to Loch Goil."*[44] *"The forestry car parks and access routes offer fine panoramic views, both from higher elevations and from along the shore. Views will become more frequent as the woodland is felled and restocked. Many of the views focus on the opposite shore, and the large terminals and MOD development are an inevitable focus, as can be large vessels within the narrow loch. Views form the loch extend up and down its long length."*[45]
- Finnart oil terminal to Coulport: The majority of this stretch of coastline is inaccessible due to high security facilities associated with the MOD and the Finnart oil terminal, and is dominated by the large structures associated with these terminals, both on and offshore. They are separated by a stretch of coast which is steep hill slope and broadleaved woodland, including the village of Portincaple. There are views towards this area from the water and the opposite shoreline (accessible through forest tracks). Views from the mouth of Loch Goil are most significant because of the importance of the junction of these two lochs.

6.3.49 **Figure 6.4 Landscape Units and Landscape Character Types** shows the ZTV overlain on the LU and SU and **Appendix 6.2 Landscape Character** summarises the key characteristics of the three coastal areas that fall within the Loch Long SU.

6.3.50 These SCT are described in detail as part of the seascape assessment, **Section 6.8**, below.

[40] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.2 Strone Point to north of Blairmore
[41] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.2.1 Visual amenity and key viewpoints
[42] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.3 North of Blairmore to Shepherd's Point
[43] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.3.1 Visual amenity and key viewpoints
[44] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.4 Shepherd's Point to Coilessan
[45] Firth of Clyde Forum (2013). Seascape / Landscape Assessment of the Firth of Clyde, Section 5.4.1 Visual amenity and key viewpoints

Baseline Visual Conditions

Visual Amenity

6.3.51 The extent of visibility of the Proposed Development, and thus the area from which there may be visual effects can be seen in the ZTV shown on **Figure 6.1 Zone of Theoretical Visibility**, although it should be noted that this is a bare ground ZTV not taking account of the screening effects of woodland and forestry or built form.

6.3.52 The Proposed Development is located in an area with varied levels of access and settlement. Settlements and transport routes are typically located within the Glens and Straths. There are core paths and recreational routes within the glens and straths and on the glen sides. The hills are less accessible, with fewer visual receptors but greater sense of remoteness and wildness.

6.3.53 The baseline appraisal identified that the Proposed Development would be visible from the following key visual receptors, which can be classified according to their reasons for being there, as:

- Residential receptors - both scattered individual properties and small settlements;
- recreational and tourist receptors - people using the countryside for outdoor recreation and visiting the area as tourists;
- transport receptors - people travelling through the area on major and minor roads; and
- commercial receptors – people at their place of work.

6.3.54 Their locations are illustrated on **Figure 6.5 Visual Receptors**.

6.3.55 The majority of commercial receptors in the study area, such as farms and B&Bs are also residential and are covered as such. There are a small number of purely commercial receptors but they are of low sensitivity to the Proposed Development.

6.3.56 The nature of the views available in the proposed OHL alignment is generally determined by a combination of topography and forestry cover. This can be appreciated from the baseline photos from the assessment viewpoints.

6.3.57 This assessment is illustrated from 15 viewpoints (see **Figure 6.6 Visual Appraisal Photograph**), as follows:

- Viewpoint A – Forestry Track, Sealladh Buidhe;
- Viewpoint B – Unnamed Road between Drynain and Barnacabber Farm, Glen Finart;
- Viewpoint C – Dun Daraich Fort, Glen Finart;
- Viewpoint D – Birchwood Trail, Glen Finart;
- Viewpoint E – Summit of Beinn Ruadh;
- Viewpoint F – Laird's Grave Trail, Ardentinny, Glen Finart;
- Viewpoint G – Shore Road B833, Coulport;
- Viewpoint H – Benmore Gardens viewpoint, Strath Eachaig;
- Viewpoint I – Forestry Track, Puck's Glen Gorge Trail, Strath Eachaig;
- Viewpoint J – A815, Little Eachaig Bridge, Strath Eachaig;
- Viewpoint K – B386, Little Eachaig valley;
- Viewpoint L – Memorial to James Duncan, Graham's Point, Kilmun;
- Viewpoint M – Holy Loch Picnic Area;
- Viewpoint N – A885 opposite Highland Avenue, Sandbank; and
- Viewpoint O – Camel's Hump viewpoint; Ardnadam Heritage Trail Loop.

6.3.58 The area affected by the Proposed Development is rugged, particularly in the north. Where the existing OHL alignment crosses high ground there are open areas with long views, whilst across the valleys views may be constrained or focussed.

6.3.59 The Proposed Development passes close to the residential receptors listed above where it crosses Glen Finart, Strath Eachaig and the valley of the Little Eachaig and in the vicinity of Dunoon Substation.

6.3.60 Most of the tourist and recreation receptors are on the low ground of Glen Finart and Strath Eachaig, or on the flanks of these valleys. There are no top 'destination summits' (Munros or Corbetts) in the study area, but Beinn Ruadh is a Graham (mountains in Scotland between 2,000 and 2,500 feet high, with at least 150 metres of descent on all sides[46]). There is a network of promoted trails associated with the Forest Park and Arboretum, as well as a network of core paths.

6.3.61 Road users include the A815 between Sandbank and Loch Eck, the A880 between the A815 and Kilmun, the minor road to Glen Massan and the minor road through Glen Finart. Road users include cyclists using the Dunoon to Portavadie cycle route, which was formerly designated as National Cycle Network Route 75.

Future Baseline

6.3.62 The existing landscape, seascape and visual baseline is envisaged to be relatively stable. No major changes are envisaged which would mean that the future baseline is substantively different to the present-day baseline described above.

6.3.63 The main change to the baseline is associated with the forestry activities which include felling and restocking commercial plantations, some of which is reflected in the existing baseline where clearance, windblow and restocking is evident. **Chapter 12 Forestry** considers the likely significant effects of the Proposed Development on forest and woodland areas. **Chapter 12 Forestry** provides detailed descriptions of the existing baseline, including species, condition and current management; and the ongoing forest management activities, including Felling Permissions, approved Long Term Forestry Plans and proposed Forest Design Plans within the Study Area.

6.3.64 Larch felling of trees infected by *Phytophthora ramorum* and the absence of larch in replanting will have an impact on the character of the productive forests as the mix and diversity of species changes. In some areas, there will be a reduction in species diversity due to the absence of larch; whilst in other areas there is likely to be an increase in the planting of native or non-native broadleaves along with diverse conifer species. Felling consents have already been obtained within the Study Area in response to Statutory Plant Health Notices, as described in **Chapter 12 Forestry**.

6.3.65 A Forest Design Plan was approved for Sandbank Forest in 2016 (Application Reference 16/02981/FDP) setting out the management proposals from 2016 to 2036. Sandbank Forest is made up of Dunloskin, Ardnadam, Dalinlongart and Glenkin Forests. The Forest Design Plan identifies Sandbank Forest as predominantly comprising Sitka spruce, with limited larch, and with mixed broadleaf along watercourses and along the south-eastern edge of Ardnadam and Dunloskin Forests, to the south of the substation. The mixed broadleaf woodland will be retained as a nature reserve, and extended to the north-west, west of Dunoon Substation, to create a permanent forest edge of native species adjacent to Sandbank and the Ardnadam Heritage Trail.

6.3.66 With respect to proposed developments that have been identified as forming part of the future baseline, two residential developments and one tourist development have been identified. These developments introduce additional residential and recreational receptors, respectively, and include:

[46] Anderson and Prentice for Scottish Mountaineering Club (2015). The Grahams and The Donalds

- Planning Application Reference 19/01594/PP for the erection of 4 no. Semi-detached dwelling houses and formation of vehicular accesses at former Hillcrest Robertson Terrace, Sandbank, located 100 m north of access track to Tower 77;
- planning Application Reference 19/00708/PP for the erection of 5 no. Dwelling houses, installation of a septic tank and formation of vehicular access at land south-west of Holy Loch Farm Cottage, Sandbank, located 800 m east of existing OHL alignment between Towers 62 and 63; and
- planning Application Reference 2013/0328/DET for the erection of 15 no. Holiday dwellings, shop and reception building, 3 no. Barbeque huts and associated infrastructure at Barnacabber Farm, Ardentinny, located in Glen Finart and immediately north of Tower 24.

6.3.67 The proposed 4 no. two-storey houses at former Hillcrest, Robertson Terrace (Planning Application Reference 19/01594/PP) are located within Sandbank, east of the A885, and replace a detached house that has been demolished and completes an existing residential block and forms part of the settlement of Sandbank. The future residential visual receptors are assessed as part of the Sandbank group of residential receptors.

6.3.68 The proposed 5 no. houses (Planning Application Reference 19/00708/PP) are located to the north of the B836 and east of the Little Eachaig River, adjacent to the existing cluster or residential properties at Holy Loch Farm Cottage and The Granary. The 5 no. houses are arranged in a traditional steading arrangement with existing landscape and planting retained around the perimeter. The future residential visual receptors are assessed as part of the group of the Dalinlongart and surrounds group of residential receptors in Strath Eachaig.

6.3.69 The proposed holiday dwellings (Planning Application Reference 2013/0328/DET) and associated infrastructure are located to the south-west of Barnacabber Farm, sited along the edge of the open glen floor and set against the existing treeline. An access road with a lodge, reception and shop is proposed off the road through Glen Finart opposite the existing houses and the small broadleaf woodland associated with Allt Mhill and Cuil Burn, through which the existing OHL alignment and the proposed OHL alignment run.

Sensitive Receptors

Sensitive Landscape and Seascape Receptors

6.3.70 The sensitive landscape receptors that lie within the Study Area illustrated on **Figure 6.2 NatureScot National Landscape Character Assessment** include:

- The National Park;
- Benmore Botanic Garden and GDL;
- Argyll Forest Park;
- Loch Long APQ;
- Straths and Glens LCT .253 – this covers Glen Finart and Strath Eachaig;
- Steep Ridges and Hills LCT 250 – this covers the area of the western uplands of the National Park and encloses and surrounds Glen Finart and Strath Eachaig;
- Steep Ridges and Mountains LCT 34 – this covers the area to the south and west of the National Park, including Dunoon;
- LLTNP LCTs assessed at a fine scale, based on the LLTNP 2010 Assessment and extended south at a similar level of detail, and assessed at the scale of LUs:
  - Coulport (open ridges defining eastern edge of Loch Long);
  - Creachan Mòr (the open high ground north of Glen Finart and the forested flank of Loch Long);

  - Glen Finart (the farmed glen floor and the enclosing forested and wooded glen sides);
  - Stronchulin (the open high ground between Glen Finart and Strath Eachaig and the forested upper valley of the Stronchulin Burn);
  - Strath Eachaig (the farmed and forested strath floor and the enclosing forested hillsides);
  - Eachaig to Finbracken (the rolling forested hills from the valley of the Little Eachaig to Finbraken Hill); and
  - Sandbank (the settled sea loch shore fringe and the farmed, forested and wooded glen sides above the A885 around the substation, with forested hills beyond).
- Loch Long Seascape Units and Seascape Character Types incorporating the Loch Long Coastal Character Areas:
  - Loch Long SCT; and
  - Loch Long Mouth SCT.

Sensitive Visual Receptors

6.3.71 The sensitive visual receptors that lie within the Study Area illustrated on **Figure 6.5 Visual Receptors** include:

Residential Receptors

- Villages and hamlets:
  - Ardentinny;
  - Sandbank;
  - Invereck;
  - Dalinlongart;
  - Clachaig;
  - Kilmun;
  - Rashfield; and
  - Uig.
- Scattered residential properties:
  - in Glen Finart;
  - along the southern shore of Lock Eck;
  - across Strath Eachaig;
  - in the valley of the Little Eachaig River; and
  - in Glen Massan.

Recreational and Tourist Receptors

- Visitors to Benmore Botanic Gardens;
- users of Dunoon to Glendaruel & Portavadie cycle route (formerly National Cycle Network Route 75);
- users of multiple promoted trails, mainly associated with the Forest Park:
  - Puck's Glen;
  - Kilmun Arboretum;
  - Ardentinny trails;
  - Sandbank trails; and

  - Big Tree walks in the woods opposite the entrance to Benmore.
- visitors to campsites and holiday parks:
  - in Glen Finart; and
  - along the A815 south of Loch Eck to Dunoon.
- hikers of Beinn Ruadh (Graham, destination summit);
- visitors to Finart Bay / Ardentinny beach;
- visitors and users of Loch Long; and
- users of core paths throughout the area.

Transport Receptors

- Main road users:
  - A815;
  - A885;
  - A880; and
  - B836.
- minor road users:
  - from Invereck up Glen Massan; and
  - from Ardentinny along Glen Finart.

6.4 Issues Scoped Out

6.4.1 The effect on landscape character at the scale of units of the LCTs defined by the NatureScot National Landscape Character Assessment has not been considered, as the magnitude of change from a rebuild OHL would be too small to have a significant effect. The assessment of landscape effects is based on the Landscape Units and the finer grain LLTNP LCTs.

6.4.2 The effect on National Scenic Areas, Wild Land Areas and Argyll & Bute Areas of Panoramic Quality has not been considered because the nearest areas are too far from the Proposed Development to be affected. The southern tip of the Argyll & Bute APQ falls within the Loch Lomond SCT and will be assessed as part of this SCT.

6.4.3 The effect on commercial visual receptors has not been considered because they are of low sensitivity and would not be significantly affected.

6.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

6.5.1 Landscape and visual mitigation of the Proposed Development, in common with all overhead transmission lines developed by SSEN Transmission is embedded in the route selection process which gives substantial weight to potential effects on landscape character, landscape designations and visual amenity.

6.5.2 The proposed OHL alignment has accordingly been developed through an iterative design process which considered and balanced environmental, technical, and economic factors. The final alignment was selected in part to minimise the number of potential visual receptors and reduce landscape effects by running parallel to or on the alignment of the existing OHL where this would reduce landscape and visual effects.

6.5.3 The proposed OHL alignment was designed to be as close as possible to the current position along the floor of Glen Finart to reduce potential impacts to views from Dun Daraich Scheduled Monument.

6.5.4 The proposed OHL alignment was routed to enhance the back-clothing of the proposed OHL alignment and avoid the open ridges and hills of Creachan Mòr to the north; and to achieve a better landscape fit by avoiding the crest of Finbracken Hill above Sandbank.

Design Solutions and Assumptions

Construction

6.5.5 The construction of the Proposed Development will include the following aspects which may have an effect on landscape features, the character of the landscape and on visual amenity.

6.5.6 Construction activities likely to result in landscape and visual effects include:

- Felling of forestry and woodland within the Operational Corridor and along proposed access routes to accommodate the proposed OHL alignment:
  - a cleared corridor through commercial conifer plantations approximately 81 m wide;
  - a cleared corridor through broadleaf native woodland approximately 60 m wide; and
  - a cleared corridor along a proposed access track approximately 20 m wide.
- creation of temporary construction compounds including welfare facilities, parking and material storage:
  - 40 x 20 m Satellite Compound Area; and
  - 60 x 130 m Main Compound Area.
- tower compounds for construction of towers, including installing foundations:
  - 50 x 50 m tower compounds for crane builds; and
  - 30 x 25 m tower compounds for helicopter builds, excluding bunded sub-soil material and topsoil storage.
- temporary diversions where the proposed OHL alignment replaces the existing OHL along the same alignment, or crosses the existing OHL alignment;
- new tower assembly areas are required on the floor of Glen Finart and Strath Eachaig for the construction of towers within the sections of proposed OHL alignment that would be a helicopter build as illustrated by **Figure 3.5 Helicopter Flight Paths;**
- noise and movement associated with helicopter build of towers in Creachan Mòr, Glen Finart, Stronchullin and Strath Eachaig LUs; and
- borrow pit search areas and conductor pulling areas, as illustrated on **Figure 3.1: Site Layout**.

6.5.7 The works listed above are predominantly temporary in nature. The construction compound, assembly areas, laydown areas and temporary access tracks would be reinstated at the end of construction with all buildings and materials removed and soils appropriately reinstated. Construction works include the creation of new permanent and temporary access tracks and new, upgraded and temporary bellmouths, as illustrated in **Figure 3.1 Site Layout**.

6.5.8 The construction works would result in the permanent removal of vegetation for the creation of an Operational Corridor for the proposed OHL alignment and permanent access tracks where they pass through areas of forestry and woodland, and would include some temporary removal of vegetation to accommodate construction compounds, temporary diversions and temporary access tracks. Indirect construction effects on vegetation include some additional temporary removal of forests beyond the Operational Corridor to manage the risk of windthrow. However, this does not form part of the EIA.

Reference should be made to **Chapter 7 Ecology and Nature Conservation** and **Chapter 12 Forestry** with regard to potential impacts on woodland and forest.

6.5.9 Additional mitigation measures include detailed design and micrositing, and the development of Forestry Design Plans for future management where there may be opportunity to reduce the OC.

Operational period (permanent effects)

6.5.10 The main potential for significant permanent effects from the Proposed Development on landscape and visual receptors would be created by the following:

- the increased height and bulk of the proposed towers compared to the existing, and their brighter colour when new before the galvanising has weathered;
- creation of new Operational Corridors and the associated clearance of vegetation through existing forestry and woodland within the northern section at Creachan Mòr, on the south-western edge of Strath Eachaig and at Finbracken Hill; and
- the realignment of the northernmost section of the existing OHL from open hills of Creachan Mòr where the existing OHL can be seen along the skyline onto lower forested slopes where it is back-clothed.

6.5.11 Note that, whilst the scope of the Proposed Development does not include the removal of the existing OHL, the assessment of landscape and visual effects assumes that it has been removed.

Embedded Mitigation

6.5.12 The main mitigation measure is the replanting of Operational Corridors associated with existing OHL once removed and restoration and replanting of areas cleared to accommodate temporary construction compounds and access, with the re-vegetation to reflect the area it passes through, predominantly commercial forestry or broadleaf native woodland. Where applicable, this may be captured during the next forest crop rotation. However, this is under landowner control and is not enforceable by the Applicant.

6.5.13 Additional mitigation measures include ensuring that road upgrades, junctions and access points are of an appropriate rural character and fit the local vernacular with respect to boundaries and entrance features. Proposed access tracks will be well designed to reduce their landscape and visual impact.

6.5.14 The mitigation of effects on the landscape and visual resource during construction are those integral to the construction process under the 'Considerate Contractors' process that is now routinely followed, such as tidy site management to reduce visual clutter associated with the works; and use of construction lighting in accordance with best practice to minimise lighting intrusion to surrounding sensitive receptors.

6.5.15 The implementation of a Construction Environmental Management Plan (CEMP) and General Environmental Management Plans (GEMP) will ensure that best practice standards are used during the construction and reinstatement periods which will assist in minimising landscape and visual effects.

6.5.16 Whilst beyond the scope of this assessment, mitigation measures to address the indirect impact of the Proposed Development on woodland and forest include the preparation of Forest Design Plans. Forest Design Plans providing more detailed appraisals and mitigation proposals have been prepared for Ballochyle, Dunoon, and Glenfinart Forest, Ardentinny, as described in **Chapter 12 Forestry** and **Appendix 12.2 Forest Landscape Design**. With respect to the forestry above the existing access track and the Proposed Development in Glenfinart Forest, a joint venture between SSEN Transmission and Forestry and Land Scotland will undertake the removal of all commercial forestry crops above the Proposed Development (approximately 45 ha) and replace them with predominantly native broadleaved woodland appropriate to the Site. This will transform the long-term management objective in this part

of the forest from commercial timber production to biodiversity and amenity management. It would also enable the Operational Corridor to be reduced from 81 m wide to 60 m wide.

6.5.17 Specific landscape and visual mitigation commitments that have been incorporated into the Proposed Development are as follows:

- All construction compounds and all access tracks outwith areas of commercial forestry will be removed and disturbed ground made good on completion of the construction works, as set out in the GEMPs.
- All temporary road upgrades, bell-mouths etc. will be removed and disturbed ground made good on completion of the construction works, as detailed in the GEMPs.
- Compensatory planting will be undertaken to ensure no net loss of woodland.
- Wayleaves will be reduced to 60 m where forestry management objectives allow for the creation of broadleaf woodland along the Operational Corridor.
- Replacement planting of the broadleaf woodland on the floor of Glen Finart will be undertaken to reinstate the native woodland along the existing OHL Operational Corridor and temporary diversion OHL Operational Corridor, subject to agreement with the landowner. This is referenced as mitigation LV1 in **Chapter 15 Schedule of Environmental Mitigation**.

6.6 Landscape and Seascape Assessment

Introduction

6.6.1 The following paragraphs present the effects of the Proposed Development on the landscape, considered at the scale of the LUs as illustrated by **Figure 6.4 Landscape Units and Landscape Character Types** and described in **Appendix 6.2 Landscape Character**. The assessments below set out the baseline characteristics; value and susceptibility and subsequent sensitivity; the magnitude of change, and the resulting significance of effect.

6.6.2 The assessment was undertaken at the scale of individual areas of different LCT within each LU and the outcomes of these assessments combined to give the overall effect on the LU as a whole. The assessments for each LCT within the Landscape and Seascape Units are provided in **Appendix 6.3 Assessment of LCTs that make up each Landscape Unit**. Viewpoint photographs and visualisations to aid the understanding of the landscape and visual effects of the Proposed Development from five viewpoints are shown on **Figures 6.6-6.11**.

Construction Effects

6.6.3 People notice movement and active change more than they notice fixed objects. Partly because of this, the overall effects on the landscape during the construction phase would be greater than once the development is complete. The changing nature of the Proposed Development as it is being built and the presence on site of machinery, often with hazard lights, and the general noise and activity associated with construction works are likely to attract attention and add disturbance to areas that are currently tranquil. The noise and movement would be particularly apparent with respect to the helicopter operations associated with towers that would be installed by helicopter, working out of locations on the Glen Finart and Strath Eachaig floors. The Construction phase also affects a slightly larger area than the Operational Phase due to the requirement for temporary construction compounds, temporary diversions, borrow pits and temporary access tracks.

6.6.4 These effects, however, would be temporary and short term in nature (a total construction period of approximately two years although periods of intense activity in any one area would be shorter than this).

6.6.5 The clearance of vegetation to accommodate the Operational Corridors associated with temporary diversions and tracks is considered to be temporary and medium term in nature as the revegetation of these areas would take time to re-establish and reinstate the landscape and visual baseline. These are therefore considered as part of the main assessment of the Operational Phase at Year 1.

6.6.6 Construction effects on landscape character arising from the removal of vegetation to create permanent Operational Corridors for the OHL and for the proposed permanent access tracks through woodland areas would be permanent, persisting through the operational period, and are therefore considered as part of the main assessment of permanent effects of the Operational Phase.

6.6.7 Overall, the degree of significance of effect on landscape receptors during construction is generally anticipated to be the same as that found for the permanent effects. Therefore, construction period effects are only discussed in detail where substantially increased or different effects are anticipated during the construction period.

Mitigation during Operation

6.6.8 The dismantling of the existing OHL is being consented under a different regime and therefore does not form part of the Proposed Development, as described in Chapter 3. However, the Proposed Development replaces the existing OHL, rendering it redundant and enabling the dismantling of the existing OHL alignment. Therefore, secondary mitigation measures to reduce the landscape and visual effects of the Proposed Development, which fall outwith the remit of the Proposed Development, include the reinstatement of vegetation within the existing OHL Operational Corridor to reflect the vegetation within the area it passes through. It is recommended that the forestry Operational Corridors for the existing OHL alignment where this is removed on the slopes of Glen Finart along Clunie Burn and on the slopes of Strath Eachaig near Puck's Glen be managed to encourage natural woodland regeneration.

Creachan Mòr Landscape Unit

Photograph 6.1: The Forested Glen Sides and Hills of Creachan Mòr, constrasting with the Open Glen Hills

Landscape Overview

6.6.9 Creachan Mòr LU comprises the open high ground and forested flanks between Glen Finart to the south and Loch Goil to the north and along the western edge of Loch Long. Creachan Mòr LU forms part of the Steep Ridges and Hills National Landscape Character Type (LCT), characterised by steep-sided hills comprising craggy upper slopes with pronounced summits, which are frequently broken by rocky outcrops and knolls. The hills rise dramatically from narrow sea lochs and deep glens and coniferous forest predominantly covers the lower slopes of the Cowal hills and extends high up into the narrow glens and rocky gullies. The LU falls entirely within the National Park and some of the woodland and forested areas are recognised as Ancient Woodland as shown on the Ancient Woodland Inventory (AWI), defined as *"land that is currently wooded and has been continually wooded, at least since 1750"*[47]. The quality is variable, influenced by commercial forestry activity and clearance of diseased larch. The open hills generally have a remote and wild character, although this is reduced where the existing OHL alignment runs along the hill tops, introducing manmade infrastructure.

Landscape Sensitivity

6.6.10 Overall, the value of the LU is considered to be High-Medium. The susceptibility of the Creachan Mòr LU to the type of development proposed is considered to be High-Medium due to the sensitivity of the

[47] NatureScot (online) A guide to understanding the Scottish Ancient Woodland Inventory (AWI) https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi

more remote and wild open hilltops to infrastructure, albeit there is existing infrastructure present, and the tree removal required to accommodate OHLs within areas of forestry and woodland. The landscape effects on the physical landscape features of forestry and woodland are partially offset by the greater enclosure and scale afforded by forested glen sides that enable these areas to accommodate OHL infrastructure without undue effects on the integrity of the LCT. Overall, the sensitivity of the LU to the type of development proposed is High-Medium.

Assessment

Operational Phase at Year 1

6.6.11 The landscape effect of the Proposed Development on Creachan Mòr LU as a whole is both adverse and beneficial. The rebuild of the existing OHL alignment would result in an increase in height of the OHL and the installation of taller and bulkier towers, which would increase the scale and visibility of the OHL infrastructure within the LU. The Proposed Development would also require the removal of a corridor of forestry to accommodate the associated Operational Corridors, which are wider in scale than the existing OHL Operational Corridor, albeit this is in the context of commercial forestry activities. However, the rerouting of the proposed OHL alignment onto the forested hill and forested glen sides would increase the screening and backclothing of the proposed OHL alignment, helping to offset the larger scale of the infrastructure. The removal of the existing OHL alignment from the open hills where it is visible on the skyline and affects the scenic qualities of this more remote landscape would be beneficial on the character of the LU as a whole. On balance, the Proposed Development would result in a Medium-Low magnitude of change on the LU as a whole, which has High-Medium sensitivity, resulting in a **Moderate-Minor adverse** effect at Year 1 of Operation (**not significant**).

Construction Phase

6.6.12 Construction effects would be the same as the Operational Effects.

Residual Effects

6.6.13 Over time, as the new towers weather and the Operational Corridors associated with the existing OHL alignment become vegetated, the adverse aspects of the change would reduce, and the beneficial aspects increase such that eventually the effect would become **Moderate-Minor neutral** (**not significant**).

Mitigation During Operation

6.6.14 The assessment of indirect effects falls outwith the scope of this assessment, however, the Forest Design Plans, included in **Appendix 12.2 Landscape Character**, identify possible secondary mitigation measures for forestry management beyond the OC.

6.6.15 At Creachan Mòr, the Forest Design Plan proposes that the existing commercial forestry above the existing farm access track and proposed OHL be converted from productive forest to non-commercial, predominantly native woodland. This would have a beneficial effect on the LU, reducing the adverse landscape and visual impacts of forestry on the upper slopes and creating a permanently wooded backdrop to the Proposed Development, that would not be affected by future felling regimes. The Operational Corridor could be reduced to a 60 m Operational Corridor within broadleaf woodland, instead of the 81 m required within commercial forests (as illustrated by the visualisations in **Figure 6.7 Viewpoint A: Sealladh Buidhe**).

Glen Finart Landscape Unit

Photograph 6.2: The Farmed Glen Floor of Glen Finart LU, enclosed by Wooded and Forested Glen Sides above which lie the Open Hills of Creachan Mòr

Landscape Overview

6.6.16 Glen Finart LU comprises the farmed glen floor and the enclosing forested and wooded glen sides. Glen Finart LU forms part of the Straths and Glens National LCT, which is characterised by broad u-shaped glens many of which have forested glen sides, with scattered trees and remnants of native woodland along the edges of burns. The glen floors are farmed with improved pastures and settlements and farms are located on lower side slopes where they are raised above the floodplain. Road corridors follow the edges of the glen floors and towers, and low voltage power lines are described as being highly visible features across open glen floors. The LU falls entirely within the National Park and the majority of the woodland has been identified as Ancient Woodland. A scheduled monument and listed buildings add to the cultural heritage of the glen, although it is also influenced by tourism infrastructure and the existing OHLs.

Landscape Sensitivity

6.6.17 Overall, the value of the LU is considered to be High-Medium. The susceptibility of the Glen Finart LU to the type of development proposed is considered to be High-Medium due to the sensitivity of the open glen floor to large scale infrastructure and the greater capacity for forestry and woodland to accommodate large scale infrastructure, albeit with tree removal along Operational Corridors required. Overall, the sensitivity of the LU to the type of development proposed is High-Medium.

Assessment

Operational Phase at Year 1

6.6.18 The landscape effect of the Proposed Development on Glen Finart LU would arise as a result of the build of the proposed OHL alignment close to the alignment of the existing OHL alignment, which would result in an increase in height of the OHL and the installation of taller and bulkier towers, which would increase the scale and visibility of the OHL infrastructure within the LU. However, this would be a direct replacement of the existing OHL alignment, rather than being the introduction of new infrastructure into an unaffected landscape. The existing woodland on the glen floor, associated with rocky knolls, farmsteads, and houses, and the Glen Finart Burn would help to reduce the extent to which the proposed OHL alignment is perceived within the LU and would lessen the contrast of the tall infrastructure with the open pasture. The proposed OHL alignment also benefits from the backclothing of forested and wooded glen sides and the scale of the enclosing landscape that would dwarf the large-scale infrastructure. However, where the proposed OHL alignment rises up onto the forested and wooded glen sides and passes through existing woodland, the large Operational Corridor would create larger and more visible corridors through the forest and woodland, albeit along a slightly improved alignment. Therefore, the Proposed Development would result in a Low magnitude of change on the LU as a whole, which has High-Medium sensitivity, resulting in a **Moderate-Minor adverse** effect at Year 1 of Operation (**not significant**).

Construction Phase

6.6.19 Although construction effects are temporary, the location of construction compounds and the construction of towers within the helicopter operation compounds, together with the helicopter operations from these areas is likely to affect the tranquillity of the glen. The temporary diversion corridor would require the removal of a 60 m wide corridor of existing native woodland along the Clunie Burn where it rises up onto the glen sides to the north, the woodland block adjacent to the road through Glen Finart, and on the forestry edge to the south. Therefore, a temporary Medium magnitude of effect (change) on Glen Finart LU is likely to occur, which is of High-Medium sensitivity. This would result in a Moderate adverse effect (significant) during the Construction Phase.

Residual Effects

6.6.20 Over time, as the Proposed Development weathers and the Operational Corridor associated with the existing OHL alignment become vegetated, the level of effect would fall to **Minor adverse** (**not significant**).

Stronchullin Landscape Unit

Photograph 6.3: The Open Hills of Stronchullin LU as seen from Beinn Ruadh

Landscape Overview

6.6.21 Stronchullin LU comprises the open high ground and forested flanks between Glen Finart to the north and Strath Eachaig to the south, and the forested upper valley of the Stronchullin Burn. Stronchullin LU forms part of the Steep Ridges and Hills National Landscape Character Type (LCT), characterised by steep-sided hills comprising craggy upper slopes with pronounced summits, which are frequently broken by rocky outcrops and knolls. The hills rise dramatically from narrow sea lochs and deep glens and coniferous forest predominantly covers the lower slopes of the Cowal hills and extends high up into the narrow glens and rocky gullies. The LU falls entirely within the National Park and some of the wooded and forested areas have been identified as Ancient Woodland as shown on AWI. The quality is variable, with the forested glen sides influenced by commercial forestry activity. The open hills generally have a remote and wild character, although this is reduced where the existing OHL alignment runs along the hill tops, introducing manmade infrastructure between Stronchullin Hill and Beinn Ruadh.

Landscape Sensitivity

6.6.22 Overall, the value of the LU is considered to be High-Medium. The susceptibility of the Stronchullin LU to the type of development proposed is considered to be High due to the sensitivity of the more remote and wild open hilltops to infrastructure, albeit there is existing infrastructure present. The landscape effects on the physical landscape features of forestry and woodland are partially offset by the greater enclosure and scale afforded by forested glen sides that enable these areas to accommodate OHL infrastructure without undue effects on the integrity of the key characteristics of the landscape type.

Overall, the sensitivity of the LU to the type of development proposed is High as the open hills comprise the main character type of the LU.

Assessment

Operational Phase at Year 1

6.6.23 The landscape effect of the Proposed Development on Stronchullin LU would arise as a result of the proposed OHL alignment being located close to the existing OHL alignment, which would primarily result in an increase in height of the OHL and the installation of taller and bulkier towers. This would increase the scale and visibility of the OHL infrastructure within the LU, although the proposed OHL alignment would have a slightly better landscape 'fit' with respect to Stronchullin Hill where it sits slightly further off the crest of the hill than the existing OHL. The proposed OHL alignment would replace the existing OHL alignment, rather than introducing new infrastructure into a landscape that is devoid of manmade influence. Therefore, the Proposed Development would result in a Low magnitude of change on the LU as a whole, which has High sensitivity, resulting in a Moderate-Minor adverse effect at Year 1 of Operation, which is **not significant**.

Construction Phase

6.6.24 Construction effects would be the same as the Operational Effects.

Residual Effects

6.6.25 Over time, as the Proposed Development weathers and the Operational Corridors associated with the existing OHL alignment become vegetated, the level of effect would reduce, becoming **Moderate-Minor adverse** (**not significant**).

Strath Eachaig Landscape Unit

Photograph 6.4: View of Cairnbaan and Orchard Park on the Farmed Strath Floor of Strath Eachaig, framed by the Forested and Wooded Glen Sides and Hills and the Open Hills of Stronchullin LU above, including the summit of Beinn Ruadh

Landscape Overview

6.6.26 Strath Eachaig LU comprises the farmed strath floor and enclosing forested hillsides to the north-west of Holy Loch. The Strath Eachaig LU forms part of the Straths and Glens National LCT, which is characterised by straths with wide flat floodplains many of which have forested glen sides, with scattered trees and remnants of native woodland along the edges of burns. The glen floors are farmed with improved pastures and settlements and farms are located on lower side slopes where they are raised above the floodplain. Road corridors follow the edges of the glen floors and towers, and low voltage power lines are described as being highly visible features across open glen floors in the published landscape character assessments. The majority of the LU falls within the National Park and includes Puck's Glen and Benmore Botanic Gardens, promoted walking routes and woodland or forested areas shown on AWI. The Strath is also influenced by the busy A-road linking the ferry terminals at Dunoon to the Highlands, its proximity to Sandbank which extends into the LU at Sandhaven, and other tourism infrastructure.

Landscape Sensitivity

6.6.27 Overall, the value of the LU is considered to be High-Medium. The susceptibility of the Strath Eachaig LU to the type of development proposed is considered to be High-Medium due to the sensitivity of the open strath floor to large scale infrastructure and the greater capacity for forestry and woodland to accommodate large scale infrastructure, albeit recognising that tree removal along Operational

Corridors would be required and there are areas of highly sensitive woodland at Puck's Glen and Benmore Botanic Gardens. Overall, the sensitivity of the LU to the type of development proposed is High-Medium.

Assessment

Operational Phase at Year 1

6.6.28 The landscape effect of the Proposed Development on Strath Eachaig LU as a whole would arise as a result of the proposed OHL alignment along a similar alignment to the existing OHL alignment (which it replaces), however with the installation of taller and bulkier towers, to the north-east, and the realignment of the existing OHL into the Forested Glen Sides, which would reduce the effect of the Proposed Development on the more sensitive, open strath floor, to the south-west. The beneficial effects of the Proposed Development to the south-west occur outside the National Park and away from the more sensitive landscapes of Puck's Glen and Benmore Botanic Gardens. The adverse effects of the Proposed Development would arise from the replacement of the existing OHL, rather than the introduction of new infrastructure into a landscape that had been largely unaffected by infrastructure. There is some existing woodland on the strath floor, associated with settlements, farmsteads, and the Eachaig River. To the south-west, the Proposed Development would benefit from the backclothing and screening of commercial forestry on the glen sides, and the scale of the enclosing landscape that would help to reduce the perceived scale of the proposed OHL. Therefore, the Proposed Development would result in a Low magnitude of change on the LU as a whole, which has High-Medium sensitivity, resulting in a **Moderate-Minor adverse** effect (**not significant**) at Year 1 of Operation.

Construction Phase

6.6.29 Although construction effects are temporary, the location of construction compounds and the construction of towers within the helicopter operation compounds, together with the helicopter operations from these areas is likely to affect the tranquillity of the strath. The temporary diversion corridor would require the removal of existing native woodland and coniferous forestry within the 60 m Operational Corridor and along existing and proposed access tracks, to the south-east of the proposed OHL and Puck's Glen. Therefore, a temporary Medium-Low magnitude of effect (change) on Strath Eachaig LU is likely to occur, which is of High-Medium sensitivity. This would result in a Moderate-Minor adverse effect (not significant) during the Construction Phase.

Residual Effects

6.6.30 Over time, as the towers weather and become less immediately noticeable and the Operational Corridors associated with the existing OHL alignment become vegetated, the degree of effect would fall to **Minor adverse** (**not significant**).

6.6.31 The assessment of indirect effects falls outwith the scope of this assessment, however, the Forest Design Plans, included in **Appendix 12.2 Landscape Character** respectively, identify possible secondary mitigation measures for forestry management beyond the OC.

6.6.32 At Strath Eachaig, the Forest Design Plan proposes that the existing commercial forestry coups within which the Proposed Development pass at Ballochyle be replaced with a mix of Norway spruce to the south and a Sitka spruce and aspen mix to the north to increase species diversity and help to soften the appearance of new wood within the landscape. The retention of new access tracks, an uneven planting edge and the undulating landform would introduce irregularity and help to ameliorate the linear appearance of the OC.

Eachaig Finbracken

Photograph 6.5: The incised glen and Forested Upland Glens of Eachaig Finbracken LU

Landscape Overview

6.6.33 The Eachaig Finbracken LU comprises the incised, forested glens of the water courses of Little Eachaig River, Glenkin Burn, Birchen Burn and Allt na Criche and the rolling hills in between. The LU incorporates Ballochyle Hill (382 m AOD) and the forested sides of Clachaig Hill (521 m AOD) to the north, and Meall Buidhe (292 m AOD) to the south-west, and Dalinlogart Hill (196 m AOD) and Finbracken Hill (198 m AOD) to the south-east. Whilst some of the hill tops are open, the majority of the LU is covered in large scale forestry which accentuates the sense of enclosure of the incised glens.

Landscape Sensitivity

6.6.34 The Eachaig Finbracken LU is largely rolling forested hills with a less immediate relationship to the open hills above. They are gentler hills than the adjacent National Park and are more settled and developed. A small part of the forestry is recognised as Ancient Woodland in the AWI. On balance, the landscape value of the LCT is considered to be Low.

6.6.35 The susceptibility of the LU to the type of development proposed is considered to be Medium. The forestry obscures the landform with a simple composition and landcover. Remnants of mixed woodland identified as Ancient Woodland, as shown on AWI, follow the watercourses along the incised glens. The LU has some sensitivity to the type of development proposed due to the Operational Corridors associated with OHLs that results in the removal of woodland within an artificial corridor, albeit this is predominantly experienced in the context of commercial forestry that typically has a felling regime. The enclosed and simple nature of the forestry also has greater capacity to absorb OHLs than more open and remote landscapes. Overall, the sensitivity of the LU is considered to be Medium-Low.

Assessment

Operational Phase at Year 1

6.6.36 The Proposed Development would relocate a section of the existing OHL alignment from the Strath Eachaig LU into the edge of the Eachaig Finbracken LU. This would introduce a greater length of OHL, along with the associated wider Operational Corridor into the LU. Part of the realigned route would pass through the more open land around the Dalinlongart Waste Disposal Site, with a section following the existing OHL alignment, and then being realigned to run behind Finbracken Hill instead of over the crest of the hill as per the existing OHL alignment. There would therefore be a greater adverse effect on the LU to the north, but a better fit of the OHL infrastructure within the more sensitive south-eastern part of the LU, albeit with a wider Operational Corridor required to accommodate the larger OHL and current safety standards. Overall, at Year 1 of Operation this would result in a Medium adverse magnitude of effect (change) on an LU of Medium-Low sensitivity, giving rise to a **Minor adverse** effect (**not significant**) at Year 1 of Operation.

Construction Phase

6.6.37 Construction effects would be the same as the Operational Effects.

Residual Effects

6.6.38 Over time, the forestry within the redundant Operational Corridor of the existing OHL alignment over Finbracken Hill would be replanted and reintegrated into the surrounding forestry. The Proposed Development is located away from Core Paths and recreational routes and would be contained by forestry, with very localised effects on the LCT perceptible across a very limited part of the LCT, particularly given the better 'landscape fit' around Finbracken Hill. A **Minor-Negligible neutral** residual effect is anticipated (**not significant**).

Sandbank

Photograph 6.6: Elevated view across Sandbank LU with Forested and Wooded Glen Sides above the Settled Sea Loch Shore Fringes

Landscape Overview

6.6.39 The Sandbank LU comprises the settled Sea Loch Shore Fringes of Sandbank on the southern edge of Holy Loch. The landform rises up to the west of the A885, where the Glen Sides are a mix of open, farmed landcover and pockets of woodland and forest. To the west, the land rises up to Forested Hills

on the footslopes of Leacann nan Gall (568 m AOD), Black Craig (522 m AOD) and Bishop's Seat (504 m AOD). An area of Wooded Glen Sides extends along Dunloskin Wood between the Sea Loch Shore Fringes and Forested Glen Sides.

Landscape Sensitivity

6.6.40 The landscape value of the Sandbank LU is considered to be Medium-Low overall, recognising that there are areas of greater value associated with Ancient Woodland, Scheduled Monument and Ardnadam Heritage Trail. The susceptibility of the Sandbank LU is varied, although much of the LU is influenced by settlement and associated infrastructure and development, including the commercial forestry activities of the Forested Hills. Recognising that there are areas of greater susceptibility, the LU is considered to have Medium-Low susceptibility to the type of development proposed. The LU is therefore considered to have Medium-Low sensitivity.

Assessment

Operational Phase at Year 1

6.6.41 The landscape effect on Sandbank LU would arise as a result of the proposed OHL being built along a different alignment from the existing OHL which would result in slightly more of the OHL alignment falling within this LU but on a line which fits better to the form of the landscape than the existing line within the Eachaig Finbracken LU. The proposed OHL alignment would be slightly taller and bulkier than the existing and requires a wider Operational Corridor through forest and woodland, but this is experienced in the context of the existing substation and the settlement of Sandbank and associated infrastructure. The Proposed Development would result in a Low-Negligible magnitude of change on the LU as a whole, which has Medium-Low sensitivity, resulting in a **Minor-Negligible adverse** significance of effect at Year 1 of Operation (**not significant**).

Construction Phase

6.6.42 Construction effects would be the same as the Operational Effects.

Residual Effects

6.6.43 Over time, as the towers weather and the Operational Corridors associated with the existing OHL alignment become vegetated, the effect is anticipated to reduce to **Negligible adverse** (**not significant**).

Loch Long

Photograph 6.7: Elevated view across Loch Long towards the Clyde, including Coulport to the east (left of the view)

Landscape Overview

6.6.44 Loch Long SU is a sea loch that extends northwards from the Head of the Firth of Clyde from Strone Point on the western shore and Barons Point on the eastern shore and comprises Loch Long Mouth and Loch Long SCTs, as illustrated on **Figure 6.4 Landscape Units and Landscape Character Types**. The long, narrow loch becomes increasingly enclosed and steep sided as it extends towards Arrochar.

Landscape Sensitivity

6.6.45 On-shore development is irregularly distributed, with long sections of steep sided coast difficult to access. Massive structures are associated with MOD infrastructure at Coulport and the oil terminal at Finnart, contrasting with narrow, often linear settlements at Cover, Ardentinny, Blairmore and at the head of the loch at Arrochar. There is a considerable amount of forestry on the glen sides. The loch forms a marine 'gateway' to the National Park and part of the western shore of Loch Long has been designated an Area of Panoramic Quality by Argyll and Bute Council. Overall, the value of the SU is considered to be Medium. The susceptibility of the SU to the type of development proposed is considered to be Medium-Low and therefore the sensitivity of the SU is considered Medium.

Assessment

Operational Phase at Year 1

6.6.46 To the north, the proposed OHL alignment would replace an existing OHL alignment although on an alternative alignment located off the open hills and onto the forested glen sides. This locates the OHL closer to the SU, but results in a better landscape 'fit' with the proposed OHL alignment benefitting from the screening of forestry and the backcloth of hills and forests. The Proposed Development would reduce the potential for views of infrastructure on the skyline from the SU. The Proposed Development would not change the existing OHL alignment where it crosses the SU. To the south, the Proposed Development would replace the existing OHL alignment broadly along a very similar alignment. There is limited intervisibility between the SU and the Proposed Development which lies beyond Stronchullin Hill, and views are predominantly concentrated at the mouth of Glen Finart which is opposite the large MOD

complex at Coulport. Although the Proposed Development would include taller towers along the proposed OHL alignment than the towers of the existing OHL, a Negligible magnitude of effect (change) on the SU itself is likely to occur at Year 1 of Operations, which would result in a **Negligible adverse** effect (**not significant**).

Construction Phase

6.6.47 Construction effects would be the same as the Operational Effects.

Residual Effects

6.6.48 Over time as the new towers weather and the redundant Operational Corridors associated with the existing OHL alignment become vegetated, either through natural regeneration or replacing in the next crop rotation, the level of effect would reduce, with a **Negligible neutral** residual effect anticipated (**not significant**).

6.7 Visual Assessment

Introduction

6.7.1 The baseline in **Section 6.5 Sensitive Visual Receptors** identified the visual receptors that have been assessed in this chapter. Their locations are illustrated on **Figure 6.5 Visual Receptors**. **Figure 6.6 Visual Appraisal Photographs** includes photo-panoramas for viewpoints A to O which provide landscape and visual context. Visualisations of the Proposed Development from five viewpoints are shown on **Figures 6.7 to 6.11**. These are based on the proposed OHL alignment.

Construction period

6.7.2 As stated previously, people notice movement and active change more than they notice fixed objects and construction works affect a larger area than the Operational Phase of development due to the requirement for temporary construction compounds, borrow pits and temporary access tracks. These effects, however, would be temporary and short term in nature. The clearance of vegetation to create an Operational Corridor associated with temporary diversions and tracks is considered to be temporary and medium term in nature as the revegetation of these areas would take time to re-establish and reinstate the landscape and visual baseline.

6.7.3 The effect on visual amenity during construction is generally anticipated to be the same level of significance as that found for the permanent effects, except in Glen Finart and in Strath Eachaig. In the following paragraphs, construction period effects are only discussed in detail where increased effects are anticipated.

Residential Receptors

Visual Sensitivity

6.7.4 Residential receptors – people enjoying the view from their home – are usually considered to be highly susceptible to visual change, and are therefore considered to be of High sensitivity even where the actual view enjoyed may not be particularly valued.

Glen Finart

Visual Receptor Overview

6.7.5 Residential receptors in Glen Finart include houses at Stronvochlan and scattered residential properties along the glen floor adjacent to the minor access road.

6.7.6 The residential property opposite Barnacabber Farm (now Glenfinart Hotel and Deer Farm) is in close proximity to the existing OHL alignment and Proposed Development and is oriented north-east with views across the glen floor, and towards the OHL and Proposed Development. The existing OHL alignment passes within approximately 95 m to the south-east of the property, although this is oblique to the orientation and set within woodland. To the north-east, the existing tower is located approximately 247 m from the property, with filtered views of the tower beyond the deciduous trees along Glen Finart Burn. The Proposed Development would replace the existing OHL alignment, albeit with towers that are higher and bulkier than the existing towers, particularly Tower 22 on the floor of Glen Finart which would be replaced with a 36 m high tower. Beyond the glen floor, the proposed OHL alignment would not extend up onto the open hills and skyline, but would run along the wooded glen sides and be less visually prominent.

Photograph 6.8: View from minor road through Glen Finart near to Barnacabber Farm / Glenfinart Hotel and Deer Farm

Operational Phase

6.7.7 Overall, it is considered that the scale of visual change would be a slightly perceptible change in the composition of the view, which would be permanent. Therefore, a Low magnitude of effect (change) is likely to occur at Year 1 of Operation, resulting in a **Moderate adverse** effect, which is significant.

6.7.8 The remaining residential receptors within Glen Finart are located at a greater distance from the existing OHL alignment and the Proposed Development. They generally benefit from a greater degree of screening and are not oriented directly towards the Proposed Development. These more distant, generally more filtered views, are likely to result in a barely perceptible change in the composition of the

view, given the replacement OHL is located on the same alignment and only slightly greater in height. Therefore, the rest of the residential properties within Glen Finart would experience a Low to Negligible magnitude of effect (change), resulting in **Moderate-Minor adverse to Negligible** effects, which are **not significant**.

Construction Phase

6.7.9 Residential receptors in Glen Finart are likely to experience a greater effect on visual amenity during construction, although this would be temporary. However due to the concentration of activity within Glen Finart during the Construction Phase, a Medium-Low magnitude of effect (change) is likely to occur for highly sensitive visual receptors. There would be a temporary **Major-Moderate adverse** effect (**significant**) during Construction.

Residual Effects: Residential property opposite Barnacabber Farm

6.7.10 Over time, the towers would weather, becoming more recessive in colour[48] as the tower darkens in colour and is less reflective. The residual effect, once the tower has fully weathered, would be **Moderate-Minor** adverse (**not significant**).

Ardentinny

Visual Receptor Overview

6.7.11 Residents on the northern edge of Ardentinny have long distance views across the mouth of Glen Finart towards Creachan Mòr and of the existing OHL alignment that crosses the open hills and drops down the forested glen sides. The proposed OHL alignment replaces the existing OHL lower down on the forested glen sides, and would theoretically be visible from the northern-most residential properties at Ardentinny. However, the screening afforded by the existing forests, and the forested backcloth to the development would result in a barely perceptible change in the view experienced by a small number of Ardentinny residents. The scale of the Proposed Development would be dwarfed by the rising hills and would be less apparent in the view than the existing OHL alignment which is currently seen against the skyline. Dropping down to the glen floor, the proposed OHL alignment follows a less direct route, which would have a less obvious Operational Corridor through the forest than the existing OHL alignment.

Operational Phase

6.7.12 Therefore, at Year 1 of Operation, the Proposed Development would result in a Low-Negligible magnitude of effect (change) to approximately 22 residential properties in Glen Finart, which are of High sensitivity to visual change. This would result in a **Minor adverse** significance of effect at Year 1 of Operation, which is **not significant**. An adverse effect is likely to occur, despite the better landscape 'fit' of the Proposed Development due to the fact that the existing and proposed Operational Corridor would be visible at Year 1 of Operation.

Construction Phase

6.7.13 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.14 Over time, the Operational Corridor associated with the existing OHL alignment would become established as forestry/ woodland and would no longer be prominent in the view and a **Minor beneficial** residual effect is anticipated (**not significant**).

[48] Recessive colours are colours that fade into the background.

Strath Eachaig: Rashfield

Visual Receptor Overview

6.7.15 Residential receptors in Strath Eachaig include houses at Rashfield, Uig Dalinlongart and scattered residential properties along the strath floor as well as residents at Sandhaven.

6.7.16 Residents at the hamlet of Rashfield on the floor of Strath Eachaig are located within approximately 45 m of the existing OHL alignment, which passes between tourist accommodation on the northern edge of Rashfield. The residential properties vary in the orientation, with filtered views from the properties on the western edge of Rashfield of the existing OHL alignment and Proposed Development seen through the deciduous trees along the River Eachaig. The Proposed Development replaces the existing OHL alignment along a similar alignment, offset by approximately 50 m, and slightly further away from Rashfield. Therefore, the slight increase in height and visibility of the newer towers is likely to be largely offset by the slightly increased distance of the Proposed Development.

Operational Phase

6.7.17 Therefore, at Year 1 of Operation, the Proposed Development would result in a Low-Negligible magnitude of effect (change) to the residents at Rashfield, who are of High sensitivity to visual change. This would result in a **Minor adverse** significance of effect at Year 1 of Operation, which is **not significant**.

Construction Phase

6.7.18 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.19 Over time, the Operational Corridor associated with the existing OHL alignment would become established as forestry/ woodland and the gap in tree cover on the River Eachaig would become filled in. The new towers would also become assimilated into the view as they weather and become more recessive. This would result in a very minor improvement in the affected views, and therefore a **Negligible beneficial** residual effect is anticipated, which is **not significant**.

Strath Eachaig: Dalinlongart and Surrounds

Visual Receptor Overview

6.7.20 Residents on the western edge of Strath Eachaig, in and around Dalinlongart, including on the northern and north-western edges of Sandhaven, are located in close proximity to the existing OHL alignment as it crosses the open strath floor and Little Eachaig River. Vegetation associated with the river corridor and the scattered farmsteads and access tracks help to screen and filter views of the existing OHL alignment, but a number of properties have largely open views of the existing OHL alignment, albeit in the context of other overhead lines and residential properties and farmsteads, with approximately three residential homes located in very close proximity to existing towers.

6.7.21 The Proposed Development would replace the existing OHL along a new alignment to the south-west of Invereck House, where it would run through the Forested Glen Sides instead of the more open Farmed Strath Floor and avoid the repeated crossings of the Little Eachaig River on the strath floor. The Proposed Development would result in a new Operational Corridor through the existing forestry; however, this would be set within the commercially forested area, and would benefit from screening along the edge of the transition between the more open, flat strath floor and the rising forested glen sides.

Operational Phase

6.7.22 Therefore, at Year 1 of Operation, the Proposed Development would result in a Medium magnitude of effect (change) for the affected residential properties in and around Dalinlongart and at Sandhaven, who have high sensitivity to changes in visual amenity. This would result in a **Moderate beneficial** significance of effect on the affected properties at Year 1 of Operation, which is **significant**.

Construction Phase

6.7.23 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.24 Over time, where the Operational Corridor associated with the existing OHL alignment cuts through tree belts and woodland/ forestry it would be revegetated and would be less prominent in the view. However, given the predominantly open nature of the landscape, a **Moderate beneficial** residual effect is likely to persist.

Strath Eachaig: Ballochyle

Visual Receptor Overview

6.7.25 Residents at the Ballochyle properties, including Ballochyle Steading, are located on the periphery of Strath Eachaig, adjacent to the forested glen sides and set within a mix of woodland and coniferous forestry, and to the north and west of the meandering Little Eachaig River. Views out across the Strath, and towards the existing OHL alignment, are generally contained or filtered by existing vegetation. Views up the forested glen sides are contained by landform and forestry, although the level of enclosure is affected by commercial forestry activities.

6.7.26 The Proposed Development would replace the existing OHL alignment on the Strath floor, relocating it onto the forested glen sides closer to the Ballocyle properties, within approximately 190 m of the properties at Ballochyle, and approximately 40 m above the properties, to the north-west. The Proposed Development would result in a new Operational Corridor through the dense coniferous forestry, however, it would benefit from screening and backclothing resulting from its relocation onto the forested glen sides. Occasionally the vegetation and terrain enable framed views towards the Proposed Development from the curtilage of residential properties, and the towers may be seen against the skyline where they rise up above the properties.

Operational Phase

6.7.27 Therefore, at Year 1 of Operation, the Proposed Development would result in a Medium-Low to Low magnitude of effect (change) for the residential properties at Ballochyle, who have high sensitivity to changes in visual amenity. As a worst case, this would result in a **Moderate-Minor to Minor adverse** significance of effect on the affected properties at Year 1 of Operation, which is **not significant**.

Construction Phase

6.7.28 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.29 Over time, when the coniferous forest is established and mature, the Proposed Development would be less prominent in the view and a **Minor adverse** residual effect is likely to occur, which is **not significant**.

Strath Eachaig

Visual Receptor Overview

6.7.30 The remaining residential receptors within Strath Eachaig are located at a greater distance from the existing OHL alignment and Proposed Development, and generally benefit from a greater degree of screening due to the intervening landform and forestry and woodland. These more distant, generally more filtered views, are likely to result in a barely perceptible change in the composition of the view, given the replacement OHL is located on a very similar alignment across the middle of the strath and only slightly greater in height.

Operational Phase

6.7.31 Therefore, the rest of the residential properties within Strath Eachaig would experience a Low to Negligible magnitude of effect (change), resulting in a **Moderate-Minor adverse** to **Negligible** significance of effect, which are **not significant**.

Construction Phase

6.7.32 Construction effects would be the same as the Operational Phase Effects.

Residual Effect

6.7.33 The Residual effect would be the same as the Operational Phase Effects.

Sandbank

6.7.34 Residential receptors in Sandbank include houses within the village and on the periphery of the village, at Ardnadam Farmstead.

6.7.35 Views of the existing OHL alignment and Proposed Development are slightly curtailed by the rising landform, and where the existing and proposed infrastructure can be seen, they are seen against a backdrop of coniferous forest and rising hills. The proposed OHL alignment would replace the existing OHL alignment along a similar alignment through the open farmed glen sides adjacent to the Dunoon Substation, albeit slightly south of the existing OHL alignment and therefore further from the existing residential properties. Through the forested hills, the Proposed Development deviates from the existing OHL alignment, which crests Finbracken Hill, to run along a valley with a better landscape 'fit' than the existing OHL alignment.

Operational Phase

6.7.36 Overall, the Proposed Development would result in a Low-Negligible magnitude of change (effect) at Year 1 of Operation, on residential receptors, who are of High sensitivity. Therefore, a **Moderate-Minor adverse** significance of effect is likely to occur (**not significant**).

Construction Phase

6.7.37 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.38 Over time, the existing Operational Corridor that cuts an artificial line through coniferous forestry up Finbracken Hill would be replanted and would enhance the visual impact of infrastructure on residential properties in the immediate vicinity of the Proposed Development, resulting in a **Minor-Negligible adverse** residual effect.

Recreational Receptors

Visual Sensitivity

6.7.39 Recreational receptors may be of low, medium, or high sensitivity depending on the context. People enjoying outdoor recreation where the view is important to the experience are normally considered to be of High sensitivity. People hill walking and using promoted trails are generally there to enjoy the view.

6.7.40 Where the focus is more on the activity itself and the view is less important to the experience, they may be considered to be of Medium or even Low sensitivity.

6.7.41 With respect to visitors to Benmore Botanic Gardens, it can reasonably be assumed that they are there mainly to see the gardens themselves but there are promoted viewpoints within the gardens where visitors are encouraged to appreciate the wider view and landscape setting of the gardens, and therefore visitors to the viewpoints are considered to be of High sensitivity to changes to the view.

Walkers within the National Park and users of promoted trails and core paths

Operational Phase

6.7.42 There are multiple promoted trails in the area affected by the Proposed Development, mainly associated with Argyll Forest Park, as well as core paths which are predominantly located in the straths and glens and valley sides.

6.7.43 In general, recreational receptors experience views of the existing OHL alignment, which the Proposed Development replaces. The proposed OHL alignment would introduce taller, bulkier towers which, in the early years before the galvanising weathers down would be shinier and therefore more noticeable than the existing infrastructure. Whilst the Proposed Development would predominantly be located on or close to the existing OHL alignment, in places it has been re-routed to achieve a better 'landscape fit' which is less visually prominent.

6.7.44 Generally, across the walking routes within the Study Area, the Proposed Development would not be a new feature in the view, and its location would not materially change the nature and composition of the view but it would be slightly larger and more noticeable and the freshly cut Operational Corridor would be more noticeable. The magnitude of effect (change) on recreational users of core paths and promoted trails within the Study Area is therefore generally considered to be Low. As walkers are highly sensitive, the significance of effect is considered to be **Moderate-Minor adverse** at Year 1 of Operation, which is **not significant**.

Construction Phase

6.7.45 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.46 The Residual effect would be the same as the Operational Phase Effects.

6.7.47 Specific recreational receptors that have particularly high sensitivity to visual change and/or are likely to experience significant visual effects are assessed separately below.

Beinn Ruadh

Operational Phase

6.7.48 Hikers to the summit of Beinn Ruadh have long distance views of the existing OHL alignment (over approximately 1.95 km), as illustrated by **Figure 6.9: Viewpoint E: Beinn Ruadh**. The Proposed

Development would locate the proposed OHL alignment within approximately 1.8 km of the summit viewpoint, where it would sit slightly lower in relation to Stronchullin Hill.

6.7.49 The existing OHL alignment and Proposed Development form a small part of the extensive panoramic view, seen against the backdrop of enclosing hills and below the horizon and views towards the Clyde and Gourock beyond. The existing OHL alignment is inconspicuous in the view, however the Proposed Development would be very slightly more prominent in the view at Year 1 of Operation due to the more reflective finish of the new towers, as illustrated in **Figure 6.9: Viewpoint E: Beinn Ruadh**. Therefore, a Low-Negligible magnitude of change (effect) is likely to occur at Year 1 of Operation, on highly sensitive receptors, which would result in a **Minor adverse** significance of effect, which is **not significant**.

Construction Phase

6.7.50 Construction effects would be the same as the Operational Effects.

Residual Effect

6.7.51 Over time, the towers would become less reflective and shiny, and be more recessive in the view, and a **Negligible** residual effect is anticipated (**not significant**).

Benmore Botanic Gardens

Operational Phase

6.7.52 Views of the existing OHL alignment and Proposed Development from Benmore Botanic Gardens are predominantly screened due to the wooded and enclosed nature of the Gardens. However, there is an elevated view from the gazebo viewpoint, as illustrated by **Figure 6.10 Viewpoint H: Benmore Gardens**, which has open views across Strath Eachaig and of the existing and proposed OHL alignment. There are glimpsed views of the existing OHL alignment where it is visible in two locations above the open hills of Beinn Ruadh and Cerag Mhòr during the winter when deciduous vegetation allows more open views due to reduced foliage: at the head of the Inverchapel Burn valley to the north-east and where it runs along the Creag Mhòr side slopes to the east. Generally, the view is oriented south-east down Strath Eachaig and over the wooded Gardens towards Holy Loch. The existing OHL alignment and Proposed Development are predominantly seen on the wooded and forested glen sides that enclose the view and comprise the Puck's Glen area.

6.7.53 The Proposed Development would replace the existing OHL alignment with a line based on taller, bulkier structures where it is visible. This would not introduce new infrastructure into the view, but would replace the existing infrastructure on a similar alignment with new towers of a greater scale, seen over a distance of more than 2 km. At Year 1 of Operation, the Proposed Development is likely to be more visible due to the combination of the existing and proposed Operational Corridors on the woodland and forests at Puck's Glen, although this would be relatively well screened by existing vegetation to be retained in this oblique view. Overall, this would result in a Low magnitude of effect (change) on a Highly sensitive receptor. This would result in a **Moderate adverse** significance of effect at Year 1 of Operation which is **significant**.

Construction Phase

6.7.54 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.55 Over time, the Proposed Development would become assimilated into the view, with the towers becoming more recessive as they weather and age, and the existing OHL Operational Corridor would be

planted up, reducing the prominence of the Operational Corridors on the forested and wooded glen sides. Therefore, a **Minor-Negligible adverse** residual effect is likely to occur (**not significant**).

Photograph 6.9: View from Puck's Glen footpath

Puck's Glen

Operational Phase

6.7.56 Puck's Glen is a popular destination and promoted Heritage Trail within the Forest Park. The existing OHL alignment and Proposed Development is generally peripheral to the core of the trail which focusses on the incised glen and the surrounding woodland and forestry, as illustrated by **Photograph 6.9**. The existing OHL alignment and Proposed Development are only visible at the top of the glen, where the path joins a forestry access track and the landscape changes from an enclosed and wooded upland glen to the wooded, forested and open hills. This change is emphasised by the open nature of the existing OHL Operational Corridor and forestry tracks at this transition point.

6.7.57 Views of the existing OHL alignment and Proposed Development are limited from the more sensitive promoted trails within Puck's Glen. Where views of the existing OHL alignment and Proposed

Development are afforded, they are experienced in the context of slightly more open views that enable walkers to orientate themselves in the wider landscape, as illustrated by **Viewpoint I**. The Proposed Development would replace the existing OHL alignment along a similar alignment. The proposed OHL alignment would be set slightly further away from the Puck's Glen paths than the existing OHL alignment, but would be higher and bulkier than the existing towers.

6.7.58 Therefore, no change is anticipated for most of the trails within Puck's Glen. For the short section of affected trail, a Medium magnitude of change (effect) is likely to occur at Year 1 of Operation, experienced in the context of the existing forestry access path and existing OHL alignment. Given the highly sensitive nature of walkers, a **Major-Moderate adverse** significance of effect is likely to be experienced along approximately 150 m of the Puck's Glen path, which would be **significant**.

Construction Phase

6.7.59 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.60 Over time, the existing and temporary Operational Corridors would be planted up with native woodland trees, extending the vegetation around the upper portion of Puck's Glen path and the existing bench to reduce the influence of infrastructure on the users of the trail. This would help to soften and filter views of the larger proposed OHL alignment. The Proposed Development would be further assimilated into the views as the towers become more weathered and faded over time, which would make it less prominent in the view. Therefore, a **Moderate-Minor adverse** residual effect is anticipated, which is **not significant**.

Users of Tourist Accommodation

Visual Sensitivity

6.7.61 The sensitivity of accommodation users depends on their context. Users of holiday homes and B&Bs may generally be considered to be of Medium to High sensitivity – similar to permanent residents but slightly reduced because of the temporary nature of the accommodation use. Recreational receptors at campsites and holiday parks may be considered to be of Medium sensitivity as the high value attached to the view is balanced against a lower susceptibility due to the setting being experienced in the context of a campsite or holiday park with the associated built form and man-made infrastructure.

Culzean House (at Barnacabber Farm)

Operational Phase

6.7.62 Culzean House is located on the edge of the largely open glen floor, approximately 200 m to the north-west of the existing OHL alignment. The Proposed Development replaces the existing OHL alignment along the same alignment along the glen floor and a similar alignment as it rises up the glen sides. Views of the existing OHL alignment and the Proposed Development, particularly where the OHL is nearest to Culzean House, are peripheral to the main views of the House, and partially screened by woodland to the south-east and entirely screened by the built form at Barnacabber Farmstead to the south. A Low-Negligible magnitude of effect (change) is anticipated at Year 1 of Operation, on a receptor of Medium-High sensitivity, a **Minor adverse** visual effect (**not significant**).

Construction Phase

6.7.63 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.64 Over time, as the new galvanising weathers this is anticipated to fall to **Negligible adverse** (**not significant**).

Proposed Holiday Dwellings Complex at Barnacabber Farm

Operational Phase

6.7.65 The holiday lodges, shop and reception buildings are proposed along the edge of the largely open glen floor, distributed along the tree line at the toe of the enclosing forested glen sides, within approximately 36 m of the existing OHL alignment. The Proposed Development replaces the existing OHL alignment close to the existing alignment, but slightly closer to the proposed holiday lodges site.

6.7.66 The Proposed Development would replace the existing OHL alignment to the north-west, bringing the OHL infrastructure immediately adjacent to the proposed holiday accommodation site, with the associated Operational Corridor extending into the site north-eastern and south-eastern corners of the site. Two new, larger towers would be introduced onto the open glen floor to the west of the Glen Finart road, introducing additional infrastructure into the view of the lodges that are orientated towards the existing and proposed OHL alignments. A Medium to Low magnitude of effect (change) is anticipated at Year 1 of Operation, on a receptor of Medium-High sensitivity, resulting in a **Moderate to Moderate-Minor adverse** visual effect (**significant**).

Construction Phase

6.7.67 Construction effects would be the same as the Operational Effects as although they would be more prominent and visible, they are also temporary.

Residual Effects

6.7.68 The proposed holiday lodges are set within a proposed wooded setting. Over time, the proposed planting will establish and mature and filter and screen views of the Proposed Development. Together with the weathering of the new galvanising the magnitude of effect would reduce to a Medium-Low to Low-Negligible magnitude of effect and a **Moderate-Minor to Minor adverse** residual effect, which is **not significant**.

Glenfinart Caravan Park

Operational Phase

6.7.69 Glenfinart Caravan Park is located on the largely open glen floor, approximately 415 m from the existing OHL alignment. The Proposed Development replaces the existing OHL alignment along the same alignment along the glen floor and a similar alignment as it rises up the glen sides. Views of the existing OHL alignment and the Proposed Development are partially screened by existing trees and buildings on the glen floor. Therefore, a Low-Negligible magnitude of effect (change) is likely to occur at Year 1 of Operation. Given the Medium sensitivity to visual change, a **Negligible** effect on visual amenity is likely to occur (**not significant**).

Construction Phase

6.7.70 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.71 Over time, as the new galvanising weathers the operational effect would reduce further.

Rashfield Sheilings, Strath Eachaig

6.7.72 The existing OHL alignment passes through the tourist accommodation at Rashfield Sheilings on the floor of Strath Eachaig. The Proposed Development replaces the existing OHL alignment offset by approximately 50 m north, away from Rashfield. Therefore, the slight increase in height and visibility of the newer towers associated with the proposed OHL alignment are likely to be substantially offset by the increased distance of the Proposed Development from the receptor.

6.7.73 Therefore, at Year 1 of Operation, the Proposed Development would result in a Medium magnitude of effect (change) to the tourism visitors at Rashfield Sheilings, who are of Medium sensitivity to visual change. This would result in a **Moderate-Minor beneficial** significance of effect at Year 1 of Operation, which is **not significant**.

Construction Phase

6.7.74 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.75 Over time, the gaps in vegetation along the Operational Corridor associated with the existing OHL alignment would become filled in. The new towers would also become assimilated into the view as they weather and become more recessive, therefore a **Moderate beneficial** residual effect is anticipated, which is **significant**.

Ballochyle Cottage, Strath Eachaig

6.7.76 The existing OHL alignment passes within approximately 107 m of Ballochyle cottage as it crosses the Little Eachaig River and the open strath floor, formerly Ballochyle Farmstead and now self-catering accommodation. Vegetation associated with the former farmstead and river corridor partially screen and filter views of the existing OHL alignment, however there are likely to be some views of the existing OHL alignment from the property.

6.7.77 The Proposed Development would replace the existing OHL alignment along a new alignment where it is relocated onto the Forested Glen Sides to the west of the property. The Proposed Development would result in a new Operational Corridor through the existing forestry; however, this would be set within the commercially forested area, and would benefit from screening along the edge of the transition between the more open, flat strath floor and the rising forested glen sides.

6.7.78 Therefore, at Year 1 of Operation, the Proposed Development would result in a Medium magnitude of effect (change) for the tourism visitors at Balloychle Cottage, who are of Medium-High sensitivity to changes in visual amenity. This would result in a **Moderate beneficial** significance of effect on the affected properties at Year 1 of Operation, which is **significant**.

Construction Phase

6.7.79 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.80 Over time, where the Operational Corridor associated with the existing OHL alignment cuts through tree belts and woodland/ forestry it would be revegetated, restoring the character of the strath floor and the riparian vegetation that is currently interrupted by the repeated crossings of the Little Eachaig River. However, given the predominantly open nature of the landscape, a **Moderate beneficial** residual effect is likely to persist (**significant**).

Transport Receptors

Visual Sensitivity

6.7.81 Transport receptors may be of low, medium, or high sensitivity depending on the context. Tourist travellers, in particular cycle tourists and users of promoted tourist routes are likely to have greater sensitivity to changes in visual amenity, whilst where the user's focus is on travelling and the view is peripheral to the journey, they are likely to be of medium or low sensitivity. Views from transport routes are by their nature transient and sequential which would influence the way in which changes in visual amenity are experienced.

Users of Minor Road from Ardentinny along Glen Finart

6.7.82 Users of the Minor Road along Glen Finart experience views within a National Park, travelling through the landscape of Glen Finart, which is enclosed by the rising, forested and wooded hills. The road is not a busy through-route, and users are likely to include a high proportion of more sensitive receptors including residents travelling to and from their homes, tourism visitors to the Glen, compared to commercial users associated with deliveries and services. On balance, the value of the view is considered to be High and the susceptibility of the receptor to the type of development proposed is considered to be Medium to Low, with a High-Medium to Medium sensitivity overall.

Operational Phase

6.7.83 Along the floor of Glen Finart, the Proposed Development would replace the existing OHL close to the existing alignment although the towers would be taller and bulkier. This would be particularly apparent when immediately adjacent to the proposed Tower 23 that is located in close proximity to the road, to the south-east of Barnacabber Farm. The Proposed Development would result in a wider Operational Corridor through the existing woodland adjacent to the road. The construction of the Proposed Development requires the temporary diversion of the existing OHL, which would require the temporary creation of a 60 m Operational Corridor through the woodland. Rising up onto the side slopes of the Glen, the Proposed OHL would run along a similar alignment. The Proposed Development would result in a slightly better landscape 'fit' than the existing OHL alignment but at Year 1 of Operation the new, temporary and existing Operational Corridors would be visible, increasing the change in visual amenity.

6.7.84 Therefore, a Large-Medium to Low magnitude of effect (change) is likely to occur at Year 1 of Operation, resulting in a Major-Moderate adverse to Moderate-Minor adverse significance of effect on users of the Minor Road along Glen Finart at Year 1, which is significant.

Construction Phase

6.7.85 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.86 Over time, the existing OHL alignment and temporary diversion Operational Corridors would be replanted and the Proposed Development would become better assimilated into the view, as the towers weather and vegetation disturbed by construction re-establishes. Therefore, a Minor adverse to Negligible residual effect is anticipated, which is not significant.

Users of A880

Operational Phase

6.7.87 The A880 extends from the A815 to Blairmore, via Kilmun, to the east of the A815 and Strath Eachaig, and runs along Holy Loch and Loch Long. It falls within the National Park but it is a main road through

the area, serving a settled loch shore and with views out beyond the National Park. Users of the A-road would include tourists with a focus on the landscape and commuters and commercial drivers for whom the landscape is peripheral to their journey. On balance, the value of the view is considered to be Medium and the susceptibility of the receptor to the type of development proposed is considered to be Medium to Low, with a Medium to Low sensitivity overall.

6.7.88 Theoretically there are views of the existing OHL and Proposed Development from the road as illustrated by the ZTV. However, in reality, the existing woodland and built form screen views of the OHL, and where it is seen, it is over a great distance and the settled character of the landscape and the backdrop of forested hills result in the OHL forming a very small, largely imperceptible, part of the view. The Proposed Development replaces the existing OHL alignment, along a similar alignment where visible from the A880. Therefore, a Low-Negligible magnitude of effect (change) is likely to occur at Year 1 of Operation, resulting in a Minor-negligible adverse significance of effect at Year 1, which is not significant.

Construction Phase

6.7.89 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.90 Over time, a Negligible residual effect is likely to occur, which is not significant.

Users of A815

Operational Phase

6.7.91 The A815 is the main access route through the study area. It runs along the eastern shore of Loch Eck to the north, through Strath Eachaig and into Sandbank and along the shore of Holy Loch to Dunoon to the south. To the north, the A815 is within the National Park, and to the south the landscape is undesignated and is a busy road through settlements and providing access to ferry terminals. Users of the A815 would include tourists with a focus on the landscape, who would be of Medium-High sensitivity as well as commercial users and local residents simply travelling from place to place, for whom the landscape is peripheral to the journey and would be of Low sensitivity.

6.7.92 The Proposed Development would replace the existing OHL along a broadly similar alignment. Travelling south towards the Proposed Development from Loch Eck, in the vicinity of the lodges to the north of Rashfield, the proposed OHL alignment would be slightly more prominent due to the location of Tower 52 to the east of the A815. However, from the floor of Strath Eachaig, north of the Little Eachaig River, the Proposed Development would be less prominent due to its realignment within the forested glen sides. Overall, the Proposed Development would result in a change (effect) of Low to Negligible magnitude at Year 1 of Operation of users of the A815 within the study area which, considering primarily the more sensitive users, would lead to a Moderate to Minor adverse effect (not significant).

Construction Phase

6.7.93 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.94 Over time, as the Proposed Development weathers down and the existing OHL Operational Corridors become vegetated, this would reduce to a Minor-Negligible adverse effect (not significant).

Users of B836

Operational Phase

6.7.95 The B836 runs along the Little Eachaig River valley, outside the National Park and, like the A815 is used both by tourists and local traffic. It is also part of the signed cycle route from Dunoon to Portavadie (formerly National Cycle Route 75). Given the mix of tourist and local use, users of the B836 are considered to have sensitivity ranging from Medium-High to Low.

6.7.96 The Proposed Development replaces the existing OHL along a new alignment, crossing the B836 to the west of the existing OHL alignment, where the valley is more forested and enclosed. Overall, the Proposed Development is likely to result in an effect of Low-Negligible to Negligible magnitude at Year 1 which, considering primarily the more sensitive users, would lead to a Minor adverse effect (not significant).

Construction Phase

6.7.97 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.98 Over time, as the Proposed Development weathers down and the existing OHL Operational Corridors become vegetated, this is anticipated to reduce to a Negligible effect (not significant).

Users of A885

Operational Phase

6.7.99 The A885 links Dunoon and Sandbank, to the south of the A815 and is a main access route between the settlements. The A885 is not within the National Park and is not a promoted tourism route. Users of the A885 are considered to have Medium-Low to Low sensitivity.

6.7.100 The Proposed Development would replace the existing OHL, tying into Dunoon Substation to the west of the A885. The Proposed Development passes behind Finbracken Hill, instead of the direct route over the hill that the existing OHL follows which has a particularly visible Operational Corridor through coniferous forestry, that emphasises the existing OHL in views from the A885. The Proposed Development would result in a Low-Negligible to Negligible magnitude of effect (change) at Year 1 of Operation, resulting in a Minor-Negligible adverse effect (not significant).

Construction Phase

6.7.101 Construction effects would be the same as the Operational Effects.

Residual Effects

6.7.102 Once the existing Operational Corridor ceases to be a clearly visible feature, either through of management of the forestry either side or vegetation regrowth becoming established, a Minor beneficial residual effect is anticipated (not significant).

6.8 Special Landscape Qualities Assessment

6.8.1 National Parks are a national designation and represent the most highly valued and sensitive landscapes in Scotland. NatureScot have prepared working draft guidance to aid the assessment of potential impacts on special landscape qualities (SLQs) on NSA, which has been used as the basis for this assessment. The working draft guidance recommends a tabular approach for transparency, using a 4 Step process:

- Step 1: The Proposal
- Step 2: The Study Area
- Step 3: The Assessment
- Step 4: Summary of effects on SLQs and integrity of the NSA (National Park)

Step 1: The Proposal

6.8.2 Please refer to **Chapter 3 Description of the Proposed Development** for details of the Proposed Development.

6.8.3 Key aspects of the Proposed Development that could impact upon the SLQs includes the increased height of the proposed OHL and its amended alignment. Temporary construction works are likely to create greater effects than post completion due to movement and activity associated with construction, including the creation of temporary tracks, compounds, welfare facilities and removal of vegetation.

6.8.4 The areas with the greatest potential to create significant visual effects are the open hill tops where infrastructure contrasts more strongly with the remote and unsettled landscape character and through areas of forestry and woodland where the associated Operational Corridors require the removal of vegetation and long-term maintenance of a tree-free corridor.

Step 2: The Study Area

6.8.5 The Proposed Development lies partially within the National Park and, where it is located outside the National Park boundary, it is also visible from within the Park. A study area of 3 km from the proposed OHL has been identified, as detailed in **Paragraphs 6.2.6 to 6.2.14**. This assessment considers potentially affected SLQs as a whole, and not just the part from which there may be visibility or falls within the Study Area.

6.8.6 **Figure 6.2 NatureScot National Landscape Character Assessment** shows the zone of theoretical visibility of the Proposed Development with respect to the National Park, based on a bare-earth mode. Potential visibility within the National Park is limited to the south-western part of the National Park, within the Argyll Forest Park Character Zone. The Proposed Development would be predominantly visible from within Glen Finart and Strath Eachaig and from Stronchullin Hill and the eastern slopes of Creachan Mòr.

Landscape Character of the National Park

6.8.7 The relevant published SLQ report is the 2010 SNH Commissioned Report 376: The Special Landscape Qualities of the Loch Lomond and The Trossachs National Park. The General Qualities of the LLTNP are:

- *"A world-renowned landscape famed for its rural beauty;*
- *wild and rugged highlands contrasting with pastoral lowlands;*
- *water in its many forms;*
- *the rich variety of woodlands;*
- *settlements nestled within a vast natural backdrop;*
- *famous through-routes;*
- *tranquillity; and*
- *the easily accessible landscape splendour."*

6.8.8 The Proposed Development lies within the Argyll Forest Park Character Zone, which comprises one Landscape Area. The SLQ of the Argyll Forest are:

- *"A remote area of high hills and deep glens;*

- *a land of forests and trees;*
- *Arrochar's mountainous and distinctive peaks;*
- *the variety of glens;*
- *the slender jewel of Loch Eck;*
- *the dramatic pass of Rest and Be Thankful; and*
- *the seaside architecture of Kilmun and Blairmore."*

How the Area is Used and Experienced by People

6.8.9 The Argyll Forest includes the settlements of Ardentinny, Kilmun, Rashfield, Ardbeg and Uig and it is traversed by the main roads A815 and A880 and minor roads within Strath Eachaig and Glen Finart. Local residents within the Study Area include residents of settlements and scattered residential properties and farmsteads in Strath Eachaig and Glen Finart.

6.8.10 The Land Reform (Scotland) Act 2003 gives everyone rights of access over land and inland water referred to as *"freedom to roam"* rights. Walkers are drawn to the summits, including Beinn Ruadh, and walking paths. Walking paths, viewpoints and visitor destinations have been identified within the Study Area where there is likely to be a concentration of recreational users experiencing the National Park, including:

- viewpoints at Benmore Botanic Gardens; and
- Argyll Forest Park:
  - Puck's Glen
  - Laird's Grave

6.8.11 Viewpoint analysis informed the identification of the Special Landscape Qualities of LLTNP, these included the following viewpoints which fall within the Study Area:

- Viewpoint 1: Argyll Forest – Glen Finart, Barnacabber Viewpoint from Glen Finart Hotel looking north-west (GR NS 179889).
- Viewpoint 3: Argyll Forest – Younger Botanic Garden, Cowal Viewpoint from William Wright Smith Gazebo, slopes of A'Chruach looking north-east to south-west (GR NS 139855).

Step 3: The Assessment

6.8.12 The Special Landscape Qualities of the Loch Lomond and The Trossachs National Park Report identifies eight General SLQ that apply to the National Park as a whole. The SLQ Report identifies that the National Park is composed of a number of landscapes of differing character, each with their own special qualities. The Proposed Development lies within the Argyll Forest Landscape Area and the SLQ identified for Argyll Forest that are of relevance to the Proposed Development are:

- *"A remote area of high hills and deep glens;*
- *a land of forests and trees; and*
- *the variety of glens."*

6.8.13 This assessment is undertaken with regard to the eight General SLQ of the National Park as a whole, where appropriate.

"A remote area of high hills and deep glens"

6.8.14 This Argyll Forest SLQ relates to the mountainous character of the area, in contrast with the sea lochs, lochs or flat-bottomed glens. Characteristics include the distinctive summits, forested and steep-sided slopes and the remoteness and isolation of the area. The perception of remoteness and isolation is

emphasised by the frequent cloud, drizzle and rain. The terrain generally restricts access by road, so that travel by sea has been the easiest and preferred means of travel. The uplands are described as rugged and wild, especially to the north.

6.8.15 The value of this SLQ is considered to be high as it forms a core part of what makes the National Park a nationally valued landscape, contributing to the General SLQs *"wild and rugged highlands contrasting with pastoral lowlands"*, due to its contribution to the highlands character, and *"water in its many forms"*, due to the relationship between the sea lochs and lochs.

6.8.16 The susceptibility of the SLQ to the type of development proposed within the National Park (replacement OHL) is considered to be medium. The scale of the landscape is likely to have capacity to absorb tall infrastructure, remote and wild landscapes are typically more sensitive to the introduction of infrastructure.

6.8.17 Overall, it is considered that this SLQ would be of high sensitivity to the introduction of new infrastructure of the type proposed, and of medium-high sensitivity to the replacement proposed.

General SLQ

6.8.18 With respect to the General SLQ "wild and rugged highlands contrasting with pastoral lowlands", mountains and large hill ranges are found across the Park, the massifs separated by sea lochs, freshwater lochs and deep glens. The alps and hills are wild upland landscapes, all with distinctive characters, including individual and well known summits. The flat-bottomed glens that penetrate the hills are inhabited and farmed, presenting a contrast to the bare hills and summits above.

6.8.19 The whole area of mountains and glens, comprising great tracts of wild and rugged land, contrasts sharply with the gentle, rolling, low-lying farmlands and parklands found in the south.

6.8.20 The uplands, including Argyll Forest, with their pasture on the glen floors, their sides of rough moorland, native woodland or dark conifer plantations and their craggy hills, presents a highly textured, more desolate and generally, less populated scene than the green and fertile lowlands.

"A land of forests and trees"

6.8.21 The Argyll Forest landscape area comprises a particularly heavily forested part of the National Park. This Argyll Forest SLQ relates to the extensive conifer plantings that cover most of the lower hillsides which are a distinguishing feature of the scenery. In places, broadleaved woodland provides a lighter foreground to the dark backdrop of coniferous plantations. Some of the forest types are of particular value, such as the formal designed landscape of Benmore Botanic Garden and the forested walks including Puck's Glen. With respect to perception, the coniferous plantations can appear sombre, especially on a cloudy, dull day, and the dense forests and woods accentuate the sense of remoteness in uninhabited areas, and a sense of shelter and seclusion around houses and settlements. The forests can restrict long distance views, creating a visual and perceptual barrier between the farmed glen floor and the upper, bare and open hill summits, and often end abruptly at a distinctive tree line.

6.8.22 The Argyll Forest Park seeks to combine commercial forestry with the recreation, enjoyment and scenic beauty of the extensive forests, which are generally well-established and mature, imbuing the area with a great sense of time depth and continuity.

6.8.23 This SLQ contributes to the General SLQ of *"the rich variety of woodlands"* which identifies great woodland variety throughout the Park, despite vast swathes of commercial forest cover in some areas. The woodlands throughout the National Park typically define the lower and mid-glen slopes, distinguishing them from the open uplands. The woodlands enclose settlements, and clothe loch shores and islands. The woodlands and trees are considered to be important visually to the National Park *"bringing a tapestry of texture and colour that changes throughout the year".*

6.8.24 The value of this SLQ is considered to be medium-high as it contributes to the distinctive character of the Argyll Forest landscape area and includes designed landscapes, trees of substantial stature and age, and important plant collections.

6.8.25 The susceptibility of this SLQ to the type of development proposed is considered to be medium as although the type of development proposed would have an apparent localised effect on the SLQ, the characteristics of this SLQ generally have capacity to absorb large scale infrastructure without undue effect on the integrity of the SLQ as a whole, albeit the effects would typically be over a large geographical extent and be permanent or very-long term.

6.8.26 Overall, this SLQ is considered to be of medium sensitivity to the type of development proposed.

General SLQ

6.8.27 With respect to the General SLQ *"the rich variety of woodlands"*, there are vast swathes of commercial forest cover in some areas, although previous woodland management has led to great woodland variety throughout the Park, with ancient broadleaved plantations, wood pasture, farmland trees and policy plantings. The woodlands define the lower and mid-glen slopes, distinguishing them from the open uplands, they enclose settlements, and they clothe loch shores and islands. The woods and the trees are important visually, bringing a tapestry of texture and colour that changes throughout the year.

"The variety of glens"

6.8.28 This Argyll Forest SLQ relates to the deep glens that carve through the uplands, with floors of permanent pasture and generally afforested slopes. The glens are all generally quiet and peaceful, with sparse built development and habitation, but each has its own distinct character. Of the glens that are described, the Proposed Development traverses Glen Finart.

6.8.29 Glen Finart is described as being more pastoral, with a broader glen floor of wet, rushy pastures and steep afforested glen slopes giving way to riparian woodlands that mark the course of the River Finart across the glen floor, along with Craighoyle Woods of oak and birch on rocky slopes. With respect to perception, Glen Finart is described as a harmonious, welcoming place that is more settled and contrasts with busier stretches of the Cowal coast and linear shores of Loch Eck.

6.8.30 The value of this SLQ is considered to be medium as it contributes to the qualities that make the National Park a nationally valued landscape, including the General SLQs: *"settlements nestled within a vast natural backdrop"* and *"the easily accessible landscape splendour".*

6.8.31 The susceptibility of the SLQ with respect to the type of development proposed is considered to be medium-low due to the more settled character of Glen Finart where the presence of infrastructure is likely to have a reduced landscape and visual effect as the eye is drawn to the detail associated with settlements and infrastructure is less out of place.

6.8.32 Overall, this SLQ is considered to be of medium-low sensitivity to the type of development proposed.

General SLQ

6.8.33 With respect to the General SLQs, the following are considered applicable with respect to the Argyll Forest "*variety of glens*":

- Wild and rugged highlands contrasting with pastoral lowlands
- Settlements nestled within a vast natural backdrop
- Easily accessible landscape splendour

6.8.34 The uplands, including Argyll Forest, with their pasture on the glen floors, their sides of rough moorland, native woodland or dark conifer plantations and their craggy hills, presents a highly textured, more desolate and generally, less populated scene than the green and fertile lowlands.

6.8.35 The area has a long history of habitation, with structures mainly confined to the lower-lying land. Human populations are typically low across the National Park, with settlements often small in scale, nestled within the backdrop of vast landforms of mountain, hill, glen and loch.

6.8.36 The landscape splendour of the National Park is easily accessible from major centres of population and popularly known as 'Glasgow's playground' but also draws tourists from all over the world.

Table 6-2: Assessment of Effects on Special Landscape Qualities

Relevant SLQs identified at Scoping and refined during subsequent study	SLQ Sensitivity	Impacts of the Proposal on Underpinning Key Characteristics and the Effects on the SLQs	Proposed Mitigation– Level of Residual Effect
Argyll Forest SLQ: **A remote area of high hills and deep glens** **General SLQ:** • **Wild and rugged highlands contrasting with pastoral lowlands**	Medium-high sensitivity	**Negligible significance of effect** The Proposed Development would bring change into the landscape of the National Park. However, the majority of the Proposed Development comprises of a replacement OHL alignment, generally following a similar alignment to the existing OHL alignment. Therefore the Proposed Development is not introducing new manmade features into .a context in which they are not present. The northern section would replace the exisitng OHL with the proposed OHL along a lower alignment, generally above an existing forestry track, avoiding the open and more wild hilltops to the south-east of Creachan Mòr that the existing OHL straddles including Am Binnein, and making use of the screening and backclothing of coniferous plantation forestry. This would reduce the intrusive nature of man-made infrastructure within the high hills which have a more remote and wild character. Where the Proposed Develoment crosses Glen Finart, the proposed OHL alignment would closely follow the existing OHL alignment and therefore does not introduce a new element into the landscape although the Proposed Development would be slightly more prominent due to an increase in scale and the width of the associated Operational Corridors through forest and woodland. A section of the replacement OHL is set back from the open floor of Strath Eachaig, running along the forested toe slopes of Sgorach Mòr, and making use of the screening and backclothing of the forested glen sides. The degree of change in the existing baseline as a result of the Proposed Development is predominantly dwarfed by the scale of the surrounding landscape and elements. Overall, a negligible magnitude of change on the Argyll Forest SLQ is likely to occur, affecting a very small part of the National Park, and therefore a negligible significance of effect on this SLQ and associated General SLQ is likely to occur.	Negligible significance of effect Embedded mitigation measures include: • Removal and making good of areas disturbed by construction works, including temporary road upgrades, as set out in GEMPs. • Compensatory planting to ensure no net loss of woodland. • Operational Corridor to be reduced to 60 m where forestry management objectives allow for a change from forestry to native woodland. • Replacement planting of broadleaf woodland on the floor of Glen Finart., subject to landowner agreement.

Relevant SLQs identified at Scoping and refined during subsequent study	SLQ Sensitivity	Impacts of the Proposal on Underpinning Key Characteristics and the Effects on the SLQs	Proposed Mitigation– Level of Residual Effect
Argyll Forest SLQ: **A land of forests and trees** **General Quality:** • **The rich variety of Woodlands**	Medium sensitivity	**Minor significance of effect** The Proposed Development would bring change into the landscape of the National Park. Where the Proposed Development follows a different alignment to the existing OHL, this would result in the removal of trees to create an approximately 81 m wide Operational Corridor through commercial forest and 60 m wide Operational Corridor through broadleaf woodland. New access tracks through areas of woodland and forestry would also require tree removal. Existing Operational Corridors associated with the existing OHL within conifer plantations would be returned to that land use on the next planned rotation following the removal of the existing OHL. However, a greater degree of tree removal would be required to acommodate the wider Operational Corridor associated with the taller towers, and due to the realignment of the northern section through forestry, avoiding the open glen sides, and along the edge of Strath Eachaig, avoiding the open strath floor. Temporary woodland removal would also be required where temporary realignments are required. Woodland or forested areas shown on AWI would be affected to the north of Glen Finart (removal and reinstatement); to the south of Glenfinart (reinstatement); and, to a lesser extent, in Strath Eachaig (removal and reinstatement). Overall, a medium magnitude of change is likely to occur on the Argyll Forest SLQ, affecting a very small part of the National Park, and therefore a minor significance of effect on this SLQ, and associated General SLQ, is likely to occur.	Minor-Negligible significance of effect Proposed and embedded mitigation measures include: • Compensatory planting to ensure no net loss of woodland. • Operational corridors to be reduced to 60 m where forestry management objectives allow for a change from forestry to native woodland. • Replacement planting of broadleaf woodland on the floor of Glen Finart, subject to landowner agreement.
Argyll Forest SLQ: **A variety of glens** **General SLQ:** • **Wild and rugged**	Medium-low sensitivity	**Negligible significance of effect** The Proposed Development would bring change into the landscape of the Argyll Forest and National Park. However, the Proposed Development comprises a replacement of an existing OHL, running on the existing OHL alignment where it crosses Glen Finart and predominantly close to the	Negligible significance of effect Proposed and embedded mitigation measures include: • Removal and making good of areas disturbed by construction works,

Relevant SLQs identified at Scoping and refined during subsequent study	SLQ Sensitivity	Impacts of the Proposal on Underpinning Key Characteristics and the Effects on the SLQs	Proposed Mitigation– Level of Residual Effect
highlands contrasting with pastoral lowlands • **Settlements nestled within a vast natural backdrop** • **Easily accessible landscape splendour**		existing OHL alignment where it crosses Strath Eachaig. Therefore, the Proposed Development does not introduce a new element into the landscape. In some instances, the Proposed Development would be slightly more prominent due to an increase in scale, and in others there would be a decrease in prominence due to the new alignment resulting in a better 'fit' into the landscape. The degree of change in the existing baseline as a result of the Proposed Development is predominantly dwarfed by the scale of the surrounding landscape and elements and is localised in its effect on the variety of glens, with no changes to the other glens occurring as a result of the Proposed Development. Overall, a negligible magnitude of change is likely to occur, affecting a very small part of the National Park, and therefore a negligible significance of effect on this SLQ, and associated General SLQ, is likely to occur.	including temporary road upgrades, as set out in GEMPs • Compensatory planting to ensure no net loss of woodland. • Operational corridors to be reduced to 60 m where forestry management objectives allow for a change from forestry to native woodland. • Replacement planting of broadleaf woodland on the floor of Glen Finart., subject to landowner agreement.

Step 4: Summary of Effects

6.8.38 As described in detail in **Table 6-2**, the Proposed Development would have a negligible significance of effect on most of the SLQ due to the nature of the existing baseline and the presence of an existing OHL which would generally be rebuilt on or close to the current position, with a new alignment proposed in the northern section, north of Glen Finart.

6.8.39 The Proposed Development is predominantly dwarfed by the scale of the surrounding landscape and elements and the change would affect a very small part of the National Park within which an existing OHL is located.

6.8.40 The Proposed Development would have an effect of Minor significance (not significant) on *the "land of forests and trees"* Argyll Forest SLQ where it would introduce change within existing coniferous forestry plantations and some broadleaf woodland as a result of new alignments.

6.9 Cumulative Effects

6.9.1 As discussed in **Chapter 5 Methodology,** two aspects of cumulative assessment have been considered in the EIA Report: In-combination effects and effect interactions.

In-Combination Effects

6.9.2 In-combination effects consider the combined effects of the Proposed Development together with other schemes identified through a review of planning applications and in consultation with the Local Authority and Stakeholders. They include:

- decommissioning of the existing OHL; and
- reconductoring and refurbishment of the Loch Long Crossing.

6.9.3 In addition, the in-combination effects of the forestry activity associated with commercial felling and clearing of infected larch together with the Proposed Development extend across the Study Area due to the prevalence of commercial forests and larch, particularly within the Glen Finart, Strath Eachaig and Eachaig Finbracken LUs.

6.9.4 The main cumulative effects that are likely to arise would be as a result of the removal of trees within the Operational Corridor of the Proposed Development and within commercial forestry areas being felled or cleared which would result in greater cumulative landscape and visual effects during the Construction and Operation Phases where they occur simultaneously.

6.9.5 The prevalence of commercial forestry is a characteristic feature of the Argyll Forest Park and the landscape and visual study areas, contrasting with the farmed and wooded strath and glen floors and the open hills. The removal of trees on a large scale would have an effect on the local landscape character, although this would predominantly be temporary with respect to the forestry activities.

6.9.6 The felling of forestry adjacent to the Proposed Development could also result in more open views of the Proposed Development where the surrounding forestry would generally help to screen the proposed OHL, opening up views from footpaths and visual receptors that are typically more enclosed. In certain locations, the cumulative effect of commercial felling and/ or larch clearance adjacent to the Proposed Development would reduce the perceived prominence of the proposed Operational Corridor, which typically contrasts with surrounding mature vegetation as an unnaturally regular linear corridor.

6.9.7 Decommissioning of the existing OHL would primarily result in an increase in cumulative effects during the Construction Phase associated with the construction movement and activity, including helicopter movement, and the construction access, compounds and welfare facilities. This would extend across the entire Study Area. The decommissioning of the existing OHL would commence after the

construction and commissioning of the Proposed Development, taking place when the access track removal is underway. Therefore, the decommissioning of the existing OHL would mainly extend the period of construction movement and activity and alter the location of construction activities, rather than increasing the intensity or prominence. This assessment considers the decommissioning of the existing OHL with respect to Operational and Residual Effects.

6.9.8 The upgrading of Loch Long crossing consists of reconductoring and refurbishment of the existing Loch Long OHL crossing, with potential for some upgrading of steel members in the lattice structures and foundations. Therefore, the main potential for cumulative effects is during the Construction Phase, should this overlap with the Proposed Development, where there would be additional movement and activity associated with construction and construction compounds, welfare facilities and pulling areas.

6.9.9 **Table 6-3** below summarises the likely cumulative effects as a result of the cumulative schemes that have been scoped into the landscape and visual assessment, based on a worst-case scenario of simultaneous construction and operation. It should be noted that cumulative operation effects of the Proposed Development and decommissioning of the existing OHL have been included in the initial assessment.

Table 6-3: Cumulative Effects

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
Creachan Mòr LU • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL • Upgrading of Loch Long crossing	**Moderate adverse (significant)** Cumulative effects on Creachan Mòr LU that would arise as a result of the simultaneuous construction of the Proposed Development, forestry activities, larch clearance, decommissioning of the existing OHL and upgrading the Loch Long crossing. Forestry activities and larch clearance could potentially introduce vehicular movements and changes to vegetation into the areas of forestry when construction of the Proposed Development is taking place. Whilst larch clearance would be relatively localised due to the small amount of larch, commercial felling could be more extensive within the Creachan Mòr LU. The decommissioning of the existing OHL and upgrading the Loch Long crossing would result in increased vehicular movement, noise and helicopter flights, the construction of additional access tracks and the requirement for additional construction compounds and wellfare facilities over a more extended period of time and wider area. Overall, based on a worst-case scenario, a slight increase from a **Moderate-Minor adverse** significance of effect as a result of the Proposed Developent (not significant) to a **Moderate adverse** cumulative effect (significant) would occur.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on local landscape character, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent, and would not be inconsistent with the changing nature of the Argyll Forest Park Character Zone of the National Park.
Glen Finart LU • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL.	**Major-Moderate adverse (significant)** Cumulative effects on Glen Finart LU that would arise as a result of the simultaneuous construction of the Proposed Development and the cumulative schemes would be the increase in construction activities, including vehicular and machinery movements, creation of new access tracks and temporary construction compounds and welfare facilities within the enclosed and tranquil landscape of Glen Finart. Commercial forestry felling occurring simultaneously with the construction of the Proposed Development would	**Moderate adverse (significant)** The simultaneous and wide-spread removal of vegetation would have a noticeable effect on local landscape character, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent. The Forest Design Plan and proposed reinstatement of forest and woodland planting would help to reduce the effect of the cumulative schemes on Glen Finart, although

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
	result in an increase in vehicular and machinery movements and changes to vegetation patterns on the forested side slopes of the glen. Whilst the felling of infected larch may occur during the construction phase of the Proposed Development, there are relatively small areas of larch on the side slopes of Glen Finart. The decommissioning of the existing OHL would also require helicopter movements and two temporary redundant tower cut up areas on the glen floor which would increase the noise, movement and infrastructure within the glen, although this would occur after the construciton and commissioning of the proposed OHL and therefore wouldmainly extend the period of construction rather than increasing the intensity. Overall, a slight increase from a **Moderate adverse** significance of effect as a result of the Proposed Developent (significant) to a **Major-Moderate adverse** cumulative effect (significant) would occur based on a worst-case scenario where wide-spread commercial felling on the side slopes of Glen Finart happens simultaneously with the construction of the Proposed Development.	the planting would be immature at Year 1 of the Operational Phase. The **Moderate-Minor adverse** significance of effect as aresult of the Proposed Development (not significant) would increase to a **Moderate adverse** cumulative effect (significant) based on a worst-case scenario.
Stronchullin LU • Decommissioning of the existing OHL	None Cumulative effects on Stronchollin LU that would arise as a result of the simultaneuous construction of the Proposed Development and cumulative schemes would be the increased vehicular movement, noise and helicopter flights within the area, the construction of additional access tracks and the requirement for additional construction compounds and wellfare facilities and a redundant tower cut up area north-west of Stronchullin.	None

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
	However, the **Moderate adverse** effect likely to occur as a result of the Proposed Development is unlikely to increase.	
Strath Eachaig LU • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL	None Cumulative effects on Strath Eachaig LU that would arise as a result of the simultaneuous construction of the Proposed Development and cumulative schemes would be the increased vehicular movement, the construction of additional access tracks and bellmouths and the requirement for additional construction compounds and wellfare facilities. However, the **Moderate-Minor adverse** effect likely to occur as a result of the Proposed Development is unlikely to increase.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on local landscape character, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent.
Eachaig Finbracken LU • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL	**Moderate-Minor adverse (not significant)** Cumulative effects on Eachaig Finbracken LU that would arise as a result of the simultaneuous construction of the Proposed Development and the cumulative schemes would be the increased vehicular movements, construction compounds and the construction of additional access tracks with construction activities affecting a larger proportion of the LU, including potential forestry works. Overall, a slight increase from a **Minor adverse** significance of effect as a result of the Proposed Developent (significant) to a **Moderate-Minor adverse** cumulative effect (significant) would occur based on a worst-case scenario where wide-spread commercial felling happens simultaneously with the construction of the Proposed Development.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on local landscape character, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent.

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
Residents to the south-east of Barnacabber Farm • Forestry activity associated with commercial felling and the clearing of infected larch • Decommission of the existing OHL	**Major adverse (significant)** Cumulative effects on residents of the property south-east of Barnacabber Farm would arise as a result of the increased construction activity surrounding the property. Existing vegetation provides some screening and filtering of views, however the increased construction activity together with two additional temporary areas for redundant tower cut up are likely to increase the temporary construction effects on residents at the property should constuction of all the cumulative schemes occur simultaneously with construction of the Proposed Development as a result of an extended construction period. Overall, a slight increase from a **Major-Moderate adverse** significance of effect as a result of the Proposed Developent (significant) to a **Major adverse** cumulative effect (significant) would occur based on a worst-case scenario where wide-spread commercial felling on the side slopes of Glen Finart happens simultaneously with the construction of the Proposed Development.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on the enclosing forested and wooded glen sides, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent. The Forest Design Plan and proposed reinstatement of forest and woodland planting would help to reduce the effect of the cumulative schemes on Glen Finart, although the planting would be immature at Year 1 of the Operational Phase.
Users of Culzean House Tourist Accommodation • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL	**Moderate-Minor adverse (not significant)** Cumulative effects on users of the tourist accommodation Culzean House, at Barnacabber Farm, would arise as a result of the increased construction activity on the Glen Floor and commercial felling on the Glen Sides to the north-east and east of the property. Existing vegetation and built form provides some screening and filtering of views, however the increased construction activity together with an additional temporary area for redundant tower cut up and associated helicopter movements are likely to increase the temporary construction effects on users of the property should constuction of the cumulative schemes occur simultaneously with construction of the Proposed Development.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on the enclosing forested and wooded glen sides, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent. The Forest Design Plan and proposed reinstatement of forest and woodland planting would help to reduce the effect of the cumulative schemes on Glen Finart, although the planting would be immature at Year 1 of the Operational Phase.

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
	Overall, a slight increase from a **Minor adverse** significance of effect as a result of the Proposed Developent (not significant) to a **Moderate-Minor adverse** cumulative effect (significant) would occur based on a worst-case scenario where wide-spread commercial felling on the side slopes of Glen Finart happens simultaneously with the construction of the Proposed Development.	
Users of proposed Holiday Dwellings at Barnacabber Farm • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL	**Major-Moderate to Moderate-Minor adverse (significant)** Cumulative effects on users of the proposed tourist accommodation would arise as a result of the increased construction activity surrounding the holiday facility. Existing vegetation provides some screening and filtering of views of construction to the east of Glen Finart Burn; however the increased construction activity together with two additional temporary areas for redundant tower cut up are likely to increase the temporary construction effects on users of the tourism accommodation should constuction of the cumulative schemes occur simultaneously with construction of the Proposed Development. Overall, based on a worst-case scenario, a slight increase from a **Moderate to Moderate-Minor adverse** significance of effect as a result of the Proposed Developent (significant) to a **Major-Moderate to Moderate-Minor adverse** cumulative effect (significant) would occur based on a worst-case scenario where wide-spread commercial felling on the side slopes of Glen Finart happens simultaneously with the construction of the Proposed Development and decommissioning of the existing OHL.	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on the enclosing forested and wooded glen sides, although it would temporarily result in the linear Operational Corridors associated with the Proposed Development being less apparent. The Forest Design Plan and proposed reinstatement of forest and woodland planting would help to reduce the effect of the cumulative schemes on Glen Finart, although the planting would be immature at Year 1 of the Operational Phase.
Users of Minor Road through Glen Finart • Forestry activity associated with commercial felling and the clearing of infected larch • Decommissioning of the existing OHL	No change Cumulative effects on users of the minor road through Glen Finart, predominantly between Barnacabber Farm and Glenfinart Caravan Park, would arise as a result of the increased construction activity. Existing vegetation and built form provides some screening and filtering of views,	None The simultaneous and wide-spread removal of vegetation would have a noticeable effect on the enclosing forested and wooded glen sides, although it would temporarily

Receptors and Cumulative Schemes	Cumulative Construction Effects	Cumulative Operation Effects
	however the increased construction activity, which includes two additional temporary areas for redundant tower cut up and additional helicopter flights, are likely to increase the temporary construction effects on users of the minor road should constuction of all the cumulative schemes occur simultaneously with construction of the Proposed Development, although this will extend the construction period rather than increase its intensity. Commercial forestry felling occurring simultaneously with the construction of the Proposed Development would result in an increase in vehicular and machinery movements and changes to vegetation patterns on the forested side slopes of the glen. However, the **Major-Moderate to Moderate-Minor adverse** effect likely to occur as a result of the Proposed Development is unlikely to increase for users of the road through Glen Finart.	result in the linear Operational Corridors associated with the Proposed Development being less apparent.

6.10 Summary

6.10.1 The Proposed Development would introduce a replacement OHL that is of a greater height and has taller and bulkier towers, but is predominantly located on or close to the existing OHL alignment. Where the Proposed Development deviates from the existing OHL alignment, the proposed OHL alignment predominantly achieves a better landscape 'fit' than the existing OHL alignment although the required Operational Corridor widths are wider. **Tables 6-4** and **6-5** provide a summary of the landscape and visual assessments, respectively; the landscape and seascape units are shaded blue.

Table 6-4: Summary of landscape effects

Receptor	Sensitivity	Magnitude of Change	Significance of Effect at start of Operational Phase	Residual Effect after 20 years
Creachan Mòr LU	High-Medium	Medium-Low	Moderate-Minor adverse	Moderate-Minor neutral
Forested Hills LCT	High-Medium	Medium	Moderate adverse	Moderate-Minor adverse
Forested Glen Sides LCT	Medium	Low	Minor neutral	Minor neutral
Open Hills LCT	High-Medium	Low	Moderate-Minor beneficial	Moderate-Minor beneficial
Wooded Glen Sides LCT	High-Medium	Low	Minor adverse	Minor beneficial
Glen Finart LU	High-Medium	Low	Moderate-Minor adverse	Minor adverse
Forested Glen Sides LCT	Medium	Medium-Low	Moderate-Minor adverse	Minor adverse
Wooded Glen Sides LCT	High-Medium	Low-Negligible	Negligible	Minor beneficial
Farmed Strath and Glen Floors LCT	High-Medium	Low	Minor adverse	Negligible
Stronchullin LU	High	Low	Moderate-Minor adverse	Moderate-Minor adverse
Forested Glen Sides LCT	Medium	Low-Negligible	Minor-Negligible adverse	Negligible adverse
Forested Hills LCT	High-Medium	Low	Moderate-Minor adverse	Minor-Negligible adverse
Open Hills LCT	High	Medium-Low	Moderate adverse	Minor adverse
Wooded Hills LCT	High-Medium	Medium	Moderate-Minor adverse	Minor adverse
Wooded Upland Glen LCT	High	Low-Negligible	Minor adverse	Minor adverse
Strath Eachaig LU	High-Medium	Low	Moderate-Minor adverse	Minor adverse
Wooded Hills	High-Medium	Low-Negligible	Minor-Negligible adverse	Negligible adverse

Receptor	Sensitivity	Magnitude of Change	Significance of Effect at start of Operational Phase	Residual Effect after 20 years
Wooded Upland Glen	High	Low-Negligible	Minor adverse	Minor-Negligible beneficial
Forested Glen Sides LCT	Medium	Medium	Moderate adverse	Moderate-Minor adverse
Farmed Strath and Glen Floor LCT	High-Medium	Low-Negligible	Minor adverse	Minor-Negligible beneficial
Eachaig Finbracken LU	Medium-Low	Medium	Minor adverse	Minor-Negligible neutral
Forested Upland Glen LCT	Medium-Low	Low	Minor-Negligible adverse	Minor-Negligible adverse
Forested Hills LCT	Medium-Low	Medium	Minor adverse	Minor-Negligible beneficial
Sandbank LU	Medium-Low	Low-Negligible	Minor-Negligible adverse	Negligible
Forested Hills LCT	Medium-Low	Low	Minor adverse	Minor-Negligible adverse
Farmed Glen Sides LCT	Low	Negligible	Negligible adverse	Negligible neutral
Loch Long SU	Medium	Low-Negligible	Negligible adverse	Negligible neutral
Loch Long Mouth LCT	Medium-Low	Negligible	Negligible adverse	Negligible
Loch Long LCT	High-Medium	Low-Negligible	Minor-Negligible beneficial	Minor beneficial

6.10.2 No significant effects on the LUs as a whole are likely to occur as a result of the Proposed Development. Moderate adverse significant effects were identified on the Forested Hills LCT, Creachan Mòr LU; the Open Hills LCTs, Stronchullin LU; and the Forested Glen Sides LCT, Strath Eachaig, which are significant. This is predominantly due to the Operational Corridors associated with the Proposed Development, which have a greater effect where forestry and woodland have to be removed to accommodate the Proposed Development. No significant residual effects are anticipated.

6.10.3 Whilst the assessment of indirect effects falls outwith the scope of this assessment, the Woodland Reports and Forest Design Plans, included in **Appendices 12.1 Landscape and Visual Methodology and 12.2 Landscape Character** respectively, identify possible secondary mitigation measures for forestry management beyond the OC. The implementation of the proposed Forest Design Plan at Glenfinart Forest would transform the Forested Hills LCT into Wooded Hills LCT to the north of the existing forestry access track and Proposed Development. This would have a significant beneficial effect on the LU and Wooded Hills LCT.

Table 6-5: Summary of visual effects

Receptor	Sensitivity	Magnitude of Change	Significance of Effect at the start of the Operational Period	Significance of Long-term Effect
Residential Receptors				
Property opposite Barnacabber Farm / Glenfinart Hotel and Deer Farm	High	Low	Moderate adverse	Moderate-Minor adverse
Remaining Residential Properties in Glen Finart	High	Low-Negligible to Negligible	Moderate-Minor adverse to Negligible	Minor adverse to Negligible
Residential Properties on the Northern Edge of Ardentinny	High	Low-Negligible	Minor adverse	Minor beneficial
Rashfield, Strath Eachaig	High	Low-Negligible	Minor adverse	Negligible
Dalinlongart and Surrounds, Strath Eachaig	High	Medium	Moderate beneficial	Moderate beneficial
Ballochyle	High	Medium-Low	Moderate-Minor adverse	Minor adverse
Remaining Residential Properties in Strath Eachaig	High	Low-Negligible to Negligible	Moderate-Minor adverse to Negligible	Moderate-Minor adverse to Negligible
Residents on the western edge of Sandbank, including at Ardnadam Farmstead	High	Low-Negligible	Moderate-Minor adverse	Minor-Negligible adverse
Recreational Receptors: Core Paths and Trails				
Hikers of Beinn Ruadh	High	Low-Negligible to Negligible	Minor adverse to Negligible	Negligible
Visitors to Viewpoint at Gazebo in Benmore Botanic Gardens	High	Low	Moderate adverse	Minor-Negligible adverse to Negligible
Visitors to Puck's Glen	High	Medium to Negligible	Major-Moderate adverse to Negligible	Moderate-Minor adverse to Negligible
Users of Remaining Core Paths and Trails	High	Low-Negligible to Negligible	Moderate-Minor adverse to Negligible	Moderate-Minor adverse to Negligible
Recreational Receptors: Tourist Accommodation				
Culzean House (at Barnacabber Farm)	Medium-High	Low-Negligible	Minor adverse	Negligible
Proposed holiday dwellings at Barnacabber Farm	Medium-High	Medium to Low	Moderate to Moderate-Minor adverse	Moderate-Minor to Minor adverse

Receptor	Sensitivity	Magnitude of Change	Significance of Effect at the start of the Operational Period	Significance of Long-term Effect
Glenfinart Caravan Park	Medium	Low-Negligible	Negligible	Negligible
Rashfield Sheilings	Medium	Medium	Moderate-Minor beneficial	Moderate beneficial
Ballochyle Cottage	Medium-High	Medium	Moderate beneficial	Moderate beneficial
Transport Receptors				
Users of Minor Road along Glen Finart	Medium-High to Medium	Large-Medium to Low-Negligible	Major-Moderate adverse to Minor adverse	Minor adverse to Negligible
Users of A880	Medium to Low	Low-Negligible to Negligible	Minor-Negligible adverse to Negligible	Negligible
Users of A815	Medium-High to Low	Low to Negligible	Moderate to Minor adverse	Minor-Negligible adverse
Users of B836	Medium-High to Low	Low-Negligible to Negligible	Minor adverse	Negligible
Users of A885	Medium-Low to Low	Low-Negligible to Negligible	Minor-Negligible adverse	Minor beneficial

6.10.4 A Major-Moderate adverse effect was identified as likely to occur on a very small section of the Puck's Glen trail at Year 1 of Operation, experienced in the context of the existing OHL. This would reduce to a Moderate-Minor adverse to Negligible effect over time, with some beneficial effects on the trail also anticipated as a result of the Proposed Development and replanting of the existing OHL Operational Corridor.

6.10.5 A Major-Moderate adverse to Minor adverse significance of effect would occur for users of the minor road along Glen Finart, with significant effects on visual amenity likely to occur in close proximity to the Proposed Development due to the increased scale of the proposed OHL and the reduction in roadside screening due to the creation of permanent and temporary Operational Corridors. No significant residual effect is anticipated once the broadleaf woodland has been reinstated within the Operational Corridors of the existing OHL and the temporary diversion.

6.10.6 Moderate adverse significant effects were identified on one residential property in Glen Finart and a Moderate beneficial significance of effect is likely to occur for residents at Dalinlongart and Surrounds in Strath Eachaig at Year 1 of Operation and as a Residual effect. Visitors to the Benmore Botanic Gardens would be predominantly unaffected by the Proposed Development, although a Moderate adverse significance of effect is likely to occur at Year 1 of Operation for visitors to the viewpoint at the Gazebo. Users of proposed tourist accommodation at Barnacabber Farm would experience a Moderate to Moderate-Minor adverse significance of effect.

6.10.7 Users of tourist accommodation at Rashfield Sheilings, Strath Eachaig would experience a Moderate beneficial residual effect as a result of the Proposed Development.

Significant Construction Effects

6.10.8 Although Construction effects can be more perceptible due to the movement, noise and change they introduce into the landscape and the view, they are temporary and generally are unlikely to be greater than the Operation effects. However, a Moderate adverse significance of effect during construction is

anticipated on the landscape character of Glen Finart LU due to the location of construction compounds, including helicopter operation compounds, and the helicopter flights in and out of the glen, which would affect the tranquillity of Glen Finart LU.

Significant Cumulative Effects

6.10.9 A temporary **Major-Moderate adverse** cumulative landscape effect is likely to occur on Glen Finart LU as a result of the simultaneous construction of the Proposed Development and the cumulative schemes due to the concentration of large-scale construction activities within a tranquil glen.

6.10.10 A temporary **Moderate adverse** cumulative landscape effect is likely to occur on Creachan Mòr LU should all the cumulative schemes be constructed simultaneously due to the increased vehicular movement, noise and helicopter flights within a similar area.

6.10.11 A temporary **Major adverse** and a **Major-Moderate to Moderate-Minor adverse** cumulative visual effect on residents to the south-east of Barnacabber Farm and users of proposed Holiday Dwellings at Barnacabber Farm, respectively, are likely to arise during the construction phase should the cumulative schemes be constructed simultaneously. Users of the road through Glen Finart are likely to experience a temporary **Moderate adverse to Moderate-Minor adverse** cumulative effect during the construction phase. However, whilst more intense, the simultaneous construction would result in construction activity having a shorter duration.

6.10.12 Mitigation measures to reduce the effect of construction on Glen Finart include the careful siting of construction compounds and the use of hoarding and fencing to screen equipment, stockpiles and areas of movement, minimising the movement of stockpiles, etc as set out in the CEMP and GEMPs.

7. ECOLOGY AND NATURE CONSERVATION

7.1 Introduction

7.1.1 This chapter presents the assessment of the potential effects on ecology and nature conservation resulting from the Proposed Development. This chapter (and its associated Figures and Appendices) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report (**Chapter 1: Introduction** to **Chapter 5: Methodology**).

7.1.2 Additional information which supports this chapter is presented in the following technical appendices and their associated figures:

- Appendix 7.1: Biodiversity Legislation
- Appendix 7.2: Habitats Data
  - Figure 7.2.1: UKHab Habitat Results
  - Figure 7.2.2: Statutory Natural Heritage Designations within 2 km buffer of proposed OHL alignment
  - Figure 7.2.3: Non-Statutory Natural Heritage Designations within 1 km buffer of proposed OHL alignment
  - Figure 7.2.4: Ancient, Native and Near-Native Woodlands within 1 km buffer of proposed OHL alignment
- Appendix 7.3: Protected Species Data
  - Figure 7.3.1: Bat Results
  - Figure 7.3.2: Squirrel Results
  - Figure 7.3.3: Pine Marten Results
  - Figure 7.3.4: Otter Results
  - Figure 7.3.5: Water Vole Results
  - Figure 7.3.6: Freshwater Pearl Mussel Results
  - Figure 7.3.7: INNS Observations
- Appendix 7.4: Confidential Badger Data
  - Figure 7.4.1: Confidential Badger Results

7.1.3 Considerations with regards to Habitats Regulations Appraisal (HRA) and the Proposed Development have been made in **Chapter 8: Ornithology** of this EIA Report.

7.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

7.2.1 An EIA Scoping Report[49] was submitted to the Scottish Government Energy Consents Unit (ECU) in May 2022, which outlined the scope of this Ecological Impact Assessment (EcIA) based on the available baseline data at the time. The scope has since been revised to incorporate scoping responses received from various stakeholders (**Table 7-1**). Any deviations are identified and justified accordingly.

7.2.2 This chapter focuses on the effects of the construction phase of the Proposed Development upon Important Ecological Features (IEFs) aligning with EcIA Guidelines from the Chartered Institute of

[49] Scottish Hydro Electric Transmission plc (2022). Dunoon to Loch Long 132kV OHL Rebuild, Scoping Request, February 2022. Scottish Hydro Electric Transmission Plc, Perth.

Ecology and Environmental Management (CIEEM)[50] (hereafter the 'CIEEM EcIA Guidelines'). This EcIA has also been prepared with reference to the applicable legislative framework and national and local planning policy; these are outlined in **Appendix 7.1: Biodiversity Legislation**. Specific guidance documents for habitats and species are referenced throughout this chapter and the associated appendices as appropriate. Ornithological considerations are included within **Chapter 8: Ornithology** of this EIA Report.

Extent of the Study Area

7.2.3 Distinct study areas have been established for desk-based data review exercises and field surveys, to reflect the different elements of the Proposed Development, ecological sensitivities along the proposed OHL alignment and the extent of the Proposed Development's Ecological Zone of Influence (EZoI) for each ecological feature assessed. The CIEEM EcIA Guidelines define the EZoI as the area over which ecological features may be subject to significant effects as a result of the Proposed Development; this could extend beyond the footprint of the Proposed Development.

7.2.4 For the purposes of this EcIA, the Proposed Development comprises the following (as defined in Section **3.8 Construction practices and phasing** of this EIA Report) (hereafter the Proposed Development 'footprint'):

- the proposed OHL alignment;
- an 81 m operational corridor along the proposed OHL alignment and temporary diversion through plantation woodland;
- a 60 m operational corridor along the proposed OHL alignment and temporary diversion through broadleaf woodland;
- tower foundations and associated construction working areas: 50 x 50 m for a crane build; and 30 x 30 m for a helicopter build[51];
- footprint of the Equipotential Zones (EPZs) within woodland areas;
- formation of temporary works compounds and work areas (**Figure 3.5: Helicopter Flight Paths**) from which the helicopter operations can be safely operated (hereafter 'Helicopter Compounds');
- habitats occurring within 10 m from the centre line (20 m total width) of proposed retained (permanent) and temporary access tracks occurring within woodland areas;
- habitats occurring within 3 m from the centre line (6 m total width) of permanent and temporary access tracks occurring within non-woodland areas; and
- borrow pit search areas.

7.2.5 The study area will vary for each ecological feature due to the varying mobility range of the feature being assessed as well as the connectivity between the feature and the Proposed Development. For example, the effect of the EZoI on mobile species, such as otters, will be greater than those on sedentary habitats.

7.2.6 A 1 km study buffer for ancient and native woodlands has also been considered.

7.2.7 Distinct field survey areas have also been established. These are set out with justifications in the section on **Method of Baseline Data Collation**.

[50] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf

[51] Increased from 25 x 30 m to produce a square base for the associated habitat calculations.

Consultation Undertaken to Date

7.2.8 Consultations were undertaken during the completion of the Proposed Development's Environmental Alignment Selection Study[52] and EIA Scoping Report[53]. Consultation requests placed at the time of writing, which are relevant to this chapter, are captured in **Table 7-1**.

Table 7-1 – Consultation responses of relevance to ecology and nature conservation

Organisation	Type of Consultation	Response	How response has been considered
Argyll and Bute Council	Scoping Opinion	Argyll and Bute Council is in agreement that the construction effects on ecology and biodiversity are likely to be temporary, low-magnitude and localised, and that embedded mitigation in the design will alleviate these impacts.	Embedded mitigation and the Applicant's standard environmental management procedures considered in the chapter (**Section 7.4.5**). No change to EcIA scope.
Argyll Biological Records Centre (ABReC)	Alignment Selection Study data request	ABReC was not in a position to produce full data search reports. However, they advised on the availability of the centre's data from the National Biodiversity Network (NBN) Atlas[54].	NBN Atlas reviewed for ABReC data pertaining to the targeted protected species prior to the field surveys commencing. No change to EcIA scope.
Butterfly Conservation	Alignment Selection Study data request	Butterfly Conservation provided three records pertaining to two priority species: the small pearl-bordered fritillary butterfly *Boloria selene*; and a micro-moth *Udea decrepitalis*.	This data provided by Butterfly Conservation has been used to inform the assessment of potential impacts on invertebrate receptors in this EcIA.
Argyll County Recorder for Botanical Society of Britain and Ireland (BSBI)	Alignment Selection Study data request	The county recorder confirmed that they did not have records of any legally protected plants in the corridor as outlined. The presence of the Craighoyle Woodland Site of Special Scientific Interest (SSSI) was highlighted, as was the Puck's Glen woodland trail, which is a noted site for pteridophytes (ferns). An area of habitat close to the River Eachaig near Deargacha was highlighted for a large population of the nationally rare epiphytic moss *Daltonia splachnoides*. The county recorder advised that much of the corridor is production forestry plantation and wet heath with little botanical interest and what limited interest there is, is confined to the incised watercourses.	Craighoyle Woodland SSSI is considered within the EIA Scoping report and is scoped out of further assessment within this chapter. The location of the epiphytic moss is approximately 240 m north-west of the closest proposed tower location. This data provided by BSBI has been used to inform the assessment of potential impacts on habitat receptors in this EcIA (see **Section 7.3**, **Table 7-3** and **Section 7.4**, **Table 7-4**).

[52] Scottish Hydro Electric Transmission Plc (2021). Environmental Alignment Selection Study, Project: Dunoon to Loch Long 132 kV OHL Replacement, May 2021, REF: LT000193-WSP-ENV-RPT-004/. Scottish Hydro Electric Transmission Plc, Perth.
[53] Scottish Hydro Electric Transmission plc (2022). Dunoon to Loch Long 132kV OHL Rebuild, Scoping Request, February 2022. Scottish Hydro Electric Transmission Plc, Perth.
[54] NBN Atlas [online]. Available at: https://nbnatlas.org/ [Accessed July 2022].

Organisation	Type of Consultation	Response	How response has been considered
Bat Conservation Trust (BCT)	Alignment Selection Study data request	BCT confirmed that they are unable to provide bat data records for individual projects and recommended contact with the relevant local records centre, and other record holders, where applicable.	Local records centre (ABReC) and Loch Lomond Bat Group consulted with. No change to EcIA scope.
Cowal Red Squirrel Group	Alignment Selection Study data request	Advised that the Cowal Red Squirrel Group had disbanded and recommended making alternative contact with the Scottish Wildlife Trust (SWT).	SWT consulted with. No change to EcIA scope.
Loch Lomond and the Trossachs National Park (LLTNP)	Scoping Opinion	LLTNP requested further discussion with regards to achieving Biodiversity Net Gain (BNG) as opposed to 'no net loss'. Existing OHL alignment: It is strongly recommended that the potential for redundant sections of the existing OHL corridor to deliver ecological mitigation and enhancement for the whole project are fully explored as part of the EIA Report. Assessment of works required outside of proposed OHL alignment: It is understood that further details of the other works required to facilitate the proposed development outside of the proposed OHL alignment will be provided in the EIA Report (e.g. temporary line diversions, site access and borrow pit search areas). It is vital that these elements of the project are addressed in the EIA Report to ensure that the overall impacts of the project are fully considered.	BNG is being considered separate from the EIA Report and will be reported upon in a standalone document. The dismantling and removal of redundant infrastructure are not directly covered by the scope of this EIA. These elements are to be covered by a future, separate Environmental Appraisal (EA). They are, however, considered within the cumulative effects section of this EcIA. Collective construction elements, including site access and borrow pit search areas are considered within this EcIA.
LLTNP	EIA Scoping Report, statutory consultee	LLTNP requested further discussion with regards to achieving Biodiversity Net Gain (BNG) as opposed to 'no net loss'. A number of potential cumulative effects have been identified and it is expected that the EIA report will address these. An estimated construction timeline for the full duration of the works, including restoration and removal of the existing OHL alignment should also form part of the EIA report.	BNG is being considered separate from the EIA Report and will be reported upon in a standalone document. The potential cumulative effects from the Loch Long crossing and decommission of the existing OHL alignment are considered within this EcIA, where applicable (**Section 7.4.5**, **Cumulative Effects**).
Scottish Wildlife Trust	Alignment Selection Study data request	SWT advised on the availability of their data from the NBN Atlas.	NBN Atlas reviewed for squirrel data prior to the field surveys commencing. No change to EcIA scope.
NatureScot	EIA Scoping Report,	NatureScot advised that they note that the proposed OHL alignment avoids all designated sites and are satisfied that any impacts to designated sites are scoped out of the	As considered within the Proposed Development's EIA Scoping report, designated sites applicable

Organisation	Type of Consultation	Response	How response has been considered
	statutory consultee	assessment. Similarly, they are content that impacts to all key protected species will be satisfactorily addressed within the scope of the EIA Report. NatureScot requested that cumulative effects be fully addressed within the EIA Report and that the cumulative assessment takes account of all elements of the project; including the works required both within and outwith the OHL corridor as well as the dismantling and removal of redundant infrastructure.	to this chapter are not anticipated to be negatively impacted by the Proposed Development. Thus, the assessment of statutory sites is scoped out of this EcIA. Potential cumulative effects are considered within this EcIA, where applicable. The dismantling and removal of redundant infrastructure are not directly covered by the scope of this EIA. These elements are to be covered by a future, separate Environmental Appraisal (EA). They are, however, considered within the cumulative effects section of this EcIA.
Scottish Forestry	EIA Scoping Report, statutory consultee	Scottish Forestry stated that the effects of felling, woodland removal and re-establishment should be considered in the EIA Report (i.e. not just woodland removal). This should also include indirect impacts on adjacent woodlands. This can be achieved by describing effects in the relevant Environment Receptor chapters, however, they should be clearly cross-referenced from the proposed Forestry Chapter and effects should be summarised in a Technical Appendix.	The woodland management effects of felling, woodland removal and re-establishment are considered within this EcIA, where applicable. The assessment of coniferous woodland as a specific IEF is considered and scoped out of this EcIA in **Table 7-4** of this chapter. All forestry-specific impacts are considered within **Chapter 12: Forestry**.
Marine Scotland	EIA Scoping Report, statutory consultee	The detail within the generic scoping guidelines already provides sufficient information relating to water quality and salmon and trout populations for developers at this stage of the application. Developers will be required to provide a completed gate check checklist in advance of their application submission which should signpost ECU to where all matters relevant to freshwater and diadromous fish and fisheries have been presented in the EIA report. Where matters have not been addressed or a different approach, to that specified in the advice, has been adopted the developer will be required to set out why.	The assessment of fish; and rivers and streams as IEFs is considered and scoped out of this EcIA in **Table 7-4** of this chapter.

Organisation	Type of Consultation	Response	How response has been considered
		Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following: • any designated area, for which fish is a qualifying feature, within and/or downstream of the proposed development area; • the presence of a large density of watercourses; • the presence of large areas of deep peat deposits; • known acidification problems and/or other existing pressures on fish populations in the area; and • proposed felling operations. It is recommended that regular visual inspections are carried out by the appointed Ecological Clerk of Works (ECoW) on all watercourses paying particular attention to watercourses during and after periods of prolonged precipitation, during the fish migration/ spawning period and on watercourses which are downstream of watercourse crossings, where construction is carried out and where vehicular traffic is frequenting.	
Royal Society for the Protection of Birds (RSPB)	EIA Scoping Report, statutory consultee	The EIAR should include a full survey, impact assessment and proposals for mitigation in relation to important habitats on this site. Mitigation should ideally avoid or seek to minimise any impact on areas of high-quality habitats found. Attention should also be paid to rainforest habitats, which is an important UK Biodiversity Action Plan habitat, as the proposed development transits area of Atlantic Oakwood and Ancient Woodland Inventory with Plantlife Scotland's Important Plant Area. Any loss of this habitat should be minimised. If this cannot be avoided, compensatory planting should be undertaken.	UK Habitat Classification (UKHab) and Habitat Condition Assessment (HCA) habitat surveys have been completed for the Proposed Development. An impact assessment regarding important habitats and appropriate mitigation is considered in the assessment.

7.2.9 In relation to the Alignment Selection Study data request, the following organisations did not provide a response:

- Argyll and Bute Local Biodiversity Partnership via Argyll and Bute Council;
- Buglife;
- Loch Lomond Bat Group;
- Loch Lomond and the Trossachs National Park; and
- The Vincent Wildlife Trust.

Method of Baseline Data Collation

Desk Study

7.2.10 A desk-based review of publicly available data sources was conducted from July to August 2020, during the Proposed Development's routeing stage. The review was completed by competent ecologists who hold current CIEEM membership and sufficient experience in ecological data collection. Data sources included: NatureScot Sitelink[55]; Scotland's Environment Web[56]; Ordnance Survey (OS) and aerial mapping; and NBN Atlas. In addition, biological data consultations were undertaken during the Proposed Development's alignment stage (**Table 7-1**). Please refer to **Appendix 7.2: Habitats Data** and **Appendix 7.3: Protected Species Data** of this EIA Report for full details of the desk study methodologies employed.

Field Surveys

7.2.11 All field surveys were undertaken by a team of competent ecologists who hold current CIEEM membership and sufficient experience in surveying the habitats and protected species likely to be encountered across the prevailing landscape. All data were captured electronically using tablets.

Habitats Field Survey

7.2.12 Initial habitat classification and condition assessment surveys were undertaken in October 2020. This survey was later updated during September and November 2021; and July and October 2022 to encompass changes to the proposed OHL alignment. The following habitat surveys were undertaken concurrently:

- UK Habitat Classification (UKHab) surveys – The UKHab surveys broadly covered all habitats occurring within a 325 m proximity of the Preliminary Alignment Options (PAO) initially defined at the Proposed Development's alignment selection stage. To give a proportionate level of detail at appropriate scales of buffer within this area, a 125 m buffer of the PAO received a detailed 'Level 5' UKHab survey. The surrounding 200 m buffer of the 'Level 5' area then received a 'Level 3' UKHab survey. This survey was later updated to encompass changes to the proposed OHL alignment.
- Habitat Condition Assessment (HCA) – A HCA was completed concurrently with the UKHab surveys. The results of the HCA will be used to inform the Proposed Development's BNG assessment and will be reported within a BNG report, separate from this EIA Report.

7.2.13 Please refer to **Appendix 7.2: Habitats Data** of this EIA Report for full details of the habitats field survey methodologies employed.

Protected Species Field Survey

7.2.14 A proportionate field survey approach was designed. The following Protected Species surveys were undertaken:

- Habitat Suitability Site Survey – A protected species habitat suitability survey was carried out, between 13 and 22 October 2020. The survey aimed to classify the suitability of terrestrial habitats within proximity of the Proposed Development to support the following species:
  - Bat species;
  - Badger;
  - Red squirrel;
  - Pine marten; and

[55] NatureScot SiteLink Map Search [online]. Available at: https://sitelink.nature.scot/map [Accessed July 2022].
[56] Scotland's Environment Web [online]. Available at https://map.environment.gov.scot/sewebmap/ [Accessed July 2022].

  - Reptile species.

  In addition, the survey aimed to classify the suitability of any encountered watercourses for the following riparian mammal species:

  - Otter; and
  - Water vole.

- Species-specific Site Surveys – A suite of species-specific site surveys was carried out to inform the baseline protected species aspects of this EcIA. Current field data was recorded:
  - between September and November 2021 from the areas identified as presenting 'moderate' to 'high' suitability during the previous Habitat Suitability Site Survey; and
  - between July and October 2022 additional, applicable species survey buffers were assessed on site, in areas where the OHL alignment had been altered and where they were not already covered by the 2020 Habitat Suitability Site Survey.
- The following species surveys were undertaken:
  - Bat species;
  - Badger;
  - Red squirrel;
  - Pine marten;
  - Otter; and
  - Water vole.
- Dunoon Substation Building – Additional bat surveys were completed to the substation building in November 2021 and January 2022.
- Freshwater Pearl Mussel (FWPM) – FWPM surveys were undertaken between 22 and 24 September 2021 on the River Eachaig; the Little Eachaig River; and Glenfinart Burn.
- Invasive Non-Native Species – Incidental observations of INNS were recorded concurrently with the species-specific site surveys.

7.2.15 Please refer to **Appendix 7.3: Protected Species Data** of this EIA Report for full details of the protected species field survey methodologies employed.

Determining Magnitude of Change and Sensitivity of Receptors

7.2.16 The assessment focuses on IEFs of greatest nature conservation importance, as supported by the CIEEM EcIA Guidelines. To inform the scoping of relevant IEFs, each has been evaluated in line with the criteria presented in **Table 7-2**.

7.2.17 For the purposes of this EcIA, the geographic context of an IEF's nature conservation importance is interpreted as follows: International = Europe; National = United Kingdom; Regional = Scotland; Authority Area = Argyll and Bute; and Local = cities, towns and villages within the authority area.

Table 7-2 – IEF importance geographic context[50]

Geographic frame of reference	Criteria/ examples
International	A site designated under international conventions or European directives meeting the criteria for a European site[57]. Considerable extents of a priority habitat type listed in Annex I of the Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna

[57] NatureScot, European Sites [online]. Available at: https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites [Accessed July 2022].

Geographic frame of reference	Criteria/ examples
	and Flora, or smaller areas of such habitat that are essential to maintain the viability of a larger area. A regularly occurring significant population/ number of any internationally important species i.e. European Protected Species.
National	Nationally designated sites, or sites meeting the criteria for national designation. Notified species/ habitats of a nationally designated site. A nationally important, viable area of priority habitat identified within the Scottish Biodiversity List (SBL) or a smaller area which is vital for the viability of a larger area. A regularly occurring significant population/ number of any nationally important species i.e. listed on the Wildlife and Countryside Act 1981 (as amended). Species present in nationally important numbers (>1 % UK population).
Regional	Any internationally or nationally important habitat (as described above) that is currently degraded but has the potential for restoration. Sites falling slightly below criteria for selection as a national designated site. Regularly occurring moderate to large populations/ numbers of SBL species. Species present in regionally important numbers (>1 % of the regional population).
Authority Area	A regularly occurring, viable population of an SBL species or habitat which is scarce in the Local Authority boundary.
Local	Local Nature Conservation Sites (LNCS) identified by the Local Authority. Viable areas of local priority habitat or small areas of such habitats which are essential to maintain the viability of the larger area; identified by the Local Authority often through a Local Biodiversity Action Plan (LBAP)[58]. Areas identified of conservation interest by organisations such as the Scottish Wildlife Trust. Areas of ancient woodland and native woodland smaller than 0.25 ha. A regularly occurring, substantial population of a species scarce in the local area or of local priority. Areas of habitat or species considered to enrich the ecological resource within the local context (e.g. hedgerows).
Site	Habitats and species that are of low to no ecological importance and enrich the habitat resource at a site level due to their size, extent, species composition and other factors.

7.2.18 IEFs that are of site importance under the above frame of reference are not considered in detail in this EcIA.

7.2.19 Aligning with the CIEEM EcIA Guidelines but remaining consistent with the wider EIA Report, the terms 'sensitive receptor' and 'IEF' will be used synonymously throughout this chapter.

7.2.20 Impact magnitude refers to changes in the extent and integrity of an ecological receptor. A definition of ecological 'integrity' has been approved by the European Commission[59]. It states that "*The 'integrity of the site' can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/ or populations of species for which the site is designated*". Although this definition is used specifically regarding European designated sites, it is applied here to wider-countryside habitats as well as the integrity of species' populations.

[58] Argyll and Bute Council (2010). The Argyll and Bute Local Biodiversity Action Plan 2010 – 2015 [online]. Available at: https://www.argyll-bute.gov.uk/sites/default/files/Unknown/AandB%20BAP%20Draft.pdf.

[59] European Commission (2018). Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

7.2.21 Detailed consideration of impact magnitude is a standard component of EcIA. It is incorporated to succinctly describe the scale of individual impacts. In line with the CIEEM EcIA Guidelines, for each IEF, the impacts of construction and operational aspects of the Proposed Development and their resultant effects on IEFs are considered in terms of their:

- beneficial (positive) or adverse (negative) nature;
- extent;
- magnitude;
- duration;
- frequency and timing; and
- reversibility.

7.2.22 As defined above, the magnitude of change considers more than the scale of change but also its nature. As described in **Section 7.2.18**, only impacts on ecological features of Local importance or above are assessed in this EcIA. As described within the CIEEM EcIA Guidelines, "*For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*". Once the nature of an impact is determined, a geographical scale is assigned to it following the same frame of reference as set out in **Section 7.2.17**. Again, only impacts to IEFs with a Local geographic importance and above are considered further within this chapter.

Limitations and Assumptions

7.2.23 Considering the extent of the Proposed Development and the type of construction work associated it, it was essential to identify a proportionate approach for data collection which would remain robust and sufficient to inform the EcIA and any necessary mitigation. The protected species survey effort was focused on the areas identified as presenting moderate or high suitability to support the targeted species, as ascertained during prior site walkovers (see **Appendix 7.3: Protected Species Data**). The protected species surveys employed, included an initial search for field signs and potential resting sites for each targeted species. However, further detailed surveys to confirm the occupation of each potential resting site were not undertaken. This is a high-level approach intended to inform a precautionary EcIA of construction impacts resulting in the potential loss or disturbance of protected species resting sites. Ultimately, it is anticipated that pre-construction surveys to confirm final occupancy of resting sites and to inform any specific licences for occupied resting sites will be undertaken by the Applicant or their appointed agent(s). To mitigate this limitation, a precautionary approach has been adopted when assessing the construction impacts, based on all data recorded to date, assuming occupation of potential resting sites.

7.2.24 It is assumed that all non-woodland habitats within the operational corridor, which aren't within the footprint of any of the Proposed Development's permanent construction elements (such as towers), will be retained during the operation of the Proposed Development. Conversely, it is assumed that all habitats within the tower foundations and associated construction working areas (**Section 7.2.4**) will be lost during the Proposed Development's construction.

7.2.25 It is assumed that potential operational impacts resulting from maintenance work, such as clearance of the proposed OHL alignment's operational corridor and tracking across land, would be assessed and controlled in accordance with prevailing legislation, policy and best practice guidance.

7.2.26 As required by the Applicant, it is assumed that protocols detailed within the General Environmental Management Plans (GEMPs) and Species Protection Plans (SpPPs) will be implemented successfully by the successful Principal Contractor(s).

7.2.27 The opportunity to influence the Proposed Development as part of ecology and nature conservation mitigation has been partly limited as:

- The exact location of temporary infrastructure (e.g. compounds) will be at the discretion of the successful Principal Contractor.
- Management felling requirements beyond the operational corridor will be covered by separate forestry licence applications, as required, and are not covered by the scope of this EIA Report. Such additional felling, if required, will be essential to ensure safe maintenance of the operational OHL; thus, it is not possible to avoid felling in certain areas for ecology and nature conservation interests.
- The exact method of temporary access/ access without track creation will be at the discretion of the successful Principal Contractor. The range of construction access options likely to be considered include:
  - patching/ upgrade of existing access tracks;
  - installation or modification of permanent access track routes to new tower locations to assist with ongoing operation, maintenance and repair of the Proposed Development, and where land use/ land management activities can accommodate or benefit from this;
  - installation of temporary metal or plastic roadway panels (e.g. Trackway, or Terrafirma etc);
  - installation of temporary stone roads on a geo-textile fabric base; or
  - use of specialised low ground bearing pressure vehicles.

7.2.28 In the absence of detailed, site-specific habitat data to investigate the presence of ancient native trees and their associated ancient soil bank, it has been precautionarily assumed that all woodlands within the Proposed Development's footprint listed on the AWI are of good condition, have high distinctiveness and cannot be recreated.

7.2.29 Tree felling to achieve a safe operational corridor on either side of the proposed OHL alignment will result in irreversible and unavoidable loss of associated woodland habitat. It is assumed that the remaining construction works associated with the Proposed Development will result in temporary habitat loss, perceived as habitat degradation, as habitats are likely to restore in the short term.

7.2.30 The locations of temporary site compounds remain broadly unknown at this stage of the assessment as these will be determined by the successful Principal Contractor. Therefore, this EcIA pragmatically assumes that temporary site compounds will be micro-sited to avoid sensitive receptors.

7.2.31 A number of limitations apply to the detailed habitat and protected species surveys. With regards to the habitat surveys, limitations with regards to seasonality apply. For all site surveys, limitations pertaining to site access applied, such as: fallen and wind-blown trees; dense woodland and vegetation; steep embankments; and active timber operations. Please refer to **Appendix 7.2: Habitats Data and Appendix 7.3: Protected Species Data** of this EIA Report for full details of the limitations and assumptions pertaining to the habitats and protected species field surveys, respectively.

7.3 Baseline Conditions

7.3.1 A summary of each feature has been included when evaluating their relative nature conservation importance (see **Sensitive Receptors**) or when scoping them out from further assessment (see **Issues Scoped Out**), as part of the justification behind this. Please refer to the following Appendices for full details of baseline conditions:

- **Appendix 7.2: Habitats Data**;
- **Appendix 7.3: Protected Species Data**; and
- **Appendix 7.4: Confidential Badger Data**.

Future Baseline

7.3.2 The following three consented planning applications have been identified within proximity of the Proposed Development:

- 19/01594/PP: Erection of four semi-detached dwelling houses and formation of vehicular accesses. Land at Former Hillcrest Robertson Terrace, Sandbank, Argyll and Bute. Located approximately 100 m north of access track to Tower 77.
- 19/00708/PP: Erection of five dwelling houses, installation of septic tank and formation of vehicular access. Land south-west of Holy Loch Farm Cottage, Sandbank, Dunoon, Argyll and Bute. Located approximately 800 m east of the proposed OHL alignment, between Tower 62 and 63.
- 2013/0328/DET: Erection of 15 holiday dwellings, shop and reception building, three barbeque huts and associated infrastructure. Barnacabber Farm, Ardentinny, Argyll and Bute, PA23 8TT.

7.3.3 All three of the above consented applications introduce additional dwellings with limited anticipated impacts to the current habitats, management regimens and baseline disturbance at their locals. The range and population size of the IEF species (see **Sensitive Receptors**) are predicted to continue as per their current trends with the addition of the above consented applications.

7.3.4 In the absence of the Proposed Development, the habitats identified directly under the proposed OHL alignment and corridor either side of the proposed OHL alignment (the 'operational corridor') are likely to continue to be present within the context of their current management regimes and maintenance agreements in place for the operational corridor.

7.3.5 The presence and/or woodland composition of the commercial forestry areas along the OHL alignment will likely change in line with the operators' forestry management plans.

7.3.6 The range and population size of the IEF species (see **Sensitive Receptors**) are predicted to continue as per their current trends in the absence of development.

Sensitive Receptors

7.3.7 An IEF is a sensitive receptor that occurs within the EZoI (see **Section 7.2, Determining Magnitude of Change and Sensitivity of Receptors**) and which has been evaluated to be of Local nature conservation importance or above. The habitats and species identified as IEFs are presented in **Table 7-3**, together with the justification for this evaluation.

Table 7-3 – Geographic context of Important Ecological Features scoped-in

Feature	Geographic importance	Justification
Ancient Woodland (as defined by the Ancient Woodland Inventory (AWI))[60]	Authority Area	Approximately 20 hectares (ha) of the woodland occurring within the Proposed Development's footprint (including the operational corridor) is listed on the AWI. This comprises just over 12 % of the habitats within this footprint. These areas shown within the AWI primarily consist of Ancient Semi-Natural Woodland (ASNW) (approximately 15 ha); with approximately 4.5 ha of woodland occurring on the 1750 Roy maps[47]; and approximately 0.5 ha of Long-Established woodland of Plantation Origin (LEPO). In Scotland, ASNW is considered to be currently wooded and has been continuously wooded since at least 1750. ASNW is recognised as an irreplaceable habitat within Scottish Planning Policy (SPP)[61] and

[60] The full AWI dataset was used for this assessment. No alterations to the calculations were made based on the presence or absence of wooded areas.
[61] Scottish Parliament (2014). Scottish Planning Policy, paragraph 194. Available at: https://www.gov.scot/publications/scottish-planning-policy/pages/7/

Feature	Geographic importance	Justification
		is assumed to comprise a diverse structure and species-rich flora having been long-established. Other woodlands occurring on 'Roy' woodland sites are areas shown as unwooded on the 1st edition OS maps (circa 1860) but as woodland on the Roy maps (circa 1750). Such sites have, at most, had only a short break in the continuity of woodland cover and may still retain features of Ancient Woodland. LEPO is long-established but often non-native. AWI woodlands regularly occur within the Proposed Development's footprint, where woodland cover is otherwise dominated by commercial coniferous plantation; thus, these woodlands are considered to be of Authority Area level importance.
Broadleaved, mixed and yew woodland	Authority Area	The SBL includes several terrestrial woodland habitats. Of these, lowland mixed deciduous woodland is applicable to the habitats present in the Proposed Development's footprint. The Argyll and Bute LBAP[62] includes lowland mixed deciduous woodland as a priority habitat. Scotland comprises approximately 19 % woodland cover; with under a quarter of these woodlands considered native[63]. Approximately 11.5 ha of the woodland occurring within the Proposed Development's footprint (including the operational corridor) is broadleaved, mixed and yew woodland. This comprises just approximately 7% of the habitats within this footprint; thus, these woodlands are considered to be of Authority Area level importance.
Dwarf shrub heath	Local	Upland heathland and European dry heath are habitats within the UKHab Level 3 'dwarf shrub heath' habitat grouping. Upland heathland is a SBL terrestrial habitat and an Argyll and Bute LBAP priority habitat. European dry heath is an Annex I habitat. Dwarf shrub heath habitats occur across a relatively low proportion of the Proposed Development's footprint (excluding the operational corridor) and are therefore assessed to be of Local level importance. These habitats cover approximately 2 ha of the Proposed Development's footprint which comprises just approximately 9.5% of this footprint area; thus, these woodlands are considered to be of Local level importance.
Otter	Local	Confirmed otter resting sites were identified at: a tributary to the Glen Finart Burn, known as the Cuil Burn; and the Little Eachaig River. Otter spraints (droppings) were identified at the River Eachaig; and the Little Eachaig River. In addition, a number of potential resting sites were also identified at the River Eachaig; and the Little Eachaig River. Otter is classified as a European Protected Species (EPS) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Otter is present on the SBL and is an Argyll and Bute LBAP priority species.

[62] Argyll and Bute Council (2010). The Argyll and Bute Local Biodiversity Action Plan 2010 – 2015. Available at: https://www.argyll-bute.gov.uk/sites/default/files/Unknown/AandB%20BAP%20Draft.pdf

[63] Walton, P., Eaton, M., Stanbury, A., Hayhow, D., Brand, A., Brooks, S., Collins, S., Duncan, C., Dundas, C., Foster, S., Hawley, J., Kinninmonth, A., Leatham, S., Nagy-Vizitiu, A., Whyte, A., Williams, S., and Wormald, K. (2019). The State of Nature Scotland 2019. The State of Nature Partnership.

Feature	Geographic importance	Justification
		The Mammal Society[64] reported that otter populations across the UK have shown an increase and are predicted to continue to do so. Their range is also predicted to increase. Therefore, due to their national stability but presence within the Survey Area, a maximum of Local importance has been allocated.
Bat species	Local	Soprano pipistrelle and common pipistrelle bats were recorded roosting within the Dunoon Substation building. In addition, 172 trees with PRFs were identified within the targeted bat habitats. Of these, one presented 'High' suitability for roosting bats; 124 with 'Moderate' suitability; and 47 with 'Low' suitability. Also, 12 rock faces, three of which with 'Low' suitability and nine with 'Moderate suitability, and one bridge with 'Moderate suitability were identified. All ten bat species found in Scotland (common pipistrelle; soprano pipistrelle; Nathusius' pipistrelle; brown long-eared; noctule; Daubenton's; Natterer's; Whiskered; Brandt's; and Leisler's) are classified as EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Five species are common and widespread: common pipistrelle, soprano pipistrelle, brown long-eared, Daubenton's and Natterer's bat. The remaining five species have a restricted range: Nathusius' pipistrelle, Whiskered, noctule, Brandt's and Leisler's bat. All bat species found in Scotland (except Leisler's bat) are listed on the SBL. Soprano pipistrelle; brown long-eared; and noctule bats are an Argyll and Bute LBAP priority species. The Mammal Society[64] reported that population trends for bat species found in Scotland are unknown due to data deficiency. Bats are anticipated to occur regularly across all areas of the Proposed Development, with different habitats and features likely to support a range of Scottish species. Woodlands along the Proposed Development site are likely to be used by foraging bats and woodland edges present sheltered commuting routes throughout the wider landscape. Boundary features, such as tree lines or hedgerows or dense scrub along fence lines and dry-stone walls, are also likely to act as navigational aids to commuting bats. Riparian habitats are likely to have relatively high levels of foraging and commuting bat activity. Bats are likely to be common and widespread along the Proposed Development, adding to the value of all habitats and features to some extent. Therefore, bats are considered to be of Local level importance in the context of the scale of the Proposed Development.
Pine marten	Authority Area	The majority of the Proposed Development falls within the known distribution range of pine marten within Scotland[65, 66]. Incidental potential evidence of pine marten activity was recorded, including: multiple potential scat droppings located, within or adjacent to

[64] Mathews, F., Kubasiewicz, L. M., Gurnell, J., Harrower, C. A., McDonald, R. A., Shore, R. F. (2018). A Review of the Population and Conservation Status of British Mammals: Technical Summary. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.
[65] Croose, E., Birks, J.D.S., Schofield, H.W. and O'Reill, C. (2014). Distribution of the pine marten (*Martes martes*) in southern Scotland in 2013. Scottish Natural Heritage Commissioned Report No. 740.
[66] The Vincent Wildlife Trust (2020). The Pine Marten. Available at: https://www.vwt.org.uk/species/pine-marten/

Feature	Geographic importance	Justification
		woodland or on access tracks; and multiple potentially suitable den sites. This species receives full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); and certain methods of killing or taking pine martens are illegal under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Pine marten is a SBL species. The Mammal Society[64] reported that pine marten populations across the UK have shown an increase and are predicted to continue to do so. Their range is also predicted to increase. However, their population estimate (3,700) is less than half that of otters (11,000). Therefore, due to their population estimate and likely presence within the Survey Area, an Authority Area importance has been allocated.
Red squirrel	Authority Area	Mature woodland with the potential to support red squirrels is present across the majority of the Proposed Development's footprint. Multiple visual observations of red squirrels were recorded during the ecological site surveys undertaken to inform this chapter. In addition, numerous field signs of squirrel foraging and the presence of potential dreys were observed throughout the targeted squirrel habitats. Red squirrels and their dreys (resting places) receive full protection under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended). Red squirrel is present on the SBL and is an Argyll and Bute LBAP priority species. The Mammal Society[64] reported that red squirrel populations across the UK have shown a decrease and are predicted to continue to do so. Their range is also currently, and predicted to continue to, decline. Therefore, due to their national stability and presence within the Survey Area, an Authority Area importance has been allocated.

7.4 Issues Scoped Out

7.4.1 Operational effects have been scoped out as the operational situation of the Proposed Development will essentially be no different to the baseline conditions; with the exception of maintenance of habitats as a result of essential operational corridor preservation. Effects of tree felling are addressed during the construction phase where the impact will initially be realised. Operational impacts resulting from maintenance work such as clearance of the operational corridor and tracking across land would be assessed and controlled in accordance with prevailing legislative, policy and best practice guidance. It is anticipated that surveys to confirm new presence of, or occupancy of, resting sites used by the IEF protected species considered in this chapter would be undertaken, as required, by the Applicant or their appointed agent(s) and that the loss of any confirmed active resting sites would be mitigated for through strict protected species licensing at that time.

7.4.2 It is understood that the Helicopter Compounds will be restored to their original condition upon completion of the related construction works. These are proposed within current agricultural areas of low ecological value, outwith a 30m disturbance proximity of any known IEF resting sites. Therefore, the Helicopter Compounds are scoped out from further assessment.

7.4.3 The following ecological features were scoped out within the Proposed Development's EIA Scoping Report and will not be considered further within this EcIA:

- statutory designated sites;
- impacts on Holy Loch Local Nature Reserve (LNR) and LNCS; and
- construction impacts on agricultural land and built-up areas.

7.4.4 As described in **Section 7.2.18**, only impacts on ecological features of Local importance or above are assessed in this EcIA. Those at Site level of importance have been excluded from further assessment (**Table 7-4**).

Table 7-4 – Additional ecological features scoped out

Feature	Justification
Blanket bog	Blanket bog is an SBL and Argyll and Bute LBAP habitat. Blanket bog is one of Scotland's most common semi-natural habitats, covering some 1.8 million hectares (approximately 23%) of Scotland's land area[67]. Approximately 3.5% (approximately 0.75 ha) of the Proposed Development's footprint (excluding the operational corridor) comprises blanket bog habitat, with only one tower structure (Tower 38) occurring within it, making less than 0.001% of Scotland's resource. Therefore, this feature is considered to be of Site importance only and is thus scoped out from further assessment in this chapter. Peatland habitats are considered further in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**.
Dense scrub	Scrub habitats within the Proposed Development's footprint (excluding the operational corridor) are relatively species-poor, predominantly comprising dense stands of gorse or broom. Whilst adding a diverse structure to the other habitats, scrub within the Proposed Development's footprint is reflective of and frequent across the wider landscape. Scrub habitats are not included under legislative, or conservation lists as a priority habitat type. This feature is considered to be of Site importance only, thus it is scoped out from further assessment.
Standing open water and canals	Areas of standing water/ponds occur relatively rarely within the Proposed Development's footprint (excluding the operational corridor). All identified ponds have been modified to some extent by adjacent land use. No specific construction impacts to areas of standing water are anticipated from the Proposed Development. This feature is considered to be of Site importance only, thus it is scoped out from further assessment.
Rivers and streams	Any required culvert installations for new access crossings or impacts to watercourses for the Proposed Development will require adherence to the CAR regulations[68], as considered within **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**. Embedded mitigation to help avoid potential negative effects on rivers and streams are included within the Applicant's GEMP documents. This feature is thus considered to be of Site importance only and is scoped out from further consideration.
Coniferous woodland	Of the woodlands surveyed, commercial coniferous plantation comprises a large proportion, with approximately 81 ha occurring within the Proposed Development's footprint (including the operational corridor), making up just over 48 % of this area. All stands were notably uniform and dense, with limited associated ground flora. Coniferous plantation woodlands are not included under legislative or conservation lists as a priority habitat type.

[67] NatureScot (online). Blanket Bog. Available at: https://www.nature.scot/landscapes-and-habitats/habitat-types/mountains-heaths-and-bogs/blanket-bog [Accessed August 2022].
[68] Scottish Parliament (2011). Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended). Available at: https://www.legislation.gov.uk/ssi/2011/209/contents/made

Feature	Justification
	Commercial forestry plantation dominated by coniferous trees makes up three-quarters of woodland cover across Scotland[69], with the remaining quarter considered to be native. Coniferous woodland can support a smaller range of protected and generalist species however, when considered in isolation, large extents of plantation are considered to be of Site importance only, thus is scoped out from further assessment.
Fish (Atlantic salmon, brown and sea trout, lamprey, European eel)	Any required culvert installations for new access crossings or impacts to watercourses for the Proposed Development will require adherence to the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR regulations), as considered within **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**. Any permanent new watercourse crossings along access tracks are located in the northern two-thirds of the Proposed Development between the Holy Loch and Loch Long, at small upland headwaters that have limited salmonid or overall fish habitat. The extents of these at the crossing points are characterised by overgrown bankside vegetation, poor connectivity/ substrate heterogeneity and a lack of channel structure. Small areas of localised habitat suitability were observed within the Site, however, the continuity of available habitat as well as accessibility for fish is restricted due to the above factors. In addition, embedded mitigation to help avoid potential adverse effects on rivers and streams are included within the Applicant's GEMP documents. This feature is thus considered to be of Site importance only and is scoped out from further consideration.
Water vole	This species only receives partial protection[70] [71] and is also an SBL and Argyll and Bute LBAP priority species. The Mammal Society[72] reported an increase in the population size of water voles in Scotland, but a recent decline in their range. Across the UK, populations are predicted to decline whilst the species' range may remain stable. No field evidence of water vole presence or activity was identified during the targeted watercourse surveys and their riparian habitats. Consequently, this species is not considered to occur within an EZoI, is of Site importance and is scoped out from further consideration.
Badger	Badgers and their setts are legally protected[73] [74]. Badgers are not included on the SBL or Argyll and Bute LBAP. Their level of legal protection has been derived from their persecution. Scottish Badgers[75] estimate that there are between 20,000 to 25,000 individuals in Scotland, ranging in varying densities from the north coast through to the border with England. The Mammal Society[64] reported that badger populations across the UK have shown an increase, predicted to remain stable; their range has been and is predicted to remain stable. Badgers are well-adapted to the agricultural landscape which dominates large portions of the Proposed Development's footprint, exploiting and enriching habitats considered to be of negligible to low ecological importance in isolation; as well as being associated with woodland and riparian habitats. However, only limited field signs of their presence were identified during the targeted badger field survey, with both of the identified setts occurring outwith a 30 m

[69] Walton, P., Eaton, M., Stanbury, A., Hayhow, D., Brand, A., Brooks, S., Collins, S., Duncan, C., Dundas, C., Foster, S., Hawley, J., Kinninmonth, A., Leatham, S., Nagy-Vizitiu, A., Whyte, A., Williams, S., and Wormald, K. (2019). The State of Nature Scotland 2019. The State of Nature Partnership.
[70] Protection against damage and destruction of burrows and disturbance of individuals whilst using burrows.
[71] UK Government (1981). Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Available at: https://www.legislation.gov.uk/ukpga/1981/69
[72] Mathews, F., Kubasiewicz, L. M., Gurnell, J., Harrower, C. A., McDonald, R. A., Shore, R. F. (2018). A Review of the Population and Conservation Status of British Mammals: Technical Summary. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.
[73] UK Government (1992). Protection of Badgers Act 1992 as amended by the Wildlife and Natural Environment (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents
[74] Scottish Parliament (2011). Wildlife and Natural Environment (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/asp/2011/6/contents/enacted
[75] Scottish Badgers (2018). Surveying for Badgers, Good Practice Guidelines, Version 1. Available at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf

Feature	Justification
	proximity of the proposed OHL alignment and the Proposed Development's footprint, including access tracks. Protected species licensing may be required should this sett, or any newly created setts, have the potential to be adversely affected by any planned activities. This species is considered to be of Site level importance in the context of the scale of the Proposed Development and is therefore scoped out from further consideration.
Freshwater pearl mussel	FWPM is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); and is an SBL and Argyll and Bute LBAP priority species. No field evidence of FWPM was identified during the targeted watercourse surveys. FWPM populations are not thought to occur within the targeted sections of watercourse along the proposed OHL alignment. This species is not considered to occur within an EZoI and is scoped out from further consideration.
Invertebrates (excluding freshwater pearl mussel)	No invertebrate species of conservation concern were recorded during surveys, however, it was noted that the habitats within both the UKHab study area and the wider area contained ample suitable habitats for a range of invertebrate species for sheltering, foraging and breeding. Invertebrates were considered to be of Site value only and are thus scoped out from further consideration. Invertebrates are not considered to occur within an EZoI, because the footprint of the Proposed Development will be small relative to the surrounding broadly homogenous habitats and resources for invertebrates.
Great crested newt (GCN)	This is an EPS which receives full protection under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); and an SBL and Argyll and Bute LBAP priority species. A network of accessible ponds with the potential to support GCN was not identified. The Proposed Development occurs within a part of Scotland which is not known to support populations of GCN[76]. Consequently, this species is not considered to occur within the EZoI of the Proposed Development.
Amphibians (palmate newt, smooth newt, common frog, common toad; excluding great crested newt)	All amphibians native to Scotland (except GCN and natterjack toad[77]) receive limited protection under the Wildlife and Countryside Act 1981 (as amended), but only against trade (i.e. sale, barter, exchange, transport for sale, or advertise for sale or to buy). Common toad; natterjack toad; and GCN are SBL species; other amphibians (except GCN) are not on the SBL or the Argyll and Bute LBAP. Only limited occurrences of standing water with relatively unmanaged surrounding terrestrial habitats, and riparian habitats, occur within the Proposed Development's footprint. Common species of amphibian are likely to occur regularly within these suitable habitats but are considered to enrich these resources at a Site level only.
Reptiles (slow worm, common lizard, adder)	All reptiles native to Scotland are SBL species and receive limited protection under the Wildlife and Countryside Act 1981 (as amended), against intentional or reckless killing and injury and trade. Adders are a priority species within the Argyll and Bute LBAP. Mosaics of habitats with suitability to support basking and foraging reptiles have been recorded occasionally within the Proposed Development's footprint (including the operational corridor), (e.g. heath, scrub, and relatively unimproved grasslands). Common lizards were sighted during the course of the field surveys. Common species of reptile are likely to occur regularly within these suitable habitats but are considered to enrich these resources at a Site level only.

[76] O'Brien, D., Hall, J., Miró, A., & Wilkinson, J. (2017). Testing the validity of a commonly-used habitat suitability index at the edge of a species' range: great crested newt Triturus cristatus in Scotland, Amphibia-Reptilia, 38(3), 265-273. Available at: https://doi.org/10.1163/15685381-00003108

[77] The Scottish distribution of natterjack toad is restricted to the coastal regions of south-west Scotland; this species is not considered further. Further information available [online]: https://jncc.gov.uk/jncc-assets/Art17/S6284-SC-Habitats-Directive-Art17-2019.pdf [Accessed July 2022].

7.4.5 The following features do not align with descriptions of priority habitats included under legislative or conservation lists, such as the SBL or, with the exception of 'fen marsh and swamp', the Argyll and Bute LBAP. The broad, Level 3, UKHab habitat types of 'fen marsh and swamp'; 'acid grassland'; 'neutral grassland' and 'built-up areas and gardens' all have potential priority habitat sub-categories. However, none of the habitats recorded under these broad habitats corresponded to these priority habitat sub-types. They are considered to be of Site importance only and thus are scoped out from further assessment in this chapter:

- Fen marsh and swamp;
- Acid grassland;
- Neutral grassland;
- Modified grassland; and
- Built-up areas and gardens.

7.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

7.5.1 The footprint of the Proposed Development avoids statutory designated sites of natural heritage interest and priority habitats, wherever possible. In addition, where possible, access tracks re-use pre-existing routes, reducing the potential adverse effects on adjacent habitats and species. The transport of construction elements by helicopter is proposed at selected tower locations, which will reduce the number and extent of access track works required in remote, and difficult to reach locations (**Chapter 3: Description of the Proposed Development**). Furthermore, the construction working areas associated with the applicable helicopter tower builds will impact a lesser area than the standard crane build areas, further minimising potential adverse effects on natural heritage assets (**Section 7.2.4**).

Construction Phase

Design Solutions and Assumptions

7.5.2 Embedded mitigation relevant to this chapter includes tried and tested measures documented within the Applicant's GEMPs and SpPPs (which have been agreed with NatureScot); see **Appendix 3.2 GEMPs** and **Appendix 3.3 SpPPs.** The Applicant will require that the protocols detailed within these documents are implemented successfully by the employed contractors.

7.5.3 For clarity, embedded mitigations captured within the following particular GEMPs will be sufficient to address and control potential impacts associated with pollution events, such that pollution impacts have not been addressed through this assessment:

- Oil storage and refuelling;
- Working in or near water;
- Working with concrete;
- Watercourse crossings;
- Waste management; and
- Contaminated land.

7.5.4 Other GEMPs which will address and mitigate (fully or in part) potential impacts on habitat interests include:

- Working in sensitive habitats;
- Soil management;

- Working in or near water;
- Watercourse crossings;
- Biosecurity on land;
- Restoration; and
- Bad weather.

7.5.5 The following SpPPs are held by the Applicant and are applicable to the Proposed Development's construction and operational phases:

- Bat species;
- Otter;
- Red squirred; and
- Pine marten.

7.5.6 The Applicant's GEMPs (**Appendix 3.2 GEMPs** and **Appendix 3.3 SpPPs**) will be implemented. A portion of these (working in sensitive habitats; restoration; and bad weather) will help mitigate any potential habitat degradation and fragmentation, beyond the minimum amount of clearance required by the Proposed Development. In particular, the GEMP for working in sensitive habitats sets out suitable access protocols to avoid and minimise disturbance to sensitive habitats such as the dwarf shrub heath and bog habitats located within the Proposed Development's footprint. The GEMPs will also help ensure pollution events, which may otherwise result in habitat degradation, are avoided or reasonably mitigated for.

7.5.7 The Applicant's Biosecurity (On Land) GEMP will be adhered to by all site staff throughout construction. Best practice control measures[78] will be followed to mitigate the spread of Ramorum Disease, caused by *Phytophthora ramorum* mould[79].

7.5.8 All additional mitigation will be captured in and delivered through the Construction Environmental Management Plan (CEMP).

7.5.9 Temporary line diversions are proposed as part of the Proposed Development, to facilitate the construction of replacement towers located along the existing OHL alignment. These temporary diversions are to be supported by wood poles (**Chapter 3: Description of the Proposed Development, Section 3.7**). These are anticipated to remain in situ for no more than 12 months. The precise location of the wood pole OHL will be micro-sited within the temporary line diversion's Limit of Deviation (LoD) to avoid sensitive receptors with relatively few ecological sensitivities at each extension.

Description of Effects

Habitat Loss

Habitats

7.5.10 Approximately 20.5 ha of woodland within the Proposed Development's footprint (including the operational corridor) is listed on the AWI (including ASNW; other woodlands on 'Roy' woodland sites; and LEPO). ASNW are considered irreplaceable, however, the removal of trees which would otherwise compromise the installation and operation of the proposed OHL alignment would be unlikely to threaten the long-term integrity of the wider ancient woodland network as the remaining woodland

[78] Forest Research (online). *Phytophthora* manual, Biosecurity measures. Available at: https://www.forestresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/ramorum-disease-phytophthora-ramorum/phytophthora-manual-3-biosecurity-measures/ [Accessed July 2022].
[79] Forest Research (online). Ramorum disease (*Phytophthora ramorum*). Available at: https://www.forestresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/ramorum-disease-phytophthora-ramorum/ [Accessed December 2022].

blocks, their soils and supporting environmental conditions would otherwise be retained. The effects to woodland in the AWI have therefore been assessed as: Adverse; Long-term; of Medium spatial magnitude; and Irreversible, but only at a Site level and therefore **Not Significant**.

7.5.11 Approximately 11.5 ha of the woodland occurring within the Proposed Development's footprint (including the operational corridor) is broadleaved, mixed and yew woodland. The felling of trees within these areas, to maintain the proposed OHL alignment's operational corridor, would result in the loss of the pertinent specimens. However, this would be unlikely to alter the function of the adjoining woodland as these trees and supporting environmental conditions would otherwise be retained. The effects to broadleaved, mixed and yew woodland have therefore been assessed as: adverse; long-term; of low spatial magnitude; and irreversible; at a Site level and therefore **Not Significant.**

7.5.12 Approximately 2 ha of dwarf shrub heath habitats occur within the Proposed Development's footprint (excluding the operational corridor). Construction of the Proposed Development's OHL towers within these areas would result in an irreversible habitat loss within the footprint of the tower foundations and associated construction working areas. Foundation types and designs for each tower will be confirmed following detailed geotechnical investigation at each tower position. An outline of the approach to the foundation sizes and construction methods is detailed in **Chapter 3: Description of the Proposed Development, Section 3.7**. However, the foundation type employed is unlikely to alter the function of the adjoining, retained dwarf shrub heath habitats as any physical alterations are limited to the foundation base and supporting environmental conditions would otherwise be retained. The effects to dwarf shrub heath habitats have therefore been assessed as: adverse; long-term; of low spatial magnitude; at a Site level and therefore **Not Significant.**

7.5.13 Whilst not considered an IEF, some areas of the felled coniferous plantation areas may receive a **Not Significant**, reversible; long-term; beneficial residual effect of low spatial magnitude at the Site level within the Proposed Development's operational corridor, where heath is successfully established in place of the felled conifer trees.

Protected Species

7.5.14 The impacts and effects of habitat loss to the following species are the same, and thus they have been discussed together. Felling impacts would result in an irreversible loss of foraging and/or commuting habitat for species with an affinity to such habitats including: bats; pine marten; and red squirrel. Riparian mammals, including otters, would also be subject to the same irreversible loss where felling occurs along watercourses. The combined woodland habitats comprise approximately 55 % of the Proposed Development's footprint (including the operational corridor). Therefore, other than the loss of tree species within the proposed OHL alignment's footprint, the adjacent woodland sections would be retained. The effect of the loss of foraging and/or commuting habitat for protected species has therefore been assessed as: adverse; long-term; of medium spatial magnitude; but only at a Site level and therefore **Not Significant.**

7.5.15 In some places, the removal of individual trees; clearing of individual trees; or partial woodland clearance, within predominantly coniferous plantation woodland; may open areas for colonisation by a more diverse range of plants which in turn may provide a broader range of foraging opportunities for locally occurring species. The effect of the change in foraging habitat diversity for protected species has therefore been assessed as: beneficial; long-term; of low spatial magnitude; and irreversible, at a Site level and therefore **Not Significant.**

7.5.16 The loss of species' resting sites due to habitat loss (e.g. bat roosts) is addressed separately (**Loss of, Obstruction of, or Disturbance to Species' Resting Sites**).

Habitat Degradation and Fragmentation

Habitats

7.5.17 Temporary works and access routes requiring trackway, working platforms and site compounds are expected to result in short-term damage and/or degradation of heath habitats. The specific extent of this temporary damage is unknown due to a lack of information on temporary infrastructure and earthwork scope being dependent on the site conditions and levels during construction. The extent of the habitats considered for this chapter's assessment are summarised in **Section 7.2**, **Extent of the Study Area**. However, this effect is expected to be adverse; short-term; of low spatial magnitude; and reversible; at a Site level and therefore **Not Significant**.

7.5.18 Invasive non-native plant species, identified in both terrestrial and riparian habitats, may spread further if interfered with during construction works. Whilst not considered an IEF, movement of construction traffic through areas of coniferous plantation has the potential to cause the spread to and/or from affected trees, which may have a detrimental effect on susceptible species, such as larch. Further spread of invasive non-native species or Ramorum disease would result in an adverse; reversible; medium-term effect; of low spatial magnitude; at a Site level and therefore **Not Significant**.

Protected Species

7.5.19 Temporary access routes would be unlikely to cause fragmentation of territories used by protected species, due to their limited anticipated width and short-term presence (**Chapter 3: Description of the Proposed Development, Section 3.7**).

7.5.20 The effects of habitat degradation and fragmentation to the arboreal IEF protected species - pine marten, red squirrel and bats - are the same, and thus they have been discussed together. The tree felling requirements to maintain the proposed OHL alignment's operational corridor would result in irreversible fragmentation of woodland habitat resources for these arboreal protected species. However, the creation of the new operational corridor through areas of previous wooded habitat would create a new edge habitat commuting routes for bat species and other terrestrial mammals, offering a sheltered edge and foraging resource. Additionally, the sequential development of scrub, shrub and heath habitats within these previous woodland areas (both coniferous plantations and broadleaved, mixed and yew woodland) would provide alternative cover, foraging and habitat connectivity opportunities for species traversing the operational corridor. The resulting effect would be adverse; long-term; of low spatial magnitude; at a Site level and therefore **Not Significant.**

Killing of, and Injury to Species

Protected Species

7.5.21 This section considers the protected species IEFs targeted within this chapter. Specifically: otter; bat species; pine marten; and red squirrel. The impacts and effects of the killing of, and injury to these species are the same, and thus they have been discussed together.

7.5.22 There is potential for incidental killing of, or injury to, these protected species through general construction activities (e.g. through accidental vehicle collision or entrapment).

7.5.23 Felling trees with undetected bat roosts could result in the killing of or injury to bats occupying the roosts. Similarly, the felling of undetected red squirrel dreys or pine marten tree den sites could result in the killing of or injury to the species occupying them. Due to the surveys undertaken to date and the above design solutions, the number of such potential occurrences are considered to be low, and thus of a Site level. Such impacts would require development licences from NatureScot for the pertinent species, prior to the Proposed Development commencing. However, should the impacts occur, they

are not predicted to adversely affect the IEF species' conservation integrity. Effects associated with mortality or injury of protected species would be adverse; long-term; of low spatial magnitude; and irreversible and **Not Significant**.

Loss of, Obstruction of, or Disturbance to Species' Resting Sites

Protected Species

7.5.24 This section considers the protected species IEFs targeted within this chapter. Specifically: otter; bat species; pine marten; and red squirrel. In the absence of information on the location of temporary infrastructure, including site compounds, there is potential for these structures to obstruct, damage or destroy resting sites used by these species.

7.5.25 Riparian mammals (otters) and their resting sites are not anticipated to be disturbed during works associated with the Proposed Development based on limited evidence of their presence in combination with standoff distances set out in the SpPPs.

7.5.26 Felling required to create the safe operational corridor has the potential to result in the loss of bat roosts where they occur within trees subject to felling. Furthermore, roosts located in retained trees adjacent to areas subject to felling may be indirectly affected by disturbance from the felling works or from permanent changes to their immediate surrounding habitat (i.e. exposing the roost) causing roost abandonment.

7.5.27 Where resting sites associated with protected arboreal IEFs (bats, pine martens and red squirrel) occur within an area requiring felling to create an operational corridor for the proposed OHL alignment, it is assumed that there would be no satisfactory alternative to retain these resting sites.

7.5.28 A low proportion of the habitats within the proposed OHL alignment's operational corridor is considered to provide moderate or high suitability to support roosting bat species (**Appendix 7.3: Protected Species Data**). Therefore, whilst the specific number of tree roosts subject to felling is unknown at this stage, it is considered likely that a relatively low proportion of roosts could be affected. Upon application of the Applicant's embedded SpPP measures, the effects associated with the loss of; obstruction of; or disturbance to bat roosts would be of low spatial magnitude based on the percentage of woodland of moderate and high suitability; and short-term. Compensatory roosts may take up to five years to become occupied, if at all[80]. However local populations of bats are likely to use multiple other opportunities for roosting based upon their roost switching behaviour[81] such that the loss of a single roost site may be of reduced effect (depending on the type of roost). Therefore, following the successful application of the SpPP measures, the effect on bats is anticipated to be medium term; adverse and reversible, at the Site level and therefore **Not Significant**.

7.5.29 The impacts and effects of the loss of, obstruction of, or disturbance to other protected species identified as IEFs (and their resting sites) (otter, pine marten and red squirrel) are the same, and thus they have been discussed together. A number of potential squirrel drey have been identified, with none confirmed as being occupied by red squirrels at the time of survey. However, frequent visual observations of red squirrels, as well as squirrel foraging, indicate that undetected or newly established dreys could occur in areas of mixed woodland within the Proposed Development's footprint, which could be lost or disturbed. Similarly, a number of potentially suitable pine marten denning areas were identified, with no evidence of current use at the time of survey. However, the potential exists for felling to result in the loss of, or disturbance to, undetected or newly established den sites. Following the

[80] Conservation Evidence (online). Bat Conservation, Provide bat boxes for roosting bats. Available at: https://www.conservationevidence.com/actions/1024 [Accessed December 2022].
[81] Bat Tree Habitat Key (2019). Bat Roosts in Trees: A guide to identification and assessment for tree-care and ecology professionals. Pelagic Publishing.

successful application of the SpPP measures, the effect would be adverse; short-term; of low spatial magnitude; and reversible; at the Site level and therefore **Not Significant**.

Mitigation During Construction

7.5.30 BD1: A portion of felled tree stems, limbs and brash will be retained in piles within the operational corridor (subject to landowner agreement) to help mitigate the loss of habitat connectivity for small mammals; and to create habitat resources for invertebrates; reptiles; and amphibians. This, in turn, will help provide new foraging opportunities for protected species such as pine marten and bats due to a potential greater abundance in their prey species.

7.5.31 BD2: Invasive non-native species will be demarcated by the ECoW and treated by the Principal Contractor or their appointed agent(s) to prevent further spread during the construction period. No works will occur within at least 7 m of identified invasive non-native plant species to prevent further spread[82].

Residual Effect

7.5.32 Following implementation of the mitigation during construction, the significance of residual effects will remain as described in the initial assessment, i.e. **Not Significant** for all IEFs. However, the mitigation measures will further reduce the magnitude of effect for protected species and invasive non-native species. The residual effect is considered to be of Site level importance and therefore **Not Significant**.

Cumulative Effects

7.5.33 Projects identified for a cumulative assessment of effects are related to the Proposed Development, however are being considered under separate consenting regimes; namely the 'Loch Long Crossing' and 'Decommissioning of the Existing Dunoon Substation to Loch Long OHL'. These projects are predicted to use the same temporary access tracks and working areas, where applicable.

Loch Long Crossing

7.5.34 This project is proposed to comprise the replacement or reinforcement of two towers on either side of Loch Long (Towers 12 and 15) and the restringing of new conductors and earth wires. The terrestrial habitats within the vicinity of these towers and their access tracks are expected to largely coincide with the Proposed Development's Survey Area have the potential to support or contain the terrestrial IEF's assessed within this EcIA.

7.5.35 Mitigation detailed in this EcIA and the Applicant's SpPPs; GEMPs; and CEMP are anticipated to significantly reduce the likelihood of direct and indirect impacts on the EcIA's IEFs and, being a related project to the Proposed Development, it is understood that all mitigation detailed in relation to the terrestrial IEFs (such as riparian and arboreal mammals) would also apply to the Loch Long Crossing project, where relevant. Due to these factors, it is considered cumulative effects on the Proposed Development's IEFs would result in effects of Site level importance and are therefore **Not Significant**.

Decommissioning of the Existing Dunoon Substation to Loch Long OHL

7.5.36 This project is proposed to comprise the removal of the existing OHL alignment. As a result, the current tree maintenance/clearance activities within the existing OHL operational corridor would cease. A lesser amount of habitat loss, degradation or fragmentation is anticipated from this project. The redundant operational corridor has the potential to promote the establishment of more diverse native habitats, either through natural regeneration or direct action from the landowners. This also has the potential to

[82] Environment Agency (2013). Managing Japanese knotweed on development sites. Available at: https://www.gov.uk/government/publications/japanese-knotweed-managing-on-development-sites

improve habitat connectivity in these regions. As the existing OHL alignment is located in close proximity to the proposed OHL alignment, the indirect impacts and effects of this project are anticipated to be similar to, or less than, those associated with the Proposed Development. The terrestrial habitats along the proposed OHL alignment largely coincide with the Proposed Development's Survey Area have the potential to support or contain the terrestrial IEF's assessed within this EcIA.

7.5.37 It is understood that all relevant mitigation in relation to the Proposed Development would apply to this project and would be equally effective. Due to these factors, it is considered cumulative effects on the Proposed Development's IEFs would result in effects of Site level importance and are therefore **Not significant**.

7.6 Summary

7.6.1 The following Important Ecological Features (IEFs) have been identified:

- Habitats:
  - ancient woodland;
  - broadleaved mixed, and yew woodland; and
  - dwarf shrub heath.
- Species:
  - otter;
  - bat species;
  - pine marten; and
  - red squirrel.

7.6.2 This chapter has considered how, in the absence of mitigation, the Proposed Development's construction phase would affect the above IEFs by: habitat loss; degradation and fragmentation; species mortality and injury; and the loss of, obstruction of, or disturbance to species and their resting sites.

7.6.3 Through the successful application of embedded and industry-standard mitigations (including the Applicant's GEMPs and SpPPs), and additional (secondary) mitigations identified through this EcIA (summarised in **Table 7-5**); this chapter concludes that the Proposed Development would not result in a residual significant effect on any sensitive ecology and nature conservation receptors.

Table 7-5 – Summary of additional ecology and nature conservation mitigations

Ref.	Mitigation
BD1	A portion of felled tree stems, limbs and brash will be retained in piles within the operational corridor (subject to landowner agreement) to help mitigate the loss of habitat connectivity for small mammals; and to create habitat resources for invertebrates; reptiles; and amphibians. This, in turn, will help provide new foraging opportunities for protected species such as pine marten and bats due to a potential greater abundance in their prey species.
BD2	Invasive non-native species will be demarcated by the ECoW and treated by the Principal Contractor or their appointed agent(s) to prevent further spread during the construction period. No works will occur within at least 7 m of identified invasive non-native plant species to prevent further spread.

8. ORNITHOLOGY

8.1 Introduction

8.1.1 This chapter presents the assessment of the potential for effects on ornithology resulting from the Proposed Development. This chapter (and its associated Figures and Appendices) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report (Chapter 1-5).

8.1.2 This chapter is accompanied by the following appendix:

- Appendix 8.1 Ornithology Baseline Report.
  - Figure 8.1.1 – Ornithology survey areas.
  - Figure 8.1.2 – Non-breeding season vantage point light activity survey viewsheds.
  - Figure 8.1.3 – Breeding season vantage point light activity survey viewsheds.
  - Figure 8.1.4 – Confidential desk study records.
  - Figure 8.1.5 – Non-breeding season flight activity survey results.
  - Figure 8.1.6 – Breeding season flight activity survey results.
  - Figure 8.1.7 – Moorland breeding bird survey territories.
  - Figure 8.1.8 – Black grouse survey results.
  - Figure 8.1.9 – Winter walkover survey results.

8.1.3 All species' scientific names are provided in **Appendix 8.1 Ornithology Baseline Report** and are therefore not repeated in this chapter.

8.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

8.2.1 An EIA Scoping Report was submitted in May 2022, which outlined the scope of this Ornithological Impact Assessment (OIA) based on the available baseline data at the time (see **Appendix 4.1: EIA Scoping Report**). The scope was also informed by extensive consultation undertaken to inform baseline data requirements with responses from stakeholders incorporated into the OIA where applicable.

8.2.2 This chapter focusses on the effects of the construction and operational phase of the Proposed Development upon Important Ornithological Features (IOF) aligning with EcIA Guidelines from the Chartered Institute of Ecology and Environmental Management (hereafter the 'CIEEM EcIA Guidelines') (CIEEM, 2018)[83].

8.2.3 This OIA has been prepared with reference to the applicable legislative framework and national and local planning policy; these are outlined in **Appendix 7.1: Biodiversity Legislation and Planning Policy** of this EIA Report.

8.2.4 Guidance for the assessments set out by CIEEM are as follows:

- CIEEM Guidelines for Preliminary Ecological Appraisal[84]; and
- CIEEM EcIA Guidelines[83].

[83] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester. Available online at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf (Accessed November 2021).
[84] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

8.2.5 This assessment was undertaken following guidance produced by NatureScot (formally Scottish Natural Heritage (SNH)) on the assessment of the impacts of powerlines on birds (SNH, 2016)[85].

8.2.6 The baseline surveys completed to inform this OIA have been carried out in accordance with good practice survey guidelines (SNH, 2017)[86] and are referenced where applicable in the Baseline Data Collection section.

Extent of the Site and Study Area

8.2.7 The site of the Proposed Development is defined as the proposed OHL alignment plus a 50 m horizontal Limit of Deviation (LoD) either side and the extent of all permanent and temporary access and construction areas (the Site). Where relevant reference is made to the existing 132 kV OHL that runs parallel with the proposed OHL alignment along most of its length (the existing OHL alignment).

8.2.8 Distinct study areas have been established for the desk-based data review exercise and field surveys, to reflect the different elements of the Proposed Development, ornithological sensitivities and extent of the Proposed Development's Ecological Zone of Influence (EZoI). The CIEEM EcIA Guidelines define the EZoI as the area over which ecological features may be subject to significant effects as a result of the Proposed Development; this could extend beyond the locality of the Proposed Development itself.

8.2.9 Surveys and desk study to inform the assessment were undertaken based on the preferred route as confirmed in October 2020 ('Preferred Route'). Surveys of the Preferred Route and additional buffers to a maximum of 2 km from the Preferred Route (the Survey Area) were undertaken. The buffers varied in extent depending on the ornithological receptors under consideration. Survey areas were determined based on pertinent guidance (SNH, 2017)[86] and from data gathered for the desk study indicating which sensitive species were likely to occur.

8.2.10 The following survey area extents are applicable to this assessment:

- flight activity surveys: targeted areas of the Preferred Route;
- moorland breeding bird surveys and winter walkover survey: Preferred Route plus 500 m buffer;
- lekking black grouse surveys: Preferred Route plus 1.5 km buffer; and
- scarce breeding bird surveys: Preferred Route plus 2 km buffer.

8.2.11 For the desk study the Study Area extended up to 6 km from the Site for records of golden eagle and white-tailed eagle and up to 20 km from the Site for European or Internationally designated sites with goose qualifying interest (as goose foraging range can extend up to 20 km from roost sites in SPAs).

Consultation Undertaken to Date

8.2.12 To ensure a comprehensive understanding of the potential ornithological issues associated with the Site and inform survey methodology and assessment, various stakeholders were contacted for information and comment. **Table 8-1** below details the consultees, their responses and any subsequent actions if relevant.

Table 8-1 Consultation Responses

Organisation	Type of Consultation	Response	How Response has been Considered
NatureScot	Request for comment on ornithology baseline data	NatureScot were satisfied that the bird surveys were appropriate. They stated that Vantage Points should be chosen to allow	Four non-breeding season flight activity Vantage Points were selected to

[85] SNH (2016). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds – Guidance. Version 1.
[86] SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2.

Organisation	Type of Consultation	Response	How Response has been Considered
	gathering methodology via letter; October 2020.	detection of flight activity at power line height.	achieve adequate coverage of the proposed OHL.
		NatureScot stated that the proposed route passes through the peripheral part of a known golden eagle territory.	Confidential golden eagle range report requested from NatureScot and incorporated into baseline information.
		NatureScot responded that they do not hold any ornithological data relevant to the project and recommended that WSP contact the RSPB, Argyll Raptor Study Group (ARSG) and Argyll and Bute Black Grouse Recovery Project (ABBGRP).	RSPB, ARSG and Argyll and Central Scotland Black Grouse and Capercaillie Study Group (CSBGCSG)[87] were contacted for data relevant to the Proposed Development and data was supplied.
		NatureScot requested clarification on how survey plans would be revised if the need for non-breeding surveys was established during initial winter walkover surveys.	Targeted flight activity surveys would be considered if notable records, e.g. golden eagle flights, were recorded during the winter walkover surveys. Non-breeding surveys were subsequently commenced (see below entry).
	Alignment Consultation; September 2021.	NatureScot referred to their guidance on the use of helicopters and aircraft in relation to disturbance risk for WCA Schedule 1-listed species.	NatureScot guidance[88] was followed when undertaking the assessment of effects of helicopter flights on WCA Schedule 1 species.
	Ornithology baseline data gathering methodology via meeting and email: 7th to the 16th December 2021.	NatureScot suggested that winter flight activity surveys should be undertaken to cover the section of the route as it passes through the identified golden eagle territory.	Non-breeding flight activity surveys were commenced from two VPs covering the golden eagle range.
		Nature Scot provided comment on the potential suitability of the Natural Research Ltd. golden eagle tracking data to inform the OIA. They stated that one year of tracking data is required, ideally two years. Data from Natural Research was only collected over nine months.	Natural Research Ltd were contacted to enquire about purchasing satellite tag data to inform the assessment and a quote was provided. The purchase was not progressed as data was not deemed a requirement to inform the assessment due to the availability of extensive survey data

[87] CSBGCSG were contacted as no contemporary contact information was located for the ABBGRP (the project ended in 2012)
[88] SNH (2015). The use of helicopters and aircraft in relation to disturbance risks to Schedule 1 and 1A raptors and wider Schedule 1 species.

Organisation	Type of Consultation	Response	How Response has been Considered
		NatureScot provided information on an additional golden eagle territory that the proposed OHL crosses. NatureScot indicated that this area should also be surveyed during the non-breeding flight activity surveys.	Non-breeding season flight activity surveys commenced from an additional VP (three in total).
		NatureScot stated that the proposed approach for non-breeding flight activity surveys was appropriate.	No response required.
	Scoping response, June 2022.	Content that the impacts on ornithology will be satisfactorily addressed within the scope of the EIA report. NatureScot were content that the proposed realignment of the northern section will minimise impacts on sensitive bird species.	No change to EIA scope.
	Request for Golden Eagle Topography model (GET) data from relevant territories, August 2022	NatureScot provided GET maps and data for the relevant territories.	Data considered and incorporated into the assessment.
Royal Society for the Protection of Birds.	Data Request via email; November 2020 and June 2022.	RSPB provided records of rare and vulnerable species from within a maximum 6 km search area from the Route Corridor.	Data included in baseline to inform the OIA.
	Scoping response in relation in revised alignment, April 2022.	RSPB responded that their original response still stands in relation to the amended alignment.	NA
	Scoping response, June 2022.	RSPB stated that potential impacts on golden eagle, hen harrier, barn owl and black grouse should be adequately covered in the EIAR.	All species were covered in the assessment, including barn owl which was scoped out following further survey information.
		RSPB suggested that line markers should be considered to mitigate against potential collision impacts, particularly in relation to golden eagle.	No significant effects from collision were identified and therefore line markers were not required.
		For hen harrier and barn owl the RSPB advised that dialogue should be maintained with the Argyll Raptor Study Group for information about territories.	ARSG contacted for updated survey information in July 2022.
		RSPB stated that the Proposed Development traverses one black grouse Level 2 priority area and	Works will avoid leks within 750 m which is considered a more proportionate zone of influence based on available evidence and

Organisation	Type of Consultation	Response	How Response has been Considered
		two Level 3 priority areas[89] for this species. They advised that works do not take place within 1.5 km of leks during the lekking/ breeding season (March 1st to August 31st). RSPB also stated that any new stock/ deer fences should be marked to reduce collision risk for black grouse.	guidance[90]. Works will avoid the key lekking period of March to May inclusive.
		The EIAR should include a full survey, impact assessment and proposals for mitigation in relation to important habitats on site, particularly peatland.	Effects on habitats were adequately assessed based on the low likelihood of significant effects in relation to ornithology.
Central Scotland Black Grouse & Capercaillie Study Group (CSBGCSG)	Data Request via email; November 2020.	CSBGCSG provided records of black grouse within a 2 km search area from the Route Corridor.	Data included in baseline to inform the OIA.
Argyll Raptor Study Group (ARSG)	Data Request via email; November 2020 and June 2022.	ARSG provided records of rare and vulnerable species from within a maximum 6 km search area from the Route Corridor.	Data included in baseline to inform the OIA.
Natural Research Ltd.	Data Request via email; November 2020.	Natural Research Ltd. provided a quote to purchase golden eagle tracking data.	Requirement to use tracking data was reviewed following the completion of the flight activity surveys. As limited golden eagle flight activity was recorded during surveys undertaken for the Proposed Development use of tracking data to inform the OIA was not considered necessary to inform a robust and proportionate assessment.
Forestry and Land Scotland (FLS)	Data Request via email; November 2020.	FLS provided anecdotal information on ornithological sensitivities relevant to the site.	Information included in baseline to inform the assessment.

[89] Understood to refer to level of intervention (typically land management) required to restore/increase black grouse populations in distinct geographical areas.

[90] Goodship, N, M and Furness, R, W (2022). NatureScot Research Report 1283 - Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species

Method of Baseline Data Collation

Desktop Study

8.2.13 Freely downloadable datasets were searched for information on statutory and non-statutory designated sites within 2 km of the Site. This search was extended to 10 km for European sites[91] and to 20 km for European sites designated for wintering geese (based on a maximum foraging range of 20 km for pink-footed geese and greylag geese (SNH, 2016)[92]).

Data Requests

8.2.14 To help inform the ornithological survey programme and the OIA, a consultation exercise was undertaken to request records of protected and notable species of conservation concern. The following ornithological interest groups were consulted for any relevant data they may hold:

- NatureScot.
- The Royal Society for the Protection of Birds (RSPB).
- Central Scotland Black Grouse & Capercaillie Study Group (CSBGCSG) (RSPB affiliated study group).
- Argyll Raptor Study Group (ARSG).
- Forestry and Land Scotland (FLS).

Ornithology Surveys

8.2.15 Surveys were undertaken following standard industry guidance informed by the results of the desk study and consultation. Target Species were determined based on their presence in at least one of the following categories (as detailed in SNH (2017)[86]) (hereafter referred to as 'Conservation Categories'):

- birds listed on Annex I of the EU Birds Directive (Annex I);
- birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (Schedule 1);
- birds that are qualifying features of European, or international, designated sites of nature conservation importance for birds (i.e. SPAs and Ramsar Sites) in proximity to, or potentially connected to the Site;
- birds listed on the Scottish Biodiversity List (SBL[93]);
- red-listed Birds of Conservation Concern (BoCC)[94]; and
- listed as a priority species on the Argyll and Bute Local Biodiversity Action Plan (LBAP)[95].

8.2.16 Other species not on any of the above lists but considered potentially vulnerable to the effects of OHL developments were also included as Target Species (e.g. common snipe). Passerines (songbirds), as a group, were not considered in detail regardless of conservation status as they are not considered to be vulnerable to impacts from OHL[85].

8.2.17 Full details of the survey methods used to inform this assessment are presented in **Appendix 8.1 - Ornithology Baseline Report**. An overview of the survey methods is provided below with survey areas shown in **Volume 3, Figure 8.1.1 – Ornithology Survey Areas**:

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[91] European sites are a network of sites across the European Union designated for rare and threatened species, and rare natural habitat types, protected in their own right originally under the Birds Directive 2009/147/EC and the Habitats Directive 92/43/EEC and subsequently under the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021.
[92] SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs) – Guidance, Version 3. SNH, Battleby.
[93] NatureScot (2022). Scottish Biodiversity List. Available online at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list (Accessed 2 June 2022).
[94] 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: 723-747
[95] Argyll and Bute Council (online). The Argyll and Bute Local Biodiversity Action Plan 2010 – 2015. Available at: https://www.argyll-bute.gov.uk/sites/default/files/Unknown/AandB%20BAP%20Draft.pdf. (Accessed June 2022).

- **Flight activity surveys** - surveys undertaken following SNH (2017)[86]. Surveys were undertaken from three flight activity survey Vantage Points (VP) over the non-breeding season (December 2020 to February 2021 inclusive) and from four VPs over the breeding season (March to August 2021). Thirty-six hours of survey effort was undertaken from each VP during each season. Flights were determined to be at Potential Risk of Collision (PRC) if they crossed the proposed OHL alignment plus 50 m (the Collision Risk Area (CRA)) at heights of between 10 m and 50 m above ground level.
- **Moorland breeding bird surveys** - methods followed a modified version of the Brown and Shepherd methodology (Brown and Shepherd, 1993)[96] as summarised in Gilbert et al. (1998)[97]. Habitats surveyed comprised upland moorland areas and lowland agricultural areas with the survey designed to capture activity of breeding waders and waterfowl. Four survey visits were undertaken across an area encompassing the Route Corridor plus a 500 m buffer during the period late April to mid-July 2021 (inclusive).
- **Scarce breeding bird surveys** - methodology followed Hardey et al. (2013)[98] and Gilbert et al. (1998)[97] with surveys focused on recording scarce breeding birds, principally raptors but also potentially waterbirds and waders (e.g. those listed on Schedule 1 of the WCA or Annex I of the EU Birds Directive). Four survey visits were undertaken across an area encompassing the Route Corridor plus a 2 km buffer during the period April to August 2021 (inclusive).
- **Lekking black grouse surveys** - following methodology described in Gilbert et al. (1998)[97]. Two survey visits were undertaken across an area encompassing the Route Corridor plus a 1.5 km buffer during April and May 2021.
- **Winter walkover surveys** - three survey visits were undertaken across an area encompassing the Route Corridor plus a 500 m buffer between late November 2020 and early March 2021.

Assessment Methodology

8.2.18 The assessment focuses on receptors of greatest nature conservation value (defined as IOFs), as supported by CIEEM EcIA Guidelines. To inform the scoping of relevant IOFs, each has been evaluated in line with the criteria presented in **Table 8-2**.

8.2.19 Taking the above factors into account, a level of importance is assigned to each ornithological feature using a geographical frame of reference as set out below. For the purposes of this assessment, the nature conservation values are interpreted as follows: International = Europe, National = Scotland, Regional = Argyll West and Islands Natural Heritage Zone (NHZ)[99], and Local = the Cowal Peninsula.

Table 8-2 Ornithological Value Criteria

Nature Conservation value	Criteria / examples
International	An internationally designated site as designated under the EU Birds Directive (i.e. SPA or Ramsar site). Qualifying features connected to a nearby SPA/Ramsar site, or an area meeting the criteria for an international designation. A regularly occurring, nationally important population of any species listed under Annex I of the EU Birds Directive, or regularly occurring migratory species connected to an SPA designated for this species under the EU Birds Directive. Non-statutory designated Important Bird Areas (IBAs), designated by Bird Life International are also considered to be of international importance.

[96] Brown, A.F. and Shepherd, K, B. (1993). A method for censusing upland breeding waders. Bird Study, 40:3 189-195.
[97] Gilbert, G., Gibbons D.W., and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.
[98] Hardey et al. (2013). Raptors. A Field Guide for Surveys and Monitoring – Third Edition. The Stationery Office.
[99] NatureScot deem Natural Heritage Zones the appropriate biogeographical zones with which to assess regional impacts on bird populations (outwith designated sites).

Nature Conservation value	Criteria / examples
National	A nationally designated site with bird interests, or area meeting the criteria for national level designations (e.g. SSSI or NNR). A regularly occurring, nationally important population of any species listed under Schedule 1 of the WCA or Annex I of the EU Birds Directive, or species represented on the red list of BoCC or SBL. A nationally rare species (<300 breeding pairs in the UK).
Regional	A regularly occurring, regionally important population of any species listed under Schedule 1 of the WCA or Annex I of the EU Birds Directive or are a red listed BoCC. Sites with bird interests which exceed the local authority-level designations but fall short of SSSI selection guidelines. A species for which a significant proportion (>1 %) of the regional population is found within the Site.
Local	Sites and species of local conservation concern such as LNRs and LNCSs with bird interests. Other species of conservation concern, including species listed as a priority species on the LBAP.

8.2.20 Sites and species/ species groups that are of less than Local importance under the above geographical frame of reference are not considered in detail in this assessment (hereafter defined as having Site level importance).

Determining Magnitude of Change and Sensitivity of Receptors

8.2.21 Aligning with the CIEEM EcIA Guidelines but remaining consistent with the wider EIA Report, the terms 'sensitive receptor' and 'IOF' will be used synonymously throughout this chapter.

8.2.22 Impact magnitude refers to changes in the extent and integrity of an ecological receptor. A definition of ecological 'integrity' has been approved by the European Commission[100]. It states that '*The 'integrity of the site' can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/ or populations of species for which the site is designated*'. Although this definition is used specifically regarding European designated sites, it is applied here to wider-countryside habitats as well as the integrity of species' populations.

8.2.23 Detailed consideration of impact magnitude is a standard component of EcIA. It is incorporated to succinctly describe the scale of individual impacts. In line with the CIEEM EcIA Guidelines, for each IOF, the impacts of construction and operational aspects of the Proposed Development and their resultant effects on IOFs are considered in terms of their:

- Beneficial (positive) or adverse (negative) nature;
- Extent;
- Magnitude;
- Duration;
- Frequency and timing; and
- Reversibility.

8.2.24 As defined above, the magnitude of change considers more than the scale of change, but also its nature. As described in **Paragraph 8.2.20**, only impacts on ecological features of Local importance or above are assessed in this EcIA. As described within the CIEEM EcIA Guidelines, "*For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for*

[100] European Commission (2018). Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

'important ecological features' or for biodiversity in general". Once the nature of an impact is determined, a geographical scale is assigned to it following the same frame of reference as set out in **Table 8-2**. Again, only impacts of Local level and above have the potential to be considered significant.

Limitations and Assumptions

8.2.25 The proposed OHL alignment at the northern section passes to the south of the Preferred Route Corridor. As such the view arc for VP1 (used during both the non-breeding and breeding season flight activity surveys) does not cover the majority of the proposed OHL alignment in this section (approximately 2.5 km of the proposed OHL alignment is 'behind' the VP). The proposed OHL alignment in this section, however, passes through conifer planation woodland that is suboptimal habitat for key Target Species identified during the desk study. As such coverage of this section of the proposed OHL alignment is not a priority as similarly the woodland areas at the southern end of the proposed OHL alignment were not covered by flight activity surveys. The lack of coverage of the northern section of the proposed OHL alignment by flight activity surveys is therefore not deemed to significantly affect the result of the OIA. Results from VP1 are nonetheless still provided to further inform the ornithology baseline in the wider Survey Area.

8.2.26 Similarly, the proposed OHL alignment at the northern section extends outwith the moorland breeding bird/ winter walkover survey area to the east and the survey areas for black grouse and scarce breeding birds do not cover the full 1.5 km and 2 km buffers respectively from the proposed OHL alignment in this area. The north-eastern section of the Survey Area, however, encompasses conifer plantation, Loch Long and land on the opposite side of Loch Long. As conifer plantation does not support moorland breeding birds and birds occupying land to the opposite side of Loch Long are unlikely to be affected by the Proposed Development this therefore is not deemed to significantly affect the result of the OIA.

8.3 Baseline Conditions

8.3.1 A detailed account of the baseline ornithological conditions is presented in **Volume 4, Technical Appendix 8.1: Ornithology Baseline Report**. A concise summary is provided in this section.

Desktop Study

Designated Sites

8.3.2 Two designated sites with ornithological interest features were located within 2 km of the Site, namely the Holy Loch Local Nature Reserve (LNR) and Local Nature Conservation Site (LNCS), notable for estuarine habitats that supports wintering bird assemblages. The designated sites are located approximately 790 m east of the central section of the Site. No European sites were identified within the search parameters detailed in Paragraph 8.2.13. The location of the designated sites is shown in **Figure 7.2.2 - 2 km Statutory Natural Heritage Designations and Figure 7.2.3 - 1 km Non-Statutory Natural Heritage Designations.**

Data Requests

8.3.3 Records of Target Species provided by the consultees are described below and shown on **Volume 3, Figure 8.1.4**.

NatureScot

8.3.4 NatureScot provided reports for two separate golden eagle ranges that overlap with the proposed OHL alignment (Austin et al. 2015[101, 102]). The proposed OHL alignment crosses the south-eastern extent of territories G/ A22 and G/ C1 between Towers 1 and 20 and 21 and 29 respectively Territory extents and use as predicted by the Predicted Aquila Territories (PAT) model, however, are considered to have key limitations based on information subsequently gathered from satellite tagging golden eagles. The predicted range extents, however, are based on the location of golden eagle breeding sites. Therefore, while the exact territory extents and predicted use of territories derived from the PAT model is not reliable it is assumed, for the purposes of this assessment, that the proposed OHL alignment passes through two golden eagle territories (based on known location of breeding sites and proximity to the proposed OHL alignment).

8.3.5 NatureScot also provided results from a recent Golden Eagle Topography model (GET) run across the entire Scottish land mass (including islands). The GET model predicts the air space use of golden eagles based on topography alone[103]. The model is based on GPS telemetry readings gained from tagged juvenile eagles in Scotland. The GET model is considered superior to the PAT model at predicting space use, for both dispersing juveniles and territorial adults[104]. The GET model predicts space use based on a standardised preference index (SPI) score ranging from the lowest predicted use, SPI 1, to the highest predicted use SPI 10. SPI scores of less than 6 would mean that the corresponding area is likely to be rarely used by eagles. The GET model predicted a high level of use (SPI scores of 8, 9 and 10) across much of the open upland habitats within the identified territories and along and adjacent to the proposed OHL alignment. The GET model does not predict territorial extents for PAT territories G/ C1 and G/ A22 as an accurate prediction of territory extents is only possible by tracking territorial birds (e.g., with satellite tags). The GET model exhibiting SPI score of six and above is shown on **Volume 3, Figure 8.1.4**.

Royal Society for the Protection of Birds

8.3.6 Five records of black grouse (all males) were provided from three locations over 1 km from the Site.

Central Scotland Black Grouse & Capercaillie Study Group

8.3.7 Eleven records of black grouse were provided from five locations comprising 10 records of males and one of a female. Four of the locations are within 1 km of the proposed OHL alignment.

Argyll Raptor Study Group

8.3.8 Records of golden eagle, hen harrier, peregrine falcon and barn owl were provided:

- Golden eagle – four nest sites from three breeding sites were provided. The closest nest site to the Site was located approximately 1.2 km north-west and was occupied in 2022. All three breeding sites were located within 6 km of the Site.
- Hen harrier – four breeding sites monitored since 2015 were provided. Of these sites only two were recorded as confirmed breeding since 2015 (most recently in 2020). Both sites were over 1 km from the Site.

[101] Austin, S., Fielding, A. H. and Haworth, P. F (2015a). G/C1 Golden eagle range report – Natural Heritage Zone 14 "Argyll West and Islands". Scottish Natural Heritage Commissioned Report No. 827.
[102] Austin, S., Fielding, A. H. and Haworth, P. F (2015b). G/A22 Golden eagle range report – Natural Heritage Zone 14 "Argyll West and Islands". Scottish Natural Heritage Commissioned Report No. 859.
[103] Fielding, A, H., Haworth, P, F., Anderson, D., Benn, S., Dennis, R., Weston, E and Whitfield, A, P (2019). A simple topographical model to predict Golden Eagle Aquila chrysaetos space use during dispersal. IBIS, 162(2), 400-415
[104] NatureScot (2021). NatureScot statement on modelling to support the assessment of forestry and wind farm impacts on golden eagles. Available online: https://www.nature.scot/doc/naturescot-statement-modelling-support-assessment-forestry-and-wind-farm-impacts-golden-eagles. (Accessed June 2022).

- Peregrine falcon – a record of one nest site monitored in 2021 was provided. The breeding site was approximately 1.1 km west of the Site and was occupied in 2021.
- Barn owl – records from seven nest sites were provided with no dates or occupation history. Three records were located within 500 m of the Site at the southern end.

Forestry and Land Scotland

8.3.9 FLS provided high level information on the potential presence of a breeding pair of white-tailed eagle in the Ardgarten peninsula area and records of hen harrier but no evidence of breeding (no detailed location information provided).

Ornithology Surveys

8.3.10 A summary of the ornithology survey results is provided here with full details provided in **Volume 4, Technical Appendix 8.1 - Ornithology Baseline Report**.

Flight Activity Surveys

Non-Breeding Season

8.3.11 A total of eleven flights by five Target Species were recorded during the non-breeding flight activity surveys with one flight of golden eagle and one flight of black grouse recorded at PRC **Table 8-3** presents a summary of the flight activity results.

Table 8-3 Summary of non-breeding season flight activity survey results

Species	Total No. of Flights	Total Number of Birds	Cumulative Flight Duration (Seconds)	No. of Flights at PRC	No. of Birds at PRC	Cumulative Flight Duration at PRC
Golden eagle	6	7	726	1	1	10
Black grouse	2	6	33	1	3	3
Hen harrier	1	1	193	0	0	0
Peregrine falcon	1	1	24	0	0	0
Golden plover	1	1	175	0	0	0

Breeding Season

8.3.12 A total of 15 flights by three Target Species were recorded during the breeding season flight activity surveys with two flights of hen harrier and two flights of golden eagle recorded at PRC **Table 8-4** presents a summary of the flight activity survey results.

Table 8-4 Summary of breeding season flight activity survey results

Species	Total No. of Flights	Total Number of Birds	Cumulative Flight Duration (Seconds)	No. of Flights at PRC	No. of Birds at PRC	Cumulative Flight Duration at PRC
Hen harrier	11	11	1186	2	2	15
Golden eagle	3	4	689	2	2	44
Red kite	1	1	120	0	0	0

Moorland Breeding Bird Survey

8.3.13 The only breeding territories recorded during the moorland breeding bird survey were two common sandpiper territories along the River Eachaig. The territory centre points were located approximately

500 m north and 600 m south of the closest point of the Site respectively (access tracks that require upgrade). No territories were recorded in the open upland areas of the survey area.

Scarce Breeding Bird Survey

8.3.14 No breeding territories of scarce breeding birds were recorded. Observations of scarce breeding birds, including those recorded during the moorland breeding bird survey, are summarised below:

- golden eagle – a single adult in flight approximately 1.5 km west of the proposed OHL alignment;
- hen harrier – two records of individual hunting males in close proximity to the proposed OHL alignment in the northern and central sections; and
- osprey – flight by an individual bird over woodland at the southern end of the proposed OHL alignment.

Lekking Black Grouse Survey

8.3.15 The survey identified two black grouse leks, both occupied by single male birds, in the central section of the survey area. One lek was located directly adjacent to the proposed OHL alignment and the other approximately 1.2 km west of the proposed OHL alignment.

8.3.16 Additionally, records of black grouse, including lekking birds, were recorded during the flight activity, moorland breeding bird and winter walkover surveys. Records included a peak count of seven birds recorded in the northern section of the survey area.

Winter Walkover Survey

8.3.17 Eight target species were recorded during the winter walkover surveys including two records of golden eagle (**Table 8-5**). Many of the records were located along coastal areas on the periphery of the survey area.

Table 8-5 Summary of winter walkover results

Species	Peak Count per Month		
	December 2020	January 2021	February 2021
Golden eagle	2	0	1
Black grouse	8	4	0
Curlew	13	8	0
Oystercatcher	72	4	0
Redshank	6	1	0
Snipe	0	2	1
Mallard	13	0	0
Red grouse	0	6	1

Future Baseline

8.3.18 In the absence of the Proposed Development, the habitats and species identified directly in and around the Site are likely to continue to be present due to the continuation of existing land use practices e.g. commercial forestry and grazing/ agriculture. The woodland composition of the commercial forestry at the northern end of the proposed OHL alignment will likely change to native woodland for long-term retention under as part of FLS forestry management plans.

8.3.19 As outlined in **Table 8-6**, the range and population size of some species is stable or increasing (e.g. golden eagle) while the populations of some other species appear to be declining (e.g. black grouse). These trends are predicted to continue in the absence of the Proposed Development.

Sensitive Receptors

8.3.20 The species identified as IOFs are presented in **Table 8-6**, together with the justification for this evaluation. An Important Ornithological Feature (IOF) is a sensitive receptor that occurs within the EZoI (see Assessment Methodology) and which has been evaluated to be of Local nature conservation value or above. All the IOFs listed in **Table** 8-6 were scoped in during the EIA Scoping stage. Barn owl, scoped in during scoping stage was scoped out following the receipt of further survey information that indicated no evidence the Site and surrounding area is important for this species (see **Table 8-7**).

Table 8-6 Important ornithological features scoped in for further assessment

Feature	Nature Conservation Importance	Justification
Golden eagle	Regional	Golden eagle are a Schedule 1 and Annex I listed species with a national population of 508 breeding pairs (estimated from surveys undertaken in 2015) (Hayhow *et al*, 2017)[105]. The golden eagle population has increased in recent years from an estimated 442 pairs in 2003 (Wilson et al, 2015)[106]. The regional population, based on the Argyll West and Islands NHZ, was estimated at 44 breeding pairs in 2003. The updated national golden eagle survey undertaken in 2015 presented data on larger regions, of which southwest uplands and north England is relevant to the Site with an estimated population of 72 breeding pairs. This represents an increase from 69 breeding pairs across the same area from 2013. While no updated data for the Argyll West and Islands NHZ is available, based on the stable trends across a wider area of the country the regional population is assumed to remain approximately 44 breeding pairs. The proposed OHL alignment crosses an area encompassing the anticipated range extents of two known golden eagle breeding sites at the northern and central sections of the route (territories G/A22 and GC/1). While a third breeding site, Giant's Knowe, was located approximately 3 km south of the Site habitat within the southern section of the Site (within 6 km of the breeding site), is predominantly plantation woodland and lowland areas, both of which are of low suitability for golden eagle. It is assumed that sections of the proposed OHL alignment between Tower 1 and 20 and Tower 25 and 41 are used by territorial birds occupying G/A22 and GC/1 respectively. GET models predicted that most of the higher altitude upland habitat in these areas is likely to be used by golden eagles (with scores of 8, 9 or 10). No golden eagle nest sites were recorded during the scarce breeding bird surveys. A golden eagle nest site was provided by ARGS approximately 1.1 km north-east of the Site in territory G/A22 but no evidence of occupation was recorded during surveys in 2021. This nest site, however, was recorded as occupied in 2022 by the ARSG. Activity by golden eagle was recorded within both territories during surveys (three flights and two WWO observations in G/A22 and 6 flights in/adjacent to GC/1). Observations within G/A22 comprised displaying pairs, individual soaring adults and individual soaring juveniles. Observations within GC/1 comprised individual hunting or displaying adults. Observations are consistent with the classification of these areas as part of occupied golden eagle territories. Golden eagle is considered to be of regional level importance within the context of the Site. The site and surrounding area contain important habitat for two pairs of golden eagle (approximately 5 % of the regional population).

[105] Hayhow, D, B., Benn,S., Stevenson,A., Stirling-Aird. P,K & Eaton, M, A (2017) Status of Golden Eagle *Aquila chrysaetos* in Britain in 2015, Bird Study, 64:3, 281-294,

[106] Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504

Feature	Nature Conservation Importance	Justification
Hen harrier	Regional	Hen harrier are a Schedule 1 and Annex I listed species with a national population of 460 breeding pairs (based on surveys undertaken in 2016) (Wotton et al, 2018)[107]. This national population represents a non-significant decline from an estimated 505 pairs in 2010, a significant decline from 633 pairs in 2004 and non-significant decline from 471 pairs in 1998[108]. The NHZ population (based on 2010 surveys) was 125 breeding pairs. While no updated data on the Argyll West and Islands NHZ is provided no significant declines between 2010 and 2016 was noted for the wider West Highlands area. As such it is assumed that the regional population of hen harrier remains approximately 125 breeding pairs. Hen harrier are a red listed BoCC based on a 'historical decline' in the U.K breeding population (classified as species that have declined severely between 1800 and 1995 that have not recovered subsequently) and 'moderate decline' in breeding population over the last 25 years. This 'moderate decline' doesn't appear to have occurred across the Scottish population (based on an estimated 471 pairs in 1998 and 450 pairs in 2016). The Survey Area has supported breeding hen harrier in the recent past although no breeding sites were recorded during the surveys. ARSG provided locations of four breeding sites monitored since 2015 with evidence of confirmed breeding at two sites in different years (2016 and 2020). A total of 14 records of hunting or commuting males were recorded in the Survey Area with records indicative of an active breeding site in the wider area (males carrying food). Hen harrier are considered to be of regional level importance within the context of the Site. The Site and surrounding area supported breeding hen harrier in recent years and supported hunting males during surveys (multiple records of individual birds recorded).
Black Grouse	Regional	Black grouse are a red listed BoCC due to recent population declines. In 2005 the Scottish population was estimated at 3344 displaying males, a reduction from an estimated 4719 in 1995/ 1996 (Sim et al, 2008)[109]. This included a 49% reduction from the south-west Scotland region, within which the Site is located. Based on the 2005 data the regional population (Argyle West and Islands NHZ) was estimated at 67 displaying males (Wilson et al, 2015)[106]. Two lek sites, comprising single males, were recorded in the central area of the Survey Area. Additional records of black grouse, including a count of six male birds from two separate lek sites, were recorded during the winter walkover surveys. Records received from the RSPB and CSBGCSG indicate that black grouse have been present in the area for a number of years. Black grouse are considered to be of regional level importance within the context of the Site. The small population local to the Site is considered vulnerable to extirpation.

8.4 Issues Scoped Out

8.4.1 The CIEEM EcIA Guidelines state that the assessment process does not require consideration of effects on ecological features deemed to be below a predefined nature conservation importance threshold and where predicted effects are unlikely to occur. Therefore, an assessment of the effects upon features of

[107] Wotton,R,S., Bladwell, S., Mattingley,W., Morris,N,G., Raw, D., Ruddock, M., Stevenson, A & Eaton, M, A (2018) Status of the Hen Harrier *Circus cyaneus* in the UK and Isle of Man in 2016, Bird Study, 65:2, 145-160

[108] Sim, I, M, W., Dillon, I, A., Eaton, M, A., Etheridge, B., Lindley, P., Riley, H., Saunders, R., Sharpe, C & Tickner, M (2007) Status of the Hen Harrier Circus cyaneus in the UK and Isle of Man in 2004, and a comparison with the 1988/89 and 1998 surveys, Bird Study, 54:2, 256-267

[109] Sim, I, M, W., Eaton, M, A., Setchfield, R, P., Warren, P, K & Lindley, P (2008). Abundance of male Black Grouse Tetrao tetrix in Britain in 2005 and change since 1995–96. Bird Study, 55, 304-313.

Site level nature conservation importance, those which do not occur within the Proposed Development's EZoI, or where effects are unlikely to occur or be of negligible significance have been excluded from further assessment.

8.4.2 Construction impacts as a result of changes to water quality have been scoped out of this assessment. The construction works may result in changes to water quality as a result of the release of pollutants/ contaminants (e.g. fuel/ oil) or sediment into watercourses and waterbodies. Existing crossing points will be used to cross major watercourses (e.g. the River Eachaig) where possible and culverts or bridges will be installed where proposed construction access tracks cross watercourses. Construction of the Proposed Development will adhere to industry standard pollution prevention measures as detailed in **Appendix 3.2 – SHE Transmission plc General Environmental Management Plans (GEMP**) with all required mitigation measures also detailed in the CEMP. Following the implementation of these measures there will be no significant effects on water quality from the construction of the Proposed Development (**Chapter 10 - Hydrology, Hydrogeology, Geology and Soils**).

8.4.3 Construction effects of direct mortality to the eggs/ chicks or breeding birds has been scoped out of further assessment. Direct mortality could occur if eggs/ chicks are crushed when installing access tracks/ work areas or by the movement of plant. It is assumed that the mitigation hierarchy detailed in the Bird Species Protection Plan (SpPP) (**Appendix 3.3 - SSEN Transmission SpPPs**) (see **Paragraph 8.6.2**), including pre-construction surveys and avoiding active nests (under the supervision of an Ecological Clerk of Works (ECoW)) will significantly reduce the potential for this impact. Indirect mortality of eggs/ chicks as a result of disturbance is considered further as this impact can occur over a much wider EZoI and is inherently more difficult to identify and mitigate (although this impact is also considered in the Bird SpPP at a high level).

8.4.4 Direct mortality due to collision with temporary OHL diversions installed during the construction stage has been scoped out of further assessment. To facilitate the construction of replacement towers along sections of the proposed OHL alignment in close proximity to the existing OHL alignment, temporary diversions of the existing OHL will be required. Temporary diversions will be required in two locations, Puck's Glen and Glen Finart, both of which are low lying glens not used by IOFs identified in the Study Area. The temporary diversions will be in place for a maximum of 12 months and the majority will be located within 100 m of the existing OHL. Based on the above it is not considered that the temporary diversions will present a collision risk to birds during construction.

8.4.5 All operational impacts, with the exception of collision mortality and displacement, have been scoped out. No operational activities are associated with the Proposed Development with the exception of statutory ground clearance and irregular unplanned repairs of the OHL. Operational impacts of electrocution were not specifically mentioned in the EIA Scoping Report however more detail is provided in this paragraph for completeness. The Proposed Development is configured with a single earth wire at the top of the towers followed by three rows of conductors (two conductors in each row) hanging below three crossarms. The minimum distance between the steel tower structure and a conductor is 2.5 m which is greater than the wingspan of golden eagle (Robinson, 2005)[110], the largest species recorded that could potentially perch on the infrastructure (maximum wingspan 2.12 m). In addition to reach a conductor the bird will have to flex its wing vertically upwards, which even at its greatest extent would be a maximum distance of approximately half its wingspan. Due to the design of the Proposed Development no impacts of bird electrocution are anticipated as a result of birds perching on the infrastructure.

8.4.6 Features scoped out are detailed further in **Table 8-7** below.

[110] Robinson, R.A. (2005) BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford. Available at : http://www.bto.org/birdfacts

Table 8-7 Ornithological features scoped out of further assessment

Feature	Justification
Holy Loch Local Nature Reserve (LNR)	The LNR is notable for estuarine habitats that support an overwintering shorebird assemblage. Located approximately 790 m east of the Site the LNR does not fall within the EZoL for disturbance or displacement impacts. The proposed OHL alignment is unlikely to pose a collision risk to notified species as it is distant from the LNR and passes through wooded habitat that is unlikely to be utilised by notified species. The LNR is screened out as impacts from the Proposed Development are unlikely.
Holy Loch Local Nature Conservation Site (LNCS).	The LNR is notable for estuarine habitats design that support an overwintering shorebird assemblage Located approximately 790 m east of the Site the LNCS does not fall within the EZoL for disturbance or displacement impacts. The proposed OHL alignment is unlikely to pose a collision risk to notified species as it is distant from the LNCS and passes through wooded habitat that is unlikely to be utilised by notified species. The LNCS is screened out as impacts from the Proposed Development are unlikely.
Barn owl	Barn owl is a Schedule 1 listed species. There are an estimated 1,000 breeding barn owl pairs in Scotland (as of 2007) (Forrester, 2007)[111] with regional population or population trends unknown. Barn owl typically nest in low lying areas up to approximately 175 m above sea level (asl) in Scotland and will therefore not be present across much of the upland areas of the Site[98]. Records of breeding barn owl were provided by the ARSG from within the Survey Area, all were presumed to relate to artificial nest boxes. On investigation of these locations two dilapidated nest boxes were found. No observations of barn owl were made during surveys although as this species is largely nocturnal the species could be under reported. While the proposed OHL alignment passes through areas of lowland deciduous woodland the Bat Preliminary Roost Assessment (**Volume 4, Appendix 7.3 – Protected Species Data**) only identified one tree with 'high' suitability for roosting bats. Mature trees with large cavities/ rot holes, suitable for nesting barn owl, would likely be classified as having 'high' bat roost suitability. While it cannot be discounted that a low number of barn owls breed within hunting range (typically within a of 2 km of nest sites (Meek et al, 2009)[112]) of the Site the species is not considered to be of conservation concern (i.e. not red listed BoCC). Barn owl is therefore considered to be of site level importance and scoped out of further assessment.
Red kite	Survey results comprised a single flight (not at PRC) and no records were provided by consultees. As the Site and surrounding area is not considered important to supporting red kite this species has been scoped out.
Peregrine falcon	Survey results comprised a single flight (not at PRC) and no records were provided by consultees. As the Site and surrounding area is not considered important to supporting peregrine falcon this species has been scoped out.
Osprey	A single bird was recorded flying over woodland at the southern end of the Site during the scarce breeding bird surveys and no records were provided by consultees. As the Site and surrounding area is not considered important to supporting osprey this species has been scoped out.

[111] Forrester, R(ed)(2007). The Birds of Scotland. The Scottish Ornithologists Club.
[112] Meek, W, R., Burman, P, J,. Nowakowski, M .Sparks ,T,M., Hill ,R,A., Swetnam, R, D. & Burman, N, J(2009) Habitat does not influence breeding performance in a long-term Barn Owl Tytoalba study, Bird Study, 56:3, 369-380

Feature	Justification
Golden plover	Survey results comprised a single flight (not at PRC) and no records were provided by consultees. As the Site and surrounding area is not considered important to supporting golden plover this species has been scoped out.
Common sandpiper	Survey results comprised two breeding territories, both of which are beyond the EZoI for disturbance / displacement effects. This small agile wader is considered to be of low collision risk with the operational OHL. Common sandpiper is screened out as impacts from the Proposed Development are unlikely.
Curlew	A single record of curlew was recorded early in the breeding season and no records were provided by consultees (wintering records considered below as part of the coastal wintering bird assemblage). As the Site and surrounding area is not considered important to supporting curlew this species has been scoped out.
Snipe	Two snipe were recorded during the early moorland breeding bird survey visits in April and no records were provided by consultees (wintering records considered below as part of the upland wintering bird assemblage). As the Site and surrounding area is not considered important to supporting snipe this species has been scoped out.
Wintering Bird Assemblage – Coastal (excluding scoped in species)	The greatest concentration of wintering Target Species during the winter walkover surveys were curlew, redshank and oystercatcher in Finart Bay and adjacent farmland. The Proposed Development will utilise an existing access track that runs to the north of Finart Bay. As this access track is in good condition minimal work upgrading the track will be required. Construction traffic passing along this track is not anticipated to disturb these species as they are typically less responsive to passing vehicles in comparison to personnel on foot (Cutts et al, 2013[113]). The wintering bird assemblage (coastal) is therefore scoped out as impacts from the Proposed Development are unlikely.
Wintering Bird Assemblage – Upland (excluding scoped in species)	Records of wintering Target Species from the winter walkover surveys were restricted to low numbers of snipe and red grouse. Additionally, no flights of these species were recorded during the non-breeding season flight activity surveys. These species are of lower conservation concern and the Site and surrounding area does not support large numbers in upland areas. As the Site and surrounding area is not considered important to supporting these species wintering birds of upland areas have been scoped out.
Breeding passerine assemblage	As stated in paragraph 8.2.16 no detailed passerine surveys were undertaken. Species recorded during the moorland breeding bird survey, as an incidental species list, included moorland and woodland breeding species including the red-listed skylark and crossbill, listed on Schedule 1. The crossbill recorded on Site are likely to be common crossbill, rather than the rarer and more localised parrot crossbill or Scottish crossbill which are not known to inhabit the Argyll area[111]. Common crossbill is not listed as a BoCC. All species recorded are common and widespread across suitable habitats throughout Scotland. While they enrich the biodiversity resource where localised populations exist, substantial and regular populations of the various species are unlikely to occur on Site relative to their local or higher-level geographic reference populations. The breeding passerine assessable is therefore considered to be of Site level importance and scoped out of further assessment.

[113] Cutts, N., Hemingway, K and Spencer, J (2013). Waterbird disturbance mitigation toolkit – informing estuarine planning and construction projects. University of Hull

8.5 Habitats Regulations Appraisal

8.5.1 In Scotland, the Scottish Parliament has now passed the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 (hereafter the EU Continuity Act 2021), meaning that Scottish legislation in relation to devolved matters – including environmental matters - will remain aligned with EU law.

8.5.2 Consideration of the potential effects of the Proposed Development on European sites is therefore required. The Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations") apply strict legal protection to European sites. As Section 37 applications are under 'reserved matters' (within the meaning of Schedule 5 of the Scotland Act 1998) provisions of the Conservation of Habitats and Species Regulations 2017 (the "2017 Regulations") apply instead. Both sets of regulations require equivalent processes in relation to the assessment of projects with the potential to affect European sites. The Regulations place a duty upon 'Competent Authorities', in this case the Scottish Governments Energy Consents Unit, to consider the potential for effects upon European sites prior to granting consent for projects or plans.

8.5.3 Based on the information provided in **in this Chapter and Chapter 7 – Ecology and Nature Conservation**, no European sites are present within the EZoI of the Proposed Development and no qualifying species exhibited any connectivity with habitats in the EZoI. As such it is considered that there is no potential for Likely Significant Effects on any European site as a result of the Proposed Development. It is therefore recommended that the Proposed Development is screened out from further assessment under the Habitats Regulations.

8.6 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

8.6.1 The realignment of the northern section of the proposed OHL alignment, while not undertaken solely in relation to potential ornithological impacts, reduces the potential for impacts on IOFs in this area. Moving the proposed OHL alignment to the south-west through predominantly plantation coniferous woodland reduces the potential for impacts on golden eagle, hen harrier and black grouse, all of which were recorded utilising the open upland habitats along the previous OHL alignment option, and existing OHL alignment, in this area.

8.6.2 Embedded mitigation relevant to this chapter includes tried and tested measures documented within:

- General Environmental Management Plans (GEMPs) (**Volume 4 Appendix 3.2: SHE Transmission GEMPs**), and
- Species Protection Plan for Birds (Bird SpPP) (**Volume 4 Appendix 3.3: SHE Transmission SpPPs**).

8.6.3 It is reasonable to assume protocols detailed within the GEMPs and Bird SpPP will be implemented successfully.

8.6.4 For clarity, embedded mitigation measures captured within the following particular GEMPs will be sufficient to address and control potential impacts associated with pollution events, such that pollution impacts have not been addressed through this assessment:

- Oil Storage and Refuelling.
- Working in or Near Water.
- Working with Concrete.
- Watercourse Crossings.
- Waste Management.
- Contaminated Land.

8.6.5 Other GEMPs which will address and mitigate (fully or in part) potential impacts on habitat interests include:

- Working in Sensitive Habitats.
- Restoration.
- Bad weather.

8.6.6 Where mitigation measures relevant to IOFs either differ from that presented in the Bird SpPP or are considered important to highlight for specific elements of the Proposed Development (e.g. helicopter routes), this is captured as additional mitigation herein and supersedes that presented in the Bird SpPP.

8.6.7 All additional mitigation will be captured in and delivered through the Construction Environment Management Plan (CEMP).

Construction Phase

Habitat Loss and Degradation

Description of Impact

8.6.8 The Proposed Development would result in permanent loss of habitat associated with the establishment of wayleaves for the proposed OHL alignment through woodland, new and upgrading of existing access tracks and habitat loss associated with the installation of new towers. Full details of the habitat baseline conditions, gathered from a UK Habitat Classification Survey, and habitat assessment are presented in **Volume 2, Chapter 7, Ecology and Nature Conservation** and **Volume 4, Appendix 7.2: Habitats Data**. Loss associated with the proposed OHL alignment operational corridor and new access tracks and upgrading of existing access tracks would primarily relate to plantation coniferous woodland. Other woodland habitats lost would include approximately 87.6 hectares of broadleaved or mixed broadleaved/ coniferous woodland and 23.5 hectares of woodland listed on the Ancient Woodland Inventory. The open upland areas of the proposed OHL alignment predominantly comprise heath (including upland heathland, wet heath and dry heath), blanket bog and upland acid grassland. Construction of the towers within these areas will result in an irreversible habitat loss within the footprint of the tower foundations. Foundation types and designs for each tower will be confirmed following detailed geotechnical investigation at each tower position. However, the foundation type employed is unlikely to alter the function of the adjoining habitats.

8.6.9 The remaining works associated with the Proposed Development would result in temporary habitat loss, perceived as habitat degradation, as habitats would be restored and/ or re-establish naturally in the short-term. Habitats would be lost under temporary works areas (e.g. helicopter compounds, tower works sites, temporary diversions, Equipotential Zones (EPZs)) and temporary access tracks or spurs). All excavated habitat required for foundation works will be reinstated in accordance with methodology detailed in relevant GEMPs and all temporary OHL diversions removed. No temporary OHL diversions are proposed within upland bog/ heath habitats. EPZs, and where possible temporary access tracks, will be constructed using metal trackway to minimise damage to sensitive habitats by heavy plant and small equipment/ personnel will be transported using All-Terrain Vehicles (ATVs). Some sections of temporary access track will require land forming to create a level platform for access panels and ATV access across steep terrain will likely not use access panels. Helicopter compounds will be located in lowland areas, e.g. Glen Finart, and not located in upland bog/ heath habitats.

Description of Effects

Golden Eagle

8.6.10 Impacts of habitat loss in territory G/A22 would be restricted to loss of woodland habitat with no works proposed in the open upland habitats within the territory. While the GET model predicts usage of much of the woodland area golden eagles are known to avoid closed canopy woodland. 'Usage' would most

likely be restricted to birds soaring over the woodland and adjacent upland habitat. As such habitat loss is unlikely to affect golden eagles occupying territory G/A22.

8.6.11 Loss of suitable golden eagle habitat within/ adjacent to territory GC/1 would comprise negligible areas of habitat permanently lost under the footprint of towers and temporary habitat lost/ degraded under the temporary working areas. As the scale of permanent habitat loss is negligible and temporary degraded habitats under work areas would be restored/ regenerate in the short term it is not anticipated that this would affect golden eagle prey availability or distribution (e.g. red grouse) and therefore affect the survival or breeding productivity of the pair occupying this territory (or survival of fledged young).

8.6.12 Overall, the effect of habitat loss on golden eagle would be short term adverse and restricted to a small section of a single golden eagle territory (GC/1). This effect is unlikely to affect the conservation status of golden eagle, which currently has a stable regional and national population, at any geographical scale. Therefore, the effect of habitat loss on golden eagle would not be significant at any geographical scale.

Hen Harrier

8.6.13 Habitat lost from plantation coniferous woodland or mature woodland generally is unlikely to affect hen harrier as this species doesn't typically use such habitat for nesting, hunting or roosting (Redpath et al, 1998[114] & Hardey et al, 2013[98]). Habitat loss from optimal open moorland habitat is largely restricted to the central section of the proposed OHL alignment, approximately between Towers 28 and 47. Although within this area hen harrier activity was only recorded between Towers 28 and 35. No hen harrier nest sites were recorded during the surveys with all recorded activity comprising hunting or commuting males (assumed to be provisioning at least one nest site outside of the Survey Area). As such, habitat loss comprises a small area of a likely much larger foraging range for male hen harrier (male hen harrier can range up to 10 km from nest sites to forage) (SNH, 2016)[92].

8.6.14 As the scale of permanent habitat loss is negligible and temporarily degraded habitats under work areas will be restored post-works and further regenerate naturally in the short-term (two-three years) it is not anticipated that this will affect hen harrier prey availability or distribution (e.g. vole or meadow pipit). In addition, habitat impacted by temporary works will function to support hen harrier prey species to some degree while natural regeneration is ongoing. No effects are therefore anticipated on hen harrier breeding productivity or survival of the low number of pairs (potentially only one (**Table 8-6**)) or fledged young that utilise this habitat.

8.6.15 Overall, the adverse effect of habitat loss on hen harrier would be short term and restricted to a small section of a much larger foraging range for potentially a single pair of hen harrier. This effect is unlikely to affect the conservation status of hen harrier, which currently has a stable regional and national population, at any geographical scale. Therefore, the effect of habitat loss on hen harrier would not be significant at any geographical scale.

Black Grouse

8.6.16 Habitat lost from mature woodland of any type (e g. plantation coniferous woodland or deciduous woodland) would be unlikely to affect black grouse as this species doesn't typically use such habitat for nesting, foraging or lekking[115]. Habitat loss from optimal black grouse habitat is largely restricted to the central area of the proposed OHL alignment, approximately between Towers 28 and 47. Much of this habitat loss would be temporary loss of upland habitat under works areas and access tracks. The proposed OHL alignment passes through open habitat with scattered trees in the vicinity of Tower 44. Maintenance of the operational wayleave in this area will prevent the establishment of mature closed

[114] Redpath, S., Madders, M., Donnelly, E., Anderson, B., Thirgood, S., Martin, A & Mcleod, D (1998) Nest site selection by Hen Harriers in Scotland, Bird Study, 45:1, 51-61

[115] Pearce-Higgins, J, W., Wright, L, J., Grant, M, C and Douglas, D, J, T (2016). The role of habitat change in driving Black Grouse Tetrao tetrix population declines across Scotland, Bird Study, 63:1, 66-72

canopy woodland, at least along and narrow corridor, and contribute to the maintenance of a habitat mosaic favourable for black grouse.

8.6.17 Two black grouse leks, each comprising a single male, were recorded in the central section of the proposed OHL alignment, as were two flights (each comprising three birds). Low number of black grouse, albeit representing approximately 3% of the regional population of 67 displaying males, utilise habitat along the central area of the proposed OHL alignment. Habitat loss, however, will largely be restricted to temporary degradation of upland habitat. The habitat requirements and diet of black grouse vary seasonally with heather and other dwarf shrubs providing important food plants and nesting habitat and grassland providing lekking and brood rearing sites[115]. The presence of lekking birds indicates that nesting females may be present within suitable heathland habitat in the surrounding area (likely a low number, based on the number of lekking males).

8.6.18 Loss of suitable habitat would either be of too small a scale (permanent loss) or temporary in nature to result in effects on black grouse breeding productivity or survival as a result of loss of foraging or breeding habitat. Affected habitat represents a small proportion of larger expanses of largely ubiquitous habitat present in and around the upland area along the proposed OHL alignment between Towers 28 and 47. This assessment is cognisant of the poor conservation status of the species and the small, potentially fragmented, population on Site and regionally. This assessment also acknowledges that works activities would likely temporarily displace black grouse from all temporary works area anyway (see Disturbance and Displacement), so that temporary habitat loss will only manifest in isolation once works are completed. Temporary works areas will be removed promptly after the relevant works are completed, and habitats reinstated if required, in accordance with relevant GEMPs to minimise degradation of habitats.

8.6.19 Overall, the adverse effect of habitat loss on black grouse would be short term and small in spatial scale based on large areas of similar habitat within the immediate and wider vicinity of the section of the proposed OHL alignment between Towers 28 and 47. This effect is unlikely to affect the conservation status of black grouse at any geographical scale. Therefore, the effect of habitat loss on black grouse would not be significant at any geographical scale.

Disturbance and Displacement

Description of Impact

8.6.20 Noise and visual stimuli emitted during construction works could disturb birds during activities vital to survival and reproduction and, as a worst-case, could cause the abandonment of active nests and death of eggs or chicks. The movement of plant and general construction activities would emit noise with the loudest noise likely associated with blasting required at borrow pits. It is likely that visual disturbance, from plant and personnel, would have a wider EZoI than acoustic disturbance (Goodship and Furness, 2022)[90]. The EZoI for construction disturbance will vary by species and activity with the maximum distance associated with the Proposed Development likely to be approximately 1000 m (Goodship and Furness, 2022)[90]. The EZoI will typically be greater for nesting birds in comparison to foraging (or other behaviours) but information on disturbance distances for behaviours other than nesting is generally limited. Birds subject to disturbance will typically cease the activity (e.g. foraging) by becoming alert to the source of disturbance. If the stimuli become too intense to tolerate birds will typically take flight and move away to an area sufficiently distant from the source of disturbance.

8.6.21 The Proposed Development includes the delivery of tower sections to tower sites by helicopter along much of the proposed OHL alignment north of Tower 52 and for Towers 56 and 59 and Towers 73 and 76. All towers to be flown in would be assembled into sections at helicopter compounds located in Strath Eachaig, in Glen Finart and at Towers 73 and 74 assembly area. The assembled sections would be flown in and using the helicopter they would be landed into position, (typically two to four lifts per tower

depending on tower type and height). Helicopters will also be used during the conductoring phase along the entire length of the proposed OHL alignment to fly bonds which will then be used to pull the conductors and earth wires through. Approximately seven flights will be required between each of the 12 EPZ sections. NatureScot guidance (SNH 2015)[88] recommends that disturbance of nest or roost sites from helicopters could occur within a maximum of 1000 m from helicopter flights (both lateral and altitudinal distance) based on the most sensitive species (golden eagle and white-tailed eagle).

8.6.22 Displacement occurs when ongoing construction works discourage or even prevent birds from accessing habitats within the disturbance EZoI, usually as they have been disturbed and have left the area. This could be manifested through avoiding otherwise suitable nesting or foraging habitat thus reducing the habitat available to the birds.

8.6.23 Works associated with the Proposed Development are anticipated to be undertaken across approximately 20 months from April 2024 until December 2025 and will therefore encompass two breeding seasons.

Description of Effects

Golden Eagle

8.6.24 No golden eagle nest sites were recorded during the surveys and the closest record provided by ARSG was approximately 1.1 km north-west of the Site. No evidence of nesting was recorded at this location during surveys but the nest was occupied in 2022 (from records provided by the ARSG). Territorial golden eagles typically roost at or near nest sites (SNH 2015)[5]. As described in **Table 8-6** the proposed OHL alignment crosses two golden eagle territories with records of golden eagle activity recorded in both territories on and around the proposed OHL alignment during the surveys.

8.6.25 The proposed OHL alignment within territory G/A22 passes through plantation coniferous woodland that is unlikely to be used for nesting or hunting. It is not considered likely that works (with the exception of helicopter flights) within the woodland will prevent golden eagles soaring over this area for display or searching the adjacent upland area for prey. Helicopter routes proposed for Towers 1 to 20 and conductoring flights along these areas have the potential to displace hunting or displaying golden eagles from air space above the plantation coniferous woodland or adjacent upland habitat.

8.6.26 Within or adjacent to territory G/C1 individual adult golden eagles were recorded on six occasions, predominantly hunting or displaying. Suitable hunting habitat is available between approximately Towers 28 and 44 and the GET model predicts high usage in this area. All works have the potential to disturb and displace hunting or displaying golden eagles, with helicopter flights predicted to have the largest EZoI.

8.6.27 It is not predicted that this temporary displacement of golden eagles would result in effects on breeding productivity of territorial pairs or the survival of adults or fledged young. While works may encompass two breeding seasons the most disturbing activities, helicopter flights, will be of short duration and frequency and localised to flight routes and over sites under construction at that particular time in the works program.

8.6.28 Overall, the adverse effect of disturbance and displacement on golden eagles would be short term and small in spatial scale based on the size of golden eagle territories and is only predicted to impact hunting or displaying birds (i.e. won't directly affect nest sites). This effect is unlikely to affect the conservation status of golden eagle, which is currently exhibiting increasing population trends nationally, at any geographical scale. Therefore, the effect of disturbance and displacement on golden eagle would not be significant at any geographical scale.

Hen Harrier

8.6.29 No hen harrier breeding sites were recorded during surveys. Of the four records provided by ARSG one record, at 1 km grid square resolution, was approximately 250 m north-west of the Site. Breeding at this site, however, has not been recorded during any monitored years since 2015. Both sites with confirmed breeding since 2015 are located over 1 km from the Site.

8.6.30 Hen harrier often aggregate at communal roosts during the post breeding and wintering period. Roost sites are typically found in lowland habitats dominated by rank vegetation, particularly saltmarsh, reedbeds, rough grassland and lowland heath. Based on the lowland habitats recorded during the UKHab surveys it is not considered that any habitats provide optimal roosting habitat. Additionally, of the observations of hen harrier recorded during surveys only one was recorded during the non-breeding season. The Proposed Development would therefore be unlikely to disturb or displace roosting hen harriers.

8.6.31 Helicopter flights may disturb and displace hunting hen harriers from suitable habitat along helicopter routes accessing the northern end of the proposed OHL alignment. All aspects of the works may disturb and displace hunting hen harriers from suitable habitat particularly within the central section of the proposed OHL alignment, approximately between Towers 28 and 47, although within this area hen harrier activity was only recorded between Towers 28 and 35. The proposed OHL alignment at the northern end passes through plantation woodland located approximately 250 m the south-east, and downslope, of optimal hen harrier hunting habitat. Hunting hen harrier would therefore be potentially displaced from relatively small areas of suitable hunting habitat for a maximum of two breeding seasons. However, male hen harriers are known to forage over large distances, up to 10 km (SNH 2016)[92], from nest sites and therefore will have alternative habitat available during the works period e.g. east of Loch Long and north-west of Creachan Mor.

8.6.32 Overall, the adverse effect of disturbance and displacement on hen harriers would be short term and small in spatial scale and only impact hunting birds (i.e. it won't directly affect nest sites). This effect is unlikely to affect the conservation status of hen harrier, that is currently exhibiting stable population trends nationally, at any geographical scale. Therefore, the effect of disturbance and displacement on hen harrier would not be significant at any geographical scale.

Black Grouse

8.6.33 Evidence provided in Goodship and Furness (2022)[90] suggests that a maximum EZoI for conventional construction operations potentially disturbing black grouse would be 750 m from the source. Black grouse are not mentioned in SNH guidance in relation to potential impacts from helicopter flights. As a reasonable worst-case scenario, a maximum EZoI of 1,000 m (lateral) and 500 m (altitudinal) is deemed appropriate. It is assumed that the EZoI would be greatest for lekking males.

8.6.34 Two black grouse lek sites, each comprising a single male, were recorded during the surveys, one of which was directly adjacent to the proposed OHL alignment. Multiple other records of black grouse, including two leks of three birds each, were recorded during other surveys within 350 m of helicopter flight paths at the northern end of the Survey Area. Based on this information it is assumed, as a reasonable worst-case scenario, that:

- one lek of a single male in the central section of the proposed OHL alignment will be disturbed and displaced during construction of the proposed OHL alignment; and
- two leks comprising three males each will be disturbed and displaced from the northern section of the proposed OHL alignment during helicopter flights only. It is expected that the plantation woodland and steep slope in this area will screen other construction works from black grouse habitat to the north-west.

8.6.35 Disturbance and displacement of black grouse leks could affect breeding productivity as black grouse leks are typically located within suitable breeding habitat. Therefore, disturbance could disrupt breeding behaviour or displace black grouse, including females, from optimal nesting and chick rearing habitat. Such impacts could occur over two breeding seasons, as a worst case. An impact on seven lekking males would represent approximately 10% of the regional population. This effect could also contribute to the local extinction risk of a small and potentially isolated population.

8.6.36 Overall, the adverse effect of disturbance and displacement on black grouse would potentially encompass two breeding seasons and be of moderate spatial scale, encompassing, at its maximum extent, the EZoI from helicopter flights. The impact could affect a relatively large proportion of the regional population of a species with a poor conservation status (declining nationally). Therefore, the effect of disturbance and displacement on black grouse would be significant at a Regional geographical scale.

Mitigation During Construction

8.6.37 As significant effects on black grouse were identified during the construction phase mitigation is stipulated in this section. Ornithology Mitigation (OM) is described in relation to the northern section (Towers 1 to 20) and the central section (Towers 28 to 47). To confirm, as well as specific mitigation described below, pre-construction surveys will be undertaken and a mitigation hierarchy adopted for all breeding birds, including those scoped out of this assessment, as detailed in the Bird SpPP.

8.6.38 OM1: In accordance with the Bird SpPP pre-construction black grouse lek surveys will be undertaken within 1.5 km of the Site (including helicopter routes) across the northern and central sections of the proposed OHL alignment. Surveys should encompass the dawn period, one hour before sunrise to two hours after and could be undertaken by the ECoW if suitably qualified. If works are scheduled to commence within the March to May period pre-construction surveys must be undertaken the previous year.

8.6.39 OM2: No helicopter flight routes will be permitted within 1000 m of any identified lek sites during the period March to May inclusive during the peak lekking periods (one hour prior to sunrise until two hours after sunrise and two hours before sunset to one hour after). The above default stand-off distance will be implemented until and unless pre-construction surveys identify that lekking ends earlier or later than 2 hours after sunrise. A flight plan will be developed to show identified lek sites and exclusion zones.

8.6.40 OM3: For all other works a default stand-off distance of 750 m from identified lek sites will be applied. As above the timings of the stand-off period will be determined by lekking activity recorded during the pre-construction surveys. The default stand-off will apply from March to May inclusive during the peak lekking periods (one hour prior to sunrise until two hours after sunrise and two hours before sunset to one hour after). The stand-off distance of 750 m is a precautionary distance that may be revised following an evaluation by the ECoW of factors including the nature of works proposed in the area and the line of sight between the works and the lek (e.g. hills or woodland could screen the works).

8.6.41 OM4: Works will be scheduled to limit the program of activities, including helicopter flights, between the period March to May inclusive across the central section (Towers 28 to 47). This is particularly relevant to works 'commencing' during this period, e.g. mobilisation and installation of access tracks as such works would disturb any black grouse in the area.

8.6.42 OM5: The ECoW will monitor identified leks throughout the period March to May inclusive to determine if lek sites are still occupied, and therefore if stand-off distances still apply, and to monitor compliance with the above mitigation.

Residual Effect

8.6.43 Following the implementation of additional construction mitigation described above, the potential effects of disturbance and displacement of black grouse during construction will be significantly reduced. The residual effect is considered to be of Site level importance and therefore not significant.

Operational Phase

Collision

Description of Impact

8.6.44 NatureScot guidance (SNH, 2016)[85] recognises that birds may collide with OHL infrastructure, causing injury or death, with collisions often being concentrated along relatively short sections of OHLs. The guidance further states that several factors can interact to create collision 'hotspots'; with combining factors that create a hotspot not always being readily apparent. Bird collisions with OHL infrastructure are inherently rare events with risk being associated with the design of the OHL and environmental factors (characteristics of the birds, site topography/ habitats and prevailing weather conditions). The susceptibility of particular bird species or individuals to collision with OHL infrastructure is a combination of morphology, vision, age/ condition, behaviour and population density. EirGrid (2016)[116] provides a detailed account of the factors influencing potential bird collision with OHL infrastructure. It can reasonably be assumed that birds colliding with OHL infrastructure would, in the majority of cases, result in direct or indirect mortality.

8.6.45 Bird collisions with OHL infrastructure typically involve the 'wires' (conductors, earth wires and stays), with the towers assumed to be sufficiently visible to the birds. Generally speaking, the less visible the wires are the greater the risk of collision and as such the lighter/ thinner earth wires generally pose a greater risk than conductors which are heavier/ thicker. The risk of collision could be assumed to be directly proportional to the thickness (and therefore visibility) of the wires concerned.

8.6.46 The OHL infrastructure associated with the Proposed Development is described in **Chapter 3 – The Proposed Development**. The proposed OHL infrastructure would comprise of twin circuit steel lattice towers with three phase conductors either side of the main tower body from tower arms. An earth wire conductor is strung between the tops of the towers (see **Chapter 3 – The Proposed Development: Plate 2.1**). Towers would vary in height from approximately 23 m to approximately 39 m. The vertical spacing of the earth wire and conductors on the towers would be almost the same regardless of tower type, summarised as below:

- Earth wire strung between the tower tops;
- Top phase of conductors strung 3.3 m to 4.5 m below earth wire;
- Middle phase of conductors strung 4.1 m to 4.5 m below top phase; and
- Bottom phase of conductors strung 3.6 m to 3.7 m below middle phase.

8.6.47 The conductor on the smallest possible tower would be approximately 10.5 m above ground level and the earth wire on the tallest tower would be 39 m above ground level (the height of the tallest possible tower). As a precaution it is assumed that the collision risk window (CRW) equates to the wires, all airspace between them plus the 'bird radius' of 1.1 m (0.5 x wingspan of 2.2 m) added to the highest and lowest extent. Based on the dimensions detailed in Paragraph 8.6.46 the CRW would be a maximum of approximately 14.8 m in width and located in airspace between 8.5 m, to account for OHL sag under maximum operating temperatures, and 39 m above ground level. The CRW will typically be in excess of 10 m above ground level across the majority of OHL spans.

[116] EirGrid (2016). EirGrid evidence based environmental studies study 5: Birds

8.6.48 As a precaution all birds recorded crossing the proposed OHL alignment plus 100 m either side (the Collison Risk Area) at heights of between 10 m and 50 m above ground level were determined to be at Potential Risk of Collision (PRC). The conductors and earth wire would be approximately 25 mm and 20 mm in diameter respectively.

8.6.49 The Proposed Development will replace the existing 132 kV OHL, constructed in 1972, that is of similar structure (steel lattice towers, earth wire and three phases of conductors). The towers of the existing OHL are typically shorter than that of the Proposed Development, ranging from approximately 21 m to 32 m above ground level. The proposed OHL alignment runs adjacent, and approximately parallel to the existing OHL along much of its length. This is particularly the case where the proposed OHL alignment crosses upland bog/ heath habitat between Towers 28 and 44. Along this section the proposed OHL alignment is located no more than approximately 180 m from the existing OHL alignment. The conductors and earth wire of the existing OHL are thinner than the Proposed Development at 16.5 mm and 12.96 mm respectively. Nonetheless, the existing OHL will pose a similar collision risk to the Proposed Development in relation to alignment and extent of the CRW. The thinner conductors and earth wire of the existing OHL are potentially more of a collision risk than those associated with the Proposed Development as they are thinner and potentially less detectable.

8.6.50 Weather conditions recorded on Site were typical of western Scotland with frequent rain showers and predominantly south westerly winds. The higher altitude areas were susceptible to periods of low cloud affecting visibility with at least one survey curtailed for this reason. Periods of reduced visibility could theoretically increase the likelihood of collision events. Nonetheless these are conditions under which birds have existed in relation to the existing OHL over the last 50 years.

8.6.51 During the flight activity surveys approximately 252 hours survey effort was undertaken across seven VPs overlooking the existing OHL. No bird collisions with the existing OHL were noted or other interactions indicative of a near miss, e.g. evasive manoeuvres observed during these or any other surveys.

Description of Effects

Golden Eagle

8.6.52 Nine golden eagle flights were recorded during the flight activity surveys (six during the non-breeding season and three during the breeding season), three of which were at PRC. All three flights at PCR were recorded within the central section of the proposed OHL alignment (between Towers 28 and 44 and within territory GC/1) and involved individual adults, one of which was displaying and the other two were hunting (one of which was being mobbed by a buzzard). All three flights also crossed the existing OHL directly before or after crossing the proposed OHL alignment. Of the six flights not at PRC three were recorded in the central section and three in the northern section (in territory G/A22).

8.6.53 Bevanger (1998)[117] determined the relative risk of species groups to collision with OHLs based on the relationship of wing loading (the ratio of body weight to wing area) and wing aspect ratio (the ratio of the square of the wing span to the wing area) and analysed these factors for collision susceptibility. Eagles were classified as thermal soarers, having low wing loading and low wing aspect ratio, both of which are less susceptible to collision. Raptors such as golden eagles also typically have excellent manoeuvrability and binocular vision, being adept at judging depth perception. While these facts could be considered to reduce the likelihood of collision as golden eagles chase prey at high speed they may not be able to perceive the OHL soon enough to avoid collision.

8.6.54 Empirical evidence of a collision risk specifically in relation to golden eagles is limited. Evidence exists that bald eagles, a related species native to North America, can be susceptible to collision with OHLs

[117] Bevanger, K. (1998). Biological and conservation aspects of bird mortality caused by electricity power lines: a review. Biological Conservation 86: 67–76.

located in high use (hunting) areas, particularly juvenile birds (Mojica and Watts 2009)[118]. Studies have also shown however, that bald eagles are able to successfully avoid OHLs when commuting between roosting/ foraging areas (Mojica et al 2020)[119].

8.6.55 Six flights in total, three at PCR, were recorded within territory GC/1 from a total of 180 hours of survey effort (total of 72 hours from two VPs during the non-breeding season, and 108 hours from three VPs during the breeding season). While results indicate that golden eagles use the area in the vicinity of the proposed OHL alignment for displaying and hunting the area is on the edge of the identified territory and is likely to be some distance from active nest sites. No nest sites were identified during the surveys and the only breeding site provided within the Survey Area was inspected and found to be unoccupied. Areas of a territory in closer proximity to breeding sites are likely to be used more frequently than more distant areas.

8.6.56 Based on the above it is considered that there is a low risk of golden eagles colliding with the OHL infrastructure of the Proposed Development. The risk would be greatest for hunting birds, particularly inexperienced juveniles and during periods of reduced visibility (e.g. heavy rain or low cloud). This assessment assumes that the existing OHL poses a marginally greater risk, primarily due to the thinner and presumably less visible conductors and earth wires. This existing risk of low-level mortality has not affected occupation of territory G/C1, the regional population trends are stable, and the national population has increased since 2003.

8.6.57 Overall, the adverse effect of golden eagles colliding with the Proposed Development would be permanent across a scale encompassing the edge of a single golden eagle territory. Collison events would be very rare and at a level that would be unlikely to affect the species' conservation status at the regional or local geographical scale. The national golden eagle population has increased in recent years and is assumed to be at least stable at a regional and local level. Therefore, the effect of OHL collision on golden eagle would not be significant at any geographical scale.

Hen Harrier

8.6.58 Little empirical evidence is available to inform hen harrier collision risk with OHL infrastructure. Bevanger (1998)[117] suggests that aerial predators, such as the harrier group, are at lower risk of collision due to their excellent manoeuvrability and binocular vision. Like all species however, risk is expected to be proportional to the time spent in flight in the vicinity of OHL infrastructure.

8.6.59 A total of 12 hen harrier flights, all of males, were recorded during the flight activity surveys, eleven of which were recorded during the breeding season. Of these flights two were recorded at PRC, one of which was also recorded crossing the existing OHL. No collisions or evasive manoeuvres were observed with the existing OHL. From the hen harrier records it is likely that at least one hen harrier nest site was present beyond the Survey Area, probably to the east, and opposite side of Loch Long with no nest sites being recorded within 2 km of the proposed OHL alignment. As such it is concluded that the habitat in the vicinity of the proposed OHL alignment provides foraging habitat for males only as females typically forage in close proximity of nest sites (within 2 km)[120].

8.6.60 As hunting hen harrier behaviour is associated with low level flight, below the level of conductors and certainly the thinner, less visible earth wire, at risk flights will more likely be associated with commuting flights. As such harriers, as a group, are considered to be of low risk of collision and the habitat in the vicinity of the proposed OHL alignment is not considered to be within the core foraging range of any breeding sites.

[118] Mojica, E, K & Watts, B, D (2009). Factors Contributing to Bald Eagle Electrocutions and Line Collisions on Aberdeen Proving Ground, Maryland. Journal of Raptor Research 43(1):57-61
[119] Mojica, E, K., Rocca, C, E., Luzenski, J., Harness, R, E., Cummings, J, L., Schievert, J., Austin, D, D & Landon, M, A (2020). Collision Avoidance by Wintering Bald Eagles Crossing a Transmission Line. Journal of Raptor Research (2020) 54 (2): 147–153.
[120] Arroyo,B., Leckie,F., Amar,A., McCluskie, A & Redpath, S (2014). Ranging behaviour of Hen Harriers breeding in Special Protection Areas in Scotland, Bird Study, 61:1, 48-55

8.6.61 Overall, the adverse effect of hen harriers colliding with the Proposed Development would be permanent across a scale encompassing a low number of breeding pairs (potentially a single pair). Collison events would be very rare and at a level that would be unlikely to affect the species' conservation status at the regional or local geographical scale. The national population has not changed since 1998 and is assumed to be at least stable at a regional and local level. Therefore, the effect of OHL collision on hen harrier would not be significant at any geographical scale.

Black Grouse

8.6.62 Two black grouse flights were recorded during the flight activity surveys, both of which comprised three birds during the non-breeding season, one of which was recorded at PRC. The flight at PRC also crossed the existing OHL with the other being immediately adjacent to it. These flights, and a lek of a single male, were recorded within 100 m of the proposed OHL alignment between Towers 28 and 47. This is the only section of the proposed OHL alignment that passes through optimal black grouse habitat.

8.6.63 It is considered that grouse as a species group are particularly susceptible to collision with OHLs as their heavy body, small wings and rapid flight restricts evasive reactions to unexpected obstacles (Bevanger, 1998)[117]. However, black grouse typically fly at lower heights below the level of the thinner less visible earth wire. While lower level flights could be within the zone occupied by conductors these wires are thicker than earth wires and therefore more visible and as such considered less of a risk. It is therefore considered that the Proposed Development will pose a low collision risk to black grouse, potentially lower than that of the existing OHL due to its greater height and more visible wires. Any collision mortality, however, would have the potential for population level effects due to the small, likely declining (based on national tends) and potentially isolated population in the area.

8.6.64 Overall, the adverse effect of collision with the Proposed Development on black grouse would be permanent across a scale encompassing suitable habitat between Towers 28 and 47. Collison events would be very rare due to the design of the infrastructure, flight behaviour and low number of flights recorded. No effect on the conservation status, defined as poor based on a declining national population, would be anticipated. Therefore, the effect of collision on black grouse would not be significant at any geographical scale.

Displacement

Description of Impact

8.6.65 The operational OHL could potentially exclude birds from the immediate or surrounding area for a number of reasons. Birds could avoid the OHL and surrounding area due to its presence and the towers could increase predation risk if they are used as perches by predators (or conversely increase hunting success for these predatory birds). Displacement could also include barrier effects if birds are deterred from using their normal routes to feeding, roosting or breeding sites by the presence of the OHL. Despite this, relatively little published information is available on the avoidance of power lines by birds.

8.6.66 The presence of the existing OHL alignment along much of the proposed OHL alignment is particularly relevant in this instance as it represents a feature which forms the baseline conditions of the Site and the presence/ absence and activity of birds in association with it. Ornithology survey results in the vicinity of the existing OHL could provide a proxy to inform the potential effects of the Proposed Development as they are very similar structures.

Description Effects

Golden Eagle

8.6.67 No records of golden eagle nest sites were provided from within 1 km of the proposed OHL alignment and it is not considered that suitable nesting habitat, i.e. crags, are present within this distance. As such it is not considered that the Proposed Development would displace nesting golden eagle as no suitable habitat is present in close proximity.

8.6.68 Seven of the nine golden eagle flights were recorded flying across the route of the existing OHL, including hunting and displaying birds. There is no evidence therefore, that the existing OHL exerts a displacement effect on golden eagle habitat use or hence that the proposed OHL alignment would either.

8.6.69 Overall, any adverse effect of displacement on golden eagles would be temporary (assuming the birds become habituated) across a scale encompassing suitable habitat between Towers 28 and 47. Use of habitat in the vicinity of the existing OHL suggests no obvious displacement impacts and therefore no effects on hunting behaviour or display. No effect on the species' conservation status at any geographical scale would be anticipated. Therefore, the effect of displacement on golden eagle would not be significant at any geographical scale.

Hen harrier

8.6.70 While no nest sites were recorded during surveys ARSG provided a historic breeding record (at 1 km grid square resolution, located approximately 550 m north-west of the existing OHL). Although this territory was not found to be active during the surveys, the record suggests that breeding hen harrier have been present in the vicinity of the existing OHL and that the core foraging area encompassed large sections of the existing OHL. Seven of the 12 hen harrier flights recorded were also recorded crossing the route of the existing OHL, including numerous hunting flights. As such it is not considered that the existing OHL exerts a displacement effect on hen harrier habitat use or hence that the proposed OHL alignment would either.

8.6.71 Overall, any adverse effect of displacement on hen harrier would be temporary (assuming the birds become habituated) across a scale encompassing suitable habitat between Towers 28 and 47. Use of habitat in the vicinity of the existing OHL suggests no obvious displacement impacts and therefore no effects on hunting behaviour or display. No effect on the species' conservation status at any geographical scale would be anticipated. Therefore, the effect of displacement on hen harrier would not be significant at any geographical scale.

Black grouse

8.6.72 Records of black grouse, including a single male lek, were recorded directly adjacent to the existing OHL. Multiple records were provided by the RSPB and CSBGCSG within 1 km of the existing OHL with evidence that black grouse have been present in this area for a number of years (presumably pre-dating the installation of the existing OHL in 1972). As such it is not considered that there is any evidence that the existing OHL displaces black grouse from suitable habitat.

8.6.73 Overall, any adverse effect of displacement on black grouse would be temporary (assuming the birds become habituated) across a scale encompassing suitable habitat between Towers 28 and 47. Use of habitat in the vicinity of the existing OHL suggests no obvious displacement impacts and therefore no effects on black grouse behaviour. No effect on the species' conservation status at any geographical scale would be anticipated. Therefore, the effect of displacement on black grouse would not be significant at any geographical scale.

Mitigation During Operation

8.6.74 As no significant effects were identified on any IOFs during operation no additional mitigation is proposed.

Residual Effect

8.6.75 As no significant effects were identified on any IOFs during operation there will be no significant residual effects.

Enhancements

8.6.76 The Applicant will install a minimum of three barn owl boxes post construction in suitable locations within 500 m of the southern section of the proposed OHL alignment. The locations and specification of the nest boxes will be selected by the ECoW on consultation with the ARSG and FLS. The southern end of the proposed OHL alignment has previously supported barn owl nest boxes but all boxes were either in disrepair or not present during checks undertaken in 2021. The Applicant will maintain all installed next boxes and monitor occupancy in collaboration with the ARSG and FLS.

Cumulative Effects

8.6.77 Projects identified for a cumulative assessment of effects are two related projects to the Proposed Development that are being considered under separate consenting regimes, namely the Loch Long Crossing and Decommissioning of the Existing Dunoon Substation to Loch Long OHL. These projects will be undertaken immediately following the completion of the Proposed Development and will utilise the same temporary access tracks and working areas where relevant.

Reconductoring and Refurbishment of the Loch Long Crossing

8.6.78 This project will comprise the replacement or reinforcement of the two towers on either side of Loch Long and restringing of new conductors and earth wires. The plantation coniferous woodland adjacent on the west side of Loch Long and the open water of Loch Long are unlikely to be utilised by golden eagle, hen harrier or black grouse. Habitat in the vicinity of the tower on the eastern side of loch long, including access tracks, may be utilised by all three species. Mitigation detailed in the Bird SpPP will significantly reduce the likelihood of direct impacts on nesting birds and, being a related project to the Proposed Development, it is understood that all mitigation detailed in relation to black grouse will also apply to the Long Loch Crossing project, if relevant. Works on the eastern side of Loch Long would be undertaken across a maximum of two breeding seasons (one for access and one for works). Due to these factors, it is considered cumulative effects on golden eagle, hen harrier and black grouse will result in effects of Site level importance and are therefore not significant.

Decommissioning of the Existing Dunoon Substation to Loch Long OHL

8.6.79 This project will comprise the removal of the existing OHL immediately following the completion of the Proposed Development. It is anticipated that the project will encompass a maximum of one breeding season. Effects of the project will be very similar to the Proposed Development as the existing OHL is located in close proximity to the proposed OHL alignment. It is understood that all relevant mitigation in relation to the Proposed Developed will apply to the project, particularly in relation to black grouse. While the additional works activity, extending to three consecutive breeding seasons (including the Proposed Development) would increase the magnitude of potential effects it is anticipated that mitigation described for the Proposed Development will be equally effective on this project.

8.6.80 While decommissioning of the existing OHL will follow immediately on completion of the Proposed Development there will be period (maximum 12 months) when sections of both OHL will be present in the landscape at the same time. Works associated with the decommissioning of the existing OHL will, to

an extent, displace golden eagle, hen harrier and black grouse from the area and reduce the frequency of at risk flights. While collision risk could be expected to increase over this short period risk is considered to be negligible for all species with a marginal increase over one year not considered to result in any significant effects on the conservation status of local or regional populations.

8.6.81 Due to these factors, it is considered cumulative effects on golden eagle, hen harrier and black grouse will result in effects of Site level importance and are therefore not significant.

8.7 Summary

8.7.1 The following sensitive ornithology receptors (referred to as IOFs) within the Site and EZoIs were identified: golden eagle, hen harrier and black grouse

8.7.2 This chapter has considered how the Proposed Development would affect the above IOFs and determines if effects will be significant following the implementation of embedded and additional mitigation, if required. Potentially significant effects from the Proposed Development comprised the following:

- construction – habitat loss and degradation, and disturbance and displacement; and
- operation – collision with the Proposed Development and displacement by the Proposed Development.

8.7.3 In addition to embedded mitigation to prevent impacts on breeding birds outlined in the Bird SpPP a suite of additional mitigation will be implemented.

8.7.4 Following the implementation of the above additional mitigation no significant residual effects remain either for the Proposed Development alone or cumulatively with other known projects.

9. CULTURAL HERITAGE

9.1 Introduction

9.1.1 This chapter presents the assessment of the potential effects on cultural heritage resulting from the Proposed Development. This chapter, and its associated Figures and Appendices are not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report (**Chapters 1-5**).

9.1.2 Cultural heritage comprises a diverse range of elements that are referred to throughout the EIA Report as heritage assets. Heritage assets are features created or that have undergone modification from human agency. This includes a wide range of visible and buried archaeological sites and monuments, as well as other historic features or places. Heritage assets consist of World Heritage Sites, Scheduled Monuments, Listed Buildings, Gardens and Designed Landscapes (GDL), Battlefields, Conservation Areas, Historic Marine Protection Areas, other underwater sites, buried archaeological remains, other historic buildings, and earthworks.

9.1.3 The specific objectives of this chapter are to:

- describe the cultural heritage baseline;
- describe the assessment methodology and significance criteria used in the assessment;
- assess the potential effects, including direct and cumulative effects;
- describe the mitigation and, where appropriate, monitoring measures proposed to address likely significant effects; and
- describe the residual effects remaining following the implementation of mitigation.

9.1.4 Additional information which supports this chapter is presented in the following figures and technical appendices:

- Figure 9.1: Heritage Assets
- Figure 9.2: Heritage Assets and ZTV
- Figure 9.3: Viewpoint C2 Dun Daraich Fort Glen Finart
- Appendix 9.1: Cultural Heritage Gazetteer
- Appendix 9.2: Cultural Heritage Assessment

9.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

9.2.1 The scope of the assessment is to define the known heritage assets within the study areas surrounding the Proposed Development and identify areas that have the potential to contain unknown archaeological remains. This chapter will present the assessment of the impacts of the Proposed Development on the cultural heritage resource, during construction and operation.

9.2.2 The following national legislation forms the background against which the assessment has been made:

- The Ancient Monuments and Archaeological Areas Act 1979[121];
- Planning (Listed Buildings and Conservation Areas (Scotland)) Act 1997[122]; and
- The Historic Environment Scotland Act 2014[123].

[121] UK Government (1979) *Ancient Monuments and Archaeological Areas Act*
[122] UK Government (1997) *Planning (Listed Buildings and Conservation Areas (Scotland)) Act* 1997.
[123] Scottish Government (2014). *Historic Environment Scotland Act 2014*.

9.2.3 The assessment has been conducted in line with Scottish Planning Policy[124] and the following guidance has been applied to the assessment process:

- Environmental Impact Assessment Handbook[125];
- Designation Policy and Selection Guidance[126];
- Managing Change in the Historic Environment Setting[127]; and
- Procedural Guidance for Archaeology and Development (West of Scotland Archaeology Service (WoSAS))[128].
- Standard and guidance for historic environment desk-based assessment[129]; and
- Standards and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment[130].

Extent of the Study Area

9.2.4 The focus of the assessment is on the direct impacts from the Proposed Development on both the physical remains of heritage assets and their settings. This requires the study of the heritage assets in the surrounding landscape in order to establish the local archaeological and historical context, providing a broader understanding of the historic development of the area and the potential for the presence of as-yet unidentified archaeological remains within the wider area.

Inner Study Area

9.2.5 An inner study area of 250 m (see **Figure 9.1 Cultural Heritage Gazetteer**), extending out from the centre of the proposed OHL alignment, has been chosen to allow for the identification of heritage assets that could receive direct impacts arising from the construction and operation of the Proposed Development.

9.2.6 The inner study area includes the 50 m Limit of Deviation (LoD) for the proposed OHL alignment, access tracks, and indicative helicopter operation compounds within this 50 m area. An additional helicopter operation compound lies outside the inner study area but has been included within the assessment of potential physical impacts on heritage assets. Access tracks that fall outside the study area, or re-use existing forestry tracks or other farm tracks, have not been included within the study area.

Outer Study Area

9.2.7 An outer study area of 2 km (see **Figure 9.1 Cultural Heritage Gazetteer**), extending out from the centre of the proposed OHL alignment, has been chosen for the identification of designated heritage assets that could receive setting impacts during the operation of the Proposed Development (including cumulative effects).

9.2.8 The outer study area has been reduced from the 3 km stated within the scoping report in order to maintain proportionality within the assessment. The steep topography of the local area and the presence of the existing OHL on similar lines to the Proposed Development reduce the potential for significant impacts on the setting of more distant heritage assets.

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[124] Scottish Government (2014). *Scottish Planning Policy*
[125] Historic Environment Scotland and Scottish Natural Heritage (2018). *Environmental Impact Assessment Handbook*.
[126] Historic Environment Scotland (2019) *Designation Policy and Selection Guidance*
[127] Historic Environment Scotland (2020) *Managing Change in the Historic Environment – Historic Environment Scotland's guidance note series*
[128] West of Scotland Archaeology Service (2009) *Procedural Guidance for Archaeology and Development*
[129] Chartered Institute for Archaeologists (2020) *Standard and guidance for historic environment desk-based assessment*
[130] Chartered Institute for Archaeologists (2020) *Standards and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment*

Consultation Undertaken To Date

9.2.9 Consultation has taken place with a number of stakeholders; summaries of the responses are provided in **Table 9-1.**

Table 9-1: Consultation Undertaken to Date

Organisation	Type of Consultation	Response	How response has been considered
Historic Environment Scotland (HES) 11/06/2020	Pre-application consultation	There are a number of nationally important designated historic environment assets in the vicinity of the existing OHL. Given that the rebuild of the line will require to be on an alternative alignment, it will be important to ensure that no significant adverse effects on the site or setting of these assets are produced by the new OHL. We strongly recommend avoiding any direct impacts on the site of any designated assets such as scheduled monuments and listed buildings, and if possible on any Inventory gardens and designed landscapes. The following designated historic environment assets are in the vicinity of the existing OHL and could potentially receive impacts to their site or setting from the rebuild OHL project: • Dun Daraich, fort, Glen Finart, Cowal (SM 9190) – in the vicinity to existing towers 36 & 37 • Benmore (Younger Botanic Garden) (GDL 00056) – in the vicinity of a number of towers on page 6 of the maps provided. • Kilmun Collegiate Church, tower and burial ground (SM 5260) – setting likely includes views across Holy Loch towards the existing OHL • St Munn's Parish Church (LB 5073) – setting likely includes views across Holy Loch towards the existing OHL • Kilmun, Old Kilmun House (LB 6582) – setting likely includes views across Holy Loch towards the OHL • Adam's Cave, chambered cairn, Ardnadam (SM 6552) – very close to the existing substation and OHL at Dunoon • Ardnadam, settlement, chapel and enclosure 215m W of The Larches (SM 3235) – very close to the existing substation and OHL at Dunoon • Dunloskin Wood, platforms and charcoal production area (SM 3894) – very close to the existing substation and OHL at Dunoon	The routing and alignment stages of the Proposed Development have ensured that all scheduled monuments, listed buildings, and GDLs have been avoided through the design process. All of the designated heritage assets listed have been considered within the assessment.

Organisation	Type of Consultation	Response	How response has been considered
HES 10/12/2020	Pre-application consultation	Identified the potential for part of the preferred route to cause significant adverse impacts on the setting of a scheduled monument in the vicinity of the development, Dun Daraich fort, Glen Finart, Cowal (SM9190) that would cause grounds for objection. Possible scope for positioning within the route corridor such that impacts could be adequately mitigated.	The potential for significant impacts was considered during the alignment stage and all efforts have been made in the Proposed Development design to avoid any significant impacts on the setting of Dun Dariach Fort. Options to move the Proposed Development to the west of the fort were not viable due to engineering and other environmental considerations. During routeing of the OHL, to avoid significantly impacting on Glen Finart, including impacts on Dun Daraich fort, the proposed alignment through this section follows the existing alignment as closely as possible, requiring the construction of a temporary OHL bypass to safely construct the section.
HES 03/05/2021	Scoping Response	We are largely content there is capacity for an OHL in this location that can be designed to avoid raising issues of national interest such that we would object. We do however have concerns relating to potential impacts on the setting of the Dun Daraich fort, Cowal (SM9190) scheduled monument in the vicinity of the proposed OHL. We consider that mitigation by design will be required (with careful tower positioning) to ensure that the impacts on the setting of the monument are no worse than the impacts given by the existing OHL. A future EIA report should include visualisations looking south-east down the glen from the monument, along with visualisations showing the reciprocal view. Given the woodland cover presently on the monument, these should be taken from the immediate east of the base of the knoll that the monument is located on.	The section of the Proposed Development in close proximity to the Dun Daraich Fort has been designed specifically to avoid any adverse impacts upon the heritage asset. The EIA has considered the impacts on the setting of the fort and other heritage assets within the baseline, and visualisations looking south-east down the glen from the fort have been provided, as requested (see **Figure 9.3a-b Viewpoint C2: Dun Daraich Fort, Glen Finart** photomontage).
HES 26/05/2022	Scoping Response (additional information)	HES are content that the additional information in relation to the alternative alignment for the northern section of the replacement OHL alignment does not demonstrate any substantial change for our	Response noted – see above for consideration.

Organisation	Type of Consultation	Response	How response has been considered
		interests. HES have no additional comments to add to the previous response.	
Loch Lomond and Trossachs National Park Authority 22/04/2022	Scoping Response	The National Park Planning Authority expects that Historic Environment Scotland and the West of Scotland Archaeological Service (WoSAS) have been consulted as part of this scoping request and would defer to their position. The presence of cultural heritage assets in the vicinity of the development is noted and consideration should be given to the relevant Historic Environment Policies in the National Park Local Development Plan.	Undesignated heritage assets within 250 m of the Proposed Development have been assessed and the policies within the National Park Local Development Plan have been considered as part of the assessment. No response has been provided from the West of Scotland Archaeology Service on behalf of Argyll and Bute Council or the National Park, but undesignated heritage assets within the local Historic Environment Record (HER) have been considered within the assessment.
Argyll and Bute Council 19/07/2022	Scoping Response	The Planning Authority is in agreement with the approach set out in the Scoping Report but will defer to the views of HES and WoSAS.	Response noted – see above for consultation with HES. No response has been provided from the West of Scotland Archaeology Service on behalf of Argyll and Bute Council or the National Park, but undesignated heritage assets within the local HER have been considered within the assessment.

Method of Baseline Data Collation

9.2.10 The assessment has been informed by a review of all available archaeological records; historical documentary evidence, cartographic evidence, and photographic material. This has involved a consultation of the following sources:

- GIS data on scheduled monuments, listed buildings, and GDL's obtained from HES;
- GIS data on other cultural heritage assets obtained from the Scottish National Record of the Historic Environment (SNRHE) which is maintained by HES;
- information from the online HER, which is maintained by WoSAS;
- readily accessible primary and secondary historical sources for information relating to the area's historical past, including past land use;
- pre-Ordnance Survey maps of the inner study area, available online from the National Library of Scotland (NLS). The relevant maps date in range from the seventeenth to the nineteenth centuries;

- first and subsequent editions of the Ordnance Survey maps of the inner study area, examined via the NLS;
- LIDAR datasets of the general area through the Scottish Remote Sensing Portal maintained by the Scottish Government; and
- the solid and drift geology for the Proposed Development based on that recorded by the British Geological Survey/Geological Survey of Great Britain maps.

9.2.11 To aid in the assessment, a Zone of Theoretical Vision (ZTV) was produced to indicate the area from which the Proposed Development may be visible. The ZTV was produced by computer modelling. All height data for the Proposed Development was overlain on a digital terrain model and 'lines of sight' were computer generated to show where they would theoretically be visible. The ZTV used the Ordnance Survey Terrain 5 DTM and allowed for a viewer eye height of 1.5 m.

9.2.12 It should be noted that this is a 'bare ground' ZTV, making no allowance for screening from buildings or vegetation. Although it represents a realistic indicator of areas from where the Proposed Development would be visible, there are places where existing buildings or vegetation would partially or wholly screen the view, and there may be minor variations in the landform not represented in the DTM that mean there are small areas with a view that are not shown, or areas shown as having a view that, in reality, do not.

9.2.13 Walkover surveys of the existing OHL and the Proposed Development, including a 50 m buffer either side of the alignment were carried out between 5th and 8th November 2018, 22nd to 24th February 2021, and 19th October 2022 in order to:

- assess the baseline condition of the known heritage assets;
- identify any further features of cultural heritage interest not detected through the desk-based assessment that could be affected by construction of the Proposed Development; and
- identify areas with the potential to contain currently unrecorded buried archaeological remains.

9.2.14 All areas of land within the inner study area were surveyed in full and all heritage assets that were identified through the desk-based assessment were visited.

9.2.15 Field visits were undertaken to selected heritage assets in the outer study area in order to assess their baseline setting.

Determining Magnitude of Change and Sensitivity of Receptors

9.2.16 Cultural significance lies in the value of a heritage asset to this and future generations because of its heritage interest; this may be artistic, archaeological, architectural, historic, traditional, aesthetic, scientific or social. Known and potential heritage assets within the inner study area and the wider outer study area have been identified from national and local designations, HER data and professional opinion.

9.2.17 The determination of the cultural significance or value of heritage assets is based on statutory designation and/ or professional judgement against the characteristics and criteria expressed in HES Designation Policy and Selection Guidance[131] and the HEPS[132].

9.2.18 A degree of professional judgement is necessary, guided by acknowledged standards, designations and priorities when evaluating the importance or significance (and hence the 'value') of heritage assets. It is also important to understand that buried archaeological remains may not be well understood at the time of initial assessment, and therefore can be of uncertain value.

[131] Historic Environment Scotland (2019). Designation Policy and Selection Guidance.
[132] Historic Environment Scotland (2019). Historic Environment Policy for Scotland.

9.2.19 The determination of setting has been undertaken in accordance with guidance provided within the Managing Change Guidance[133]. A three-stage process was undertaken to assess the impact of the Proposed Development options on the setting of heritage assets:

- **Stage 1:** Designated and undesignated heritage assets that might be affected by the Proposed Development were identified. The potential for impacts on the designated assets in the wider landscape due to the potential inter-visibility with the Proposed Development were also determined through the desk-based review and a walk over survey.
- **Stage 2:** The setting of all baseline heritage assets was defined by establishing how the surroundings contribute to the ways in which the asset is understood, appreciated, and experienced.
- **Stage 3:** The way in which the Proposed Development would impact upon setting was then assessed for all baseline assets.

9.2.20 **Table 9-2** identifies factors which are appropriate to consider during the assessment of heritage assets, with the adoption of five ratings for value: very high, high, medium, low, and negligible.

Table 9-2: Criteria for assessing the value of cultural heritage assets

Value	Example
Very High	World Heritage Sites (including nominated sites); and Assets of acknowledged international importance.
High	Scheduled Monuments (including proposed sites); Listed Buildings (Category A and B); Battlefields included within the Inventory; Marine Protected Areas; Gardens and Designed Landscapes Conservation areas containing nationally important buildings; Undesignated assets of scheduled quality and importance; and Assets of national importance.
Medium	Listed Buildings (Category C); Conservation areas containing buildings that contribute significantly to its historic character; and Assets of regional importance.
Low	Assets of local importance; Assets compromised by poor preservation and/or poor survival of contextual associations; and Buildings of modest quality in their fabric or historical association.
Negligible	Assets with very little or no surviving archaeological interest; Artefact find spots (where the artefacts are no longer in situ and where their provenance is uncertain); and Poorly preserved examples of particular types of minor historic landscape features (e.g. quarries and gravel pits, dilapidated sheepfolds, etc).

9.2.21 The criteria for assessing the magnitude of impact from the Proposed Development on heritage assets is shown in **Table 9-3**.

[133] Historic Environment Scotland (various) *Managing Change in the Historic Environment – Historic Environment Scotland's guidance note series*

Table 9-3: Criteria for assessing the magnitude of impact

	Adverse	Beneficial
Major	Changes to most or all key archaeological materials or key historic building elements such that the resource is totally altered; and Comprehensive changes to setting such as extreme visual effects, gross change of noise or change to sound quality, or fundamental changes to use or access.	Preservation of a heritage asset in situ where it would otherwise be completely or almost lost; and Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated, and experienced.
Moderate	Changes to many key archaeological materials or key historic building elements, such that the resource is clearly modified; and Considerable changes to setting that affect the character of the asset such as visual change to many key aspects or views, noticeable differences in noise or sound quality, or considerable changes to use or access.	Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored; and Changes that improve the way in which the heritage asset is understood, appreciated and experienced.
Minor	Changes to key archaeological materials or key historic building elements, such that the asset is slightly altered; and Slight changes to setting such as slight visual changes to few key aspects or views, limited changes to noise levels or sound quality, or slight changes to use or access.	Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed; and Changes that result in a slight improvement in the way a heritage asset is understood, appreciated and experienced.
Negligible	Very minor changes to archaeological materials, historic buildings elements, or setting; and Very minor changes to setting such as virtually unchanged visual effects, very slight changes in noise levels or sound quality, or very slight changes to use or access.	Very minor changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed; and Very minor changes that result in a slight improvement in the way a heritage asset is understood, appreciated and experienced.
No Change	Changes to fabric or setting that leave significance unchanged.	

9.2.22 The significance of the effect of change on an attribute of a heritage asset is a function of the importance of the attribute and the scale of change. For the purpose of this assessment, impacts of **Moderate** or greater significance are potentially significant in the context of the EIA regulations and are highlighted in bold in **Table 9-4**.

Table 9-4: Significance of Effect – Cultural Heritage

		Magnitude of Impact				
Value		Major	Moderate	Minor	Negligible	No Change
	Very high	**Very Large**	**Large or Very Large**	**Moderate or Large**	Slight	Neutral
	High	**Large or Very Large**	**Moderate or Large**	**Moderate** or Slight	Slight	Neutral
	Medium	**Moderate or Large**	**Moderate**	Slight	Neutral or Slight	Neutral
	Low	Slight or **Moderate**	Slight	Neutral or Slight	Neutral or Slight	Neutral
	Negligible	Slight	Neutral or Slight	Neutral or Slight	Neutral	Neutral

Limitations and Assumptions

9.2.23 The technical terminology applied to the assessment process is based on that contained within the Scottish Planning Policy framework. Professional judgement is applied throughout.

9.2.24 The desk-based data gathering exercise on which this assessment has been based was extensive but not exhaustive, thus there remains the possibility that there may be assets or features of archaeological or historical significance that have not been identified. It has been assumed that the information obtained from the data sources listed is accurate and up to date at the time of assessment.

9.3 Baseline Conditions

Introduction

9.3.1 The descriptions of the heritage assets that form the baseline for the cultural heritage assessment are provided in **Appendix 9.1 Cultural Heritage and Archaeology Gazetteer** and the locations are shown in **Figure 9.1 Heritage Assets**. The baseline includes all designated heritage assets within the 2 km outer study area and all undesignated heritage assets within the 250 m inner study area.

9.3.2 The scheduled monument of Kilmun Collegiate Church, tower, and burial ground (*SM5260*), and the Category A-Listed St Munn's Parish Church, including Argyll and Douglas Mausolea, associated buildings, and graveyard (*LB5073*), that is surrounded by the scheduled area of the Kilmun Collegiate Church, tower, and burial ground, is located outside the 2 km outer study area. This heritage asset has been included within the baseline for assessment as requested by Historic Environment Scotland during consultation.

9.3.3 The ZTV produced to indicate the area from which the Proposed Development may be visible is overlain by the heritage asset locations and depicted in **Figure 9.2: Heritage Assets and ZTV**.

Baseline Summary

9.3.4 There are 45 heritage assets within the baseline for the cultural heritage assessment comprising 44 assets within the inner and outer study areas, plus Kilmun Collegiate Church, tower, and burial ground/ St. Munn's Parish Church, which lies approximately 120 m to the south of the outer study area at Kilmun.

9.3.5 The inner study area contains 16 heritage assets, consisting of:

- 1 scheduled monument;
- 1 category B listed building;
- 9 undesignated heritage assets noted from the HER; and

- 5 undesignated heritage assets discovered through map regression or walkover survey.

9.3.6 The undesignated Ballochyle Sheepfold (***HA16***) is the only heritage asset located within the 50 m construction buffer surrounding one of the Proposed Development towers.

9.3.7 The outer study area contains 28 heritage assets, consisting of:

- 3 scheduled monuments;
- 1 GDL;
- 23 listed buildings (2 Category A, 12 Category B, and 9 Category C); and
- 1 conservation area.

Historical Background

9.3.8 The historical background presents a summary of the baseline information provided in **Appendix 9.1 – Cultural Heritage and Archaeology Gazetteer** and is focussed on interpreting the information relevant to assessing the potential for encountering as yet unknown archaeological features within the Proposed Development footprint.

9.3.9 The heritage assets within the study areas are summarised in the context of a timeline of archaeological periods from prehistoric through to modern. The time periods discussed are defined as follows:

- Prehistoric:
  - Palaeolithic 12,000 – 11,000 Before Common Era (BCE);
  - Mesolithic 11,000 – 4,100 BCE;
  - Neolithic 4,100 – 2,500 BCE;
  - Bronze Age 2,500 – 800 BCE; and
  - Iron Age 800 BCE – Common Era (CE) 400.
- Roman CE 77 – 211;
- Medieval CE 400 – 1560;
- Post-Medieval CE 1560 – 1900; and
- Modern CE 1900 – Present.

Prehistoric

9.3.10 The earliest prehistoric inhabitants of Scotland only leave ephemeral traces of their lives within the archaeological record. The people of the Palaeolithic and Mesolithic periods were nomadic hunter gatherers and left little evidence for their existence, with most heritage assets encountered related to flint scatters. Most known heritage assets from this period have been found in coastal regions with availability of resources the dominant influence on settlement during this period. The location of the Proposed Development on higher ground, albeit close to watercourses and coastal areas, make it an unlikely location for encountering Mesolithic or earlier activity.

9.3.11 The Neolithic period in Scotland is identified through evidence of the development of more sedentary lifestyles, with seasonal rather than continual movements becoming more evident alongside the growth of farming. The low-lying areas of the River Eachaig valley and Glen Finart would have been the most suitable areas close to the Proposed Development for people to farm and live on. Evidence of a Neolithic community is present within the study areas at the southern end of the Proposed Development.

9.3.12 Settlement evidence in the form of two round houses (***HA1*** and ***HA2***) and artefacts such as a Neolithic stone axe show that the slopes of Dunan contained a thriving settlement or family group during this period. The nearby chambered cairn of Adam's Cave (*SM6552*) (***HA7***) represents a Neolithic burial

tradition and is probably related to the settlement, as would be the probable stone circle (*WoSAS Pin 53777*) (***HA5***) to the immediate south of the Dunoon Substation. The chambered cairn and stone circle are typical of burial and ritual traditions in the Neolithic period and suggest that the settlement within Dunloskin Wood may have been established for a long period, as chambered cairns typically housed the remains from generations of family or communal groups.

9.3.13 Burial practices change into the Bronze Age with unstructured burial cairns and mounds, and an increase in cremations favoured over the Neolithic chambered cairns. The stone monuments, such as the stone circle at Ardnadam (*WoSAS Pin 53777*) (***HA5***) probably continued in use, and settlement evidence from elsewhere in Scotland during this the period suggests development of farming practices. None of the heritage assets within the study areas can definitively be interpreted as Bronze Age in date but there was possibly a continuation of settlement in the areas around Dunoon given its earlier occupation, ideal location for farming due to fertile soils, and the proximity to fresh water and fishing resources.

9.3.14 The later Prehistoric period of the first millennia BCE and CE see a continuation of larger settlements with less visibility of ritual and funerary monuments. The Iron Age in Scotland is characterised by the creation of hill forts and promontory forts, and the study area contains a rather unique example in the Dun Daraich Fort (*SM9190*) (***HA42***). The fort is located in the centre of Glen Finart, constructed on a rocky knoll that rises from the level flood plain of the Glen Finart Burn. There are no wide and extensive views from the fort as the surrounding hills dominate the narrow glen, but the location of the knoll would have given the forts occupants control of access and movement of people up and down the glen. There are clear views down the glen towards the edge of Loch Long, and the partially boggy ground surrounding the fort adds to its defensive qualities. A possible platform (*WoSAS Pin 51813*) (***HA43***) to the east of the fort may have been formed by quarrying of stone to help construct the ramparts, with the rock boss containing the platform found to contain quarried holes backfilled with soil and stone.

Statement of Potential

9.3.15 The potential for the Proposed Development footprint to contain as-yet unknown, sub-surface archaeological remains from the prehistoric period varies throughout the proposed OHL alignment. The areas of steeply sloping ground containing commercial forestry, and the higher ground above 250 m AOD have low or no potential for sub-surface archaeological remains from this period. The areas within Glen Finart have medium to high potential for later prehistoric, sub-surface, archaeological remains due to the proximity of the fort and the more favourable topography. The areas within the River Eachaig valley have medium potential for prehistoric, sub-surface archaeological remains due to the more favourable topography but the lack of known heritage assets from the period and potential boggy nature of the ground would make it less favourable for settlement in this period. The southern end of the Proposed Development footprint, close to the chambered cairn and stone circle have medium to high potential for sub-surface archaeological remains from this period as it is clear that the area was inhabited from the Neolithic period and possibly beyond.

Roman

9.3.16 The Roman occupation of Scotland was short-lived with activity concentrated in southern Scotland. Initial invasions in circa CE 80 and again circa CE 138 left a lasting mark on the landscape where the Romans occupied an area, but there are no known Roman heritage assets within the study areas.

Statement of Potential

9.3.17 The potential for the Proposed Development footprint to contain as-yet unknown, sub-surface archaeological remains from the Roman period is deemed to be low or of no potential as there are no known Roman heritage assets within the study areas or within the Cowal peninsula.

Medieval

9.3.18 Evidence of early medieval activity is scarce within the archaeological record, with settlements that would have served the descendants of the hill forts rare discoveries. Despite the western coasts of Scotland being invaded and inhabited by Vikings in the late first millennium CE, the study areas do not contain any evidence of this activity.

9.3.19 The medieval period in Scotland is not usually visible in the archaeological record until the 11th and 12th centuries when there is a far greater sense of sovereign and religious control and influence within the country. However, a chapel at Ardnadam (*SM3235*) (***HA2***), built on the location of an earlier Neolithic round house, provides evidence of medieval ecclesiastical activity from the 7th or 8th century. The church would likely have served a small community, but evidence of this settlement is yet to be discovered. It is possible that this settlement grew and migrated into medieval Dunoon as it became a more established settlement in later centuries, with Dunoon Castle (*SM5450*) being constructed in the 13th century.

9.3.20 The church at Kilmun (*SM5260*) (***HA14***) is another medieval heritage asset within the assessment baseline, dating to the 12th or 13th century, and endowed as a collegiate church in 1442. The presence of the church influenced the name of the village (Kilmun) as it was constructed for 'St. Mund', with 'Kil' meaning church or holy place in Gaelic. The church sits on the north-east coast of the Holy Loch, which was probably named due to the presence of the church. It may have been a focal point for settlement in this period, although evidence of this is yet to be discovered.

9.3.21 Into the later medieval period, smaller, individual settlements become more visible in the archaeological record with individual homesteads and farmsteads surviving in upland areas. Ardnadam farmstead (*WoSAS Pin 45482*) (***HA9***) is an example of this, with cartographic evidence showing it as dating to the 16th century at the latest. The farmstead is no longer in use by the mid-19th century and may have been replaced by Ardnadam Farm (*Canmore ID 141499*) (***HA8***).

Statement of potential

9.3.22 The potential for the Proposed Development footprint to contain as-yet unknown, sub-surface archaeological remains from the medieval period is deemed to be low. Similar to the potential for prehistoric remains, the topography of the majority of the Proposed Development would make it unlikely for activity from this period to be present in these areas. Also, in the lower lying areas, the lack of known heritage assets from the medieval period in close proximity to the construction areas, and the rarity of rural settlement from this period suggests the potential would also be low in these areas.

Post-medieval

9.3.23 The beginning of the post-medieval period in Scotland is characterised by the religious and political changes brought about by the Reformation in the 16th century, the union of the crowns in 1603 under James VI, followed by religious unrest and civil war throughout the 17th centuries. The castle at Dunoon (*SM5450*) may have played a part in these events, as would Carrick Castle (*SM2495*) to the north of the outer study area, but there are no known heritage assets within the study areas that would have related to these events.

9.3.24 In the rural areas containing the Proposed Development, the post-medieval period is visible through the small farmsteads and agricultural structures related to them. An example of this within the outer study area is Ardnadam farm (*Canmore ID 141499*) (***HA8***), as well as the sheepfolds at Ballochyle and Rashfield (***HA16*** and ***HA22***), and the shieling huts up the hill from Puck's Glen (***HA23*** and ***HA35***). The former field boundaries (***HA45***) related to the early field systems can still be seen in some locations, and there is some evidence of rural industrial activity, visible in the platform and structure in Glen Finart (***HA44***), and the charcoal production platforms (*SM3894*) (***HA1***) within Dunloskin Wood.

9.3.25 The designated heritage assets within the study areas from this period relate to the 19th century expansion of the towns and villages within the study area, comprising nine houses (***HA4***, ***HA15***, ***HA18***, ***HA19***, ***HA36***, ***HA37***, ***HA38***, ***HA39***, and ***HA41***), two churches (***HA10***, and ***HA40***), a conservation area (***HA12***), and two bridges (***HA3*** and ***HA20***). They demonstrate the expansion of the population in this area with the settlement around Dunoon and the smaller, linear villages of Kilmun and Ardentinny expanding along the shore of the lochs. Several buildings were constructed to serve the tourism industry in the mid to late 19th century, with the large estate and garden of Benmore (GDL00056) (***HA24***-***HA33***) a major influence in the expansion of this industry in the area.

Statement of potential

9.3.26 The potential for the Proposed Development footprint to contain as-yet unknown, sub-surface archaeological remains from the post-medieval period is deemed to be low. In areas of steeper and higher ground the post-medieval structures and earthworks are still visible due to the lack of modern development or ploughing. Commercial forestry may have truncated some of the known heritage assets and may have destroyed others. In low-lying areas there has been little modern development or agricultural ploughing that would conceal or have buried archaeological remains.

Modern

9.3.27 Into the 20th century, expansion of the settlements within the study area continues, as seen in the house of Benmore View (*LB43020*) (***HA11***) in Dunoon. The local community commemorate the former Benmore estate owner, James Duncan, by erecting a memorial in his honour at Kilmun (*LB50435*) (***HA13***) in 1906. His management of the estate allowed the local communities to benefit from increased tourism, and this industry is still thriving today with Puck's Glen and the Benmore Botanic Gardens two of the most interesting places to visit. On the slopes of the hill leading up from Puck's Glen, a small bothy (Canmore ID 299890) (***HA34***) was constructed in 1990 as a refuge for hill walkers visiting the area, demonstrating the continued pull of the area for visitors.

9.3.28 The rural areas containing the Proposed Development change from pastoral agricultural use to commercial forestry on the higher ground but retain their medieval and post-medieval land use in the glens and valleys.

Statement of potential

9.3.29 The potential for the Proposed Development footprint to contain as-yet unknown, sub-surface archaeological remains from the modern period is deemed to be low. Modern developments would be visible on current and past mapping so any structures or other potential features would have been visible during the map regression study.

Future Baseline

9.3.30 The current baseline as described above will continue to evolve without the introduction of the Proposed Development. The areas currently under commercial forestry will be cleared and replanted in the next 10-20 years, and there may be impacts on known and sub-surface archaeological remains from

this activity. Similarly, in the lower lying areas, agricultural activity will continue with potential for localised ploughing of fields in some areas that may disturb sub-surface archaeological remains. The proximity to the existing OHL will deter most other developments along the alignment of the Proposed Development so potential for impacts arising through other developments is minimal.

Sensitive Receptors

9.3.31 The sensitive receptors in relation to cultural heritage are the designated heritage assets where the setting of the heritage asset may be adversely impacted. Undesignated heritage assets of Medium value, and any undesignated heritage asset within the 50 m construction area surrounding a tower, would also be deemed to have the potential to receive significant impacts from the Proposed Development. The presence of the existing OHL in close proximity to the Proposed Development restricts the possibility of adverse impacts on setting, but these impacts will be considered within the assessment.

9.4 Issues Scoped Out

9.4.1 The direct impacts during construction and operation on undesignated heritage assets outside the inner study area have been scoped out of the assessment as any impacts would only relate to impacts on setting and are unlikely to result in significant effects. The borrow pits, access tracks, and helicopter operation compound outside the study area will not directly impact upon any known heritage assets.

9.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

9.5.1 Heritage assets have been avoided during the alignment stage of the Proposed Development. All tower locations, including the LoD, access tracks, helicopter operation compounds and other areas of potential direct physical impact were designed to avoid heritage asset locations wherever possible. Access tracks re-use former access tracks, forestry tracks and other tracks where possible, and airlifting of tower components is proposed to reduce the number and extent of access track works required in remote, and difficult to reach locations.

Construction Phase

Design Solutions and Assumptions

9.5.2 The construction practices will follow the details set out in **Section 3.7 Construction practices and phasing**, ensuring the least environmental damage through methods such as temporary metal or plastic roadways, installation of stone roads on a geo-textile fabric base, and use of low ground pressure vehicles.

9.5.3 It has been assumed that construction works will extend to 50m from the tower locations to account for LoD and to assess for potential direct physical impacts on heritage assets identified within the baseline.

Description of Effects

9.5.4 The detailed assessment of the potential construction related impacts on the heritage assets within the baseline are presented in **Appendix 9.2 Cultural Heritage Assessment**. The impacts relate to direct or indirect physical impacts or impacts on the setting of the heritage assets due to construction activity.

Physical Impacts

9.5.5 All ground breaking activities associated with the construction of the Proposed Development, in areas of ground that have not previously been impacted upon by intensive forestry activity or other historic developments, have the potential to directly impact upon heritage assets. Such activities include, but are

not limited to groundworks, topsoil stripping, ground compaction, access, drainage, stockpiling, and storage.

9.5.6 These construction related activities could lead to the following impacts:

- permanent complete or partial loss of a heritage asset as a result of ground excavation;
- permanent or temporary loss of the physical integrity of a heritage asset;
- damage to a heritage asset as a result of ground excavation;
- damage to a heritage asset due to compaction, desiccation or waterlogging; and
- damage to a heritage asset as a result of ground vibration caused by construction.

9.5.7 Of the 45 heritage assets within the baseline, 16 are located within the inner study area. One heritage asset, Ballochyle Sheepfold (***HA16***) has the potential for direct physical impacts from construction works as it lies within the LoD surrounding Tower 60. The detailed assessment of the potential impact on the sheepfold is as follows:

- **Ballochyle Sheepfold (*HA16*)** - The magnitude of impact during construction has been assessed as Major Adverse as the sheepfold lies within the 50 m LoD surrounding Tower 60. Any tree clearance and ground breaking works for construction access has the potential to remove any upstanding remains of the sheepfold so that it is totally altered. As a result, the magnitude of impact has been assessed as Major Adverse to an asset of Low value, therefore, the significance of effect has been assessed as **Slight Adverse**.

9.5.8 The potential for the Proposed Development to contain as-yet unidentified archaeological remains is set out within **Section 1.3 Baseline Conditions** under the Statements of Potential for each time period of the Historical Background. The potential for archaeological remains to be encountered varies across the Proposed Development with higher potential in low-lying areas and low to no possibility on the steep slopes and high ground. The magnitude of impact on potential sub-surface archaeological remains within the construction areas or access tracks has been assessed as Moderate Adverse. The value of any archaeological remains encountered during construction would typically be assessed as Low to Medium due to their potential local or regional importance. Therefore, the significance of effect prior to mitigation would be **Slight Adverse** to **Moderate Adverse**.

Temporary impacts on setting

9.5.9 The construction phase activities can result in temporary direct impacts on the setting of heritage assets. These impacts can usually be scoped out of the assessment as any impact will end after construction is complete. They are considered in detail within the assessment due to the duration of the construction period and potential impacts on high value heritage assets in proximity to the Proposed Development.

9.5.10 Of the 45 heritage assets within the baseline, 28 were assessed as having No Change to their setting from potential temporary construction activity, resulting in **Neutral** significance of effects. There are 11 Negligible Adverse (Temporary) impacts on the setting of heritage assets noted within the assessment, resulting in 10 **Neutral** significance of effects, and one **Slight Adverse (Temporary)** significance of effect on Adams Cave Chambered Cairn (*SM6552*) (***HA7***). The detailed assessment in relation to this asset is as follows:

- **Adam's Cave Chambered Cairn (SM6552) (HA7)** - The magnitude of impact during construction has been assessed as Negligible Adverse. There may be temporary impacts from very minor changes to the setting of the asset due to increased visibility of construction activity and noise as the cairn is only 200 m from Tower 77 and 300 m from Tower 76. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of High Value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.

9.5.11 There are five Minor Adverse (Temporary) impacts to the setting of heritage assets noted within the assessment, all resulting in **Slight Adverse (Temporary)** significance of effects. The detailed assessment in relation to these heritage assets is detailed below:

- **Invereck (LB50432) (HA18)** – The magnitude of impact during construction has been assessed as Minor Adverse (Temporary). There may be temporary impacts from slight changes to the setting of the asset due to visibility of construction activity and noise from the helicopter operations as one of the helicopter operation compounds would be located 120 m to the west. The helicopter operations would be limited to approximately 14 flights over a potential six month period. As a result, the magnitude of impact has been assessed as Minor Adverse to an asset of High value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.
- **Footbridge over the River Eachaig (LB50413) (HA24)** – The magnitude of impact during construction has been assessed as Minor Adverse (Temporary). There may be temporary impacts from slight changes in the setting of the asset. This is due to visibility of construction activity and noise from the helicopter operations, as one of the helicopter operation compounds would be located 470 m to the east. The helicopter operations would be limited to approximately 80 flights over the length of the 30 month construction period. Despite the longevity of the construction period, the limited number of flights would ensure the impacts are temporary in nature. As a result, the magnitude of impact has been assessed as Minor Adverse to an asset of Medium value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.
- **Benmore (Younger Botanic Garden) (GDL00056) (HA33)** – The magnitude of impact during construction has been assessed as Minor Adverse (Temporary). There may be temporary impacts from slight changes in the setting due to visibility of construction activity and noise from the helicopter operations, as one of the helicopter operation compounds would be located 200 m to the south. The helicopter operations would be limited to approximately 43 flights over the length of the 30 month construction period. Despite the longevity of the construction period, the limited number of flights would ensure the impacts are temporary in nature. As a result, the magnitude of impact has been assessed as Minor Adverse to an asset of High value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.
- **Dun Daraich Platform (Canmore ID 273072) (HA43)** – The magnitude of impact during construction has been assessed as Minor Adverse (Temporary). There may be temporary impacts from slight changes to the setting of the asset due to visibility of construction activity and noise from the helicopter operations as one of the helicopter operation compounds would be located 100m to the south. The helicopter operations would involve approximately 120 flights over the 30 month construction period. As a result, the magnitude of impact has been assessed as Minor Adverse to an asset of Low value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.
- **Clunie Burn Structure and Platform (HA44)** – The magnitude of impact during construction has been assessed as Minor Adverse (Temporary). There may be temporary impacts from slight changes to the setting of the asset due to visibility of construction activity and noise from the helicopter operations as two of the helicopter operation compounds would be located within 300 m to the south. The helicopter operations would involve approximately 127 flights over the 30 month construction period. As a result, the magnitude of impact has been assessed as Minor Adverse to an asset of Low value, therefore, the significance of effect has been assessed as **Slight Adverse (Temporary)**.

9.5.12 There is one Moderate Adverse (Temporary) impact to the setting of a heritage asset noted within the assessment in relation to Dun Daraich Fort, resulting in a **Moderate Adverse (Temporary)** significance of effect. The detailed assessment for this asset is provided below:

- **Dun Daraich Fort (SM9190) (HA42)** – There is the potential for temporary impacts from considerable changes to the setting of the fort due to visibility of construction activity with one helicopter operation compound within 130 m of the fort, and temporary masts within the key view to the south-east. One other helicopter operation compound is located within the glen to the south of the fort. The noise from the operations would also impact the setting, with approximately 127 flights expected from within the glen during the 30 month construction period. The operation compounds and temporary masts will be removed upon completion of the works. As a result, the magnitude of impact has been assessed as Moderate Adverse to an asset of High Value, therefore, the significance of effect has been assessed as **Moderate Adverse (Temporary)**.

Mitigation During Construction

9.5.13 Where the assessment has identified the potential for physical impacts on heritage assets within the construction areas or access tracks, demarcation and avoidance measures will be applied to mitigate these potential impacts. Where demarcation and avoidance cannot be achieved, a programme of archaeological recording will be required to preserve the heritage asset by record, prior to direct impacts.

9.5.14 In areas of archaeological potential, archaeological monitoring would be recommended to ensure the discovery of as-yet unidentified archaeological remains within the Proposed Development. Any discoveries made would need to be investigated to ensure their preservation by record.

9.5.15 Details of the recommended mitigation and any heritage assets affected are provided in **Table 9-5**.

Table 9-5 Schedule of Mitigation – Cultural Heritage

Reference	Description
CH1	Demarcation and avoidance of heritage assets Heritage assets with visible remains that are within the 50 m construction area around a tower, or within the access tracks related to the Proposed Development would be demarcated prior to the commencement of construction to ensure visibility of the heritage asset location to all members of the construction crew. Demarcation would be achieved using high visibility marker posts set 5 m from the visible remains of the heritage asset, with the markers retained throughout the construction phase. Demarcation of heritage assets would be the responsibility of the Principal Contractor, with identification of the heritage assets made on the ground by an experienced archaeologist using the baseline information provided in **Appendix 9.1 Cultural Heritage Gazetteer**. The heritage asset to be demarcated are as follows: • Ballochyle Sheepfold (***HA16***)
CH2	Archaeological recording In the event that a heritage asset cannot be avoided by construction works, a programme of archaeological recording will be undertaken to ensure its preservation by record. Any archaeological works required will be set out within a Written Scheme of Investigation (WSI) to be agreed with WoSAS. The works may involve topographic survey, building recording, excavation etc. The methodology for dealing with any archaeological features or artefacts will be detailed within the WSI.
CH3	Archaeological monitoring Where a tower construction area or access track is within an area of high archaeological potential and ground breaking works are required, archaeological monitoring of construction works at those locations is recommended. The monitoring works will be conducted according to a Written Scheme of Investigation (WSI) detailing the defined locations for monitoring to be agreed between WoSAS and the appointed archaeologist prior to construction commencing. The WSI will detail

Reference	Description
	the methodology for the monitoring and any subsequent excavation, sampling, recording, reporting, and post-excavation requirements for any archaeological discoveries.

9.5.16 Where temporary impacts on the setting of heritage assets have been identified, no specific heritage mitigation measures are proposed. Visual impacts will be mostly unavoidable in most instances as plant and machinery will be required when necessary, during construction. The CEMP will contain mitigation to minimise noise levels from the construction activity in proximity to sensitive receptors.

Residual Effect

9.5.17 During the construction of the Proposed Development, the implementation of the mitigation measures summarised in **Table 9-5** would avoid or reduce the impact on any heritage assets within the construction areas or access tracks. Once the proposed mitigation is considered, any residual effects arising from the construction of the Proposed Development would be no greater than **Moderate Adverse**. A summary of the predicted effects before mitigation, the mitigation recommended, and the residual effects after mitigation for heritage assets with the potential to be directly impacted by the construction activities is shown in **Table 9-6**.

Table 9-6 Residual Effects

Asset No	Description of effect	Pre-mitigation impact and effect		Mitigation measures	Residual impact and effect	
		Magnitude	Effect		Magnitude	Effect
HA7	Potential temporary impacts on setting of Adam's Cave Chambered Cairn	Negligible Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Negligible Adverse (Temporary)	Slight Adverse (Temporary)
HA16	Potential physical impacts on Ballochyle Sheepfold	Major Adverse	Slight Adverse	Demarcation and avoidance (CH01)	No Change	Neutral
HA18	Potential temporary impacts on setting of Invereck	Minor Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Minor Adverse (Temporary)	Slight Adverse (Temporary)
HA24	Potential temporary impacts on setting of Footbridge over the River Eachaig	Minor Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Minor Adverse (Temporary)	Slight Adverse (Temporary)
HA33	Potential temporary impacts on setting of Benmore (Younger Botanic Garden)	Minor Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Minor Adverse (Temporary)	Slight Adverse (Temporary)

Asset No	Description of effect	Pre-mitigation impact and effect		Mitigation measures	Residual impact and effect	
		Magnitude	Effect		Magnitude	Effect
HA42	Potential temporary impacts on setting of Dun Dariach Fort	Moderate Adverse (Temporary)	Moderate Adverse (Temporary)	None proposed	Moderate Adverse (Temporary)	Moderate Adverse (Temporary)
HA43	Potential temporary impacts on setting of Dun Daraich Platform	Minor Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Minor Adverse (Temporary)	Slight Adverse (Temporary)
HA44	Potential temporary impacts on setting of Clunie Burn Structure and Platform	Minor Adverse (Temporary)	Slight Adverse (Temporary)	None proposed	Minor Adverse (Temporary)	Slight Adverse (Temporary)
N/A	Areas of archaeological potential	Moderate Adverse	Slight Adverse to Moderate Adverse	Archaeological monitoring (CH03)	Moderate Adverse	Slight Adverse

Operational Phase

Design Solutions and Assumptions

9.5.18 The impacts to the setting of the Dun Daraich Fort (*SM9190*) (***HA42***) were considered during the design of the Proposed Development. The final design solution involves the construction of replacement towers immediately adjacent to the existing OHL within Glen Finart (Tower 21 and 22). This design decision requires additional construction measures including the use of temporary diversions to maintain supply during the build, but all efforts have been made to minimise any potential impacts on this nationally significant heritage asset.

Description of Effects

9.5.19 The detailed assessment of the potential operational related impacts on the heritage assets within the baseline are presented in **Appendix 9.2 Cultural Heritage Assessment**.

9.5.20 The assessment of operational impacts and effects on the setting of heritage assets has been carried out with reference to the Proposed Development design, and locations of heritage assets shown on **Figure 9.1 Heritage Assets**. The assessments were supported by photomontages and wireframes where necessary, prepared in support of **Chapter 5: Landscape and Visual**.

9.5.21 Of the 45 heritage assets within the baseline, 32 were assessed as having No Change to their settings from the operation of the Proposed Development, resulting in **Neutral** significance of effects. There is one heritage asset, Ardnandam Farmstead (*WoSAS ID 45482*) (***HA9***), that will have a Negligible Beneficial impact upon its setting, resulting in a **Slight Beneficial** significance of effect. The detailed assessment for this heritage asset is provided within Appendix 9.2.

9.5.22 There are 12 Negligible Adverse magnitude of impacts on heritage assets, resulting in five **Neutral** significance of effects. All five are undesignated, and their setting is not a significant element in the value

of the asset. The other seven heritage assets are designated listed buildings of Medium to High value, and two scheduled monuments of High value. The detailed assessment of these assets is as follows:

- **Adam's Cave Chambered Cairn (SM6552) (HA7)** – The cairn is located within an open field, on a slight slope leading towards the loch. The key views from the asset are towards the loch and Blairbeg Hill in the east. The existing OHL is visible from the asset to the south-west with two towers leading from Dunoon Substation in view of the cairn. The Proposed Development would be visible from the asset in similar views to the south-west with potential for five replacement towers to be visible in this direction. The magnitude of impact during operation has been assessed as Negligible Adverse because of minor changes to setting with the additional towers in views to the south-west. Changes to these views do not impact on how the asset is understood, appreciated, and experienced. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of High value, therefore, the significance of effect would be **Slight Adverse**.
- **Ardentinny Hotel (LB5058) (HA36)** – The hotel is located on a slight promontory on the western shore of Loch Long. There are mixed period housing and buildings in the settlement surrounding the hotel. Key views are to the east towards Coulport and along the length of the loch. The existing OHL is only visible on the eastern shore of Loch Long at Garelochhead, at distances over 5 km, with intervening topography blocking views of all other towers to the north and west. The Proposed Development at Garelochhead would be visible from the asset as would a few of the towers on the slope of Am Binnein, over 2 km to the north. The magnitude of impact during operation has been assessed as Negligible Adverse due to minor changes in the setting with the potential visibility of infrastructure to the north. These towers would be partially screened by commercial forestry and would not impact on the ability to appreciate and understand the setting of the hotel. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of High value, therefore the significance of effect would be **Slight Adverse**.
- **Ferry Cottages (LB5059) (HA37)** – The cottages are located on a slight promontory on the western shore of Loch Long. There are mixed period housing and buildings in the settlement surrounding the cottages. Key views are to the east towards Coulport and along the length of the loch. The existing OHL is only visible on the eastern shore of Loch Long at Garelochhead, at distances over 5 km, with intervening topography blocking views of all other towers to the north and west. The Proposed Development at Garelochhead would be visible from the asset as would a few of the towers on the slope of Am Binnein, over 2 km to the north. The magnitude of impact during operation has been assessed as Negligible Adverse due to minor changes in the setting with the potential visibility of infrastructure to the north. These towers would be partially screened by commercial forestry and would not impact on the ability to appreciate and understand the setting of the cottages. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of Medium value, therefore the significance of effect would be **Slight Adverse**.
- **Ferry House (LB50404) (HA38)** – The house is located on a slight promontory on the western shore of Loch Long. There are mixed period housing and buildings in the settlement surrounding the house. Key views are to the east towards Coulport and along the length of the loch. The existing OHL is only visible on the eastern shore of Loch Long at Garelochhead, at distances over 5 km, with intervening topography blocking views of all other towers to the north and west. The Proposed Development at Garelochhead would be visible from the asset as would a few of the towers on the slope of Am Binnein, over 2 km to the north. The magnitude of impact during operation has been assessed as Negligible Adverse due to the minor changes in the setting with potential visibility of infrastructure to the north. These towers would be partially screened by commercial forestry and would not impact on the ability to appreciate and understand the setting of the house. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of Medium value, therefore the significance of effect would be **Slight Adverse**.

- **Blinkbonny, Raglan, Fern Cottage and Glencairn (LB5057) (HA39)** – The cottages are located on a slight promontory on the western shore of Loch Long. There are mixed period housing and buildings in the settlement surrounding the cottages. Key views are to the east towards Coulport and along the length of the loch. The existing OHL is only visible on the eastern shore of Loch Long at Garelochhead, at distances over 5 km, with intervening topography blocking views of all other towers to the north and west. The Proposed Development at Garelochhead would be visible from the asset as would a few of the towers on the slope of Am Binnein, over 2 km to the north. The magnitude of impact during operation has been assessed as Negligible Adverse due to minor changes in the setting with the potential visibility of infrastructure to the north. These towers would be partially screened by commercial forestry and would not impact on the ability to appreciate and understand the setting of the cottages. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of High value therefore the significance of effect would be **Slight Adverse**.
- **Ardentinny Church (LB86) (HA40)** – The church is located on a slight promontory on the western shore of Loch Long. There are mixed period housing and buildings in the settlement surrounding the church. Key views are to the east towards Coulport and along the length of the loch. The existing OHL is only visible on the eastern shore of Loch Long at Garelochhead, at distances over 5 km, with intervening topography blocking views of all other towers to the north and west. The Proposed Development at Garelochhead would be visible from the asset as would a few of the towers on the slope of Am Binnein, over 2 km to the north. The magnitude of impact during operation has been assessed as Negligible Adverse due to minor changes in the setting with the potential visibility of infrastructure to the north. These towers would be partially screened by commercial forestry and would not impact on the ability to appreciate and understand the setting of the church. As a result, the magnitude of impact has been assessed as Negligible Adverse to an asset of Medium value, therefore the significance of effect would be **Slight Adverse**.
- **Dun Daraich Fort (SM9190) (HA42)** – The fort is located in the centre of Glen Finart, constructed on a rocky knoll that rises from the level flood plain of the Glen Finart Burn, close to the seaward end of Glen Finart. The surrounding hills dominate the narrow glen and the fort, but the location of the fort on the knoll ensures that it remains a dominant and prominent feature within the landscape, and would have provided the forts occupants control of access and movement of people up and down the glen. There are clear views down the glen towards the woodland at the edge of Loch Long, and the partially boggy ground surrounding the fort adds to its defensive qualities. The knoll is covered in mature trees so views form within the fort are obscured. Key views from the edges of the fort include open views to the south-east down the glen to the sea, and open views north-west up the glen, as well as reciprocal inward views from these directions. The existing OHL is visible in the key views to the south-east, with two towers visible in views towards the loch from the edge of the fort. The Proposed Development would replace these towers within 50 m of their existing location (Tower 21 and 22), with Tower 21 moving north west to the edge of the glen (see **Figure 9.3a-b Viewpoint C2: Dun Daraich Fort, Glen Finart** photomontage). Tower 23, to the south of the fort will be slightly changed from its existing location. The replacement of Towers 21 and 22 within close proximity to the existing tower locations would reduce any potential impact on the setting of the fort within the key views to the south-east. The magnitude of impact during operation has been assessed as Negligible Adverse on an asset of High value, as there would be potential for very minor changes to setting from the relocation of Tower 22 within the glen. Therefore, the significance of effect would be **Slight Adverse**.

Mitigation During Operation

9.5.23 The nature of the Proposed Development does not allow for any form of permanent mitigation to be implemented around the tower locations that would reduce the impact on the setting of the heritage assets within the baseline, and therefore the significance of effect.

Residual Effect

9.5.24 The residual effects of the Proposed Development on the settings of heritage assets in the baseline would be the same as the predicted effects.

Cumulative Effects

9.5.25 It is necessary to consider whether the effects of other developments in conjunction with the Proposed Development would result in an additional cumulative change upon the settings of heritage assets, beyond the levels predicted for the Proposed Development alone. There are two developments considered with the potential to have cumulative effects in combination with the Proposed Development:

- Decommissioning of the existing OHL; and
- Reconductoring and refurbishment of the Loch Long Crossing.

9.5.26 The decommissioning of the existing OHL has been considered within the assessment provided, with one Negligible Beneficial impact anticipated on Ardnadam Farmstead (*WoSAS Pin 45482*) (***HA9***) due to the removal of the existing towers from the vicinity of the heritage asset. No other cumulative effects are anticipated from the decommissioning works.

9.5.27 There are no cumulative effects anticipated from the Loch Long reconductoring works as these towers are between 4-5 km north of the closest heritage assets within the baseline.

9.6 Summary

9.6.1 The cultural heritage assessment conducted in relation to the Proposed Development was based on a desk-based assessment, field surveys, and consultation with HES.

9.6.2 There were 45 heritage assets included within the baseline related to the assessment of the Proposed Development, with 16 of these heritage assets identified within the inner study area, 28 within the outer study area, and one heritage asset outside the study areas included within the baseline at the request of HES.

9.6.3 The assessment identified one heritage asset, the Ballochyle Sheepfold (***HA16***), with the potential to be physically impacted upon during construction as it was located within the 50 m construction area around a tower. The magnitude of impact was assessed as Major Adverse, resulting in a **Slight Adverse** significance of effect prior to mitigation. After the mitigation measures of demarcation and avoidance, the residual significance of effect would be **Neutral**.

9.6.4 The assessment identified the potential for temporary adverse impacts on the setting of heritage assets during construction. The temporary visual impacts, and impacts from noise during construction, have the potential to produce **Slight Adverse (Temporary)** significance of effects on six heritage assets, and a **Moderate Adverse (Temporary)** significance of effect on the setting of Dun Daraich Fort (*SM9190*) (***HA42***). The residual significance of effect from the construction phase would be **Moderate Adverse (Temporary)**.

9.6.5 During operation of the Proposed Development, six heritage assets were identified as having the potential to receive Negligible Adverse impacts to their setting, resulting in **Slight Adverse** significance of effects. One heritage asset, Ardnadam Farmstead (*WoSAS Pin 45482*) (***HA9***) has the potential to receive

a Negligible Beneficial magnitude of impact, and a **Slight Beneficial** significance of effect, due to the removal of the existing towers that are currently detrimental to their setting.

9.6.6 One heritage asset, Dun Daraich Fort (*SM9190*) (***HA42***), has been identified as having the potential to receive a Negligible Adverse magnitude of impact on its setting during operation, resulting in a **Slight Adverse** significance of effect.

9.6.7 The Proposed Development would result in an overall residual significance of effect on cultural heritage of no worse than **Slight Adverse**, and therefore not significant.

10. HYDROLOGY, HYDROGEOLOGY, GEOLOGY AND SOILS

10.1 Introduction

10.1.1 This chapter presents the assessment of potential effects on hydrology, hydrogeology, geology, and soils resulting from the Proposed Development. For each of these it details the baseline description, identifies and assesses the effects on each receptor and, where relevant, identifies proposed mitigation.

10.1.2 Additional information which supports this chapter is presented in the following figures and technical appendix:

- Figure 10.1: Hydrology Overview
- Figure 10.2: Bedrock Geology
- Figure 10.3: Superficial Geology
- Figure 10.4: Peat
- Figure 10.5: Private Water Supplies
- Figure 10.6: Groundwater Dependent Terrestrial Ecosystems
- Appendix 10.1: Peat Landslide Hazard and Risk Assessment (PLHRA)

10.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

10.2.1 An EIA Scoping Report was submitted to the ECU in March 2022, which outlined the scope of this assessment based on the available baseline data at the time (see **Appendix 4.2 EIA Scoping Report)**.

10.2.2 This chapter focuses on the effects of the construction phase of the Proposed Development upon sensitive hydrology, hydrogeology, geology, and soils features within the Study Area. There are no operational effects anticipated from the Proposed Development, therefore these have been scoped out of the assessment.

10.2.3 During the construction phase of the Proposed Development, there is the potential for the following short-term impacts on the hydrology, hydrogeology, geology, and soils environment, in the absence of mitigation measures:

- pollution of surface waters, groundwater and Private Water Supplies (PWS);
- impact on water resource availability;
- short term increase in flood risk;
- soil erosion, compaction and excavation;
- loss of peat and soils; and
- impacts upon groundwater dependent terrestrial ecosystems (GWDTE).

10.2.4 This assessment is carried out in accordance with the principles contained within the following legislation:

- The Water Environment and Water Services (Scotland) Act 2003[134];
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011[135], as amended; and

[134] UK Government (2003). Water Environment and Water Services (Scotland) Act *2003*. Available at: https://www.legislation.gov.uk/asp/2003/3/contents

[135] UK Government (2011). The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available at: https://www.legislation.gov.uk/ssi/2011/209/contents/made

- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[136].

10.2.5 The assessment has been conducted in accordance with the principles contained within Scottish Planning Policy[137] and the following guidance:

- Scottish Environment Protection Agency (SEPA) Environmental Policy Number 19[138];
- Construction Industry Research and Information Association (CIRIA) Control of water pollution from construction sites[139];
- CIRIA Control of water pollution from linear construction projects: Technical guidance[140];
- CIRIA Control of water pollution from linear construction sites: Site guide[141];
- CIRIA The SuDS Manual[142];
- Scottish Executive River crossings & migratory fish: Design guidance[143];
- Scottish Executive Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments[144];
- NatureScot (formerly SNH) and Historic Environment Scotland Environmental Impact Assessment Handbook[145];
- NatureScot (formerly SNH) and Forestry Commission Scotland Floating roads on peat[146];
- SEPA (Controlled Activities) (Scotland) Regulations 2011 (as amended) A Practical Guide Version 9.1, March 2022 [147];
- SEPA Position Statement WAT-PS-06-02: Culverting of watercourses[148];
- SEPA WAT-SG-25 Engineering in the water environment: good practice guide. River crossings (Second Edition)[149];

[136] UK Government (2017). The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/ssi/2017/282/contents/made
[137] Scottish Government (2014). Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy/documents/
[138] SEPA (2009). Groundwater Protection Policy for Scotland v3 November 2009 Environmental Policy Number 19. Available at: https://www.sepa.org.uk/media/34371/groundwater-protection-policy-for-scotland-v3-november-2009.pdf
[139] CIRIA (2001). Report C532, Control of water pollution from construction sites: Guidance for consultants and contractors. Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK
[140] CIRIA (2006). Report C648, Control of water pollution from linear construction projects: Technical guidance. Available at: https://www.ciria.org/CIRIA/ProductExcerpts/C648.aspx
[141] CIRIA (2006). Report C649, Control of water pollution from linear construction sites: Site guide. Available at: https://www.ciria.org/ItemDetail?iProductCode=C649&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
[142] CIRIA (2015). Report C753, The Sustainable Drainage Systems (SuDS) Manual. Available at: https://www.ciria.org/ItemDetail?iProductCode=C753
[143] Scottish Executive (2012). River crossings & migratory fish: Design guidance.
[144] Scottish Executive (2017). Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments, 2nd Edition. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf
[145] NatureScot (formerly SNH) and Historic Environment Scotland (2018). Environmental Impact Assessment Handbook, Version 5. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf
[146] NatureScot (formerly SNH) and Forestry Commission Scotland (2010). Floating roads on peat. Available at: http://www.roadex.org/wp-content/uploads/2014/01/FCE-SNH-Floating-Roads-on-Peat-report.pdf
[147] SEPA (2022). The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) A Practical Guide. Version 9.1, March 2022. Available at: https://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf
[148] SEPA (2015). Position Statement to support the implementation of the Water Environment (Controlled Activities) (Scotland) Regulations 2011: WAT-PS-06-02: Culverting of Watercourses - Position Statement and Supporting Guidance. Available at: https://www.sepa.org.uk/media/150919/wat_ps_06_02.pdf
[149] SEPA (2010). WAT-SG-25, Engineering in the water environment: good practice guide. River Crossings (Second Edition). Available at: https://www.sepa.org.uk/media/151036/wat-sg-25.pdf

- SEPA Prevention of Pollution from Civil Engineering Contracts: Special Requirements[150];
- SEPA Regulatory Position Statement – Developments on Peat[151];
- SEPA Guidance on assessing the impacts of development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems[152]; and
- Scottish Renewables/SEPA (2012) Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste[153].

Extent of the Study Area

10.2.6 The assessment is based upon the land within the Study Area, applying professional judgement and experience of assessing similar developments in similar environments. The following terms are used throughout this Report.

- Proposed Development footprint – the alignment of the OHL for which the Proposed Development relates, including access tracks, borrow pit search areas and temporary working areas.
- Study Area – encompasses sensitive receptors within the zone of influence of the Proposed Development footprint, up to and including 1 km. This radius is considered conservative for the assessment of potential adverse effects resulting from the Proposed Development.

Consultation Undertaken to Date

10.2.7 **Table 10-1** provides a summary of the consultation activities undertaken in support of the preparation of this chapter.

Table 10-1: Consultation responses of relevance to Hydrology, Hydrogeology, Geology and Soils

Organisation	Type of Consultation	Response	How response has been considered
Argyll and Bute Council	Data request via email, March 2021.	Argyll and Bute Council provided PWS information within a 10 km area surrounding the Proposed Development centre point.	This information is considered further within the Water Supplies and Mitigation sections of this report.
Landowner Consultation	Landowner Questionnaires (LOQs)	Completed questionnaires provided information required to identify potentially impacted PWS.	PWS data gathered from LOQs has been used to produce **Table 10-6** in the report.

[150] SEPA (2006). WAT-SG-31, Prevention of Pollution from Civil Engineering Contracts: Special Requirements. Available at: https://www.sepa.org.uk/media/152220/wat_sg_31.pdf

[151] SEPA (2010). Regulatory Position Statement – Developments on Peat. Available at: https://www.sepa.org.uk/media/143822/peat_position_statement.pdf

[152] SEPA (2017). Land Use Planning System SEPA Guidance Note 31, Guidance on assessing the impacts of development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems, Version 3. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf

[153] Scottish Renewables/SEPA (2012). Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2014/07/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance/documents/guidance-on-the-assessment-of-peat-volumes-reuse-of-excavated-peat-and-the-minimisation-of-waste/guidance-on-the-assessment-of-peat-volumes-reuse-of-excavated-peat-and-the-minimisation-of-waste/govscot%3Adocument/Guidance%2Bon%2Bthe%2Bassessment%2Bof%2Bpeat%2Bvolumes%252C%2Breuse%2Bof%2Bexcavated%2Bpeat%252C%2Band%2Bthe%2Bminimisation%2Bof%2Bwaste.pdf

Organisation	Type of Consultation	Response	How response has been considered
Scottish Water (SW)	Data request via email, March 2022, for details of whether or not there are Scottish Water registered assets within the Proposed Development and if so, an indication of their location.	SW provided information within the Proposed Development.	SW confirmed the Proposed Development is not located within a SW drinking water supply catchment. Public water supply assets might be present within the Proposed Development, which will be taken into consideration at the detailed design stage.
SEPA	Scoping Response, March 2022.	Map and assessment of all engineering Activities which may have adverse effects on the water environment. Mapping GWDTE and assessment of impacts, demonstrating that all GWDTE are outwith a 100 m radius of all excavations shallower than 1 m and outwith 250 m of all excavations deeper than 1 m and proposed groundwater abstractions. Assessment of any impacts to groundwater abstractions will be undertaken. Map detailing peat depth surveys and table detailing re-use proposals. Details of new or upgraded watercourse crossings to be included within the EIA.	This is provided within this chapter.
	Data request via email, March 2021.	Registered private water supplies and abstractions located within 5km of the Proposed Development.	This information is considered further within the Water Supplies and Mitigation sections of this report.
Marine Scotland	Scoping Response, March 2022.	Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following: • any designated area, for which fish is a qualifying feature, within and/or downstream of the proposed development area; • the presence of a large density of watercourses; • the presence of large areas of deep peat deposits; • known acidification problems and/or other existing pressures on fish populations in the area; and • proposed felling operations.	The assessment of potential impacts on designated areas, watercourses, peat deposits and the effects of forestry operations is included within this chapter.

Method of Baseline Data Collection

10.2.8 To investigate baseline conditions and to consider potential effects of the Proposed Development with respect to hydrology, hydrogeology, geology and soils, a review of available desk-based information has been undertaken.

10.2.9 The collation of baseline information was supported by a number of site visits undertaken between June and November 2022, which included peat probing and coring surveys and the collection of photographs of watercourses crossed by the Proposed Development. Peat probing and coring surveys were carried out at two stages, Phase 1 in June, August, September and November 2022 and, Phase 2 in July. The survey during June, August, September and November 2022 focussed on collecting representative peat depth data within the Proposed Development. The site visit in July 2022 focussed on the areas identified with higher risk of peat instability during the peat stability assessment. The survey collated multiple sets of site data concurrently, with supplementary peat probing alongside peat coring.

10.2.10 The general methodology used to assess the effect of the Proposed Development on the hydrology, hydrogeology, geology, and soils receptors and the surrounding area is as follows:

- desktop study to obtain baseline and historical data;
- consultation with Scottish Water, Argyll and Bute Council and landowners to identify water abstractions and PWS;
- identification of the potential effects of the Proposed Development on sensitive receptors, taking account of the Applicant's General Environmental Management Plans (GEMPs); and
- identification of options for the mitigation of potential effects, taking account of additional mitigation measures.

10.2.11 The effects of the Proposed Development on GWDTE were evaluated using SEPA's guidance on assessing the impacts of developments on GWDTE (LUPS-GU31)[154], which requires assessment of GWDTE located within 250 m of excavations greater than 1 m and within 100 m of excavations less than 1 m.

Determining Magnitude of Change and Sensitivity of Receptors

10.2.12 The assessment of significance will consider the magnitude of change (from the baseline conditions), the sensitivity of the affected environment/ receptors and the probability, (in terms of determining residual effects) and the extent to which mitigation and enhancement will reduce or reverse adverse effects.

Sensitivity of Receptor

10.2.13 The sensitivity of the receptor will be determined using professional judgement, consideration of existing designations and quantifiable data, where possible. The criteria used to determine the sensitivity of receptors is shown in **Table 10-2**.

[154] SEPA (2017). Land Use Planning System SEPA Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf

Table 10-2: Sensitivity of Receptor Criteria

Sensitivity	Example of Characteristics
High	• Receptor has 'High' or 'Good' Water Framework Directive (WFD) overall status and/or water quality status for surface water or groundwater body. • Receptor is a designated site protected under national or international legislation, such as Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), and Special Protection Area (SPA), for the disciplines assessed in this Chapter. • Receptor contains Geological Conservation Review (GCR) sites designated as SSSIs or Candidate SSSIs. • Receptor contains areas of regionally important economic mineral deposits. • Receptor supports key species and habitats sensitive to changes in suspended sediment concentrations and turbidity, such as salmon or freshwater pearl mussels. • Receptor supports GWDTE confirmed as potentially highly groundwater dependent. • Receptor contains a range of hydromorphological features with very little modification. • Receptor is a watercourse or floodplain, with a possibility of direct flood risk to populated areas, which are sensitive to increased flood risk by the possible increase in water levels. • Receptor provides clear flood alleviation benefits. • Receptor used for abstraction or storage for public water supply or large private water supply serving ≥10 properties. • Receptor contains Class 1 or 2 priority peatland, with carbon-rich and peaty soils covering ≥20% of the Proposed Development. • Receptor is classed as a high productivity aquifer. • Receptor groundwater vulnerability contains classes 5, 4a and 4b.
Medium	• Receptor has 'Moderate' WFD overall status and/or water quality status for surface water or groundwater body. • Receptor contains GCR sites with Local Geodiversity Site (LGS) status. • Receptor contains areas of locally important economic mineral deposits. • Receptor supports GWDTE confirmed as potentially moderately groundwater dependent. • Receptor contains limited hydromorphological features and a limited range of fluvial processes, such areas may have been subject to past modification such as straightening, bank protection and culverting or other anthropogenic pressures. • Receptor is a watercourse or floodplain, with a possibility of direct flood risk to high value agricultural areas, which are moderately sensitive to increased flood risk by the possible increase in water levels. • Receptor provides limited flood alleviation benefits. • Receptor used for abstraction or storage for private water supply serving <10 properties or for agricultural/ industrial use. • Receptor contains Class 1 or 2 priority peatland, with carbon-rich and peaty soils covering <20% of the Proposed Development, or Class 3 and 5 peatland areas, carbon rich and peaty soils present within the Proposed Development. • Receptor is classed as a moderate or low productivity aquifer. • Receptor groundwater vulnerability contains classes 2 and 3.

Sensitivity	Example of Characteristics
Low	• Receptor has 'Poor' or 'Bad' WFD overall status and/or water quality status for surface water or groundwater body. • Receptor contains GCR sites without SSSI (or Candidate SSSI) designation or LGS status, and non GCR sites with potential geodiversity interest. • Receptor supports no key species and habitats sensitive to changes in suspended sediment concentrations and turbidity. • Receptor supports GWDTE, with local water sources not considered as predominantly groundwater. • Receptor contains no hydromorphological diversity and/or are identified as 'heavily modified water bodies' or 'artificial water bodies'. • Receptor is a watercourse or floodplain which passes through low value agricultural areas, less sensitive to increased flood risk by the possible increase in water levels. • Receptor provides limited flood alleviation benefits. • Receptor does not support any water abstractions. • Receptor contains Class -2, -1, 0, and 4 non-peatland areas, with no carbon-rich and peaty soils. • Receptor is classed as a very low productivity aquifer. • Receptor groundwater vulnerability contains classes 0 and 1.

Magnitude of Change

10.2.14 The likely magnitude or extent of an impact (or change) on a receptor is established by assessing the degree of the impact relative to the nature and extent of the Proposed Development. The criteria used to determine the magnitude of change is shown in **Table 10-3**.

Table 10-3: Magnitude of Change Criteria

Magnitude of Change	Example of Changes
Major	• Long-term (≥12 months) or permanent change in surface water quality, resulting in a change in WFD status and/or prevention of attainment of target status of 'Good'. • Results in loss of feature(s) and failure of hydromorphological elements (morphology, quantity and dynamics of flow) resulting from the works. Loss or damage to existing habitats. Replacement of natural bed and/ or banks with artificial materials. Extensive change to channel planform. • Loss of floodplain due to construction within flood risk area. • Permanent loss of water supply. • Major or total loss of a geological site or mineral deposit, where the value of the Proposed Development would be severely affected. • Major or total loss of soils or peatland deposits or where the value of the Proposed Development would be severely affected. • Long-term (≥12 months) or permanent change in groundwater quality, resulting in a permanent change in WFD status and/or prevention of attainment of target status of 'Good'. • Major loss of an aquifer in terms of water level or yield, with total loss of or major changes to dependent abstractions/ habitats. • Major change or total loss of a GWDTE, where the value of the site would be severely affected.

Magnitude of Change	Example of Changes
	• Major increase in water yield as a result of forestry felling within the catchment.
Moderate	• Mid-term (≥6 months) change in local surface water quality, potentially resulting in a temporary change of WFD status (or equivalent status at local scale) or preventing attainment of target overall status of 'Good' during this period. • Results in adverse change on integrity of hydrological feature(s) or loss of part of feature/ moderate shift away from baseline conditions. Failure of one or more hydromorphological elements (morphology, quantity and dynamics of flow) resulting from the works. Some damage or loss to habitat due to the modifications. Replacement of the natural bed and/ or banks with artificial material. • Floodplain reduction due to extensive increases in impermeable area within catchment and/ or drainage design which would result in an increase in peak flood level. • Temporary loss of water supply. • Partial loss of a geological site or mineral deposit, with major change to the settings, or where the value of the Proposed Development would be affected. • Partial loss of soils or peatland deposits or where the value of the Proposed Development would be affected. • Mid-term (≥6 months) change in local groundwater quality, not affecting overall WFD status. • Changes to an aquifer in terms of water level or yield, with small changes to nearby dependent abstractions/habitats. • Partial change or loss of a GWDTE, where the value of the site would be affected. • Moderate increase in water yield as a result of forestry felling within the catchment.
Minor	• Short-term (≥1 month) change in local surface water quality, resulting in minor temporary changes such that ecology is affected for short-term. Equivalent to a temporary minor, but measurable, change within WFD status class. • Potential failure in one of hydromorphological elements (morphology, quantity and dynamics of flow) resulting from the works. Results in minimal shift away from baseline conditions or partial loss or damage to habitat due to modifications. • Floodplain changes due to limited increases in impermeable area within catchment and/ or drainage design which would result in a minor increase in peak flood level. • Temporarily reduced quality and quantity of water supply. • Small loss to a geological site or mineral deposit, such that the value of the Proposed Development would not be affected. • Small loss of soils or peatland, or where soils will be disturbed but the value not affected. • Short-term (≥1 month) change in local groundwater quality. • Small change to an aquifer in terms of water level or yield, with little discernible change to dependent abstractions/ habitats. • Small change to or loss of a GWDTE, where the value of the site would not be affected. • Small increase in water yield as a result of forestry felling within the catchment.

Magnitude of Change	Example of Changes
Negligible	• Negligible change to surface water quality, very slight temporary change in water quality with no discernible change to watercourse ecology. • No alteration to hydromorphological elements. Some change to feature(s), but of insufficient level to affect the use/ integrity, approximating to a 'no change' situation. • Floodplain variations of negligible change. • No anticipated change to water supply. • Minimal or no change to a geological site or mineral deposit. • Minimal or no change to soils or peatland deposits. • Negligible change to groundwater quality, very slight temporary change in local water quality. • Minimal or no change to an aquifer in terms of water level or yield, with no discernible change to dependent abstractions/ habitats. • Minimal or no change to or loss of a GWDTE. • Minimal increase in water yield as a result of forestry felling within the catchment.

Probability

10.2.15 The probability of the occurrence of an effect has been evaluated as being high, medium, or low during the phase of work being assessed. Professional judgement is used to determine the probability of occurrence.

10.2.16 The application of good practice and mitigation measures reduces the probability of an effect occurring.

Significance

10.2.17 The findings of the three criteria considered in the evaluation of an effect has been applied to a matrix for each potential effect (**Table 10-4**) to assess its significance.

10.2.18 Through the assessment, potential effects are concluded to be of major, moderate, minor, or negligible significance. Major and moderate effects are considered significant, and minor and negligible effects are considered not significant. Effects are considered adverse unless stated otherwise.

Table 10-4: Significance Matrix

Sensitivity	Magnitude	Probability	Significance of Effect
High	Major	High	Major
		Medium	Major
		Low	Moderate
	Moderate	High	Moderate
		Medium	Moderate
		Low	Minor
	Minor	High	Minor
		Medium	Minor
		Low	Minor
	Negligible	High	Minor
		Medium	Negligible
		Low	Negligible
Medium	Major	High	Major
		Medium	Moderate
		Low	Minor
	Moderate	High	Moderate
		Medium	Minor
		Low	Minor
	Minor	High	Minor
		Medium	Minor
		Low	Negligible
	Negligible	High	Negligible
		Medium	Negligible
		Low	Negligible
Low	Major	High	Moderate
		Medium	Minor
		Low	Negligible
	Moderate	High	Minor
		Medium	Minor
		Low	Minor
	Minor	High	Minor
		Medium	Negligible
		Low	Negligible
	Negligible	High	Negligible
		Medium	Negligible
		Low	Negligible

Limitations and Assumptions

10.2.19 Baseline conditions have been established from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions are likely to change during the construction and operation of the Proposed Development.

10.2.20 There are sections of the Proposed Development footprint with limited access for peat probing data collection, with spacing exceeding 100 m in a number of locations, due to health and safety and asset protection constraints. The main constraints were the Unexploded Ordnance (weapons buried in the ground that did not explode when they were employed and therefore pose a health and safety risk) Moderate risk, existing OHL and access constraints due to tree windfall. Access issues, including tree windfall and dense cover vegetation, were encountered along the proposed retained access track at the northern extent, therefore the Study Area has not been extended outside of this track (see **Figure 10.1.5 Peat**). Specific mitigation measures have been proposed along the northern alignment in order to minimise the risk (**Appendix 10.1 Peat Landslide Hazard and Risk Assessment**).

10.2.21 It is assumed that information received by third parties is complete and up to date.

10.2.22 It is assumed that the design, construction and completed stages of the Proposed Development will satisfy minimum environmental standards, consistent with current legislation, practice, and knowledge.

10.3 Baseline Conditions

10.3.1 **Figure 10.1: Hydrology Overview** demonstrates the hydrological baseline conditions associated with the Proposed Development.

Surface Water Hydrology

10.3.2 The Proposed Development is located within undulating terrain, typically moderately sloping. The steeper slopes within the Proposed Development are related to the local hills, including Creachan Mor, Stronchullin Hill, Creag Mhor and Ballochyle Hill. A review of Ordnance Survey (OS) 1:25,000 scale mapping indicates that the Proposed Development crosses 20 catchments, as listed below, from north to south:

- Allt na Moine;
- Allt Toll a' Bhuic;
- Knap Burn;
- Allt Conbhach;
- Combined coastal watercourse;
- Whitebay Burn;
- Grotto Burn;
- Clunie Burn;
- River Finart;
- Allt Mhill Odhair;
- Cuil Burn;
- Schoolhouse Burn;
- Inverchapel Burn;
- Stronchullin Burn;
- Puck's Glen;
- River Eachaig;

- Balagowan Burn;
- Little Eachaig River;
- Allt na Criche; and
- Allt a' Chromain.

10.3.3 There are also numerous small unnamed field and forestry drains crossed by the Proposed Development footprint, which originate on local slopes flowing towards the larger coastal water bodies.

10.3.4 A review of the SEPA Water Classification Hub[155], indicates a number of surface water bodies within 1 km of the Proposed Development are classified by SEPA under the WFD. These, from north to south, are as follows:

- Loch Long (South) coastal water body (ID: 200045) was classified by SEPA under WFD as having an overall water quality status of 'Good' in 2020. The water body is hydrologically connected to the Proposed Development by a number of its tributaries, including the Knap Burn, Allt Conbhach and Clunie Burn. Knap Burn flows east, before discharging into Loch Long, approximately 1 km downstream of where this watercourse is crossed by the Proposed Development.
- River Finart (ID: 10208) was classified by SEPA under WFD as having an overall water quality status of 'Poor' in 2020. This watercourse is crossed by the Proposed Development.
- River Eachaig (ID: 10205) was classified by SEPA under WFD as having an overall water quality status of 'Moderate' in 2020. This watercourse is crossed by the Proposed Development.
- Holy Loch coastal water body (ID: 200039) was classified by SEPA under WFD as having an overall water quality status of 'Good' in 2020. The water body is hydrologically connected to the Proposed Development by the River Eachaig. River Eachaig flows in a south-easterly direction towards the water body and joins it approximately 1.6 km downstream from the point where it is crossed by the Proposed Development.
- Little Eachaig River/ Cruach Neuran Burn (ID: 10202) was classified by SEPA under WFD as having an overall water quality status of 'Moderate' in 2020. This watercourse is crossed by the Proposed Development.

10.3.5 For the basis of this assessment and as a precautionary approach, surface watercourses will be assessed as High sensitivity receptors, due to the Good WFD status of two of the WFD water bodies listed above (Loch Long and Holy Loch), which have a direct hydrological linkage to the relevant hydrological receptors that are crossed by the Proposed Development.

Designated Sites

10.3.6 According to NatureScot Sitelink[156], there are three nationally and internationally important designated sites relevant to hydrology, hydrogeology, geology and soils within 1 km of the Proposed Development, as detailed in **Table 10-5**.

[155] SEPA (2019) Water Classification Hub [online]. Available at https://www.sepa.org.uk/data-visualisation/water-classification-hub/ [Accessed November 2022]
[156] NatureScot (2021) Sitelink [online] Available: https://sitelink.nature.scot/map [Accessed March 2022]

Table 10-5: Designated Sites

Designated Site Name	Site Code	Description
Loch Lomond and The Trossachs National Park	8621	The park is designated for a list of special qualities, including landscape, habitats and water environment. The park has a great variety of water bodies, including deep, indented sea lochs, long inland lochs, some straight, some sinuous, lochans, rivers, burns, waterfalls and rapids; a lowland lake, and also wetlands, marshes and mires of many sizes and types. The majority of the Proposed Development footprint falls within the National Park therefore has been assessed within this chapter. As a result, Loch Lomond and The Trossachs National Park has been classified as High sensitivity receptor.
Upper Loch Fyne and Loch Goil Nature Conservation Marine Protected Area (MPA)	10424	This MPA lies 800 m north of the Proposed Development and is designated for its burrowed mud; flame shell beds; horse mussel beds; ocean quahog aggregations; sublittoral mud and specific mixed sediment communities. The MPA is not hydrologically connected to the Proposed Development and is therefore not considered further in the assessment.
Craighoyle Woodland Site of Special Scientific Interest (SSSI)	436	This SSSI lies 650 m north-west of the Proposed Development and is designated for their bryophyte and lichen assemblages. The particular species and the diversity found at Craighoyle are determined by more specific factors such as lack of canopy and disturbance, the presence of burns within rocky gorges and the diversity of aspect as well as substrate base status. The site is located within the catchment of an unnamed tributary of the Glen Finart Burn, which is not hydrologically connected to the Proposed Development and is therefore not considered further in the assessment.

Geology and Soils

Bedrock Geology

10.3.7 According to British Geological Survey (BGS) Bedrock Geology 1:50,000 scale mapping[157] (**Figure 10.2: Bedrock Geology**, showing a 250 m buffer of the proposed OHL alignment), the bedrock formations underlying the Proposed Development from north to south are:

- Beinn Bheula Schist Formation – the most predominant bedrock formation across the Proposed Development.
- North Britain Siluro-Devonian Calc-Alkaline Dyke Suite – small areas in the northern and central sections.
- Mull Dyke-Swarm – small intrusions in the central section.
- Southern Highland Group – small intrusions in the central section and a small area near Stronsaul.
- Loch Katrine Volcaniclastic – small area noted at the southern extents.

Superficial Geology

10.3.8 BGS Superficial Deposits 1:50,000 scale mapping[157] (**Figure 10.3: Superficial Geology**, showing a 250 m buffer of the OHL Alignment) indicates that superficial deposits are largely absent across the majority of the Proposed Development, with areas of hummocky (moundy) glacial deposits, Devensian till, and alluvium throughout the Proposed Development. Smaller areas of river terrace deposits, river marine deposits, alluvium fan deposits and an isolated area of glaciofluvial ice contact deposits are also noted across the Proposed Development.

[157] BGS (2021) Geology of Britain viewer (classic) [online]. Available at: https://mapapps.bgs.ac.uk/geologyofbritain/home.html [Accessed March 2022]

Soils and Peat

10.3.9 The James Hutton Institute National Soil Map of Scotland[158] indicates that the Proposed Development footprint consists of brown forest soils, noncalcareous gleys, peaty gleys and peaty podzols, with smaller areas of alluvial soils, mineral gleys and mineral podzols.

10.3.10 According to the NatureScot Carbon and Peatland Map[159], Class 2 'nationally important carbon-rich soils, deep peat and priority peatland habitat (areas likely to be of high conservation value)' covers 7.4 % of the Study Area. Class 1 'nationally important carbon-rich soils, deep peat and priority peatland habitat (areas of potentially high conservation value and restoration potential)' covers 0.7% of the Study Area. Class 0 'mineral soil with no peatland vegetation' covers the majority of the rest of the Proposed Development (59.6 %), with pockets of Classes 3 'predominantly peaty soil with some peat soil', 4 'predominantly mineral soil with some peat soil' and 5 'peat soil with no peatland vegetation' present across the entire Proposed Development, covering 5.2 %, 9.6 % and 15.9 %, respectively. Classes 0, 3, 4 and 5 are not classified as priority peatland habitat.

10.3.11 Peat probing and coring surveys were carried out between June and November 2022, which included peat probing and coring surveys and the collection of photographs of watercourses crossed by the Proposed Development. Peat probing and coring surveys were carried out in two stages, Phase 1 in June, August, September and November 2022 and, Phase 2 in July. The results are shown in **Figure 10.4: Peat**.

10.3.12 Geology, soils, and peat have been rated as being of Medium sensitivity, based on the peat probing results showing deep peat (greater than 1.50 m depth) present only in small areas across the Proposed Development footprint and the presence of Class 1 and 2 peatland covering less than 20 % of the Proposed Development.

Groundwater

10.3.13 There is one groundwater body underlying the Proposed Development; Cowal and Lomond Groundwater Body (ID: 150689)[155], which was classified by SEPA, under the WFD, as having an overall status of 'Good' in 2020.

10.3.14 The majority of the Proposed Development is underlain by the Southern Highland Group[157] rock units, indicative of low productivity aquifers. These formations may support small amounts of groundwater in the near surface weathered zone and secondary fractures.

10.3.15 Groundwater vulnerability to pollution is predominantly Class 5[160], which is defined as 'vulnerable to most pollutants, with rapid impact in many scenarios'.

10.3.16 As a result of the receptor's 'Good' overall status, groundwater vulnerability and the supplies supported by the water body, groundwater is considered to be of High sensitivity.

Public and Private Water Supplies

10.3.17 According to the Scottish Government website[161], the Proposed Development is within a Drinking Water Protected Area (DWPA) (Groundwater). The River Eachaig is designated as a DWPA (Surface Water)

[158] James Hutton Institute (2021) Scotland's Soils [online]. Available at: http://map.environment.gov.scot/Soil_maps/?layer=1 [Accessed November 2022]
[159] NatureScot (2016) Carbon and Peatland Map [online]. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10 [Accessed November 2022]
[160] BGS (2011) User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Version 2 [online] Available at: http://nora.nerc.ac.uk/id/eprint/17084/1/OR11064.pdf [Accessed November 2022]
[161] Scottish Government (2014). Drinking water protected areas - Scotland river basin district: map 2 [online]. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/map/2014/03/drinking-water-protected-areas-

approximately 3.8 km upstream from the point where the Proposed Development would cross the watercourse. Scottish Water confirmed the Proposed Development is not located within a Surface Water drinking water supply catchment. Information regarding public registered assets will be sought from Scottish Water at detailed design stage. Therefore, public water supplies have been scoped out of the assessment.

10.3.18 Argyll and Bute Council, SEPA and SSEN provided data for PWS, confirming there are six potential PWS within 1 km of the Proposed Development (as shown on **Figure 10.5: Private Water Supplies**). However, the data does not provide the source location for some of the properties. A site visit was undertaken in order to confirm the location of the sources. The results from these consultations and surveys are compiled in **Table 10-6**.

10.3.19 For the purpose of this assessment a precautionary approach has been taken and supplies have been assessed and classified as Medium sensitivity, due to each of the above PWS serving less than 10 properties.

Table 10-6: Private Water Supplies

Source ID	Property Name and ID	Source location (NGR)	Source Type	Council Information	Landowner Questionnaires (Savills)	Site Visit Information
PWS01	Drynain/ Clunie/ Kerry Fern (PRP01)	217624, 689202	Unknown	Location shown at the Drynain property. Serves four properties in Ardentinny.	N/A	N/A Source was not visited as it is not hydrologically connected to the Proposed Development.
PWS02	Barnacabber (PRP02)	217689, 688691	Surface water	Not included	Will need to be confirmed at detailed design stage but Barnacabber Deer Farm, adjacent cottages and Ardentinny Caravan Park likely to take water from hill supply.	Source not found on site. Barnacabber owner confirmed they are connected to the mains supply.
PWS03	Glenfinart (PRP03)	217520, 689002	Unknown	Not included	Mains water supply but understand other properties in the glen still take water from the hill.	N/A Source was not visited as it is not hydrologically connected to the Proposed Development.
PWS04	Ballochyle (PRP04)	213909, 682917*	Spring	Type B	The resident confirmed they use a PWS.	Source location confirmed on site, including the location of the tank and pipework from the source to the property. The number of properties served by the PWS is unknown.

scotland-river-basin-district-maps/documents/surface-water-maps/f9cd68d5-a8c1-4f24-93f6-189435d266fd/f9cd68d5-a8c1-4f24-93f6-189435d266fd/govscot%3Adocument/DWPA%2B-%2BScotland%2BRBD%2B-%2Bsurface%2Bwater%2B-%2Bmap%2B2%2Bof%2B22.pdf [Accessed November 2022]

Source ID	Property Name and ID	Source location (NGR)	Source Type	Council Information	Landowner Questionnaires (Savills)	Site Visit Information
PWS05	Ballochyle 2 (PRP05)	213771, 682354*	Spring	Council location shown 50 m west of the confirmed source location.	N/A	Source location confirmed on site, including the location of the tank and pipework from the source to the property.
PWS06	Balagowan Cottage (PR0P6)	213118, 681825*	Surface water	Council location shown at the property.	Source supplying five people with water for domestic and commercial uses (butchery).	Source location confirmed on site. Abstraction is taken immediately downstream of an artificial dam in the watercourse.

* Source location confirmed on site.

Groundwater Dependent Terrestrial Ecosystems (GWDTE)

10.3.20 A UKHab survey undertaken in 2021 identified a number of habitats within the buffer mentioned above (250m of the proposed OHL alignment), comprising upland heathland, neutral grassland, lowland fens and rush pastures. The potential GWDTE and their associated potential groundwater dependency is based on SEPA's guidance[152] and summarised in **Table 10-7** (see **Figure 7.2.1: UKHab Habitat Results in Appendix 7.2** and **Figure 10.6: GWDTE**).

Table 10-7: Summary of potential GWDTE

UKHab Code	Potential Groundwater Dependency	Description
f2b – purple moor grass and rush pastures	Highly Groundwater Dependent & Moderately Groundwater Dependent	Community is an apparently stable component of topogenous sequences around open waters and mires, but where it occurs on flushed slopes, grazing often maintains the community and prevents progression of the community to scrub or woodland.
g3c – Other neutral grassland g3c8 - *Holcus-Juncus* neutral grassland	Moderately Groundwater Dependent	This community is widespread in lowland Great Britain, although it also occurs at low altitudes in most upland areas. This is a vegetation type of damp acid to neutral soils on level to gently sloping ground in enclosed pastures, and in neglected situations such as ditches, pond sides and roadside verges.
h1b - upland heathland	Moderately Groundwater Dependent	Wet heath is widespread in the north and west of Great Britain. It is most common in the western Highlands. It is a community of shallow, wet or intermittently waterlogged, acid peat or peaty mineral soils on hillsides, over moraines, and within tracts of blanket mire.
f2a - lowland fens	Highly Groundwater Dependent &	This rush-pasture occurs on peaty mineral soils and stagnogleys, often with a strong smell of decomposing vegetation. They are kept wet throughout the year by

UKHab Code	Potential Groundwater Dependency	Description
	Moderately Groundwater Dependent	flushing and seepage, and there can be some standing water in winter. This community occurs throughout the west and north of Great Britain.

10.3.21 Peat probing surveys were undertaken between June and November 2022, along the entire Proposed Development. During the walkover, no groundwater spring/ seepage were noted on-site, and surface runoff appeared to be the main soil water factor for the habitats.

10.3.22 Using a precautionary approach, these communities will be assessed as Medium sensitivity receptors, although they are unlikely to be critically dependent on groundwater.

Flooding

10.3.23 There are a number of sections of the Proposed Development which are located in areas subject to a high risk of surface water, river and coastal flooding, based on SEPA's indicative flood risk mapping[162]. Areas subject to a high likelihood of flooding from water bodies within 1 km of the Proposed Development are displayed in **Table 10-8**.

Table 10-8: Likelihood of flooding from water bodies within 1 km of the Proposed Development

Type of Flooding	Likelihood	Water Body Name(s)
River	High	• River Finart • River Eachaig • Balagowan Burn • Little Eachaig River
Surface Water	High	• Knap Burn • River Finart tributaries • Cuil Burn • Stronchullin Burn • Puck's Glen • River Eachaig tributaries • Little Eachaig River • Allt na Criche • Allt a' Chromain
Coastal	High	• Loch Long • Holy Loch

[162] SEPA Interactive Flood Risk Mapping (2021) [online]. Available at: http://map.sepa.org.uk/floodmap/map.htm [Accessed November 2022]

10.3.24 Due to the nature of flood likelihood being 'high' at the noted sections, the associated sensitivity for the Proposed Development (including tower locations) is therefore High[163].

10.4 Issues Scoped Out

10.4.1 Key drivers of the scoping out process were the Proposed Development's design and the adoption of good practice measures. After taking account of the above factors, the following effects were considered to be unlikely to be significant and thus were scoped out from assessment:

- Direct effects on fisheries during construction and operation from chemicals, fuels and sedimentation pollution and modifications to surface water drainage patters, on the basis that the Proposed Development and all structures will be designed and constructed following good practice techniques and will be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change.
- Scottish Water confirmed there are no public water supply abstractions and Drinking Water Protected Areas (Surface Water) within the Study Area, therefore they have been scoped out of the assessment.
- Operational impacts have been scoped out of this assessment as there are not expected to be any effects that are likely to be significant from the operation of the Proposed Development, with good design layout and mitigation measures.
- The impact of the mobilisation of contaminated soil/ bedrock has been scoped out, given that contaminated soil is unlikely to be present along the Proposed Development due to its historical and present rural land use (see Geology and Soils Section in this chapter).

10.4.2 Further to the Scottish Environmental Protection Agency EIA Scoping Opinion, it was decided that pollution incidents should be scoped back into the assessment due to proximity to watercourse.

10.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

10.5.1 Detailed constraints advice was provided during the iterative layout design process for the towers and associated infrastructure. At various stages during the determination of the design, fieldwork was undertaken to provide feedback to the design team.

10.5.2 Forestry felling, extraction and associated activities would require specific management and control measures in order to reduce environmental impact. However, although the baseline condition is that the existing plantation forests will require harvesting in due course, this activity may be hastened by the Proposed Development. Felling contractors would be expected to conduct felling, harvesting and associated activities in accordance with forestry good practice measures, provided in **Appendix 12.2 Forestry**.

10.5.3 During the detailed design and construction phases, towers and associated infrastructure could be microsited within the LoD (up to 50 m) to avoid deeper peat, where possible. Sections of track would be surveyed and microsited, to optimise the distances from the waterbodies and peat, taking into account local topography and local characteristics (see **Appendix 10.1 Peat Landslide Hazard and Risk Assessment** for further details).

10.5.4 As part of the layout design strategy for access tracks, watercourse crossings were minimised, which will also be the approach at detailed design stage. Where access necessitates watercourse crossings,

[163] It is recognised that the High sensitivity is considered to be a conservative approach and does not represent the majority of the Proposed Development.

construction features have been limited in these buffers as far as possible, for example minimising access tracks running parallel to watercourses and trying to avoid track junctions being constructed in these zones. A total of 19 watercourse crossings, as shown on **Figure 10.1: Hydrology Overview** and on **Table 10-10**, have been identified on the proposed new (temporary and retained) accesses which appear on OS 1:50,000 scale mapping. It would be the responsibility of the Principal Contractor to comply with the Controlled Activities Regulations (CAR), including complying to GBRs and apply for Registrations or Licences, as applicable. All structures would be designed and constructed following good practice techniques and would be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change, as per SEPA's guidance[149].

Construction Phase

Design Solutions and Assumptions

10.5.5 Access for tower construction will require vehicle access to each support structure location during construction to allow excavation and creation of foundations and erection of the proposed OHL structure (lattice tower). Existing tracks would be used where possible and upgraded as required (as shown on **Figure 3.1: Site Layout**). The different construction methodologies are listed within **Chapter 3: Description of the Proposed Development,** which includes patching/ upgrade of existing tracks, installation of temporary roadway panels or stone roads, and use of low ground bearing pressure vehicles. Formation of temporary access to each tower position is proposed from these, with sections of access also proposed for retention to facilitate ongoing safe inspection, maintenance and repair, where the retention of access ties in with other land use/ land management activities such as forestry.

10.5.6 This approach has resulted in 12 new watercourse crossing locations for the proposed retained access tracks (see **Figure 3.3.4 Typical Watercourse Crossing Section**), on watercourses mapped on OS 1:50,000 scale map (as shown on **Figure 10.1: Hydrology Overview**). Suitable crossing methods would be developed and agreed with SEPA and detailed within a Construction Environmental Management Plan (CEMP)/ Water Management Plan, with the watercourse crossing schedule to be developed and updated during detailed design and project progression.

10.5.7 The proposed temporary tracks include seven watercourse crossings, including the Glen Finart Burn (as shown in **Figure 10.1**)[164], which are anticipated to be culverts, where possible, or clear span bridges (see **Photograph 10.1**). The bridges would be constructed by creating abutments on either side of the river and either lowering the bridge into place using a crane or a push launch method from one side to the other.

[164] Existing stone arch bridge in Glen Finart Burn, which was subject to bridge assessment, has now been confirmed as being suitable for use negating requirement for the temporary bridge. However, the alternative temporary crossing has still been included as part of the assessment due to the late change.

Photograph 10.1 Temporary Clear Span Bridge example

10.5.8 There would also be a requirement for a number of crossings not requiring a CAR Registration or licence, and existing crossings to be upgraded, which are anticipated as open-bottom arch culverts or circular culverts, depending on the size of the watercourse.

10.5.9 Prior to the construction of the Proposed Development, it is anticipated that additional data to that provided in this report would be required. This information would include detailed measurements in relation to structure dimensions and refinements for flow conveyance and any ecological provision at each crossing, forming the detailed design stage. A number of the existing crossings may not need upgrade, with this engineering decision to be determined pre-construction.

10.5.10 A number of good practice measures are detailed in **Chapter 3: Description of the Proposed Development**, including the CEMP and GEMPs (GEMPs are provided in **Appendix 3.2**). A summary of those most relevant to hydrology, hydrogeology, geology and soils is provided below.

10.5.11 The adoption of the applicable GEMPs would reduce the probability of an incident occurring and also reduce the magnitude of any incident due to a combination of good site environmental management procedures, including minimised storage soil and peat volumes, soil management, staff training, contingency equipment and emergency plans.

10.5.12 The GEMPs (**Appendix 3.2**) applicable to this chapter are:

- Working In Or Near Water GEMP;
- Working In Sensitive Habitats GEMP;
- Watercourse Crossings GEMP;
- Private Water Supplies GEMP;
- Soil Management GEMP; and
- Bad Weather GEMP.

10.5.13 The following assessment of effects assumes that the embedded mitigation measures including CEMP and GEMPs are implemented.

Description of Effects

10.5.14 This assessment is based on the Proposed Development as described in **Chapter 3: Description of the Proposed Development** and the sensitivity of receptors as set out in **Table 10-2**.

10.5.15 The construction will require temporary compounds and laydown areas, which will be determined by the Principal Contractor. Vehicle access would be required to each tower location to allow excavation and creation of foundations and tower installation.

10.5.16 Tower steelwork would be delivered to each tower construction site either as individual steel members or as prefabricated panels, depending on the method of installation and the available access. Dimensions of each foundation will be confirmed following micrositing. For the purposes of this assessment, however, it has been assumed that each foundation would be buried to depths estimated to be between 1 m and 4 m below ground level (bgl).

Modification of Surface Water Drainage Patterns

10.5.17 Surface flows could be impeded by construction activity in or adjacent to stream channels, poor choice of watercourse crossing locations or inadequately designed crossing structures. Blockages could be caused by inadequate control of earthmoving plant, sedimentation and poor waste management, all of which could lead to flooding upstream. There are a number of flood-sensitive locations such as Knap Burn, Cuil Burn and Puck's Glen which are crossed by the Proposed Development, as discussed in the **Baseline Conditions**.

10.5.18 The interception of diffuse overland flow by new access tracks and their drains could disrupt the natural drainage regime of the surrounding area by concentrating flows and influencing drainage in soils. Towers and other constructed impermeable surfaces would restrict the infiltration of rainfall int the soil and underlying superficial deposits, resulting in localised increased volumes of surface runoff.

10.5.19 The local watercourses within the Proposed Development footprint have been identified as having a moderately flashy response to rainfall events. Forestry felling may lead to increased surface water flows due to less interception and uptake from trees (see **Forestry Section** below). The increases in flows could have a detrimental effect on the populations of fish, freshwater invertebrates and species dependent on the water environment.

10.5.20 The proposed retained access track design includes nine new watercourse crossings and an upgrade to three existing crossing structures, for watercourses that are subject to authorisation under the Controlled Activities Regulations (CAR) (as shown on OS 1:50,000 mapping). Compliance with the Watercourse Crossings GEMP and SEPA's Guidance[149] will also be followed for the watercourses not shown on OS 1:50,000 mapping. **Table 10-10** summarises the CAR watercourse crossings, also shown in **Figure 10.1**. For the purpose of this assessment, it has been assumed that the existing access track have structures. Oversized circular culverts have been proposed for all the watercourse crossings due to their incised characteristics, width of the channel and existing modifications due to forestry (see **Figure 3.3.4 Typical Watercourse Crossing Section**). These structures will follow the principles listed under SEPA's good practice guide[149].

10.5.21 The proposed temporary tracks include seven watercourse crossings[165] (as shown in **Figure 10.1**), which are anticipated to be culverts or bridges (see **Photograph 10.1**). The bridges would be constructed by creating abutments on either side of the river and either lowering the bridge into place using a crane or a push launch method from one site to the other.

10.5.22 A number of additional, smaller watercourse crossings have also been identified during fieldwork, these watercourses are not mapped on OS 1:50,000 scale mapping and comprise crossings of forestry drains, flush zones and small headwater channels. These crossings would have structures installed appropriate to local conditions and would be anticipated to be designed as over-sized circular culverts or layers of

[165] Existing stone arch bridge in Glen Finart Burn, which was subject to bridge assessment, has now been confirmed as being suitable for use negating requirement for the temporary bridge. However, the alternative temporary crossing has still been included as part of the assessment due to the late change.

pipes for flush zones, in line with SEPA's good practice guide[149]. It is noted that if a permanent diversion/ realignment is required for a watercourse not mapped on OS 1:50,000 scale, a level of CAR authorisation will be required. Compliance with the Watercourse Crossings GEMP and SEPA's Guidance[149] will also be followed for the watercourses not shown on OS 1:50,000 mapping.

10.5.23 The structures do not require to include provisions for the passing of mammals due to the size of the watercourses and the presence of suitable riparian vegetation as corridors (see **Chapter 7: Ecology and Nature Conservation** and **Appendix 7.3: Protected Species Data**).

Table 10-10: Summary of Watercourse Crossings Location (shown on the 1:50,000 OS map)

Watercourse Crossing ID	Easting	Northing	Watercourse	New/ Existing	Structure
WC01	220107	691593	Allt Coire Odhar (Knap Burn tributary)	New	New oversized circular culvert proposed for this crossing.
WC02	220078	691477	Knap Burn tributary	New	New oversized circular culvert proposed for this crossing.
WC03	220054	691251	Knap Burn tributary	New	New oversized circular culvert proposed for this crossing.
WC04	219761	690904	Allt Conbhach	New	New oversized circular culvert proposed for this crossing.
WC05	219633	690512	Allt Conbhach tributary	New	New oversized circular culvert proposed for this crossing.
WC06	217373	687555	Schoolhouse Burn tributary	New	New oversized circular culvert proposed for this crossing.
WC07	216278	685905	Stronchullin Burn tributary	New	New oversized circular culvert proposed for this crossing.
WC08	215850	684508	Puck's Glen tributary	New	New oversized circular culvert proposed for this crossing.
WC09	215886	683994	Puck's Glen tributary	Existing	Existing structure to be upgraded to oversized circular culvert.
WC10	215895	683930	Puck's Glen tributary	Existing	Existing structure to be upgraded to oversized circular culvert.
WC11	215760	683884	Puck's Glen tributary	New	New oversized circular culvert proposed for this crossing.
WC12	215785	683744	Puck's Glen tributary	Existing	Existing structure to be upgraded to oversized circular culvert.
WX01	218153	688917	Glen Finart Burn	New (Temporary)	New clear span bridge.
WX02	218069	688775	Allt Mhill Odhair	New (Temporary)	New clear span bridge.
WX03	216538	686608	Inverchapel Burn	New (Temporary)	New clear span bridge.
WX04	216508	686548	Stronchullin Burn	New (Temporary)	New clear span bridge.
WX05	214107	682750	River Eachaig tributary	New (Temporary)	New clear span bridge.
WX06	213883	681632	Little Eachaig River tributary	New (Temporary)	New clear span bridge.
WX07	215240	679692	Altt a' Chromain	New (Temporary)	New clear span bridge.

10.5.24 The adoption of the applicable good practice measures and Watercourse Crossings GEMP measures would reduce the impact of modification to surface water drainage patterns, with artificial drainage installed only where necessary and would, wherever practical, be installed in advance of ground being cleared of vegetation/ forestry. All structures would be designed and constructed following good practice techniques and would be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change.

10.5.25 Application of sustainable drainage techniques to increase peak lag time and implementation of cross-drains at appropriate intervals along the proposed tracks, and frequent discharge points to reduce scour potential.

10.5.26 Taking into account the design and embedded mitigation, the effect is assessed as follows:

- The magnitude of the impact upon surface water drainage patterns (High sensitivity) is Minor and the probability is considered to be Medium, which results in an overall **Minor Adverse** (and **not significant**) effect.

Pollution Incidents

10.5.27 During the construction phase, a number of potential pollutants would be present on-site to facilitate civil engineering activities, including oil, fuels, chemicals, unset cement and concrete, and waste and wastewater from construction activities. With chemicals and oil being stored and used on-site there is the potential for an incident. Any pollution incident occurring on site could have a detrimental effect on the water quality of the nearby surface waters, groundwater and/ or soil, thereby also indirectly affecting ecology (see **Chapter 7: Ecology and Nature Conservation**).

10.5.28 Taking into consideration the mitigation set out in the relevant **GEMPS**, the effects are assessed as follows:

- The magnitude of the impact of a pollution incident upon surface waters (High sensitivity) is Moderate and the probability is considered to be Low, which results in an overall **Minor Adverse** (and **not significant**) effect.
- The magnitude of the impact of a pollution incident upon groundwater (High sensitivity) is Minor and the probability is considered to be Low, which results in an overall **Minor Adverse** (and **not significant**) effect.
- The magnitude of the impact of a pollution incident on soils (Medium sensitivity) is considered to be Minor and of Low probability to occur, resulting in a **Negligible** (and **not significant**) effect.
- The magnitude of impact of a pollution incident on the Loch Lomond and The Trossachs National Park (High sensitivity) is considered Minor and the probability is considered to be Low, which results in a **Minor Adverse** (and **not significant**) effect.

10.5.29 Consultation with Scottish Water is required prior to construction to identify any Scottish Water assets which require protection. Should any such assets be identified, specific mitigation measures will be developed and incorporated into the CEMP, which will be agreed with Scottish Water.

Forestry

10.5.30 As a result of the Proposed Development, extensive conifer forestry felling and replanting are proposed. This activity could lead to increased surface water flows due to less interception and uptake from trees, rise in groundwater levels in the short term until restocked trees are established, shorter term increases in sediment loading, and nutrient release from logging residues.

10.5.31 Based on **Appendix 12.2 Forestry**, the Proposed Development could have an impact on 70.1 ha of commercial woodland, 3.5 ha of ancient woodland and 11.3 ha of commercial woodland as a result of the Proposed Development, which has been identified as the maximum area for woodland removal for

the Proposed Development. In-line with the Applicant's commitment to achieve no net loss of woodland for new development projects, the area of woodland removal for the Proposed Development, will be fully replanted through the application of the Compensatory Planting Management Strategy.

10.5.32 According to The UK Forestry Standard[166], studies suggest a 1.5% - 2.0% reduction of potential water yield (freshwater volume flowing into the receiving watercourses) for every 10% of a catchment under mature conifer forest. Therefore, for every 10% of a catchment area being deforested, an approximate 1.5% - 2.0% increase in water yield is anticipated. Using a precautionary approach, 2.0% has been used for the purpose of this assessment.

10.5.33 **Table 10-11** summarises the results of the potential flow increases as a result of forestry felling as a result of the Proposed Development. These potential flow increases would occur downstream of the forestry felling area.

Table 10-11: Potential Flow increases from Forestry Felling.

Catchment	Catchment Area (ha)	Felling Area (ha)	Felling Area (% Catchment)	Potential Flow Increases (%)
Allt Toll a' Bhuic	30.55	0.10	0.33%	Up to 2.0%
Knap Burn	150.00	2.81	1.87%	Up to 2.0%
Allt Conbhach	93.27	3.19	3.42%	Up to 2.0%
Combined Coastal Catchment	105.21	8.81	8.37%	Up to 2.0%
Clunie Burn	102.79	6.09	5.92%	Up to 2.0%
Glen Finart Burn	1,601.00	0.24	0.01%	Up to 2.0%
Allt Mhill Odhair	252.43	9.98	3.95%	Up to 2.0%
Schoolhouse Burn	190.69	0.00	0.00%	0.0%
Stronchullin Burn	565.06	0.00	0.00%	0.0%
River Eachaig	13,990.00	16.38	0.12%	Up to 2.0%
Puck's Glen	221.05	7.14*	3.23%	Up to 2.0%
Little Eachaig River	3,259.74	17.09	0.52%	Up to 2.0%
Allt Chromain	218.87	8.78	4.01%	Up to 2.0%

*Felling Area within Puck's Glen Catchment is also included within the River Eachaig Catchment felling.

10.5.34 The estimations show that for all the catchments crossed by the Proposed Development, the amount of felling equates to less than 10% of the catchment area being deforested therefore the increase in water yield is anticipated to be less than 2.0%.

10.5.35 Other associated works such as existing tracks upgrade and borrow pits excavations could have an effect on the local flows.

10.5.36 Taking into consideration the mitigation set out in the Forestry GEMP, the effects are assessed as follows:

- The magnitude of impact of forestry felling on surface water flows (High sensitivity) is Minor and the probability is considered to be Medium, which results in a **Minor Adverse** (and **not significant**) effect.

[166] Forestry Commission (2017) UK forestry standard: the governments' approach to sustainable forestry. 4th edition. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687147/The_UK_Forestry_Standard.pdf

Erosion and sedimentation

10.5.37 Soil erosion, loss of soil, and sediment generation may occur in areas where the ground has been disturbed during construction including in situations where:

- engineering activities occur close to or in watercourses; or
- where higher velocity surface water flows may occur due to local slopes and drainage design.

10.5.38 Surface water passing through small surface drains, efficiently draining the new infrastructure, could exhibit higher localised flows, increasing the potential for bank erosion.

10.5.39 Sediment transport in watercourses can result in high turbidity levels which affect the ecology, particularly fish stocks, by reducing the light and oxygen levels in the water. Sediment deposition can further effect watercourses by potentially smothering plant life, invertebrates, and spawning grounds, and can reduce the flood storage capacity of channels and block culverts, resulting in an increased flood risk.

10.5.40 In the case of pollution incident effects, good practice site environmental management measures and the dilution factor involved would be expected to reduce any potential sedimentation effect downstream.

10.5.41 Taking into consideration the mitigation set out in the relevant GEMPs, the effects are assessed as follows:

- The magnitude of impact of erosion or loss of soils (Medium sensitivity) is Minor and the probability is considered to be Medium, which results in a **Minor Adverse** (and **not significant**) effect.
- The magnitude of impact of sedimentation of surface waters (High sensitivity) is Minor and the probability is considered to be Medium, which results in a **Minor Adverse** (and **not significant**) effect.
- The magnitude of impact of sedimentation on the Loch Lomond and The Trossachs National Park (High sensitivity) is Minor and the probability is considered to be Low, which results in a **Minor Adverse** (and **not significant**) effect.

Modification of groundwater levels and flows and GWDTE

10.5.42 Excavations could disrupt shallow groundwater systems resulting in the lowering of groundwater levels in the immediate vicinity of the excavations and alterations to flow paths during dewatering activities within the new tracks and tower foundations. However, it is anticipated that earthworks associated with the proposed infrastructure will likely result in negligible changes to the local subsurface and groundwater flows.

10.5.43 Soil water conditions at the Proposed Development footprint are likely to be primarily influenced by surface water and direct rainfall. The tower foundations are unlikely to permanently alter groundwater flows. Should any alterations occur, such as during any required temporary dewatering, it would be expected that natural conditions of groundwater level and flow would recur close to these locations in a short timeframe.

10.5.44 The communities present within the Study Area, including grass pastures, neutral grassland, upland heathland and lowland fens are often associated with surface water or direct rainfall moving from the top of the local hills, with water flowing downslope locally to eventually form or join surface water channels. They are associated with a dendritic structure of smaller watercourses on the upper slopes. As detailed in the Groundwater Section, the hills are underlain by bedrock formations from the Southern Highland Group, which is indicative of low productivity aquifers. Therefore, these communities are unlikely to be critically dependent on groundwater. However, using a precautionary approach, they are considered Medium sensitivity receptors.

10.5.45 Interruption of groundwater flow would potentially reduce the supply of groundwater to GWDTE, thereby causing an alteration/ change in the quality or quantity of and/ or the physical or biological characteristics of the GWDTE. Contamination of groundwater may also cause physical or chemical contamination of the GWDTE. The majority of the habitats within the Study Area are located upslope of the proposed access tracks and/ or the alignment (see **Figure 10.6: GWDTE**). The proposed infrastructure would involve minor earthworks for the tower foundations, retained access track, widening and/ or upgrade, and associated drainage improvements, as a result negligible changes to the local subsurface and groundwater flows are expected.

10.5.46 Taking into consideration the mitigation set out in design mitigation and factors discussed above, the effects are assessed as follows:

- The magnitude of impact on groundwater levels and flows upon groundwater (High sensitivity) is Minor and the probability is considered to be Medium, which results in a **Minor Adverse** (and **not significant**) effect.
- The magnitude of impact upon GWDTE (Medium sensitivity) is considered to be Minor and the probability of effect on GWDTE is considered to be Medium, which results in a **Minor Adverse** (and **not significant**) effect.

Private Water Supplies

10.5.47 Six PWS were identified within 1 km of the Proposed Development (see **Figure 10.5: Private Water Supplies**). A site visit was undertaken in order to confirm the location of the sources and any associated infrastructure.

10.5.48 The known PWS were evaluated based on their position relative to the Proposed Development footprint, and on any potential pollutant-source-pathway-receptor relationships, in order to determine the potential for the Proposed Development to have an adverse effect on PWS. After a review of all collated information, two of the PWS have been identified as potentially at risk of adverse effects from the Proposed Development, as described and explained in **Table 10-12**.

Table 10-12: PWS within 1 km of the Proposed Development footprint.

Source ID	Property Name and ID	Source Location (NGR)	Source Type	Location Relative to Infrastructure	Potential for Impact on Supply from Proposed Development and Comments
PWS01	Drynain/ Clunie/ Kerry Fern (PRP01)	217624, 689202	Unknown	According to the Council dataset, the source is located approximately 630 m north-west and upgradient of construction works.	The source is likely to be within a sub-catchment of the Drynain Burn, which is not hydrologically connected to the Proposed Development. Therefore, it is not considered at risk of impact.
PWS02	Barnacabber (PRP02)	217689, 688691	Surface water	According to the Council dataset, the source is located approximately 290 m north-west and upgradient of construction works.	The source is likely to be within a sub-catchment of the Allt Mhill Odhair, which is not hydrologically connected to the Proposed Development. Therefore, it is not considered at risk of impact.

Source ID	Property Name and ID	Source Location (NGR)	Source Type	Location Relative to Infrastructure	Potential for Impact on Supply from Proposed Development and Comments
PWS03	Glenfinart (PRP03)	217520, 689002	Unknown	Based on the landowner questionnaire, the source is located approximately 620 m north-west and upgradient of construction works.	If the source is a surface water abstraction, it is likely to be within a sub-catchment of the Drynain Burn, which is not hydrologically connected to the Proposed Development. If the source is a borehole, it is not considered at risk of impact due to intervening distance between the source and the Proposed Development. Therefore, it is not considered at risk of impact.
PWS04	Ballochyle (PRP04)	213909, 682917*	Spring	The source is located on the eastern slopes of the Ballochyle Hill, approximately 210 m north-west and upgradient of Tower 57.	The source is located upstream of the Proposed Development and pipework is crossed by the proposed OHL alignment, however it is not crossed by the proposed access tracks. Therefore there is no impacts on the ground in the vicinity of the pipework.
PWS05	Ballochyle 2 (PRP05)	213771, 682354*	Spring	The source is located on the eastern slopes of the Ballochyle Hill, approximately 150 m north-west and upgradient of Tower 60.	Pipework from the source to the property is crossed by the existing track to be upgraded (poor condition). Consideration shall be given to the upgrade works of the access track to maintain flow from the source to the property.
PWS06	Balagowan Cottage (PR0P6)	213118, 681825*	Surface water	The source is located on the eastern slopes of the Ballochyle Hill, approximately 450 m south-west and upgradient of Tower 61.	The source abstracts from a Little Eachaig River tributary, which is not hydrologically connected to the Proposed Development. Therefore, it is not considered at risk of impact.

* Source location confirmed on site.

10.5.49 As per **Table 10-12**, Ballochyle and Ballochyle 2 springs locations are within 250 m of the Proposed Development and were confirmed on site. They are located upgradient of the Proposed Development, and due to the intervening distance and topography and the nature of the construction works, the sources are not considered to be at risk.

10.5.50 The proposed access track to be upgraded (poor condition) crosses the pipework for Ballochyle 2. As a result, specific mitigation measures will need to be implemented (in line with the **Private Water Supplies GEMP**) and agreed with affected parties, which may include:

- setting the existing pipe work within mass concrete;
- upgrading or rerouting the existing pipe work;

- ensuring that there are adequate pollution control and emergency response measures in place to deal with any accidents that could affect a water supply (e.g. spill response or sediment control);
- implementation of regular, recorded checks on any pipework (visible signs of cracking or other damage); and
- provision of an alternative supply (temporary/ permanent).

The Principal Contractor will undertake a survey to identify the precise location of the pipework for Ballochyle 2.

10.5.51 Taking into account the upgrade works involved for poor condition tracks (permanent loss of 0.5 m soil at each side) and the mitigation listed above, no adverse effects are anticipated on Ballochyle 2 supply infrastructure.

10.5.52 Taking into consideration the mitigation set out in the **Private Water Supplies GEMP**, design mitigation and factors discussed above, the effects are assessed as follows:

- The magnitude of impact upon PWS (Medium sensitivity) is considered to be Minor and the probability of effect on PWS is considered to be Low, which results in a **Negligible** (and **not significant**) effect.

Short term increase in flood risk

10.5.53 Short term increases in flood risk have the potential to include impacts on construction workers, third parties, nearby developments and floodplains.

10.5.54 Surface flows can be impeded by construction activity in or adjacent to stream channels and poor choice of crossing locations, and the construction of access tracks traversing hills with inadequate cross track drainage installed. Blockages can be caused by inadequate control of earthmoving plant, sedimentation and poor waste management, all of which could lead to flooding upstream.

10.5.55 Taking into account the design mitigation and construction good practice, specifically the **Watercourse Crossings GEMP**, the effects have been assessed as follows:

- The magnitude of the impact of a short-term increase in flood risk on third parties and nearby developments (High sensitivity) is Minor and the probability of effect is considered to be Low, which results in a **Minor Adverse** (and **not significant**) effect.
- The magnitude of the impact of a short-term increase in flood risk on floodplains and construction workers (High sensitivity) is considered Minor (as there may be works undertaken in areas of flood risk) and the probability of effect is considered to be Low, which results in a **Minor Adverse** (and **not significant**) effect.

Loss and compaction of soils

10.5.56 Soil compaction as a result of construction works within the Proposed Development may damage the vegetation and result in a reduction in soil permeability and rainfall infiltration, particularly on peaty soils, thereby increasing the potential for longer-term erosion from surface water runoff. This would be most likely caused by tracking of heavy plant machinery.

10.5.57 Stockpiled and unvegetated/ exposed areas of soils are also at risk of desiccation and erosion by wind and water, also potentially causing soil loss.

10.5.58 Taking into consideration the mitigation set out in the **Soil Management GEMP** and design mitigation, the effects are assessed as follows:

- The magnitude of impact upon soils/ peat (Medium sensitivity) is Minor and the probability of effect of soil loss is considered to be High, which results in an overall **Minor Adverse** (and **not significant**) effect on soils.

- The magnitude of impact upon soils/ peat (Medium sensitivity) is Minor and the probability of effect of compaction of soil is considered to be Medium, which results in an overall **Minor Adverse** (and **not significant**) effect on soils.

Peat Instability

10.5.59 **Appendix 10.1 Peat Landslide and Hazard Risk Assessment** has highlighted 12 localised areas of stability concern (initial Moderate and High risk), with the methodology, data, location maps and interpretation of individual locations provided within the Appendix. The methods involved in this initial risk assessment are purposefully cautious, in order to highlight areas of concern, with the expectation that additional data collated as part of the revised risk assessment and pre-construction investigations would reduce concern.

10.5.60 The inherent design principles and adoption of the applicable good practice measures in **Appendix 10.1** would reduce the effect of peat instability, which includes gathering further data during pre-construction Ground Investigation (GI) to inform the micrositing of towers.

10.5.61 Evaluation of magnitude of effect has taken account of appropriate good practice, data interpretation, and associated detailed design updates in advance of construction activities on towers. Taking into consideration the mitigation set out in additional mitigation outlined in **Table 10-9**, the effect on peat stability is assessed as follows:

- The magnitude of effect of a peat stability failure upon soils/peat (Medium sensitivity) is Moderate and the probability of effect is considered to be Low, which results in an overall **Minor Adverse** (and **not significant**) effect on soils/ peat.
- It is considered that the effect of a peat stability failure on surface water receptors (High sensitivity) in these typically headwater locations would have equivalent levels of sensitivity, magnitude, and probability, to also result in a **Minor Adverse** (and **not significant**) effect outcome at the construction phase.

Mitigation During Construction

10.5.62 Potential mitigation measures proposed to ensure that sub-surface flows and groundwater flows are not interrupted by the works may include, micro siting the infrastructure, where possible, to avoid areas of potential GWDTE.

10.5.63 Mitigation measures would be monitored by an ECoW throughout construction. PWS and Peat stability mitigation measures are highlighted in **Table 10-13.**

Table 10-13: Schedule of Mitigation – Hydrology Hydrogeology, Geology and Soils

Reference	Title	Description
HYD1	PWS / Public Water Supply	PWS will require further investigation by the Principal Contractor prior to construction to verify the infrastructure location, supply type, properties supplied and their uses. Further consultation will be required with property owners as part of this process and further unregistered PWS may need to be established. The Principal Contractor will be required to consider all construction activities and satisfy themselves that they are aware of all PWS in the local area that may be at risk of adverse effects as a result of the Proposed Development. Should any PWS be identified which require protection, specific mitigation will be developed and agreed with SEPA. Tower micrositing to be considered to avoid the infrastructure. If applicable, water quality and/ or quantity monitoring of PWS before, during and after construction will be implemented.

Reference	Title	Description
HYD2	PWS / Public Water Supply	The Principal Contractor will undertake consultation with SEPA and Scottish Water at the pre-construction stage to ascertain current abstraction operations and confirm local sources and asset locations. The Principal Contractor is then responsible for establishing the potential for impact and agree precautions with Scottish Water to protect these assets during the construction of the Proposed Development.
HYD3	Peat Stability	Peat stability mitigation measures include, as listed in Section 8 of **Appendix 10.1 Peat Landslide and Hazard Risk Assessment**: • Ground investigation (including further peat depths using methodology agreed with UXO Engineer) will be undertaken at locations where ground works are required, as confirmed by the Principal Contractor(s). • Microsite the tower or access track in order to avoid the area of concern (subject to non-violation of other constraints). • Avoid placing excavated material or other forms of loading on or immediately above breaks of slope or any other potentially unstable slopes. • Avoid removing slope support, particularly where slope stability has been highlighted as of concern. Consider floating track at appropriate locations to avoid removing slope support. • Use of retaining structures, such as gabion terracing to support specific slopes. • Mitigation measures would be monitored by an ECoW throughout construction.
HYD4	WC Crossings	All structures would be designed and constructed following good practice techniques and would be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change. Key measures identified to minimise alterations to surface water drainage patterns include: • Application of sustainable drainage techniques to increase peak lag time and implementation of cross-drains at appropriate intervals and frequent discharge points to reduce scour potential; • Minimising the size and duration of in-channel works; and • Appropriate design of crossing structures to ensure sufficient capacity to convey 1:200-year storm flows and enable fish passage, where appropriate.
HYD5	Forestry	Key measures identified to minimise increase to surface water flows include: • Slowing surface water and channel flows in the surrounding forested areas to encourage infiltration and increase lag time to downstream channels and potentially reduce peak flows; • Planting vegetation and retaining forestry material within the catchments to encourage infiltration and evapotranspiration; and • Silt traps can also be designed to slow flow of run-off and promote settlement and retention of sediment.

Residual effect

10.5.64 Following implementation of additional mitigation during the construction phase, the significance of residual effects will remain the same described under the Description of Effects Section (**not significant**). The additional mitigation measures will reduce the magnitude of effect for peat stability failure to Minor, which combined with a Low probability of effect, results in a **Negligible** (and **not significant**) effect on soils/peat.

10.6 Cumulative Effects

10.6.1 **Chapter 5** identifies other developments such as the Loch Long Crossing and the decommissioning of the existing OHL to be considered as having potential for cumulative effects with the Proposed Development.

10.6.2 Even in the event that these other developments present potentially significant effects to the receiving hydrology, hydrogeology, geology and soils environment in their own right, given that no significant residual effects have been identified associated with the Proposed Development, and assuming the effective 'source' controls for each individual development and good practice methodology, significant cumulative effects are not anticipated. Furthermore, the differing construction programming and activities that would be anticipated to occur across various developments reduces the probability that water quality and flow issues would be coincident across the catchments.

10.7 Summary

10.7.1 The following sensitive hydrology, hydrogeology, geology and soil receptors along the Proposed Development have been identified:

- surface water bodies;
- Loch Lomond and The Trossachs National Park;
- soil and peat superficial deposits.
- groundwater bodies;
- GWDTE;
- PWS; and
- flooding.

10.7.2 The assessment considered how the Proposed Development would affect the above sensitive receptors. Through successful application of embedded mitigation and the additional mitigations identified (summarise in **Table 10-9**), the assessment has concluded that the Proposed Development would not result in any significant residual effects on the hydrology, hydrogeology, geology and soils receptors.

11. NOISE AND VIBRATION

11.1 Introduction

11.1.1 This chapter presents the assessment of potential effects of construction noise and vibration resulting from the Proposed Development. This chapter (and its associated Figures and Appendices) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report.

11.1.2 This chapter is accompanied by the following Figures and Appendices:

- Figure 11.1 Overhead Line Alignment, Baseline Monitoring and NSR Locations
- Figure 11.2 Overhead Alignment and Access Tracks
- Figure 11.3 Overhead Line Forestry and Tree Clearance
- Figure 11.4 Moderate Significance of Effect: Construction Vibration
- Figure 11.5 Overhead Line Alignment and Cumulative Effects
- Appendix 11.1 Glossary of terms
- Appendix 11.2 Noise and Vibration Legislation and Guidance
- Appendix 11.3 Baseline Survey Data
- Appendix 11.4 Noise and Vibration Source Assumptions
- Appendix 11.5 Assessment and Calculations

11.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

11.2.1 The assessment refers to the Proposed Development as detailed in **Chapter 3 – Description of the Proposed Development**.

11.2.2 This chapter includes:

- a description of the assessment methodology and significance criteria used in completing the assessment;
- the baseline noise conditions;
- identification and assessment of the potential environmental effects associated with noise and vibration;
- identification and description of any mitigation measures proposed to address any potential significant effects; and
- assessment of any residual effects post mitigation.

11.2.3 The likely significant effects associated with the Proposed Development will potentially relate to noise and vibration generated during the construction phase; during the OHL Route construction activity, construction vehicle movements on public roads and site access tracks and during helicopter movements associated with the OHL construction.

Noise and Vibration Legislation

11.2.4 The noise and vibration assessment has taken account of the relevant legislation, policy and guidance framework internationally and nationally. The relevant legislation, policies and guidance are detailed in **Appendix 11.2 Noise and Vibration Legislation and Guidance** and listed below.

Legislation

- Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (the Environmental Noise Directive (END))[167];
- UK Government (1974). The Control of Pollution Act (1974)[168];
- The Environmental Noise (Scotland) Regulations (2006)[169];
- Planning and Noise: Planning Advice Note (PAN) 1/2011 (2011) [170]; and
- Assessment of Noise: Technical Advice Note (TAN) (2011)[171].

Guidance:

- Guidelines for Community Noise (1999)[172];
- Environmental Noise Guidelines for the European Region (2018)[173];
- Guidelines for Environmental Noise Impact Assessment (2014)[174];
- John W Leverton, Acoustics Bulletin Volume 35 Part 2 "Public Acceptance Of Helicopters (The Virtual Noise Component)", Institute of Acoustics (IOA) March/April 2010[175];
- D. A. Moorhouse, D. D. Waddington, and D. M. Adams, "DEFRA NANR45: Proposed criteria for the assessment of low frequency noise disturbance," University of Salford 2005[176]; and
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, HD 213/11 revision 1. Noise and Vibration (2011)[177].

Technical Standards:

- Acoustics – Description, measurement and assessment of environmental noise (ISO 1996-2:2017)[178];
- Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 9613 :1996)[179];

[167] The European Parliament and the Council of the European Union (2002), Directive 2002/49/EC relating to the assessment and management of environmental noise (the Environmental Noise Directive (END)). Available at: https://www.legislation.gov.uk/eudr/2002/49/contents
[168] UK Government (1974). The Control of Pollution Act (1974). Available at: https://www.legislation.gov.uk/ukpga/1974/40/contents
[169] Scottish Government (2006). The Environmental Noise (Scotland) Regulations 2006. Available at: https://www.legislation.gov.uk/ssi/2006/465/introduction/made
[170] Scottish Government (2011). Planning and Noise: Planning Advice Note 1/2011 (2011) Available at: Planning Advice Note 1/2011: planning and noise - gov.scot (www.gov.scot)
[171] Scottish Government (2011). Assessment of Noise: Technical Advice Note (2011). Available at: https://www.gov.scot/publications/technical-advice-note-assessment-noise/
[172] Berglund, Birgitta, Lindvall, Thomas, Schwela, Dietrich H & World Health Organization. Occupational and Environmental Health Team. (1999). Guidelines for community noise. World Health Organization. Available at: https://apps.who.int/iris/handle/10665/66217
[173] World Health Organisation (2018). Environmental Noise Guidelines for the European Region (2018). Available at: https://www.euro.who.int/__data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf
[174] Institute of Environmental Management & Assessment (2014). Guidelines for Environmental Noise Impact Assessment.
[175] Institute of Acoustics (2010). Public Acceptance of Helicopters (IOA Bulletin: March/April 2010). Available at: https://www.ioa.org.uk/catalogue/article/public-acceptance-helicopters-virtual-noise-component
[176] Waddington, DC and Kendrick, P, Department of Environment, Food and Rural Affairs (DEFRA) (2008). Research into the Improvement of the Management of Helicopter Noise (DEFRA NANR 235: 2008). Available at: https://usir.salford.ac.uk/id/eprint/30805/1/nanr235-project-report.pdf
[177] The Highways Agency, Scottish Government, Welsh Assembly Government and the Department for Regional Development Northern Ireland (2011). Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, HD 213/11 revision 1. Noise and Vibration (2011).
[178] International Organization for Standardization. (2017) Description, Measurement and Assessment of Environmental Noise (ISO 1996-2:2017)
[179] International Organization for Standardization (1996). Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 9613:1996)

- Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613:1996)[180];
- Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS 5228-1: 2009 + A1:2014)[181];
- Code of practice for noise and vibration control on construction and open sites –Part 2: Vibration (BS 5228-2: 2009 + A1:2014)[182];
- Guidance on sound insulation and noise reduction for buildings (BS 8233:2014)[183];
- Description and measurement of environmental noise – Part 1: Guide to quantities and procedures (BS 7445: 2003)[184];
- Evaluation and measurement for vibration in buildings – Guide to damage levels from ground borne vibration (BS 7385-2: 1993)[185]; and
- Calculation of Road Traffic Noise (CRTN) (1988)[186].

Extent of the Study Area

11.2.5 The assessment focusses on Noise Sensitive Receptors (NSR) up to 300 m from the OHL Route, tower locations, tower assembly locations, borrow pits and access routes.

11.2.6 NSRs are also identified within the same study area from potential noise generating activity associated with the operation of helicopters.

Consultation Undertaken to Date

11.2.7 A scoping opinion was received by the Applicant on 19 July 2022 from the Energy Consents Unit (ECU), which includes inputs from various consultees, including Argyll and Bute Council.

11.2.8 The responses from the scoping opinion, in relation to noise and vibration, and how these requirements should be addressed by the Applicant are set out in **Table 11-1.**

Table 11-1 – Consultation responses of relevance to Noise and Vibration

Organisation	Type of Consultation	Response	How response has been considered
Loch Lomond & the Trossachs National Park Authority	Dunoon EIA Scoping Main Report	The National Park Planning Authority expects that Argyll and Bute Council Environmental Health department have been consulted as part of this scoping request and would defer to their position.	Argyll and Bute Council have been consulted and the methodology for assessment was agreed on 15 September 2022.

[180] International Organization for Standardization (1996). Acoustics – Attenuation of Sound During Propagation Outdoors (ISO 9613:1996)
[181] The British Standards Institution (2014). Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS 5228-1: 2009 + A1:2014)
[182] The British Standards Institution (2014). Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (BS 5228-2: 2009 + A1:2014))
[183] The British Standards Institution (2014). Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014)
[184] The British Standards Institution (2003). Description and Measurement of Environmental Noise – Part 1: Guide to quantities and procedures (BS 7445: 2003)
[185] The British Standards Institution (1993). Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration (BS 7385-2: 1993)
[186] Department of Transport and Welsh Office (1988). Calculation of Road Traffic Noise. HMSO

Organisation	Type of Consultation	Response	How response has been considered
Argyll and Bute Council	Dunoon EIA Scoping Main Report	Data collected in 2019 and 2021 will be used to support our assessment of the Proposed Development in the EIA Report.	This has been considered in **Chapter 11 – Baseline Conditions**
Argyll and Bute Council	Dunoon EIA Scoping Main Report	The ECU is requested to evaluate whether the assumptions used in this referenced noise model are robust, to justify scoping out the operational noise characteristics associated with the proposal and specialist knowledge on the inputs / assumptions and conclusions of this evaluation will be required to consider whether such an approach is reasonable for the EIA and these matters can be scoped out.	Following consultation with the ECU, Argyll and Bute Council have reviewed the justification for scoping out the operational noise and have no further comments, as of 5 December 2022.
Argyll and Bute Council	Dunoon EIA Scoping Main Report	It is noted that at 9.7.1 the applicants confirm they will consult with Argyll and Bute council to agree the final assessment methodology and that the assessment will focus on likely significant effects arising from the construction phase of the development. It is agreed that as a general approach this is acceptable.	The proposed methodology was issued to Argyll and Bute on 1 September 2022. An e-mail has been received from Argyll and Bute Council to confirm that Environmental Health Officer has no issue with the proposed methodology. As per e-mail received on 15th September 2022.

Assessment Noise Modelling

11.2.9 A 3D computer noise propagation model was developed using Cadna A® software and ArcGIS. CadnaA acoustic modelling software implements ISO 9613-2[187] and BS 5228[188], which contains standard methods for calculating sound attenuation during outdoor propagation and during construction noise, respectively.

11.2.10 The following geographic input data has been implemented within the model:

- 1 m LIDAR topography data – applied to the digital terrain model (DTM) for areas surrounding the Proposed Development;
- OS MasterMap – used to generate buildings and base-mapping;
- Addressbase data – used to determine NSR within the study area (each individual NSR is identifiable through a Unique Property Reference Number UPRN); and
- Geo-referenced layout drawings for the OHL Route tower locations, tower assembly locations, helicopter flight routes, borrow pit and track access routes to tower locations.

[187] International Organization for Standardization. (2017) Description, Measurement and Assessment of Environmental Noise (ISO 1996-2:2017)

[188] The British Standards Institution (2014). Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS 5228-1: 2009 + A1:2014)

11.2.11 The following modelling parameters have been used in the assessment:

- Ground absorption: 0.5 (mixed ground) for all areas;
- Building heights of 6m with acoustically reflective facades; and
- Noise levels are calculated at first floor levels (4 m) and calculation points are positioned at the façade of the building.

11.2.12 Plant, equipment and associated noise levels assumed for the key construction activities are presented in **Appendix 11.4 Noise and Vibration Source Assumptions**.

Determining Magnitude of Change and Sensitivity of Receptors

Sensitivity of Receptors

11.2.13 NSRs have been identified in line with the guidance provided in PAN and TAN. The types of NSR considered within this assessment are provided in **Table 11-2.**

Table 11-2 – NSR Included within Assessment

Sensitivity	Description	Example NSR
High	Receptors where people or operations are particularly susceptible to noise	• Residential dwelling • Schools during the daytime • Hospitals/ residential care homes • Places of worship • Holiday parks

11.2.14 The following sections relating to determining the magnitude of change assume that all receptors included within the assessment are of high sensitivity, as per **Table 11-2.**

Construction Noise – Assessment Methodology

11.2.15 Construction noise levels are predicted based on sound pressure levels at 10 m for items of plant likely to be used during the construction phase. The noise propagation is calculated at each NSR and averaged over a 12-hour working day to account for plant use over a full working day, the final value is provided as an $L_{Aeq,12h}$.

11.2.16 Construction noise levels at NSRs have been assessed using the ABC method described in BS5228-1:2009+A1:2014 to determine the significance of effect at each receptor. The ABC method defines thresholds of potentially significant effects based on the baseline ambient noise level, as presented in **Table 11-3.**

Table 11-3 – Threshold of potential significant effect at dwellings

Evaluation Period	Assessment Category (dB L_{Aeq})		
	A [A]	B [B]	C [C]
Night-time (23:00-07:00)	45	50	55
Evening and Weekends [D]	55	60	65
Daytime (07:00-19:00)	65	70	75

NOTE 3: Applied to residential receptors only.

[A)] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

[B)] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values.

Evaluation Period	Assessment Category (dB L_{Aeq})		
	A [A]	B [B]	C [C]
[C] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values. [D] 19:00-23:00 weekdays, 13:00-23:00 Saturdays and 07:00-23:00 Sundays.			

11.2.17 Construction noise may be considered as potentially significant where the predicted noise level exceeds the appropriate category value. Consideration of other project-specific factors, such as the number of receptors affected and the duration and character of the impact, are used to determine if there is a significant effect.

Construction Noise – Magnitude of Change

11.2.18 The magnitude of change criteria are determined by the difference between the predicted construction noise levels and the ABC threshold values at the receptors.

11.2.19 The magnitude of change criteria and effect significance for construction noise is informed by the guidance in BS 5228-1 and DMRB.

11.2.20 A scale for the magnitude of change for construction noise is shown in **Table 11-4**.

Table 11-4 – Construction Noise Magnitude of Change

Magnitude of Change	Construction Noise Level	Significance of Effect
High	Above or equal to +5 dB above the threshold level determined as per **Table 11-5**	Major
Medium	Above or equal to the threshold level determined as per **Table 11-5** and below +5 dB	Moderate
Low	Below or equal to the threshold level determined as per **Table 11-5.**	Minor
Negligible	Below or equal to baseline noise level $L_{Aeq, T}$	Negligible

11.2.21 Construction noise may be considered significant where it is determined that a medium or high magnitude of change from **Table 11-4** will occur for a duration of:

- Ten or more days or nights in any 15 consecutive days or nights; or
- A total number of days exceeding 40 in any six consecutive months.

Construction Traffic Noise – Assessment Methodology

11.2.22 Traffic noise will be generated through construction vehicle movements associated with the Proposed Development. Vehicle movements on publicly accessible roads is considered within the construction traffic noise assessment, as the activity has the potential to impact NSRs.

11.2.23 Construction traffic noise has been assessed through consideration of the potential increases in traffic flows, in line with principles from the CRTN and DMRB. The calculation undertaken is a comparison of Basic Noise Level (BNL).

11.2.24 The BNL is calculated at 10 m from the road link and is representative of NSRs along the specified road link. The BNL takes into consideration traffic flow, speed and composition (percentage of HGVs), in line with the CRTN methodology.

11.2.25 To assess the noise impact using a BNL, a single figure estimate of the overall noise level of construction traffic is necessary. The index adopted in CRTN to assess traffic noise is $L_{A10,18h}$. As recorded in DMRB a reasonably good correlation has been shown to exist between this index and the perception of traffic noise by NSRs over a wide range of noise exposures.

Construction Traffic Noise – Magnitude of Change

11.2.26 The description of the magnitude of change for the assessment of construction vehicle movements is adapted from PAN, TAN and IEMA guidance, as shown in **Table 11-5** below.

Table 11-5 – Construction Traffic Noise Magnitude of Change

Noise Level Change	Perception of Change	Magnitude of Change	Significance of Effect
≥5 dB	Increased perception of noise change	High	Major
≥3 to <5 dB	Generally perceptible change in noise	Medium	Moderate
≥1 to <3 dB	Benefits / disbenefits may be perceptible	Low	Minor
0 to <1dB	Below minimum threshold for perception of change	Negligible	Negligible

Construction Helicopter Noise – Assessment Methodology

11.2.27 The use of helicopters is identified during periods of the construction schedule, both to assist with the movement of materials, for OHL tower assembly and during the conductoring phase along the length of the proposed OHL alignment.

11.2.28 In terms of the development of a quantitative limit to apply to the temporary use of helicopters, research undertaken by Defra[189] highlights the following:

- No single satisfactory noise index for the measurement or prediction of the impact of helicopter noise on the community;
- No good correlation with complaints in relation to commonly used acoustic parameters including L_{Aeq}, L_{Ceq}, L_{Amax}, L_{10}, L_{90} and L_{Amax}; and
- Addressing acoustic noise limits may be unlikely to significantly improve public acceptance of helicopter noise.

11.2.29 The IOA's bulletin from March/April 2010[190] on the public acceptance of helicopters also highlights the lack of correlation with noise complaints associated with helicopter noise and the maximum, or peak, noise level. The bulletin suggests that small helicopters, which generate low overall levels of noise, provoke at least the same level of complaints as larger helicopters which produce much higher noise levels, with a significant factor in noise complaints being the character of the helicopter noise. The more impulsive or tonal the sound, the more likely complaints are to occur.

11.2.30 Other issues discussed are the perceived uncontrolled way helicopters fly with authorities having no power over flight paths and flying heights.

[189] Waddington, DC and Kendrick, P, Department of Environment, Food and Rural Affairs (DEFRA) (2008). Research into the Improvement of the Management of Helicopter Noise (DEFRA NANR 235: 2008). Available at: https://usir.salford.ac.uk/id/eprint/30805/1/nanr235-project-report.pdf

[190] Institute of Acoustics (2010). Public Acceptance of Helicopters (IOA Bulletin: March/April 2010)

11.2.31 The article concludes that "*the reaction of helicopters and heliports is dependent on several factors, some of which are completely unrelated to the sound generated by the helicopter*". The non-acoustical elements (virtual noise) including concerns about safety and the 'startle effect' of low level flying helicopters often dictates the level of public response to helicopters.

11.2.32 Based on the above discussion and the lack of satisfactory noise index for the measurement or prediction of helicopter noise, no criteria has been assigned to this activity. The assessment of potential noise impacts from the helicopter activity is to be based on a qualitative assessment, informed by indicative noise level predictions.

Construction Vibration (Human Perception) – Assessment Methodology

11.2.33 Construction vibration is expected to be generated during piling and access road installation activities, specifically during the OHL tower foundation installation and vibratory compaction for access road installation.

11.2.34 BS 5228-2 assessment methods are to be used to predict the propagation of vibration from construction activities related to the Proposed Development. BS 5228-2 describes a significance criteria for determining effects on human receptors, and refers to BS 7385 to determine the impact on structures.

11.2.35 **Table 11-6** provides some guidance on the consequences of vibration levels generated with relation to human perception and disturbance, as described in BS 5228-2.

Table 11-6 – Guidance on Effects of Vibration Levels

Vibration Level [A, B, C]	Guidance on effects	Significance of Effect
0.14 mm/s^{-1}	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Negligible
0.3 mm/s^{-1}	Vibration might be just perceptible in residential environments.	Minor
1.0 mm/s^{-1}	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	Moderate
10 mm/s^{-1}	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Major

A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.

B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.

C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment

11.2.36 Further details relating to the assumptions made in the construction vibration assessment are found in **Appendix 11.4 Noise and Vibration Source Assumptions**.

Construction Vibration (Human Perception) – Magnitude of Change/Effect

11.2.37 **Table 11-7** provides a scale of vibration levels and magnitude of change, with relation to human perception and disturbance, as described in BS 5228-2.

Table 11-7 – Construction Vibration (human) Magnitude of Change

Magnitude of Change	Construction Vibration Level	Significance of Effect
High	Above or equal to 10 mm/s^{-1}	Major
Medium	Vibration levels above or equal to 1 mm/s^{-1} but below 10 mm/s^{-1}	Moderate
Low	Vibration levels above or equal to 0.3 mm/s^{-1} but below 1 mm/s^{-1}	Minor
Negligible	Vibration levels < 0.3 mm/s^{-1}	Negligible

11.2.38 Adverse health impacts relating to a significant effect is more difficult to quantify and BS 5228-2 notes that "Guidance on the effects on physical health of vibration at sustained high levels is given in BS 6841, although such levels are unlikely to be encountered as a result of construction and demolition activities."

11.2.39 Significance of effect is therefore related to the duration and frequency of construction activities as well as the time period the activities would be experienced.

11.2.40 Construction vibration may be considered significant where it is determined that a medium or major magnitude of impact will occur for a duration longer than:

- Ten or more days or nights in any 15 consecutive days or nights; or
- A total number of days exceeding 40 in any six consecutive months.

Construction Vibration (Building Damage) – Assessment Methodology

11.2.41 BS 5228-2 references BS 7385-2 'Evaluation and measurement for vibration in buildings - guide to damage levels from ground borne vibration'. The criteria shown in **Table 11-8** relates to the thresholds of cosmetic damage due to vibration and is based upon systematic studies using a carefully controlled vibration source in the vicinity of buildings.

Table 11-8 – Transient Vibration Guide Values for Cosmetic Damage

Type of building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	50 mm/s at 4 Hz and above
Unreinforced or light framed structures Residential or light commercial buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
NOTE 1: Values referred to are at the base of the building. NOTE 2: For un-reinforced or light framed structures and residential or light commercial buildings, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.		

11.2.42 BS 7385-2 states that the probability of damage from transient vibration tends towards zero at 12.5 mm/s^{-1} peak component particle velocity. For continuous vibration, such as from vibratory rollers, the threshold is around half this value.

11.2.43 BS 7385-2 states that minor damage is possible at vibration magnitudes that are greater than twice those given in **Table 11-8** and major damage to a building structure can occur at values greater than four times the tabulated values. The descriptions to these damage categories are described in BS ISO 4866:2010:

- Cosmetic: The formation of hairline cracks on drywall surfaces, or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in mortar joints of brick / concrete block construction.
- Minor: The formation of large cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks / concrete blocks.
- Major: The damage to structural elements of the structure, cracks in support columns, loosening of joints, splaying of masonry cracks, etc.

Construction Vibration (Building Damage) – Magnitude of Change/Effect

11.2.44 **Table 11-9** describes the magnitude of change for continuous vibration, based on the descriptions provided in BS 7385-2 and BS ISO 4866.

Table 11-9 – Construction Vibration (building) Magnitude of Change/Effect

Magnitude of Change/Effect	Peak Particle Velocity (PPV) level	Damage category	Significance of Effect
High	≥ 30 mm/s	Major	Major
Medium	≥ 15 mm/s	Minor	Moderate
Low	≥ 7.5 mm/s	Cosmetic	Minor
Negligible	< 7.5 mm/s	-	Negligible

Limitations and Assumptions

11.2.45 The Proposed Development construction programme is provided in **Chapter 3 – Description of the Proposed Development**. The activities identified within the programme are anticipated to occur sequentially, with construction activities only occurring following the completion of other construction activities e.g. access tracks are to be completed prior to OHL tower positions being accessible to plant and equipment.

11.2.46 Potential blasting activities associated with the borrow pit search areas and access route are excluded from this assessment, as per the details provided in in **Chapter 3 – Description of the Proposed Development.**

11.2.47 Tree removal and forestry operations are to be undertaken within the Operational Corridor, within which trees are to be permanently removed to ensure safe operation of the line.

11.2.48 The requirements for each OHL tower and its associated access tracks depend on the tower type and the construction operations required at that tower e.g. whether a crane is required, or whether a helicopter build is proposed, or the type of foundation appropriate to the ground conditions.

11.2.49 **Figure 11.2 Overhead Alignment and Access Tracks** identifies the proposed OHL tower positions and alignment, access tracks, borrow pits and Dunoon Substation activity locations.

11.2.50 Site investigation, foundation installation, tower erection and rock breaking activities are assumed to occur within the same activity footprint as the proposed OHL tower positions. Rock breaking and construction haul routes are assumed to occur within or along the same footprint of the access track activity.

11.2.51 Helicopters will be utilised to transport tower sections from the tower assembly areas to new OHL tower locations. Additionally, helicopters will be used to transport materials from tower assembly areas to construction locations along the OHL Route. Helicopter activities including helicopter flight routes and tower assembly compound areas are shown in **Figure 3.5 Helicopter Flight Paths**.

11.2.52 The configuration of plant including noise levels and 'on-time' duration for each of the construction activities and construction vehicle movements on public roads and haul routes are presented in **Appendix 11.4: Noise and Vibration Source Assumptions.**

11.2.53 Assumptions relating to the construction noise levels, plant and equipment types and numbers for use were developed with the design team. The noise and vibration assumptions provided are considered as proportionate to the level of information available at this stage in the design.

11.2.54 NSRs were identified with the use of Ordnance Survey AddressBase data procured in 2019. A review of an updated Ordnance Survey Addressbase data was undertaken during the pre-application review process which identified a total of 45 additional residential dwellings and 103 static caravans associated within holiday parks.

11.2.55 A review of additional NSRs and the potential significant effects on them has been undertaken using a combination of the assessment results (referencing already predicted construction noise emissions at adjacent dwellings) and professional judgement. The outcome of the NSR review indicates that no new significant effects are anticipated, with the majority of new NSRs being located at a large distance from the proposed activities. Where NSRs are identified at closer locations to the proposed construction activities, potential effects at new NSRs are already described within the assessment section of this chapter, with no new significant effects anticipated.

11.2.56 New NSR dwellings where potentially significant vibration effects may be experienced have been included in Figure 11.4 Moderate Significance of Effect: Construction Vibration.

11.2.57 The transport data which is the basis for the construction traffic noise calculations is derived from data from **Appendix 13.1 Framework CTMP**. Construction vehicle movement numbers are used to inform the construction traffic noise calculations in this assessment.

11.2.58 All of the above-mentioned construction activities are to be restricted to daytime operation only and are assessed accordingly.

11.2.59 Temporary power generation is required to supply the distribution network during the proposed double circuit outages. This activity will occur 24 hours a day, seven days a week during the period of the outage. The temporary power generation activity is the only activity proposed which assessed against night-time criteria.

11.2.60 Plant and equipment anticipated to be used for the decommissioning of the existing OHL are assumed to be equivalent to the foundation installation activity from **Appendix 11.4 Noise and Vibration Source Assumptions**.

11.3 Baseline Conditions

Current Baseline

11.3.1 There is a total of 308 NSRs identified within the study area as shown in **Figure 11.1 Overhead Line Alignment, Baseline Monitoring and NSR Locations**.

11.3.2 During the pre-application review it was identified that the data used to determine the number, location, and sensitivity of, NSRs was not up to date. Following a review of the most recent 2022 Ordnance Survey Addressbase data, a further 45 residential dwellings and 105 caravans within holiday parks were identified.

11.3.3 A baseline noise monitoring survey was undertaken at four locations between 23rd November and 1st December 2021. The purpose of the survey was to evaluate the existing sound climate at the NSRs in proximity to the Proposed Development.

11.3.4 The survey was conducted in accordance with BS 7445 using a Class 1 sound level meter as defined in BS EN 61672. The sound level meters were positioned in free-field conditions at approximately 1.5 m above ground level.

Monitoring Locations

11.3.5 **Table 11-10** provides the baseline noise monitoring locations with easting and northing coordinates.

11.3.6 The location of the baseline noise monitoring locations shown in **Table 11-10 are** also presented graphically in **Figure 11.1 Overhead Line Alignment, Baseline Monitoring and NSR Locations**.

Table 11-10 – Baseline Monitoring Locations

Location	Description	Easting	Northing
LT1	Rural location approximately 60 m northeast of road linking Ardentinny to the A815	218087	688899
LT2	Monitoring location at northern extent of Rashfield, approximately 10 m west of A815	214683	683689
LT3	Rural location approximately 430 m north of the B836 and 600 m west of the A815	214119	682325
LT4	Rural location approximately 400 m west of Sandbank	215941	679961

11.3.7 A weather station was also installed at one of the long-term measurement locations (LT2) and weather data was logged during the survey. Data during periods of precipitation or where wind speed exceeded 5 ms^{-1} have been excluded from the analysis.

11.3.8 **Table 11-11** presents the average daytime and night-time noise levels at measurement locations.

Table 11-11 – Baseline Survey Result Summary

Location	Period	Equivalent Continuous Sound Level (dB, $L_{Aeq,T}$)	Typical Background Sound Level (dB, $L_{A90,T}$)	$L_{A90,1hr}$ dB range	Typical Maximum Event Sound Level (dB, $L_{AFmax,T}$)	L_{AFmax}, dB range
LT1	Day (0700-2300)	48 (36 – 63)	37	35 – 55	-	37 – 91
	Night (2300-0700)	47 (35 – 56)	36	34 – 51	75	36 – 82
LT2	Day (0700-2300)	55 (45 – 59)	40	38 – 42	-	40 – 64
	Night (2300-0700)	48 (38 – 57)	39	38 – 42	74	41 – 83
LT3	Day (0700-2300)	43 (28 – 56)	33	25 – 50	-	32 – 81
	Night (2300-0700)	43 (21 – 54)	27	19 – 49	73	30 – 79
LT4	Day (0700-2300)	40 (35 – 44)	37	33 – 40	-	39 – 67
	Night (2300-0700)	37 (32 – 45)	34	32 – 40	53	35 – 65

11.3.9 At LT1, LT3 and LT4, the ambient sound level results indicate that the existing sound sources are representative of typical rural locations, with distant vehicle movements occasionally audible. At LT2, measured noise levels are noted to be influenced by the presence of the nearby A815.

11.3.10 The results presented in **Table 11-11** indicate that ambient noise levels are relatively low at all monitoring locations and characteristic of rural areas. L_{Aeq} levels indicate that the ambient noise levels are well below 65 dB. Therefore, ambient noise levels at NSRs within the study area are all below the BS 5228-1 ABC assessment Category A.

11.3.11 The full reported results from the noise survey are presented in **Appendix 11.3 Baseline Survey Data**.

Future Baseline

11.3.12 Variations in the existing baseline conditions will depend on the local road network and changes in the operation of local developments. It is expected that the baseline sound climate would not change significantly in the future.

11.4 Issues Scoped Out

11.4.1 The elements shown in **Table 11-12** are not considered to give rise to likely significant effects as a result of the Proposed Development and have therefore not been considered within this assessment.

Table 11-12 – Elements Scoped Out of the Assessment

Element scoped out	Justification
Operational noise and vibration – vehicle movements	Given the nature of the Proposed Development, it is expected that levels of noise generated during the operational phase are unlikely to be significant at the identified sensitive receptors.
Operational vibration	Given the nature of the Proposed Development, it is expected that levels of vibration during the operational phase are unlikely to be significant at the identified sensitive receptors.
Operational maintenance	Any operational maintenance works required along the line will be short-term and intermittent and are not anticipated to give rise to significant effects relating to noise and vibration.
Operational noise and "corona discharge" during the operation of the OHL.	It is not expected that this phenomenon is of concern for the Proposed Development, during operation, given that the proposed OHL is to operate at 132 kV. Evidence-based studies[191] have confirmed that the noise from corona discharge is only likely to become a significant effect at voltages higher than 350 kV.

11.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

11.5.1 The design of the proposed OHL alignment has taken proximity of residential receptors into consideration with respect to operational noise such that it has been scoped out of this assessment.

[191] EirGrid Evidence Based Environmental Study 8: Noise. Literature review and evidence based field study on the noise effects of high voltage transmission development, 2016

Construction Phase

Design Solutions and Assumptions

11.5.2 Construction noise and vibration emissions which may adversely affect NSRs will be generated as a result of the following activities:

- The use of fixed and mobile plant on-site ; and
- Construction vehicle movements on existing public roads and site access routes.

11.5.3 Significant noise and vibration generating activities occur during the following construction phases:

- Enabling works: tree clearance and access track construction;
- Construction works: tower foundation construction (including rock breaking and piling activities), tower assembly and erection and temporary diversions;
- Outage works: power generation at Dunoon Substation; and
- Reinstatement works: access track removal.

11.5.4 As discussed in **Chapter 3 – Description of the Proposed Development** all works will be undertaken in accordance with a CEMP; the following embedded mitigation is referred to as NV4 in **Chapter 15 Schedule of Mitigation**. Noise and vibration mitigation during the construction phase of the Proposed Development will include Best Practicable Means (BPM) as per BS 5228-1 and BS 5228-2. BPM will be applied to all construction activities. The CEMP will incorporate the inclusion of BPM and the measures presented below, as a minimum:

- The appropriate selection of plant, construction methods and programming: Only plant conforming with or better than relevant national or international standards, directives or recommendations on noise or vibration emissions will be used;
- Construction plant will be operated and maintained appropriately, having regard to the manufacturer's written recommendations or using other appropriate operation and maintenance programmes which reduce noise and vibration emissions;
- All vehicles and plant will be switched off when not in use;
- Choice of routes and programming for the transport of construction materials, spoil and personnel to reduce the risk of increased noise and vibration impacts;
- Vehicle and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, be maintained in good working order and operated in such a manner as to minimise noise emissions.
- Plant items that comply with the relevant UK noise limits applicable to that equipment will be used;
- The positioning of construction plant and activities to minimise noise and vibration at sensitive locations;
- Equipment that breaks concrete by munching or similar, rather than by percussion, will be used as far as is practicable;
- Design and use of localised screens, where necessary, to provide acoustic screening at the earliest opportunity;
- The use of mufflers on pneumatic tools, will be used as far as is practicable;
- Provision of information to the public on expected construction noise and vibration, including duration, in particularly for those likely to be exposed to moderate or large effects;
- Prior consent agreement for any works outside core hours, where there is potential for significant adverse effects;

- Contact details for nominated site contact for local residents to deal with complaints and engaging with local residents;
- Training of site personnel to raise awareness of noise, vibration and nearby NSRs;
- Selection of quiet and low noise equipment and methodologies, where practicable;
- Selection of construction method and plant to minimise the vibration generated, where practicable;
- Restrictions on some activities to less sensitive times e.g restricting piling activities to daytime only; and
- Use of less intrusive alarms, such as broadband vehicle reversing warnings.

11.5.5 A Framework Construction Traffic Management Plan (CTMP) has been prepared as part of the application (as provided in **Appendix 13.1 Framework CTMP)**. The CTMP provides information to demonstrate how construction traffic is to be managed to minimise the impacts on the surrounding road network and nearby NSRs.

11.5.6 Temporary diesel power generation is anticipated to be provided at the Dunoon Substation during double outages. At this stage of the project, specific noise source data is not available. Plant or equipment provided to cover the double outage will meet the noise limits provided within **Table 11-13.**

Table 11-13 – Dunoon Substation Double Outage Mitigation

Each Plant Item	Indicative noise limit (dB L_{Aeq} at 10m)
1,250 kVA diesel generator	66 dB (each)
150 kVA diesel generator	62 dB (each)
6,300 kVA Transformer	60 dB

11.5.7 If the limit cannot be achieved through the provision of the CEMP and specification from the equipment manufacturer, further assessment will be undertaken to ensure that any significant effects are minimised during the activity.

Description of Effects – Construction Noise

11.5.8 A summary of the noise results is provided in **Table 11-14.** The results are provided in full in **Appendix 11.5 Assessment and Calculations.**

11.5.9 The information provided in **Table 11-14** indicates the construction activity assessed and the number of NSR within each category of effect. The noise results present a worst-case assessment at the nearest NSRs to the Proposed Development.

Table 11-14 – Construction Noise Significance of Effect

Construction Activity	Significance of Effect	Number of NSR
Forestry and Tree Clearance	Major	1
	Moderate	3
	Minor	265
	Neutral	43
Site investigation, Conductor activities	Major	0
	Moderate	0
	Minor	23
	Neutral	285

Construction Activity	Significance of Effect	Number of NSR
Foundation installation (piling)	Major	1
	Moderate	1
	Minor	294
	Neutral	12
Rock breaking (OHL tower locations)	Major	1
	Moderate	1
	Minor	294
	Neutral	12
Civil access works	Major	0
	Moderate	0
	Minor	287
	Neutral	21
Rock breaking (Civil access works)	Major	2
	Moderate	12
	Minor	294
	Neutral	3
Borrow Pit	Major	0
	Moderate	0
	Minor	226
	Neutral	82

11.5.10 A review of additional NSRs and the potential significant effects on them has been undertaken using a combination of the assessment results (referencing already predicted construction noise emissions at adjacent dwellings) and professional judgement. The outcome of the NSR review indicates that no new significant effects are anticipated, with the majority of new NSRs being located at a large distance from the proposed activities. Where NSRs are identified at closer locations to the proposed construction activities, potential effects at new NSRs are described within the assessment section below, with no new significant effects anticipated.

Description of Effects – Forestry and Tree Clearance

11.5.11 The results in **Table 11-14** indicate that dwellings within approximately 50 m of the Operational Corridor would experience noise levels in the order of the 65 dB threshold from BS 5228-1. There are four NSRs within 50 m of the Operational Corridor. One NSR (near to Tower 23) and three NSRs (two near Tower 52 and one near Tower 55) receiving a major and moderate significance of effect, respectively.

11.5.12 It is anticipated that the duration of this exposure would be limited to less than ten consecutive days of activity before the activity moves along the Operational Corridor to a further distance from the NSRs. It is considered unlikely that major or moderate noise impacts will occur for a duration of ten or more days in any 15 consecutive days and are therefore not significant.

Description of Effects – Site Piling and Rock Breaking (OHL Tower Locations)

11.5.13 The piling and rock breaking activity results identified in **Table 11-14** indicate that one major and one moderate effect are predicted. The major significant impact is located nearby to Tower 23, with the moderate impact located at dwellings near to Tower 55.

Description of Effects – Rock Breaking (Access Track)

11.5.14 The rock breaking activity results identified in **Table 11-14** indicate that two major and twelve moderate effects are predicted.

11.5.15 Rock breaking activities associated with civil access work are potentially required when preparing the access tracks. If required, it is anticipated that any rock breaking activity would occur for short durations before moving along sections of the access tracks where required. It is expected that the activity duration will be limited to less than ten days at a time at any specific location. Therefore, it is considered unlikely that the activity will occur for a duration of ten or more days in any fifteen consecutive days and, moderate or major noise impacts identified in **Table 11-14** are not significant.

11.5.16 During the development of the project, if significant rock breaking activities are identified as required at specific locations along the access tracks for ten days or more, the CEMP should provide a clear procedure for the Principal Contractor to apply effective management and mitigation of the activity, in line with BPM. If required at specific locations along the access tracks for ten days or more, the rock breaking activity should be re-assessed following specific details of location and duration of the activity becoming available.

Description of Effects – Temporary Diesel Generator at Dunoon Substation

11.5.17 A summary of the results of our assessment for the temporary diesel generator activity at Dunoon Substation is provided in **Table 11-15** below. The information provided indicates the time period assessed and the number of NSR within each category of effect.

Table 11-15 – Temporary Diesel Generator at Dunoon Substation – Significance of Effect

Construction Activity	Time Period	Significance of Effect	Number of NSR
Temporary diesel generators Dunoon Substation	Daytime	Major	0
		Moderate	0
		Minor	78
		Negligible	230
Temporary diesel generators Dunoon Substation	Night-time	Major	0
		Moderate	0
		Minor	155
		Negligible	153

11.5.18 The results in **Table 11-15** indicate that significance of effect from the Temporary Diesel Generator at Dunoon Substation is likely to remain Minor or Negligible and not significant.

Description of Effects – Construction Helicopter Noise

11.5.19 It is anticipated that the use of helicopters during the project has the potential to cause significant effects when operating near to NSRs. Helicopter activities are scheduled for operation over the construction programme. The highest anticipated helicopter activity scheduled over the construction programme occurs near to the helicopter operation compounds (activities from these include helicopter lifts for

tower assembly, support for civil works and general material/ equipment movement). During the tower assembly, helicopters could be involved in the construction of up to three separate towers on any given day. This is noted to be the highest activity levels anticipated, with typical emissions associated with helicopter activities being much lower during periods of less intense activity.

11.5.20 Indicative noise emission predictions indicate that during days where helicopters support in the assembly of up to three OHL towers on any given construction day, noise levels in the order of 75 dB LAeq, T are expected at dwellings at 300 m distance from the proposed helicopter flight paths. If only one tower was supported by helicopter activity during a construction day, the noise levels at 300 m is expected to be in the order of 70 dB LAeq, T from the proposed helicopter flight paths.

11.5.21 As non-acoustical elements (virtual noise) including concerns about safety and the 'startle effect' of low-level flying helicopters often dictate the level of public response to helicopters, mitigation measures to reduce the potential significant effects are identified relating to the operation of the helicopters and the provision of information to the public on expected helicopter activity duration, number of flights, flight paths, safety measures and contact details enabling local residents to contact helicopter operators or the Principal Contractor.

Description of Effects – Construction Traffic Noise

11.5.22 A BNL has been calculated to assess the potential noise level change during the construction phase of the Proposed Development. The BNL calculation compares the future baseline and future baseline + construction traffic to determine whether construction vehicle movements on public roads constitutes a significant impact. **Table 11-16** provides the outcome of the assessment of construction traffic noise.

Table 11-16 – Construction Traffic BNL

Road Link	Existing, Baseline	Future Baseline (Construction Year)	Future Baseline + Construction Phase	Future Baseline vs Future Baseline + Construction Phase	Significance of Effect
	dB $L_{A10, 18hour}$				
Link 1: A885 (High Road)	61.2	61.6	61.6	0.0	Negligible
Link 2: B836	56.7	57.0	57.1	0.1	Negligible
Link 3: Unclassified Road - Turn off from A815 at Invereck Countryside Holiday Park	48.6	49.0	49.1	0.1	Negligible
Link 4(a): A815 North	60.0	60.2	60.3	0.1	Negligible
Link 4(b): A815 South	63.6	64.0	64.0	0.0	Negligible
Link 5: A880 / Shore Road	48.2	48.6	48.8	0.3	Negligible
Link 6: Unclassified Road - Turn off A815 at Whistlefield Hotel Inn	47.0	47.4	49.3	1.9	Minor
Link 7: A83	88.7	89.1	89.2	0.1	Negligible

11.5.23 Based on the results shown within **Table 11-16** the predicted increase in noise due to construction traffic associated with the Proposed Development is not significant.

Description of Effects – Construction Vibration

11.5.24 Piling is expected to be required during the construction phase of the Proposed Development, specifically during foundation installation. The piling method required is not confirmed at this stage. To account for the potential variability in vibration generated, vibration predictions have been undertaken

for both vibratory and percussive piling methods, providing for worst-case scenario predictions for the purposes of assessment.

11.5.25 **Table 11-17** and The results in **Table 11-17** show that the magnitude of impact is predicted to be significant at distances of 55 m and below from the proposed OHL tower locations. There are no NSRs within 55 m of the OHL tower piling locations, therefore it is considered unlikely that significant effects would occur during vibratory piling activities when constructing the OHL tower foundations.

Percussive Piling

11.5.26 **Table 11-18** shows the likely peak particle velocity (PPV) at various setback distances from the vibratory piling method.

11.5.27 **Table 11-18** show the likely peak particle velocity (PPV) at various setback distances from these piling methods.

11.5.28 Another potential source of vibration is the vibratory roller and compactor activity. **Table 11-19** shows the predicted PPV at various setback distances. Based on the plant assumptions used for this assessment, it is noted that the vibratory compaction activity is only associated with the Civil Access Works activity.

11.5.29 **Figure 11.4 Moderate Significance of Effect:** indicates the location of all NSR that have been calculated to receive a moderate or major significance of effect.

Vibratory Piling

11.5.30 **Table 11-17** shows the likely PPV at various setback distances from the vibratory piling method.

Table 11-17 – BS5228 Vibratory Piling Assessment

Distance from Vibratory Piling Activity (m)	Scaling Factor (kv)	Resultant PPV (mms^{-1})
55	126	1.0
100	126	0.5
150	126	0.3

11.5.31 The results in **Table 11-17** show that the magnitude of impact is predicted to be significant at distances of 55 m and below from the proposed OHL tower locations. There are no NSRs within 55 m of the OHL tower piling locations, therefore it is considered unlikely that significant effects would occur during vibratory piling activities when constructing the OHL tower foundations.

Percussive Piling

11.5.32 **Table 11-18** shows the likely peak particle velocity (PPV) at various setback distances from the vibratory piling method.

Table 11-18 – BS5228 Percussive Piling Assessment

Distance from Percussive Piling Activity (m)	Nominal Hammer Energy (W)	Scaling Factor (kp)	Resultant PPV (mms^{-1})
50	85,000	3	5.3
100	85,000	3	2.2
150	85,000	3	1.3
180	85,000	3	1.0
300	85,000	3	0.5

11.5.33 **Table 11-18** shows that the vibration level predicted is considered as significant at distances closer than 180 m from the OHL tower locations. There are a total of eight NSRs within 180 m of the OHL tower locations. All the identified NSR receive a moderate significance of effect, with predicted PPV values above or equal to 1 mm/s^{-1} but below 10 mm/s-1.

11.5.34 Vibration levels of this magnitude (between 1 mm/s and 10 mm/s, although having the potential to cause complaint, can be tolerated if prior warning and explanation has been given to residents. As the Proposed Development apply Best Practicable Means (BPM) (BS 5228-2) to all construction activities, prior warning of construction activities will be provided through liaison with members of the public, in particular those identified in the above section as potentially experiencing vibration levels above 1.0 mm/s^{-1} (as shown in **Figure 11.3 Overhead Line Alignment and Construction Vibration NSR**).

11.5.35 Details of the measures taken to manage and communicate potential vibration effects will be detailed within the CEMP, which will be prepared and implemented by the Principal Contractor.

11.5.36 Based on the above, although the activities are likely to be perceived at a total of eight NSRs, it is considered unlikely that significant effects will occur during vibratory piling activities when constructing the OHL tower foundations.

Vibratory Roller and Compactor

11.5.37 **Table 11-19** shows the likely peak particle velocity (PPV) at various setback distances from the vibratory piling method.

Table 11-19 – BS5228 Vibratory Roller and Compactor Assessment

Construction Activity	Approximate Distance to closest receptor from Vibratory Rollers and Compactors (m)	Max PPV (mms^{-1}) Vibratory Roller and Compactor Setting	
		Steady State	Start-up and Run Down
Civil Access Works	25	2.4	3.0
	50	0.9	1.3
	60	0.7	1.0
	100	0.3	0.5

11.5.38 The results in **Table 11-19** show that at the nearest sensitive receptors during the civil access works activity, the magnitude of impact for NSRs within 60 m would be moderate during start-up and run-down activities. There are thirteen NSR within 60 m of the proposed access track activity locations.

11.5.39 Start-up and run-down activities should be undertaken away from sensitive receptors to minimise significant impacts. To ensure that start-up and run-down activities do not result in significant effects, the activity should only be undertaken at distances greater than 60m from the nearest NSR.

11.5.40 Vibration levels as a result of construction are to be minimised through the implementation of BPM and mitigation methods advised in BS5228-2. The CEMP will detail the measures taken to manage and communicate potential vibration effects is to be detailed within the CEMP, which will be prepared and implemented by the Principal Contractor.

11.5.41 There are eleven NSRs within 50 m of the proposed access track activity locations (as shown in **Figure 11.3 Overhead Line Alignment and Construction Vibration NSR**).

11.5.42 Although having the potential to cause complaint, vibration levels between 1 mm/s and 10 mm/s, can be tolerated if prior warning and explanation has been given to residents. As the Proposed Development will include BPM (as per BS 5228-2) applied to all construction activities, prior warning of construction activities will be provided through liaison with members of the public, in particular those identified in the above section as potentially experiencing vibration levels above 1.0mm/s^{-1}.

11.5.43 Vibratory roller and compaction activities associated with civil access work are required when preparing the access tracks. The duration of the activity in any specific location is not confirmed at this stage. It is anticipated that the vibratory roller and compaction activities will occur sequentially, moving along sections of access tracks as the tracks progress. It is expected that the vibratory roller activity would occur for limited durations at any specific location i.e. less than ten consecutive days at a time. Therefore, it is considered unlikely that vibration effects will occur for a duration of ten or more days in any 15 consecutive days and are not considered as significant.

11.5.44 Based on the above, although the activities are likely to be perceived at a total of eleven NSRs, it is considered unlikely that significant effects will occur during vibratory roller and compactor activities.

Mitigation During Construction

NV1: General Construction Noise

11.5.45 For activities such as piling and rock breaking, a noise barrier which provides full line of sight screening from the NSR will be utilised where practicable, to minimise significant effects.

11.5.46 BS 5228-1 advises that noise barriers can provide a reduction in noise levels of 10 dB when the plant is completely screened from a receptor. The effectiveness of a noise barrier depends upon its length, effective height, position relative to the noise source and to the receptors, and the material from which it is constructed.

11.5.47 During the development of the project, if significant rock breaking activities are identified as required at specific locations for ten consecutive days or more, the CEMP should provide a clear procedure for the principal contractor to apply effective management and mitigation of the activity, in line with BPM. If required, the rock breaking activity should be re-assessed following specific details of location and duration of the activity becoming available.

NV2: Helicopter Noise

11.5.48 The assessment identifies the potential for significant effects during the proposed helicopter operations associated the movement of materials, for OHL tower assembly and during the conductoring phase.

11.5.49 Due to the nature of helicopter noise, specific measures that can be undertaken to reduce noise generated at the source are limited. Mitigation measures generally relate to the operation of the helicopters, rather than specific measures that can be taken to reduce the noise generate at the source.

11.5.50 Mitigation measures that will be adopted are detailed below:

- Provision of information to the public on expected helicopter activity duration, number of flights, flight paths, in particular for those dwellings within set-back distance of 300m from proposed helicopter routes;
- Provision of information to the public related to the aircraft operation and methods of ensuring the safety of both the local residents and helicopter operators;
- Helicopter fleet will be selected to provide quieter helicopter operation as practicable;
- Review of the locations of helicopter routes and tower assembly areas to maximise the separation distance from NSRs;
- Provide contact details for a nominated site contact for local residents to contact with complaints and for engaging with local residents;
- Training of helicopter operatives to raise awareness of noise, nearby NSRs and the importance of reducing impacts where practicable and safe to do so; and

- Restrictions on activities to allow for a reduction of potential effects e.g. helicopter flights limited to between 0900 – 1900 hours, to ensuring some respite for local residents within setback area.

NV3: Rock Breaking and Vibratory Roller and Compactor

11.5.51 If rock breaking or vibratory roller and compaction activities are identified as required along the access tracks (within 100m and 50m of nearby NSRs, respectively) for a duration of ten days or more, the activities should be re-assessed following confirmation of the details of location and anticipated duration of the activity becoming available.

Residual Effect Construction

11.5.52 The residual noise results present a worst-case assessment at the nearest NSRs for each activity, following the implementation of mitigation during individual construction activities. The results of which are provided in **Appendix 11.5 Assessment and Calculations**.

11.5.53 Construction activity noise level predictions indicate that there are no significant effects at any NSRs, following the implementation of the embedded mitigation and mitigation discussed in the mitigation during construction sections above.

11.5.54 Construction activity vibration level predictions indicate that there are no significant effects at any NSR during vibratory piling or vibratory roller and compactor activities.

11.5.55 During percussive piling activities eight NSRs receive a moderate significance of effect. Although of moderate significance of effect, it is considered the effects are not significant due to the application of BPM (BS 5228-2).

11.5.56 Vibratory roller and compaction activities result in up to eleven NSRs receiving a moderate significance of effect. Although of moderate significance of effect, it is considered the effects are not significant as it is considered unlikely that vibration effects will occur for a duration of ten or more days in any 15 consecutive days in one specific location.

Concurrent noise effects

11.5.57 The Proposed Development construction programme (**Table 3-1 Chapter 3 – Description of the Proposed Development**) indicates that many phases of the Proposed Development will occur during the same time period. Despite occurring at the same time, activities are anticipated to occur sequentially. Moving along the Proposed Development site prior to start of the next phase of the construction.

11.5.58 Although construction activities are anticipated to occur sequentially, there is the potential that different construction activities could occur both at the same time and near to NSRs. To account for this, an additional simultaneous noise calculation has been undertaken. The calculation assumes that the proposed access track, tower foundation and tower assembly and erection activities construction activities occur at the same time and at the locations nearest each NSR.

11.5.59 The results of this simultaneous calculation are provided in **Appendix 11.5 Assessment and Calculations** and are shown graphically in **Figure 11.5 Overhead Line Alignment and Cumulative Noise Effects**. The simultaneous calculation results indicate that there is the potential for up to thirty-two NSRs to receive moderate significance of effect.

11.5.60 These potential effects could occur where activities occur concurrently at OHL Towers 21 – 24, OHL Towers 52 – 55, OHL Towers 59 –62 and OHL Towers 76 – 77 and access track locations within the same area. The effects are not significant due to the unlikely circumstance where separate construction activities occur simultaneously near to any specific NSR, the application of BPM (BS 5228-1 and BS 5228-2) and the temporary nature of any potential simultaneous construction activities.

11.5.61 Additionally, it is highlighted that where helicopter flight routes pass over the activity locations noted, cumulative noise effects could occur. These will be mitigated as far as practicable.

11.5.62 The potential for the effects identified above are temporary in nature and confined to specific periods during the construction programme (two years duration) in which construction activities occur together at the same time and in the same locality (which is unlikely due to the sequential nature of the works associated with the Proposed Development). As such, no significant noise or vibration effects are associated with the Proposed Development.

Cumulative Effects - In-Combination

11.5.63 There are two developments that are proposed to occur during the Proposed Development construction programme, these are:

- decommissioning of the existing OHL; and
- reconductoring and refurbishment of the Loch Long Crossing.

11.5.64 Within the Proposed Development construction programme, the temporary access track removal activity is scheduled to take place during the same time period as the decommissioning of the existing OHL. If the two were to occur within a similar geographical location, cumulative effects would be present. Based on the information available related to the OHL removal, less than a 1 dB increase in construction traffic noise levels would be expected at any of the Noise Sensitive Receptors (NSRs). Resulting in a minor significance of effect and non-significant in-combination effects.

11.5.65 When occurring at a similar location within the Study Area, construction activities for the Proposed Development and decommissioning of the existing OHL result in a total of one NSR receiving a noise level of 66 dB (UPRN 125037982) and moderate significance of effect where activities occur near to Tower 23. All other NSRs receive in-combination noise levels below 65 dB.

11.5.66 It is anticipated that the decommissioning of the existing OHL will be undertaken in accordance with BPM (as per BS 5228-1 and BS 5228-2). The moderate significance of effect is considered as not significant due to the application of BPM at construction activity locations near to Tower 23. As such, there is no significant in-cumulative effects anticipated.

11.5.67 The reconductoring of the Loch Long Crossing occurs at the most northern extent of the Proposed Development. The activity will result in no cumulative noise effects at identified NSRs within the Proposed Development study area.

11.6 Summary

11.6.1 This chapter considers the potential noise and vibration effects that could arise due to construction of the Proposed Development. The assessment considers all noise sensitive receptors within the study area.

11.6.2 All construction activities associated with the Proposed Development are to be undertaken in accordance with a CEMP. Noise mitigation will include Best Practicable Means (as per BS 5228-1 and BS 5228-2) as set out in the CEMP. Additional mitigation will include noise attenuating enclosures and noise control limits for temporary power generation at the Dunoon Substation and a noise barrier which provides full line of sight screening during activities such as piling and rock breaking.

11.6.3 Based on the implementation of the above mitigation measures, the results indicate a minor or negligible significance of effect (not significant) at NSRs within the Study Area for noise emissions during the construction programme of the Proposed Development.

11.6.4 It is anticipated that the use of helicopters during the project has the potential to cause significant effects when operating near to NSRs. As non-acoustical elements (virtual noise) including concerns about

safety and the 'startle effect' of low-level flying helicopters often dictate the level of public response to helicopters, mitigation measures to address these points will be implemented.

11.6.5 The assessment highlights that for many construction activities, the temporary nature of the activity and the short durations of activities such as rock breaking at access track and OHL tower locations, vibratory compaction along access track locations, result in no significant effects. In the circumstance where an activity previously anticipated to occur for a longer duration (up to ten consecutive days) is required, mitigation and management of the activity will be undertaken in line with the CEMP.

11.6.6 There are two developments (decommissioning of the existing OHL and reconductoring of the Loch Long Crossing) that are proposed to occur during the Proposed Development construction programme. No significant cumulative effects are anticipated during the Proposed Development construction programme.

12. FORESTRY

12.1 Introduction

12.1.1 This chapter assesses the significance of predicted residual effects of the construction and operation of the Proposed Development on forest and woodland areas within five sections of the proposed OHL alignment for the Proposed Development.

12.1.2 This assessment is supported by the following Appendices:

- Appendix 12.1: Woodland Reports
  - Section 1: Forest and Land Scotland (The Knap, Glenfinart Forest)
  - Section 2: Forest and Land Scotland (Cnap Reamhar Wood, Ardentinny, Stronvochlan Wood, Glenfinart Forest and Land at Glenfinart)
  - Section 3: Forest and Land Scotland (Benmore Forest), Scottish Water and Land Adjacent to the River Eachaig
  - Section 4: Rashfield Farm, Deargacha, Cladaig House and Gleann Ban Woodlands
  - Section 5: Dalinlongart Hill, Dalinlongart Forest and Ardnadam Forest
  - Figure 12.1.1: Forestry Felling Map – FLS (The Knap)
  - Figure 12.1.2: Forestry Felling Map – FLS (Cnap Reamhar and Stronvochlan)
  - Figure 12.1.3: Forestry Felling Map – FLS (Benmore)
  - Figure 12.1.4: Forestry Felling Map – Rashfield and Gleann Ban
  - Figure 12.1.5: Forestry Felling Map - Dalinlongart and Ardnadam
- Appendix 12.2: Forest Landscape Design
  - Figure 12.2.1: Ballochyle – Location and Context
  - Figure 12.2.2: Ballochyle – Current Tree Cover
  - Figure 12.2.3: Proposed Felling under Current Arrangements
  - Figure 12.2.4: Proposed Powerline Felling
  - Figure 12.2.5: Indicative Powerline Restocking
  - Figure 12.2.6: Photo Visualisation – Viewpoint 1 - Location
  - Figure 12.2.7: Photo Visualisation – Viewpoint 1 – Current View
  - Figure 12.2.8: Photo Visualisation – Viewpoint 1 – View of proposed Powerline Felling
  - Figure 12.2.9: Photo Visualisation – Viewpoint 1 – View of Indicative Mature Restocking
  - Figure 12.2.10: Photo Visualisation – Viewpoint 2 – Location
  - Figure 12.2.11: Photo Visualisation – Viewpoint 2 – Current View
  - Figure 12.2.12: Photo Visualisation – Viewpoint 2 - View of proposed Powerline Felling
  - Figure 12.2.13: Photo Visualisation – Viewpoint 2 - View of Indicative Mature Restocking
  - Figure 12.2.14: Glenfinart – Location and Context
  - Figure 12.2.15: Glenfinart - Current Tree Cover
  - Figure 12.2.16: Glenfinart – Proposed Felling under Current Arrangements
  - Figure 12.2.17: Glenfinart – Proposed Powerline Felling
  - Figure 12.2.18: Glenfinart – Indicative Powerline Restocking
  - Figure 12.2.19: Photo Visualisation - Viewpoint 3 – Viewpoint Location
  - Figure 12.2.20: Photo Visualisation – Viewpoint 3 – Current View

  - Figure 12.2.21: Photo Visualisation – Viewpoint 3 – View of Proposed Powerline Felling
  - Figure 12.2.22: Photo Visualisation – Viewpoint 3 – View of Indicative Mature Restocking
- Appendix 12.3: Native Woodland Strategy
- Appendix 12.4: Compensatory Planting Strategy

12.1.3 **Appendix 12.1 Woodland Reports** contains a series of five location specific Woodland Reports in relation to forestry and woodland that would be intersected by the Proposed Development. These Woodland Reports that are individual Annexes to **Appendix 12.1**, detail the current baseline in terms of describing the woodland type (including species, condition, current management), and details of future management where available. The Woodland Reports contain the detailed assessment of impacts likely to result from the construction and operation of the Proposed Development. Where possible, future management proposals have been designed in conjunction with relevant landowners/ forest managers to create a resilient and sustainable long term forest management system.

12.1.4 The assessment has been prepared by Galbraith Forestry in line with the UK Forestry Standard (UKFS) guidance[192]. All staff contributing to this Chapter have professional experience in forestry survey and environment impact assessment (EIA), as detailed in **Chapter 1**, in **Section 1.6 EIA Quality**.

12.1.5 Throughout this assessment, areas of native semi-natural woodland are referred to as woodland and areas of predominately commercial species are classed as forests.

12.2 Assessment Methodology and Significance Criteria

Scope of Assessment

12.2.1 This chapter considers the significance of likely predicted effects of the Proposed Development on forestry, including cumulative effects with other developments where relevant. This includes an assessment of the sensitivity of the forestry and woodland areas located along the route of the Proposed Development and an assessment of the likely impacts that would arise from the Proposed Development, with particular emphasis on forest and woodland structure and management.

12.2.2 The assessment is based on the description of the Proposed Development that is provided in **Chapter 3: Description of the Proposed Development.**

12.2.3 The assessment is based on the requirement to form, and maintain, an Operational Corridor (OC), permanent and temporary access tracks and temporary OHL diversions along the proposed OHL alignment, while recognising the potential impacts over broader forest management areas as a result of the Proposed Development. This Chapter reports on the assessment of the effects associated with the creation of the OC only, and does not address the overall Long Term Forest Plans (LTFPs) or management intentions of the various landowners. Any felling undertaken outwith the OC would be solely under the control of the relevant landowner (and not the Applicant), and consequently, the assessment is limited to consideration of the effects of the Proposed Development on the present forest composition and yield, at the time of writing. The relevant landowners and forest managers have been consulted on the felling requirements within the OC and how these may impact on the management of the wider forest area. Proposals to develop the additional works required to maintain a sustainable long term resilient holding following the clearance of the OC have been developed alongside the landowners and forest managers to minimise the long term impact.

12.2.4 As provided in terms of the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002[193] and Schedule 4 to the Electricity Act 1989[1], the Applicant has the necessary statutory powers to remove

[192] United Kingdom Forestry Standard (UKFS), Forestry Commission (2017)
[193] UK Government (2002). The Electricity Safety, Quality and Continuity Regulations 2002. Available at: https://www.legislation.gov.uk/uksi/2002/2665/contents/made - accessed 15/07/2022

woodland for the purposes of construction and on-going maintenance of new overhead lines (OHLs), and/ or protection of electrical plant.

Extent of the Study Area and Operational Corridor

12.2.5 The study area for this assessment initially focussed on a 100 metres (m) area either side of the centre line of the proposed OHL alignment and ancillary infrastructure, where relevant, prior to the identification of an OC. Where the proposed OHL alignment passes through woodland or forested areas (and elsewhere), an Operational Corridor (OC) is established which is defined by the area which during the life of trees growing, they could grow to a height which would compromise the safe operation of the OHL. Trees are therefore removed within the Operational Corridor to facilitate construction and ensure continued safe operation of the OHL. As a result, the final OC width would be based on the safety distance required to allow for a mature tree falling towards the OHL at the mid-point on an OHL span between two towers, taking account of topography, tree height at maturity and electrical arcing clearance at 132 kV voltage.

12.2.6 The typical OC required within areas of commercial conifer forestry for a 132 kV OHL is 81 m, (i.e. 40.5 m either side of the centre line). Where the OC passes through areas of native woodland, it is proposed that the extent of woodland removal is likely to be reduced due to the lower height of the tree species present. The proposed OC for the Proposed Development through areas of native woodland has been reduced to 60 m (i.e. 30 m either side of the centre line of the OHL). This has been based on the likely height of the woodland at maturity.

12.2.7 By definition the OC is deemed to include any tree with the potential to become a "Red Zone" tree as defined within the Forest Industry Safety Accord (FISA), Guidance note 804[194]. This refers to any tree with the potential to fall into the 3.5m vicinity zone of the overhead line conductors or directly onto the conductors causing damage or failure.

12.2.8 The forestry assessment has been limited to the woodland removal required to create the proposed OC for the OHL and required access tracks, as set out in **Chapter 3: Description of the Proposed Development**. It is acknowledged that the creation of the OC would result in wider potential indirect effects on the surrounding woodland areas. These areas would be subject to potential increased risk of damage (windthrow). As a result, the assessment work includes a series of Woodland Reports (see the Annexes to **Appendix 12.1**), in respect of the forests and woodlands affected by the Proposed Development. The Woodland Reports demonstrate how the Proposed Development would be incorporated within ongoing forest management activities. They also identify further areas of felling to establish and leave a windfirm edge for the remaining forestry or woodland; (categorised as an indirect effect). Any felling undertaken outwith the OC would be solely under the control of the relevant landowner (and not the Applicant).

12.2.9 It should be noted that of the woodland, forest and other land affected by the proposed OHL alignment, thirteen properties are private landholdings, three are within the ownership of the Scottish Ministers and are managed by Forestry and Land Scotland and one is under the ownership of Argyll and Bute Council.

Consultation Undertaken to Date

12.2.10 The scope of the assessment has been determined through a combination of professional judgement and consultation with stakeholders through a formal EIA scoping process and pre-application advice, and is based on the formal Scoping Opinion issued by the Scottish Ministers dated 26 April 2022 (**Appendix 4.4 EIA Scoping Opinion).**

12.2.11 Scoping responses, relevant to forestry and woodland, are provided in **Table 12-1** below.

[194] Safety Guide 804 Electricity at work: Forestry, Forest Industry Safety Accord (FISA)

Table 12-1: Consultation responses of relevance to forestry and woodland impact

Organisation	Response	How response has been considered
Argyll and Bute Council (ABC)	ABC requested further clarification on the mechanism to achieve necessary compensatory planting of the woodland removal area to deliver overall no net loss of woodland.	Compensatory planting requirements form part of the forestry assessment and are addressed in the **Appendix 12.4 Compensatory Planting Strategy**
Loch Lomond and Trossachs National Park Authority	LLTNP recommended that cumulative effects of felling with ongoing felling of diseased larch trees should be assessed and that opportunities for ecological and landscape enhancement along the existing OHL corridor should also be explored.	The landscape effects of sanitation felling are taken into account in the assessment of the effect of the Proposed Development on each affected section.
Scottish Forestry (SF) – 7th April 2022	SF requested that the proposal consider effects of felling, woodland removal and re-establishment should be considered. This should also include indirect impacts on adjacent woodlands. The Woodland Reports for each affected section should identify all areas of felling required to form the operational corridor and access corridors. In addition, the Woodland Reports should aim to reduce the risk of future wind throw by identifying felling of stable forest edges (outside of the operational corridor).	The Woodland Reports contained in the supporting Appendix and Annexes to this Chapter identify all areas of felling required to form the OC and access corridors. In addition, the Woodland Reports address the issue of reducing the risk of future wind throw by identifying felling outwith the OC to stable forest edges.
Scottish Forestry (SF) – 1st June 2022	Areas of concern highlighted by Scottish Forestry regarding the new proposed route include: • The potential impact on future forestry management activity from the forest road; • Operational isolation of woodland above the OHL; • The impact on Plantations on Ancient Woodland Sites (PAWS) and Ancient Woodland sites. The forestry chapter should also include information on the presence of Larch and *Phytophthora ramorum* within and adjacent to the operational corridor, and the potential impact on control and spread of the disease.	Information relating to these potential impacts is included within this Chapter and associated Appendix and Annexes.

Methodology for the Assessment of Effects

12.2.12 There are currently no published criteria, guidance or methodologies for the assessment of effects on forestry. The assessment reported in this Chapter is based upon the methodology set out in **Chapter 5**

Methodology and has therefore been based upon the requirements of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

12.2.13 The assessment is made based on professional judgement, with reference to:

- the sensitivity of the different types of woodland present in the study area taking account of the degree and rate of change in the woodland, both in the recent past and that anticipated in the near future, and therefore the susceptibility/ vulnerability of the woodland to change; the quality of the woodland and the extent to which it is rare or distinctive, and the value attributed to the woodland through designations;
- magnitude of change and extent of woodland removal;
- duration and reversibility - timescale of effect (months/years) until recovery. Permanent effects are described as such, and likelihood of recovery is detailed where appropriate; and
- adverse/ beneficial - if the effect will be beneficial or detrimental to the feature.

12.2.14 The effect on woodland is normally considered to be of an adverse nature (ie tree felling) however indirect beneficial effects in some areas may arise where the introduction of the Proposed Development allows the removal of monoculture conifer plantations and replacement with more diverse and resilient conifer mixes or the introduction of native woodland with an increased proportion of open ground habitat. Whilst there may be an ecological benefit from the removal of conifer plantation forest, there is a presumption against forest removal which is supported by the Scottish Governments policy on Control of Woodland Removal[195]. As such for the purposes of this assessment tree removal is to be considered as having an adverse effect.

12.2.15 ***Criteria for Assessing Sensitivity/Importance of Receptors*** Four categories of sensitivity / importance of a forest or woodland are defined in **Table 12-2**.

Table 12-2: Sensitivity Criteria

Category	Description
High	• Highly valued, subject of national designation, e.g. NatureScot Ancient Woodland Inventory Category 1a and 2a; • Particularly rare or distinctive in a national context; or • Considered intolerant to small changes.
Medium	• Rare or distinctive in a local or regional context; and/ or • Tolerant of moderate levels of change.
Low	• More commonplace in nature, not designated; • Considered potentially tolerant of noticeable change; or • Undergoing substantial development and as such characterised by change.
Negligible	• Already fundamentally changed (e.g. second rotation commercial conifer plantation); • Considered tolerant of noticeable change; or • Having undergone substantial development and as such characterised by change.

12.2.16 Given the dynamic nature of productive forests which are subject to restructuring, the environmental sensitivity of the forest as a commercial asset and land use is low. There are areas of Ancient Woodland present within the vicinity of the Proposed Development, and these are considered in this assessment to be of high sensitivity. The assessment of effects of effects on ancient and semi-natural woodland in ecological terms are addressed in **Chapter 7: Ecology and nature Conservation** of the EIA Report.

[195] Scottish Government's Policy on Control of Woodland Removal: implementation guidance. (2019)

Criterial for Assessment Magnitude of Change

12.2.17 Criteria for assessing the magnitude of change to a forest or woodland is defined in **Table 12-3.**

Table 12-3: Magnitude of Change Criteria

Category	Description
High	A noticeable change to the forest or woodland over a wide area or an intensive change over a limited area.
Medium	Small changes to the forest and woodland over a wide area or noticeable change over a limited area.
Low	Very small changes to the forest or woodland over a wide area or small changes over a limited area.
Negligible / None	No discernible change to the forest or woodland.

12.2.18 The sensitivity of the woodland (**Table 12-2**) and magnitude of change criteria (**Table 12-3**) are then used to inform a professional judgement on the likely significance of the effect. **Table 12-4** provides a framework for reaching a judgement as to the significance of predicted effects.

Table 12-4: Matrix for Determining the Significance of Effects

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

12.2.19 Major and moderate effects are considered to be significant within the context of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

Desk Study

12.2.20 Searches of the Land Register of Scotland of the Proposed Development provided the property boundary information of each landholding. A desk-based appraisal of Ordnance Survey (OS) mapping, aerial photography and review of web-based data provided by Scottish Forestry identified the existing forest and woodland cover within a study area defined as 100 m either side of the proposed OHL alignment. This was supplemented where possible by consultation with landowners and/ or forest managers, review of existing forest data on woodland type (species/ age/ class) and the existing woodland management regime, including woodland restructuring and Long Term Forest Plan information.

Field Survey

12.2.21 Forest walkover and mapping surveys were undertaken during the period November 2021 to October 2022, to confirm the extent of the woodland areas affected by the Proposed Development and further assess the current woodland characteristics. Photographic records were taken to provide visual samples of the woodland types and are included in **Appendix 12.1: Woodland Reports**. A detailed survey of the commercial conifer woodlands was undertaken by a specialist contractor to provide accurate crop data using best practice forest mensuration methodology.

12.2.22 The forest walkovers included visual assessment of tree health, vigour, ground conditions and existing woodland stability. Observations were also made of potential woodland wind-firm felling boundaries outwith the OC initially through assessment of aerial photographic imagery. The forest walkover surveys included consideration of ancillary infrastructure and the Limits of Deviation (LoD) as set out in **Chapter 3: Description of the Proposed Development**.

Limitations and Assumptions

12.2.23 Forest information has been provided by the landowners and forest/ land managers of most landholdings and cross checking has been carried out where observations suggested that the immediate conditions varied from the information provided. In several cases, detailed forest data was not supplied and criteria such as age, species and yield were therefore estimated through field surveys.

12.3 Baseline Conditions

12.3.1 The study area comprises large areas of commercial forestry plantations, as well as areas of broadleaved semi-natural woodland, a number of which are recorded as Ancient Woodland. The Argyll and Bute region is closely identified with forests and woodland. Forests and woodlands cover some 2,000 square kilometres or 30 % of the local authority area. Approximately 165,000 ha comprises productive commercial forests dominated by Sitka spruce. The remaining 35,000 ha comprises native semi-natural woodland with birch and oak the dominant species. This includes approximately 17,700 ha of broadleaved semi-natural woodland and 17,300 ha of Ancient woodland (Argyll and Bute Woodland and Forestry Strategy, 2011).

12.3.2 The baseline characterisation work carried out identified twelve landowners with sixteen separate landholdings containing forest, woodland or other trees potentially affected by the Proposed Development. The landholdings were grouped into five sections and a Woodland Report prepared for each section, which are included in **Appendix 12.1: Woodland Reports**. Each site was visited, and woodland site surveys carried out to verify and assess the growing stock with reference to existing data sourced from the forest owners and their agents where available. The five sections and corresponding Woodland Reports are identified as follows:

- Section 1 - Forest and Land Scotland (The Knap, Glenfinart Forest), Towers 1-18;
- Section 2 -Forest and Land Scotland (Cnap Reamhar Wood, Ardentinny and Stronvochlan Wood, Glenfinart Forest), Towers 19-28;
- Section 3 - Forestry and Land Scotland (Benmore Forest), Scottish Water and Land Adjacent to River Eachaig, Towers 44-52;
- Section 4 - Rashfield Farm, Deargacha, Cladaig House and Gleann Ban Woodlands, Towers 53-63; and
- Section 5 - Dalinlongart Hill, Dalinlongart Forest and Ardnadam Forest, Towers 64-77.

12.3.3 The total areas of woodland habitats recorded within the OC during the site surveys include:

- Commercial Woodland (70.09 ha); and
- Native Broadleaved Woodland (semi-natural woodland and ancient woodland) (14.76 ha).

12.3.4 The commercial woodland area includes approximately 0.5 ha of LEPO (2b) and hereafter is not included within Ancient Woodland calculations. Of the broadleaved semi-natural woodland areas identified, 3.44 ha of these areas are recorded in the NatureScot Ancient Woodland Inventory[196] (AWI), as detailed in **Table 12-7** and shown within **Appendix 12.1: Woodland Reports.**

[196] Data available online at: https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland - accessed 15/07/2022

12.3.5 NatureScot's Ancient Woodland Inventory[47] sets out a provisional guide to the location of Ancient Woodland. It contains three main categories of woodland, all of which are likely to be of value for their biodiversity and cultural value by virtue of their antiquity:

- Ancient Woodland (1a or 2a) - Interpreted as semi-natural woodland from maps of 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS);
- Long Established of Plantation Origin (LEPO) (1b or 2b) - Interpreted as plantation from maps of 1750 (1b) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as species diverse as Ancient Woodland; and
- Other woodlands on 'Roy' woodland sites (3) - Shown as unwooded on the 1st edition maps but as woodland on the Roy maps. Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of Ancient Woodland.

12.3.6 The Proposed Development passes through an area of Category 1a Ancient Woodland (of semi-natural origin) (0.26 ha) next to Clunie Burn and an area of Other 'Roy' woodland (0.36 ha) within Section 1. Additionally, an area of PAWS is impacted (3.42 ha).

12.3.7 Section 2 passes through an area of Category 1a Ancient Woodland (of semi-natural origin) (0.58 ha). However, impact will be caused by a temporary OHL diversion allowing the woodland to be regenerated once construction is complete. Additionally, an area of PAWS woodland is impacted (3.57 ha).

12.3.8 The Proposed Development passes through an area of Category 2a Ancient Woodland (of semi-natural origin) (1.25 ha) within Section 3.

12.3.9 The Proposed Development passes through an area of Category 2a Ancient Woodland (of semi-natural origin) (0.99 ha) within Section 4. Additionally, an area of PAWS woodland is impacted (2.44 ha).

12.3.10 The Proposed Development does not interact with any areas of Ancient Woodland (as detailed in the AWI) within Section 5.

Future Baseline

12.3.11 Under the future "do nothing scenario", it has been assumed that coniferous plantations will continue to be managed principally in accordance with commercial objectives and the 'normal' cycle of forest management, including their felling and replanting with similar species. It is assumed that the Ancient Woodland and semi-natural woodland areas would be managed as long-term retention areas. It is not considered likely that there will be a net reduction in the area of forest as a result of this scenario overall, although there will clearly be local changes. On this basis, the current baseline has been used for the purposes of this assessment and no further consideration will be given to future baseline scenarios.

12.4 Issues Scoped Out

12.4.1 On the basis that felling proposals to create the operational corridor will be supported by a commitment to comply with Scottish Government's Control of Woodland Removal Policy (CoWRP)[197] through compensatory planting, there would be no likely significant effects on the productive conifer plantation resource.

12.4.2 It is noted that the UKFS identifies seven elements of sustainable forest management, as follows:

- Forests and Biodiversity;

[197] Forestry Commission (2009). The Scottish Government's Policy on Control of Woodland Removal. Available at: https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal

- Forests and Climate Change;
- Forests and Historic Environment;
- Forests and Landscape;
- Forests and People;
- Forests and Soil; and
- Forests and Water.

12.4.3 The potential environmental impacts and likely significant effects associated with the seven elements of sustainable forest management will be considered within the individual topic chapters proposed for inclusion in the EIA Report, rather than in a Forestry chapter.

12.5 Assessment of Effects, Mitigation and Residual Effects

Embedded Mitigation Measures

12.5.1 The embedded mitigation is a combination of decisions taken during the design process to avoid or minimise the potential for likely significant effects through routeing and alignment of the OHL, and the implementation of standard practice mitigation measures that are well-established and effective. These are discussed below.

Mitigation by Design

12.5.2 The routeing and alignment selection process for the Proposed Development has taken into consideration the potential for significant effects on forestry and woodland, and for such effects to be avoided or minimised where possible. This has continued through the EIA process, with survey data informing the siting of infrastructure and access routes to minimise further potential effects on forestry and woodland, where practicable. This process is detailed in **Chapter 2 Route Selection and Alternatives**.

Good Practice

12.5.3 There would be a contractual management requirement for the successful Principal Contractor to fully implement a comprehensive and Site-specific Construction Environmental Management Plan (CEMP). This document would detail how the successful Principal Contractor would manage all works in accordance with all commitments and mitigation detailed in the EIA Report, the Applicant's GEMPs and SPPs (as presented in **Appendices 3.2 and 3.3**), statutory consents and authorisations, and industry good practice and guidance, including pollution prevention guidance.

12.5.4 Good practice measures with respect to felling requirements will be incorporated into environmental management controls, including:

- Adherence to Forestry Commission (Scottish Forestry) Guidelines[198] e.g. to ensure protection and enhancement of the water environment;
- Management of forestry waste (SEPA)[199] to ensure all excess waste resulting from forestry operations is correctly disposed of; and
- Implementation of tree harvesting and extraction methods to ensure minimisation of soil disturbance and compaction.

12.5.5 All woodland removal operations contracted by the Applicant would adhere to the UKFS[200].

198 The UK Forestry Standard. Forestry Commission (2017)

199 SEPA Guidance WST –g-027, version 3 (2017)

200 The UK Forestry Standard. Forestry Commission (2017)

Assessment of Likely Significant Effects

12.5.6 The assessment of likely significant effects associated with the construction and operational phases of the Proposed Development is based on the typical activities and characteristics described in **Chapter 3: Description of the Proposed Development**.

12.5.7 The introduction of OHLs into forestry and woodland can give rise to a combination of short term and long-term effects during both construction and operation. The following inter-related effects can arise from the introduction of OHLs within forest and woodland areas associated principally with the requirement for tree felling and vegetation management.

- Direct construction and operational effects: loss of areas of forest through woodland removal to create the OHL OC and access tracks, in the context of the regional forest resource for both commercial woodland, Ancient Woodland and semi natural woodlands. Temporary effects include woodland removal in relation to temporary access tracks and temporary OHL diversions;
- Indirect construction effects: increased windthrow and secondary felling agreed with landowners;
- Indirect operational effects: effects on forest management systems;
- Indirect operational effects: restrictions on forest access; and
- Cumulative effects: combined loss of woodland from direct and indirect (secondary) felling.

12.5.8 The assessment is structured around the consideration of these effects.

12.5.9 In total, approximately 12 km of the route for the Proposed Development was assessed as being within forest or woodland and associated open ground, where tree clearance would be required to form **Sensitive Receptors**

12.5.10 A summary of the forest and woodland receptors present are defined in Table 12-5 together with their justification for inclusion in the assessment. Each of the woodland sections contains both receptors except Section 5 which only contains plantation conifer forest. Appendix 12.1 provides details of the named forestry and woodland sites.

Table 12-5: Summary of Woodland Receptors

Receptor	Justification
Commercial conifer forest	Tolerant to the proposed changes and having no environmental designation. Considered as part of the assessment of effects.
Native Woodland (comprising Ancient Woodland and broadleaved semi-natural woodland)	Ancient Woodland is an important biodiversity resource. It has no legislative protection but in terms of planning policy protection it benefits from non-statutory designation. Non-designated broadleaved semi-natural woodland is noted to have biodiversity and amenity value and has planning policy protection. Both are considered locally tolerant to medium levels of change. This assessment is based on the regional sensitivity. It is recognised there may be some localised areas considered to have increased sensitivity. Within this assessment the sensitivity is considered to be medium. Considered as part of the assessment of effects.

Construction Phase

Construction Effects – Woodland Removal

12.5.11 The direct and gross loss of woodland from construction of the Proposed Development is set out for each Section in **Table 12-6**. The areas affected in each of the woodlands is described in each of the relevant Woodland Reports in **Appendix 12.1**.

Table 12-6: Construction Phase Woodland Removal

Section	Woodland Type	Woodland Classification	Area (ha)	Felling Requirement	Notes
1	Commercial	Conifer	22.84	OC	
	Native	Broadleaved semi-natural	0.69	OC	
	Native	Ancient Woodland (1a)	0.26	OC	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5)
	Native	AWI - Other woodlands on 'Roy' woodland sites (3)	0.36	OC	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5)
	Commercial	Conifer	1.74	New Access Track	Permanent track
2	Commercial	Conifer	10.76	OC	
	Native	Broadleaved semi-natural	0.86	OC	
	Native	Ancient Woodland (1a)	0.02	OC	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5).
	Commercial	Conifer	1.24	New Access Track	Permanent track
	Commercial	Conifer	0.66	Temporary OHL Diversion	Temporary tree removal – to be restocked
	Native	Broadleaved semi-natural	0.41	Temporary OHL Diversion	Temporary tree removal – to be restocked
	Native	Ancient Woodland (1a)	0.56	Temporary OHL Diversion	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5). Temporary tree removal – to be regenerated.
3	Commercial	Conifer	0.53	OC	
	Native	Broadleaved semi-natural	4.11	OC	
	Native	Ancient Woodland (2a)	1.25	OC	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5).
	Commercial	Conifer	0.38	New Access Track	Permanent track
	Native	Broadleaved semi-natural	0.86	New Access Track	Permanent track

Section	Woodland Type	Woodland Classification	Area (ha)	Felling Requirement	Notes
	Commercial	Conifer	1.23	Temporary OHL Diversion	Temporary tree removal – to be restocked
	Native	Broadleaved semi-natural	2.83	Temporary OHL Diversion	Temporary tree removal – to be restocked
4	Commercial	Conifer	12.88	OC	
	Native	Broadleaved semi-natural	0.41	OC	
	Native	Ancient Woodland (2a)	0.87	OC	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5).
	Commercial	Conifer	0.58	New Access Track	Permanent track
	Native	Ancient Woodland (2a)	0.12	New Access Track	Semi-natural broadleaved woodland included in NatureScot AWI (see paragraph 12.3.5). Permanent track
5	Commercial	Conifer	17.04	OC	
	Native	Broadleaved semi-natural	0.89	OC	
	Commercial	Conifer	0.21	New Access Track	Permanent track
	Native	Broadleaved semi-natural	0.26	New Access Track	Permanent track
Total			**84.85**		

12.5.12 The total direct and gross loss of forestry and woodland for construction of the Proposed Development equates to 84.85 ha; this includes 70.09 ha of commercial woodland removal and 14.76 ha of Ancient Woodland and semi natural native woodland removal.

Commercial Conifer Forest

12.5.13 As shown in **Table 12.6**, the direct loss of commercial conifer forest as a result of the Proposed Development is primarily as a result of the requirement to form an OC, with some felling required to form access tracks and temporary OHL diversions. Commercial woodland loss is spread across all Sections included within the assessment (i.e. Sections 1 to 5), with the greatest losses shown in Sections 1, 2, 4 and 5. Losses of under 10 ha are predicted in Section 3.

12.5.14 The sensitivity of commercial conifer forest within the study area is low. The combined and direct loss of 70.09 ha of commercial woodland across all Sections is assessed as a low magnitude of change, in the context of a noticeable change over a limited area, equating to a 0.0004% impact of woodland removal within the regional resource forest area of 165,000 ha. This effect is assessed as **Minor Adverse** and **Not Significant.**

Broadleaved Semi-Natural Woodland

12.5.15 As shown in **Table 12.6**, the direct loss of broadleaved semi-natural woodland is predicted in all Sections with the greatest loss being seen in Section 3. Across all Sections, this is primarily as a result of the requirement to form an OC, with some additional felling required to form access tracks and temporary OHL diversions.

12.5.16 The combined removal of broadleaved semi-natural woodland required due to construction of the Proposed Development across all 5 Sections is 11.32 ha. However, 3.24 ha of this total is associated with the provision of temporary OHL corridors which will allow impacted woodland to be regenerated post-construction. Therefore, the direct net loss of broadleaved semi-natural woodland is 8.08 ha. A breakdown of native woodland habitat impacted by construction and operation of the Proposed Development are shown in **Table 12-7**.

Table 12.7: Native woodland habitat (Ancient and broadleaved semi-natural) impacted by the Proposed Development

Woodland Classification	Total Area (ha)	Area (ha) Associated with Temporary OHL Diversions	Net Loss (ha)
Ancient Woodland (1a)	0.84	0.56	0.28
Ancient Woodland (2a)	2.24		2.24
AWI - Other woodlands on 'Roy' woodland sites (3)	0.36		0.36
Semi-natural woodland	11.32	3.24	8.08
Total	**14.76**	**3.80**	**10.96**

12.5.17 The sensitivity of semi-natural woodland is considered within this assessment as medium. The combined loss of 11.32 ha of broadleaved semi-natural woodland across all Sections is assessed as a medium magnitude of change, in the context of a noticeable change over a limited area, equating to a 0.0006% impact of woodland removal within the regional resource forest area of 17,600 ha. The effect is assessed as **Moderate Adverse** and **Significant**.

Ancient Woodland

12.5.18 As shown in **Table 12.6**, the direct loss of Ancient Woodland is predicted in Sections 1, 2, 3 and 4, with the greatest loss being seen in Sections 3 and 4. Across these Sections, this is primarily as a result of the requirement to form the OC, with some additional felling required to form access tracks and temporary OHL diversions. No loss of Ancient Woodland is predicted in Section 5 of the route for the Proposed Development.

12.5.19 The combined loss of Ancient Woodland, due to construction of the Proposed Development across all 5 Sections would be 3.44 ha. However, 0.56 ha of this total is associated with the provision of temporary OHL corridors which will allow impacted woodland to be regenerated post-construction. Therefore, the direct net loss of Ancient Woodland would be 2.88 ha. A breakdown of the Ancient Woodland and semi natural woodland habitat types impacted by construction and operation of the proposed OHL alignment are shown in **Table 12.7**.

12.5.20 The sensitivity of Ancient Woodland is considered within this assessment as high. The combined loss of 3.44 ha of Ancient Woodland across all Sections is assessed as a medium magnitude of change, in the context of a noticeable change over a limited area, equating to a 0.0002% impact of woodland removal within the regional resource forest area of 17,400 ha. The effect is assessed as **Moderate Adverse** and **Significant.**

12.5.21 The local authority (Argyll and Bute Council) recorded combined area of Ancient Woodland and broadleaved semi-natural woodland is thought to be 35,000 ha. Therefore the gross area impacted (14.76 ha) would represent a maximum of 0.0004% of the regional resource.

12.5.22 The assessment of the impact of the clearance of native woodland habitat (Ancient Woodland and broadleaved semi-natural woodland) in biodiversity terms is addressed within **Chapter 7: Ecology and Nature Conservation.**

Construction Effects – Windthrow

12.5.23 The tree felling required through areas of mature commercial woodland to create the OC would result in an indirect effect of exposing unstable forest edges and therefore increasing the risk of windthrow where mature forest trees are retained immediately adjacent to the OC. Those areas, known within the forestry industry as 'brown edges', contain relatively unstable trees within them which previously benefitted from and were adapted to the shelter afforded by now felled neighbouring trees. When this shelter is removed, the likelihood that these trees will be damaged or blown over is increased.

12.5.24 This assessment identifies an additional area of 70.0 ha of commercial woodland which would be at increased risk of windthrow. The sensitivity of commercial woodland within the study area is low. The magnitude of impact would be low, and therefore this additional area is assessed as **Minor Adverse** and **Not Significant.**

12.5.25 Notwithstanding this assessment, in keeping with this assessment, the Applicant has produced Woodland Reports included in **Appendix 12.1**, which recommend proposals to landowners to remove this risk by identifying additional areas of felling out to the nearest 'windfirm' edge (known as a 'green edge'), where the trees have developed next to open ground or a suitable edge can be found next to a forest road, ride or other feature. The extent of additional (secondary) 'management felling' required to achieve this reduction in windthrow risk would be 70.0 ha. The sensitivity of the forest for removal of trees outwith the OC is considered low in that the forest is deemed tolerant to this level of change and that such change could be expected to occur during normal forest management practices. Indeed, some 78% of this area is already scheduled for felling within the next five years under existing Long Term Forest Plans (LTFP), Felling Permissions or Statutory Plant Health Notices (SPHN). The additional felling requirement introduced by the Proposed Development would potentially bring some felling activity forward and as such can be considered to be a temporary (albeit long-term) effect, with replanting mandatory as a condition of statutory felling consent.

Mitigation During Construction

12.5.26 The Applicant proposes to implement a suite of standard good practice working methods to ensure that all construction activity (including woodland removal) avoids significant effects on ecological and hydrological receptors.

12.5.27 FR1: The areas of Ancient Woodland and semi natural woodland impacted by the Proposed Development could potentially be further reduced through micrositing within the LoD where a combination of factors (e.g. topography, tower height, tree species and tree height) may reduce the area of Ancient Woodland defined as being within the OC and therefore requiring removal. For example, the extent of tree clearance may be reduced where it can be demonstrated through further detailed survey that the trees can be safely overflown by the OHL conductors or that the trees can be accommodated within closer proximity to the Proposed Development. This is likely to include ravines, or deeper edged watercourses with riparian, Ancient Woodland and broadleaved semi-natural woodland, e.g. such as that found between Towers 17 and 18. There may also be opportunities to further retain native scrub/ understorey layers in areas where existing tree cover does not breach safety clearances and allows for safe construction activity.

12.5.28 FR2: The Woodland Reports, included within **Appendix 12.1**, identify all areas of felling required to form the OC, access tracks and temporary OHL diversions. In addition, the Woodland Reports have sought where necessary to reduce the risk of future wind throw by identifying felling to stable forest edges outside of the OC.

The Woodland Reports have also sought to agree good forest landscape design following best practice as defined by Forestry Commission (Scottish Forestry) Guidance (2014)[201]. The delivery of the felling identified in the Woodland Reports has been developed in conjunction with the landowners/ forest managers to deliver felling and restocking out with the OC. The Applicant has agreed the use of the 'Woodland Report' and associated woodland impact assessments to confirm the extent of woodland removal required. This proposed felling will be further reviewed with the landowners to link in with their existing LTFP, which will, once amended, be required to adhere to the UKFS as part of the approval process with Scottish Forestry. This approval is required prior to any felling being undertaken out with the Proposed Development OC or proposed access tracks. This method of addressing felling has been successfully used on a number of recent large OHL projects and has delivered forest design to the satisfaction of Scottish Forestry as the statutory authority.

Construction Residual Effects

12.5.29 Whilst opportunities to further reduce the predicted removal of 14.76 ha (net 10.96 ha) of Ancient Woodland and broadleaved semi-natural woodland are possible, these remain uncertain until further micro-siting and review of wiring operations by a Principal Contractor has been undertaken in conjunction with the Project Forestry Manager. The residual effect on woodland removal for broadleaved semi natural woodland remains **Moderate Adverse** and **Significant**. Similarly, the residual effect on woodland removal for Ancient Woodland remains **Moderate Adverse** and **Significant**.

12.5.30 The potential to reduce construction effects through good practice measures have been identified in the Woodland Reports in relation to windthrow. However, the Applicant is limited to committing to work with landowners to seek to agree felling through the Woodland Reports, which would in turn lead to changes to the LTFP on land outside of the Applicant's.

Operational Phase

Operational Effects – Woodland Removal

12.5.31 The direct operational effects on forests and woodland associated with the Proposed Development would be limited to periodic vegetation management to maintain the OC. Within the OC, following the construction of the Proposed Development, there would be an ongoing need to manage the growth of vegetation to facilitate access for maintenance of the OHL and to maintain the required tree clearance from the Vicinity Zone for the safe and resilient operation of the OHL. The OC, after woodland removal, is deemed to be of negligible sensitivity and the impact of vegetation management is considered to represent a low magnitude of change. Overall, the adverse effect during operation is assessed as **Negligible** and **Not Significant.**

12.5.32 In addition, there is the potential for a medium to long term beneficial effect through the opportunity to manage lower growing vegetation to provide biodiversity enhancement within the OC. The development of a species diverse area of low growing native shrub species would provide valuable wildlife habitat and help to suppress invasive non-native species, principally as *Rhododendron ponticum* and western hemlock which are prevalent in the sections of forest managed by Forestry and Land Scotland.

[201] 'Forest design planning: a guide to good practice', Forestry Commission (2014).

Operational Effects - Effects on Forest Management Systems

12.5.33 The introduction of a new OHL through areas of managed forest would require a review by each landowner of existing systems of forest management. Most large commercial forest areas have an LTFP which identifies the operations intended for the ongoing management of the forest over a 20 year period. The LTFP also provides the forest owner with consents from Scottish Forestry, as the statutory authority, to undertake felling and replanting of the forest over a 10-year period. The impact of the Proposed Development is therefore only in terms of individual LTFP's having to be revised to address the construction of the OHL and the associated tree clearance works on the future management of the site. In the absence of mitigation, although the requirement for forest owners to revisit their LTFP to incorporate the existence of the Proposed Development could be considered onerous, sensitivity of the management system to revision is considered to be low. However, the magnitude of change required in terms of restructuring the LTFP to incorporate felling for the OC and potentially additional felling to avoid windthrow and manage operational impacts could in some cases be of high magnitude and thus the effect is **Moderate Adverse** and **Significant**.

Operational Effects - Restrictions on Forest Access

12.5.34 The forestry industry has a range of potential options for tree harvesting, some of which can be severely restricted by the presence of an OHL, particularly on extreme slopes. Live electrical OHLs provide a number of risks in terms of tree felling and extraction of the timber to the roadside near the OHL. Loading and haulage of the timber off-site can also be restricted within proximity of the OHL.

12.5.35 The sensitivity of commercial forest and woodlands to this impact is considered to be low in Sections 2 to 5 and the magnitude of change is defined as none due to the working area being removed by approximately 40.5 m from the Proposed OHL due to the presence of the OC. This assumes that all proposed felling works would incorporate standard health and safety management measures (e.g. the Forest Industry Safety Accord) as set out in **Section 12.5** of this chapter.

12.5.36 Within Section 1, however, the impact of the Proposed Development on forest management will be high due to the extreme slopes that occur in Glenfinart Forest and the constraints and hazards associated with safely extracting timber from such slopes using cable cranes in close proximity to the OHL. The absence of safe alternatives for timber extraction on steep terrain effectively renders commercial forestry unviable on the uphill side of any Proposed Development in this Section. This position has been agreed with Forestry and Land Scotland and the Proposed Development routed above the forest road where practicable to ensure that commercial forest management can continue unhindered below the road with suitable clearance from the OHL.

12.5.37 In order to mitigate the impact on commercial forestry in Section 1, a joint venture between the Applicant and Forestry and Land Scotland will undertake the removal of all commercial forestry crops above the Proposed Development (approximately 46.9 ha) and their replacement with predominantly native broadleaved woodland for long term retention, effectively transforming the long term management objective in this part of the forest from commercial timber production to biodiversity and amenity management. Thus, the overall effect is assessed as **Moderate Adverse** and **Significant.**

Mitigation During Operation

12.5.38 To mitigate the predicted likely significant effect on forest management systems for individual landowners, the Applicant has developed the Woodland Reports in conjunction with the relevant landowners and forest managers.

Compensatory Planting

12.5.39 FR3: Given that the Proposed Development would result in the loss of 84.85 ha of forest and woodland (including the temporary removal of 3.8 ha of Ancient Woodland and broadleaved semi-natural woodland associated with temporary OHL diversions), the Applicant is committed to making arrangements to plant off-site the equivalent area of woodland as set out in **Appendix 12.4 Compensatory Planting Strategy**, meeting the Scottish Government's CoWRP[202] objective of no net loss of woodland.

12.5.40 Following the removal of the existing OHL, there is potential for woodland expansion within the historical OC. This presents an opportunity to replant part of the compensatory planting requirement within close vicinity to the Proposed Development, although this requires to be discussed and agreed with the respective landowners.

Operational Residual Effects

12.5.41 Current and future forest management is likely to be affected by the introduction of the OHL and associated felling requirements. In some cases, this will require forest managers to amend current objectives, plans and techniques, incorporating felling requirements into long-term felling plans. Taking account of the proposed mitigation in the Woodland Reports, the residual effect on forest management is assessed as **Minor Adverse** and **Not Significant**.

12.5.42 In most cases, there would be no significant operational effects on woodland removal or forestry operations access and consequently, no significant residual operational effects are predicted to occur. In the case of Section 1, the Proposed Development will constrain future access for commercial forestry operations necessitating conversion from productive forest to non-commercial woodland. The overall residual effect on forest management is therefore assessed as **Moderate Adverse** and **Significant**.

Cumulative Effects

12.5.43 There is an overlap of woodland removal for the Proposed Development in combination with minor felling works associated with existing Towers Ex.14 and Ex.15. These are part of a separate development and do not form part of this EIA. On this basis, the cumulative effect is assessed as **Negligible** and **Not Significant**.

12.5.44 The cumulative effect of direct forest and woodland removal associated with creating an OC, access tracks and temporary OHL diversions (predicted to be 84.85 ha), combined with the potential indirect (secondary) effect of woodland removal outside of the OC (predicted to be 116.90 ha) (under separate felling consent obtained by landowners and not under the control of the Applicant), would potentially comprise an area of 201.75 ha.

12.5.45 *Phytophthora ramorum*, a high infectious tree disease that mainly affects larches, is a common problem encountered in commercial forests within the Argyll and Bute region. Forest management is routinely impacted by Statutory Plant Health Notices (SPHN) necessitating sanitation felling intended to control the spread of *P. ramorum*. Some 77% of the direct tree removal associated with creating an OC, access tracks and temporary OHL diversions is already scheduled within the next five year or sooner under existing forest management plans, including sanitation felling related to *P. ramorum*. Within Section 3, significant sanitation felling has taken place over the last year within the route of the Proposed Development.

12.5.46 No other developments have been identified that might have significant cumulative impacts on forests and woodland within the vicinity of the Proposed Development.

[202] The Scottish Government's Policy on Control of Woodland Removal, Forestry Commission (2009)

12.5.47 Overall, the cumulative effect of woodland removal is assessed as a medium magnitude of change. Given the low sensitivity of commercial woodland within the study area, this cumulative effect is assessed as **Minor Adverse** and **Not Significant**. There are no additional indirect cumulative effects associated with native woodland.

12.5.48 The predicted indirect effects on commercial woodland out with the OC are based on the increased risk of windthrow following construction phase felling. On this basis, it is assessed that there is no potential for additional cumulative windthrow effects from the Proposed Development. As such, the cumulative effect of windthrow is assessed as **Negligible** and **Not Significant**.

12.5.49 Table 12.8 provides a summary of the residual effects.

Table 12.8 Summary of Residual Effects

Forest Receptor	Effect (Pre-Mitigation)	Mitigation Proposed	Residual Effect
Woodland removal (commercial conifer forest) during construction	Direct effect on commercial conifer forest. Minor Adverse and Not Significant based on the area of woodland removal.	The Applicant would implement a suite of standard good practice working methods to ensure that all construction activity (including woodland removal) avoids significant effects on ecological and hydrological receptors. Equivalent area of woodland removed to be planted off site as per Scottish Government's CoWRP.	Minor Adverse and Not Significant.
Woodland removal (Ancient Woodland) during construction	Direct effect on Ancient Woodland. Moderate Adverse and Significant.	The Applicant would reduce the OC felling where possible and seek to retain scrub/understorey layers in areas where existing tree cover does not breach safety clearances and construction activities. Equivalent area of woodland removed to be planted off site as per Scottish Government's CoWRP.	Moderate Adverse and Significant.
Woodland removal (Native Semi-natural Woodland) during construction	Direct effect on Semi-natural Woodland. Moderate Adverse and Significant.	The Applicant would reduce the OC felling where possible and seek to retain scrub/understorey layers in areas where existing tree cover does not breach safety clearances and construction activities. Equivalent area of woodland removed to be planted off site as per Scottish Government's CoWRP.	Moderate Adverse and Significant.

Forest Receptor	Effect (Pre-Mitigation)	Mitigation Proposed	Residual Effect
Predicted loss of forest due to windthrow	Predicted indirect effect on commercial conifer forest based on risk of windthrow following construction phase felling. Minor Adverse and Not Significant based on the area of woodland removal.	No mitigation possible within the scope of the Proposed Development. However, mitigation is possible with the co-operation of the landowners. The Applicant has produced Woodland Reports relevant to each forest and woodland affected, which will recommend actions to reduce the risk of future windthrow by felling to wind-firm forest edges outside of the OC.	Minor Adverse and Not significant.
Woodland removal (operational)	Limited to periodic vegetation management to maintain the OC Negligible and Not Significant.	No mitigation is required.	Negligible and Not Significant.
Forest management	Indirect effect on woodland management through requirement to incorporate the proposed OHL into LTFP. Moderate Adverse and Significant.	The Applicant has produced Woodland Reports for each forest ownership to inform proposed revisions to the relevant LTFP and facilitate agreement with the landowners.	Moderate Adverse and Significant.
Forest Access	Direct effect on access for forest management. In most cases Negligible and Not Significant based on OC clearance and use of standard safety measures. In the case of sites with extreme slopes above the OC, commercial forestry may be unviable in the future. Moderate Adverse and Significant.	Conversion to non-commercial woodland where future productive forestry rendered unviable on extreme slopes. No mitigation is required elsewhere.	Moderate Adverse and Significant.
Cumulative	No significant cumulative effects predicted.	No mitigation is required.	Negligible and Not Significant.

12.6 Summary and Conclusions

12.6.1 This Chapter reports upon the significance of the predicted residual effects from the construction and operation of the Proposed Development on forest and woodland areas. The assessment is supported by **Appendix 12.1**. The Appendix contains a series of location specific Woodland Reports in relation to

forestry and woodland that would be intersected by the Proposed Development. These Woodland Reports that are individual Annexes to **Appendix 12.1**, describe the current baseline in terms of the woodland type (including species, condition and current management) and future management under reference to the Long Term Forest Plans where available. The Woodland Reports contain the detailed assessment of impacts likely to result from the construction and operation of the Proposed Development.

12.6.2 The Proposed Development is predicted to result in the direct loss of 70.09 ha of commercial woodland, 3.44 ha of native woodland appearing on the AWI woodland classifications 1a, 2a and 3, and 11.32 ha of broadleaved semi-natural woodland, due to the requirement to create an Operational Corridor (OC) for the construction and safe operation of the proposed OHL, including the creation of access tracks and temporary OHL diversions.

12.6.3 The assessment concluded that the removal of 3.44 ha of Ancient Woodland and 11.32 ha of broadleaved semi-natural woodland would result in a significant adverse effect on both woodland types, despite potential opportunities to reduce the amount of felling, subject to further detailed design. No significant effects were predicted for the removal of commercial woodland.

12.6.4 The Applicant is committed to making arrangements to plant off-site the equivalent area of woodland as Compensatory Planting, meeting the Scottish Government's CoWRP[202] objective of no net loss of woodland.

12.6.5 Furthermore, it is acknowledged that the creation of the OC would result in wider potential indirect effects on the surrounding woodland areas. These areas would be subject to potential increased risk of damage (windthrow). As a result, the Applicant has produced a series of Woodland Reports (see **Appendix 12.1**) to incorporate the Proposed Development within ongoing forest management activities. The Woodland Reports identify further areas of felling outwith the OC to leave a windfirm edge (categorised as an indirect secondary impact). Any felling undertaken outwith the OC would be solely under the control of the relevant landowner (and not the Applicant).

12.6.6 The assessment identified the potential for significant effects (pre-mitigation) on forest management, due to the requirement for forest managers to incorporate the felling requirements for the OC into their long-term forest plans. The Applicant has proposed mitigation in the form of a commitment to develop 'Woodland Reports' for each of the forests and woodlands affected by the Proposed Development (five in all). This mitigation is deemed sufficient to reduce the residual effect on forest management to not significant.

12.6.7 In most cases, no significant effects on forest operations access were identified. However, in the case of sites with extreme slopes above the OC, commercial forestry may be unviable in the future and the direct effect was therefore assessed as significant and adverse, despite the opportunity to convert productive forest to non-commercial, predominantly native woodland in the future.

12.6.8 Additional good practice measures are identified for implementation on land outwith the OC, for example additional felling to deliver a more natural landscaped and wind firm edge. These measures can only be undertaken with the agreement of the affected landowner. It is the intention of the Applicant to encourage the landowners to adopt this good practice in terms of redesigning current long-term forest plans to comply with and where possible exceed the requirements of UKFS.

13. TRAFFIC AND TRANSPORT

13.1 Introduction

13.1.1 This chapter considers the access proposals and potential traffic and transport effects associated with the construction and operation of the Proposed Development on the surrounding public road network and on sensitive receptors. This chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report) (**Chapters 1-5).** The specific objectives in this chapter are to:

- review the relevant policy and legislative framework;
- describe the baseline transport conditions;
- describe the assessment methodology and significance criteria used in undertaking the 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.

13.1.2 Additional information which supports this chapter is presented in the following figures and technical appendices:

- Figure 13.1 Links and Traffic Count Locations
- Appendix 13.1 Framework Construction Traffic Management Plan (CTMP)
- Appendix 13.2 Personal Injury Accident Data
- Appendix 13.3 Pedestrian and Core Path Facilities

13.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

13.2.1 The assessment is made with reference to the Proposed Development as described in **Chapter 3: Description of Proposed Development**.

13.2.2 No assessment of the operational phase of the Proposed Development has been included due to the low number of vehicles requiring access and as agreed in the Scoping Opinion provided by Argyll and Bute Council as detailed in **Table 13-1**.

13.2.3 The assessment is structured around the consideration of potential environmental effects related to traffic and transport within the Proposed Development Study Area (**outlined in Section 13.2.6**), as identified by the Institute of Environmental Management and Assessment (IEMA) Guidance for Environmental Impact Assessment, hereafter referred to as 'IEMA Guidance' [203]:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Fear and intimidation; and
- Accidents and safety.

13.2.4 The IEMA Guidance also refer to visual effects, noise and hazardous loads. Visual effects and noise are addressed in **Chapter 6 Landscape and Visual Impact** and **Chapter 11 Noise and Vibration** respectively.

[203] Institute of Environmental Management and Assessment (2004). Guidelines for Environmental Impact Assessment.

13.2.5 The assessment has been conducted in line with Scottish Planning Policy[204] and the following guidance has been applied to the assessment process:

- Scottish Government – Planning Advice Note (PAN) 75 – Planning for Transport (17 August 2005)[205];
- Transport Scotland – Transport Assessment Guidance (July 2012)[206];
- Institute of Environmental Assessment (IEA) – The Guidelines for the Environmental Assessment of Road Traffic (January 1993)[207];
- IEMA Guidance; and
- Highways England et. al. (various dates). Design Manual for Roads and Bridges (DMRB), Volume 15, Section 1, Part 1 The NESAManual (DMRB)[208];

Extent of the Study Area

13.2.6 The Study Area for the assessment of traffic and transport has been predicated on the various access point locations along the proposed OHL alignment and the potential routes from the external public road network to these access points. The Study Area for the assessment is shown in **Figure 13.1 Study Area** and has been informed by the CTMP included as **Appendix 13.1** which provides information on construction traffic trips, including the likely origins and destinations and routes used to access the Proposed Development and using the assessment thresholds within the IEMA Guidance as an aide.

13.2.7 To determine appropriate routes, detailed consideration and assessment of the surrounding public road network has been undertaken and the location of nearby sensitive receptors has been considered. Notwithstanding this, the route taken by construction vehicles will largely depend on where the construction materials are sourced. A comprehensive desk-based study was undertaken to fully understand the surrounding public road network.

13.2.8 Considering the above, the Study Area is identified as follows:

- A885 High Road (between the A815 and Dunoon Substation);
- B836 (between A815 and A886);
- Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn);
- A815 (from Toward to the A83(T));
- A880 Shore Road (between A815 at Ardbeg House and Ardentinny);
- Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny); and
- A83(T) between Inveraray and Tarbet.

13.2.9 Note this differs from that provided as part of the Scoping exercise and has been updated to include additional roads within the vicinity of the Proposed Development and to take account of those access routes highlighted by the Principal Contractor within the CTMP that are likely to be used to access the various construction areas. The previously advised Study Area within the EIA Scoping Report for information purposes was as follows:

- A83(T) between Inveraray and Tarbet;
- A815 between Dunoon Substation and Ardbeg House;
- A815 between Ardgeg and the A83; and

[204] Scottish Government (2014). *Scottish Planning Policy.*
[205] Scottish Government (2005). *Planning Advice Note: PAN 75 - Planning for Transport.*
[206] Transport Scotland (2012). *Transport Assessment Guidance.*
[207] Institute of Environmental Assessment (January 1993). *The Guidelines for the Environmental Assessment of Road Traffic.*
[208] Department for Transport (2005). *Design Manual for Road and Bridges, Volume 15, Section 1, Part 1: The NESA Manual.*

- C09 (Glenfinat Road) between the A815 and Ardentinny.

13.2.10 The change to the Study Area has also been implemented, to ensure a consistent approach has been used across both documents. It should be noted that the unclassified road to the south-west of the A814 at Garelochhead included within the CTMP has been omitted from the above study area, this is due to this falling outwith the EIA assessment area and is a private Ministry of Defence road. Furthermore, the A83(T) has been added to ensure with wider road network has also been considered as part of the assessment.

Consultation Undertaken to Date

13.2.11 Consultation undertaken to date pertains to the EIA Scoping Report. Scoping responses received at the time of writing which are relevant to this chapter are captured in **Table 13-1**.

Table 13-1 – Consultation responses of relevance to topic

Organisation	Type of Consultation	Response	How response has been considered
Argyll and Bute Council	Scoping Response – 19 July 2022	• Address potential disruption to pedestrians, cyclists and existing road users during the construction phase; • Assess changes to local traffic flows during the construction phase; • Assess the effect of the changes on the transport network and the level of significance of any effects established; and, • Take account of the objectives of the local and strategic policy.	Response noted and we can confirm that the assessment has taken consideration of these within the assessment.
		The approach set out at 11.4.1 that: As vehicles travel away from the Proposed Development during the construction phase, they will disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to Traffic and Transport are unlikely to be significant beyond the Study Area identified above, and as such no other routes are proposed to be included. Requires that further discussions on this point are undertaken with the appropriate roads authorities with a defined study area and agreed dispersion range before on point of principle this can be agreed to be scoped out at this stage.	Response noted, attempts have been made to liaise with Argyll and Bute Council regarding the scope of works, however no response has been received to date. Study area has been informed by construction routing and construction vehicle numbers provided in the CTMP. The Study Area has superseded that proposed within the EIA Scoping Report and covers a wider area. The CTMP is provided in **Appendix 13.1**
		At 11.4.3 it is stated that: With regards to decommissioning effects, at the end of the life of the Proposed Development's operational life, there may be an impact on the local highway network due to movements of Heavy Goods Vehicles (HGVs) associated with the removal of equipment and materials. However, the number of vehicle movements is anticipated to be lower than predicted for construction and any baseline data collected for	Response noted, attempts have been made to liaise with Argyll and Bute Council regarding the scope of works, however no response has been received to date. Information in relation to the site access arrangements and on-site

Organisation	Type of Consultation	Response	How response has been considered
		the purposes of this assessment would likely not be relevant so far in the future. As such, further assessment in this regard is not considered necessary. Further information in respect of predicted HGV movements is required before it can be agreed that this should not form part of any submitted EIA data and further discussion with the Area Roads Manager will be required on this matter to form part of the EIA submission. In respect of utilising existing access points as set out at 11.5.1 it will require to be clarified what the junction designs for these will be to ensure that they can be safely utilised and also where new temporary or permanent access tracks are proposed as part of the EIA submission. It is considered important to identify if and where borrow pits are proposed which may be utilised to provide construction materials prior to the production of and Transportation Assessment (TA) associated with and conditional discharges should the scheme be approved. Recent S37 permissions have resulted in considerable post approval work for the Area Roads Manager in respect of conditioned TMP's and the failure for the use of borrow pits to be investigated and factored into TA's at an early enough stage. In this respect the applicants are advised to have further discussions with ECU, Transport Scotland and the Area Roads Manager prior to finalising any TA submissions to ensure that other projects with potential impacts on the roads network are understood and properly addressed, as well as ensuring that the potential use of borrow pits is investigated prior to the submission of the TA. To this effect the commitment at 11.7.1 that "Consultation will be undertaken with Argyll and Bute Council to agree the assessment methodology" is welcomed. It is agreed that ongoing operational traffic movements can be scoped out as these will be minimal and small scale.	access tracks is covered within the CTMP provided in **Appendix 13.1**. A worst case assessment has been undertaken assuming all materials are brought to the Proposed Development site (the Site) as detailed within the CTMP. Confirmation on use of on-site borrow pits and quantities will be confirmed following on-site investigations. Comment on operational traffic being scoped out is noted and welcomed.
Transport Scotland	Scoping Response – 12 April 2022 and 8 June 2022	Chapter 11 of the EIA Scoping Report presents the proposed methodology to assess the predicted traffic and transport issues that may arise from the construction of the proposed development. This states that the Traffic and Transport EIA Report Chapter will include an assessment of the likely number of construction traffic movements and the capacity of local roads to	Response noted and covered within the chapter, comment in relation to Low Growth has been noted and applied to the assessment.

Organisation	Type of Consultation	Response	How response has been considered
		accommodate construction traffic. We note that the study area will comprise the A83(T) between Inveraray and Tarbet, in addition to local roads. Base traffic data for 2019 will be sourced from the Department for Transport (DfT), using count site 764 at the Rest and be Thankful for A83(T) data. Transport Scotland is satisfied with the proposed study area, but would add that Transport Scotland has a Traffic Data Count site just north of Ardgarten visitor centre which may be utilised to supplement the base traffic data. We would also add that base traffic data will require to be factored to the construction year flows, using National Road Traffic Forecasts (NRTF) Low Growth.	
		The EIA Scoping Report states that the thresholds as indicated within the IEMA Guidelines for the Environmental Assessment of Road Traffic are to be used as a screening process for the assessment. The EIA Scoping Report also indicates that potential environmental impacts such as accidents and safety, pedestrian amenity, pedestrian delay and driver delay etc will be considered and assessed where the IEMA Guideline thresholds for further detailed assessment are breached. These specify that road links should be taken forward for detailed assessment if: • Traffic flows will increase by more than 30%, or • The number of HGVs will increase by more than 30%, or • Traffic flows will increase by 10% or more in sensitive areas. It is noted that any impacts associated with both the operational and decommissioning phases of the development are to be scoped out of the EIA Report. We would consider this to be acceptable in this instance.	Response noted and we can confirm that the assessment has been undertaken using this methodology. Furthermore, we note that no assessment in relation to the operational or decommissioning phases are required at this time.
		The EIA Scoping Report makes no mention of any requirement for the use of abnormal load deliveries. Given the nature of the development, we would assume these will not be required. However, should there be a need for such loads, Transport Scotland will require to be satisfied that the size of loads proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path.	Response noted, no oversized abnormal load vehicles in terms of length are anticipated to be required during the construction of the Proposed Development. Consideration has however been given to abnormal loads relating to weight.

Organisation	Type of Consultation	Response	How response has been considered
Loch Lomond and The Trossachs National Park (LLTNP)	Scoping Response	The National Park Planning Authority defer to the relevant roads authorities advice in these matters. Consideration of temporary and permanent access routes to facilitate the works and their cumulative impacts with the development as a whole are required to be considered in the EIA Report.	Response noted and covered within this chapter.

Method of Baseline Data Collation

Traffic Data

13.2.12 In order to establish baseline traffic flows, traffic count data has been obtained from the Department for Transport (DfT) and from independent traffic surveys undertaken on the Study Area in 2022. This data was provided as two-way Average Annual Daily Traffic (AADT) flows, by vehicle type including HGVs.

13.2.13 Personal Injury Accident (PIA) data for the three-year period covering 2019 to 2021 was obtained from the online resource Crashmap.co.uk[209] which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured.

Desk Study

13.2.14 The desk study included reviews and identification of the following:

- Relevant transport planning policy;
- Sensitive locations;
- Any other traffic sensitive receptors in the area (Core Paths, routes, communities, etc.);
- Ordnance Survey (OS) plans;
- Potential origin locations of construction staff and supply locations for construction materials to inform extent of local area road network to be included in the assessment; and
- Constraints to the movement of HGV traffic and larger loads.

Determining Magnitude of Change and Sensitivity

Sensitivity / Importance / Value

13.2.15 The IEMA Guidance[203] notes that separate 'Guidelines for the Environmental Assessment of Road Traffic' (1993)[207] (hereafter referred to as 'IEA Guidelines') document should be used to characterise the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. The IEMA Guidance is intended to complement professional judgement and the experience of trained assessors.

13.2.16 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.

13.2.17 The IEMA Guidance 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 13-2**.

[209] https://www.crashmap.co.uk/

Table 13-2 – 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 construction type vehicles, including Abnormal Loads and new strategic trunk road junctions capable of accommodating similar types of vehicles.
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.

13.2.18 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Magnitude of Impact

13.2.19 The IEA Guidelines as defined in **Section 13.2** indicates that the following criteria should be adopted to identify whether links on a network should be subject to detailed assessment:

- Include traffic links where either traffic flows would increase by more than 30 % or the number of HGV movements would increase by more than 30 % as a result of the Proposed Development.
- Include any other specifically sensitive location affected by traffic increases of at least 10 %.

13.2.20 The following receptors including groups have been assessed for each link within the Study Area in line with the IEA Guidelines to determine the sensitivity of receptors:

- People at home;
- People at work;
- Sensitive locations – including hospitals, schools, places of worship and historical buildings;
- People walking;
- People cycling;
- Recreational and shopping areas;
- Ecological/ nature conservation sites; and
- Tourist/ visitor attractions.

13.2.21 The traffic-related impacts set out in the IEA Guidelines are outlined below. These are the key impacts that are most important when assessing the magnitude of traffic effects from an individual development:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Fear and intimidation; and
- Accidents and safety.

13.2.22 The evaluation methodologies for each of the six traffic related impacts are discussed individually in turn.

Severance

13.2.23 Severance within the IEA Guidelines 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*" (Para 4.28).

13.2.24 In order to determine the magnitude of any change in severance a range of relevant factors need to be considered, including:

- Road conditions;
- Traffic flows; and
- Level of pedestrian activity.

Driver Delay

13.2.25 The IEA Guidelines states that driver delay is only likely to be "*significant [or major] when the traffic on the network surrounding the proposed development is already at, or close to, the capacity of the system.*" (Para 4.32). For the purposes of the assessment, the network is the Study Area as previously identified.

Pedestrian Delay

13.2.26 Changes in the volume, composition or speed of traffic may affect the ability of people to cross the road. In general, increases in traffic levels are likely to lead to greater increases in delay. However, delays would also depend upon the general level of pedestrian activity, visibility and general physical condition of the road.

13.2.27 The IEA Guidelines does not support the use of threshold assessments to quantify the magnitude of impacts due to changes in delay. Therefore, the magnitude of this impact should be determined using professional judgement based on the predicted increase in traffic levels and the predicted level of pedestrian activity on links subject to detailed assessment.

Pedestrian Amenity

13.2.28 Pedestrian amenity describes the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/ separation from traffic.

13.2.29 The IEA Guidelines considers that a suitable threshold for assessing the magnitude of the impact of traffic flow increase on pedestrian amenity is a 100 % increase in traffic levels. Therefore, the magnitude of impact in pedestrian amenity should be determined based on the level of increase in traffic flows on a particular link and the level of pedestrian activity on that link.

Fear and Intimidation

13.2.30 The IEA Guidelines advises that the level of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. Whilst danger is recognised as an important environmental impact, the IEA Guidelines confirms that there are no commonly agreed thresholds for estimating fear and intimidation caused by traffic. Therefore, the magnitude of impact should be determined by a qualitative assessment of the range of factors discussed above.

Accidents and Safety

13.2.31 The IEA Guidelines recommends that at locations where high levels of PIAs are recorded, accident statistics should be used to provide an estimate of the existing links accident rate. The Proposed Development traffic can then be used to undertake a statistical assessment of the likely increase in accident rates based on the increase in vehicle-kilometres if deemed necessary based on the existing accident characteristics. Professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

Significance of Effect

13.2.32 In order to determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using a scale set out in Table 3.8.1 of LA 104 Environmental Assessment and Monitoring of DMRB and summarised in **Table 13-3**.

13.2.33 The DMRB defines the potential changes in effect as follows:

- Very Large: These effects are considered to be material in the decision-making process.
- Large: These effects are likely to be material in the decision making process.
- Moderate: These effects can be considered to be material decision-making factors.
- Slight: Effects at this level are not material in the decision-making process.
- Neutral: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Table 13-3 – Significance Effects Matrix – Traffic and Transport

		Magnitude of Impact				
Value		Major	Moderate	Minor	Negligible	No Change
	Very high	**Very Large**	**Large or Very Large**	**Moderate or Large**	Slight	Neutral
	High	**Large or Very Large**	**Moderate or Large**	**Moderate** or Slight	Slight	Neutral
	Medium	**Moderate or Large**	**Moderate**	Slight	Neutral or Slight	Neutral
	Low	Slight or **Moderate**	Slight	Neutral or Slight	Neutral or Slight	Neutral
	Negligible	Slight	Neutral or Slight	Neutral or Slight	Neutral	Neutral

13.2.34 The combination of the receptor sensitivity and magnitude of change due to the effect of the Proposed Development, enables the significance of effects to be determined. In terms of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, effects would be considered significant 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.

13.2.35 In terms of describing the significance of effects, the terminology used in the Traffic and Transport Chapter differs slightly from that used within the other chapters of the EIA Report and as previously advised has been based on the scale set out within the DMRB. Significant effects typically comprise residual effects that are within the moderate, large or very large categories and as highlighted in bold in **Table 13-3**.

Scope of Effects

13.2.36 The temporal scope of effects is described as short, medium or long term. For the operational assessment the effects are permanent, whereas for construction they will be temporary effects. Given that this chapter is only addressing the construction phase of the Proposed Development, all effects are therefore temporary in nature.

Limitations and Assumptions

13.2.37 This assessment has been based on the peak daily traffic flows of site deliveries to provide a worst case assessment scenario. There may be localised peaks with construction days where flows can be higher for a specific hour, such as a shift change onsite or delivery of specific materials. The numbers used are estimates at this time and may change following the appointment of the Principal Contractor and confirmation of their working methods. The estimated number of traffic movements has been based on similar schemes undertaken by the Applicant and are considered appropriate for use as part of the assessment for the Proposed Development.

13.2.38 The Principal Contractor and suppliers for the Proposed Development have not yet been finalised and so it is not possible to confirm with certainty all routes that would be used by development traffic, and how much traffic would utilise each route. The information on routing has therefore been based on first principles approach from the numbers provided within the CTMP include as **Appendix 13.1** prepared by the Principal Contractor on behalf of SSEN Transmission. Where information has not been available it has been necessary to make assumptions on the potential construction vehicle generation and routing.

13.2.39 The following assumptions have been made to inform the assessment and ensure a robust approach:

- The construction programme is expected to last up to 30 months.
- The most onerous periods during construction will occur over a three month period in the first two years of the construction phase, namely June to August.
- Within those three month periods, up to 15% of the total construction traffic movements will occur, i.e. 15% in 2024 and 15% in 2025, with the remaining 70% occurring over the remaining construction period. This has been used to inform the assessment.
- Forestry felling from the sites will occur over a period of approximately five and half months and current programming shows this overlapping with the predicted three month busiest period during 2024. As such, the timber felling has been spilt equally across the five and a half month felling programme and the resultant daily trips applied to the overall construction trips.
- In terms of timber haulage approximately 65% of loads will be delivered to the Sandbank pier to be transported by ship to markets. The remaining 35% will travel north to the A83(T).
- All excavated soils generated as a result of the Proposed Development works can be re-used within the OHL area.
- 100% of the stone requirement is imported to the sites (it should however be noted that potential borrow pits have been identified and will be used subject to necessary agreements and suitable stone being present).

- 70% construction HGVs will travel to the sites via A83(T) and 30% from the south via the A815. This is to take account of potential materials coming in via Hunters Quay to the south, within Dunoon and the use of Bonnar Quarry to the north and Cowal Quarry to the south.

13.3 Baseline Conditions

Existing Road Network

13.3.1 A885 (High Road) – The A885 at this location comprises a single carriageway road running from the centre of Dunoon at its junction with the A815 to its junction with the A815 in the vicinity of the Holy Loch Marina. The road provides access to the wider road network within the town in addition to the various facilities it has to offer. Within built up areas or areas with frontage property access, there is a 30 miles per hour (mph) speed limit in place, while at all other locations, a 40 mph speed limit is in place. There are generally footways on one or both sides of the carriageway, with street lighting, providing access to a number of local facilities/ places of work, residential areas, stand-alone residential properties for example.

13.3.2 B836 – The B836 runs in an east to west direction between Dalinlongart and Auchenbrek and is part of the National Cycle Network (NCN), as Route 75 (NCR 75). The road is a single carriageway road with one lane operating in each direction, with the exception of a short section where the road crosses the Little Eachaig River where it reduces to a single lane. The road has the national speed limit in place. The road provides access to a number of stand-alone properties, local businesses and tourist destinations. Given the roads designation as part of the NCR, there could be a high number of cyclists using this route. There are no pedestrian facilities in place.

13.3.3 Unclassified Road at Invereck Countryside Holiday Park – The unclassified road is a single track road with passing places and the national speed limit in place. There is a posted weight limit of 7.5 tonnes at approximately 2.4 kilometres (km) to the west of its junction with the A815. The road provides access to a number of stand-alone properties, areas of commercial forestry and farmland. There are no pedestrian facilities in place. There is no through route on the road, with it posted as being a ‘dead end’.

13.3.4 A815 – The A815 runs from the southern extents of the peninsula at Toward and to the A83(T) to the north. The A815 forms the main route during the construction of the Proposed Development and forms the main route from Dunoon to the wider local and trunk road networks. The road is a single carriageway road, with various speed limits in place, ranging from 30 mph in built up areas in Dunoon, to 40 mph on approach to built-up areas and the national speed limit on more rural sections. Within Dunoon and other built-up areas, there are generally footways on one or both sides of the carriageway, with street lighting, providing access to a number of local facilities/ places of work, residential areas, stand-alone residential properties etc. There are dedicated crossings within Dunoon by way of Zebra crossing and locations with kerb build outs incorporating drop kerbs. The section of the A815 between Dalinlongart and the Hunters Quay forms part of the NCR 75. There is currently a shared pedestrian/ cycle route linking Dunoon with Ardbeg House, which runs on the eastern side of the carriageway. Outwith this, there are no pedestrian facilities present.

13.3.5 A880 Shore Road – The A880 runs from Ardbeg House at its junction with the A815 to the north of Cot House Services and heads south-east to Strone before turning north towards Ardentinny. The A880 officially stops at Blairmore Farm from where it is assigned the name Shore Road. Up to this point the road is single-carriageway, with speed limits between 30 and 40 mph. After Blairmore, Shore Road turns to a single-track and the maximum speed is increased to the national speed limit. On sections of single track road, there are passing places to aid two way vehicle movements. There are pedestrian facilities within Strone, Blairmore, Ardbeg House and Kilmun but these are generally limited to a footway on one

side of the carriageway. The road provides access to a number of settlements, stand-alone properties, local businesses and tourist destinations.

13.3.6 Unclassified Road at Whistlefield Inn – The unclassified road becomes a single track road with passing places and the national speed limit in place, approximately 20 m to the east of its junction with the A815. The road runs from the A815 at the Whistlefield Inn to Ardentinny. There are sections of road with significant changes in both horizontal and vertical alignment, with gradients in excess of 20% posted. The road provides access to a number of stand-alone properties, local businesses and tourist destinations. There are no pedestrian facilities in place.

13.3.7 A83(T) – The A83(T) is a trunk road running from Tarbet in the north to Campbeltown in the south. The road connects the central belt of Scotland via the A82(T) from Glasgow and is maintained by Bear Scotland on behalf of Transport Scotland. To the north of Dunoon where it will be used to access the area of the Proposed Development, the national speed limit is in place and there are no pedestrian facilities. The road provides access to the wider area, passing through a number of settlements where the speed limit reduces to 30 mph. Within these settlements there are generally pedestrian facilities by way of a footway on one side of the carriageway. The road provides access to a number of settlements, stand-alone properties, local businesses and tourist destinations.

Existing Traffic Data

13.3.8 There are a number of potential access routes that will be used to access the Proposed Development during the construction phase. The CTMP has identified these routes based on the available information at this time. For the purposes of undertaking the assessment within the chapter, the routes have been broken down in to following Link sections, within the Study Area. Note, Link 4 has been broken down in to two sections given the length of the Link section and to enable routing of construction vehicles to be accounted for:

- Link 1: A885 High Road (between the A815 and Dunoon Substation);
- Link 2: B836 (between A815 and A886);
- Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn);
- Link 4(a): A815 North (from B836 to the A83(T));
- Link 4(b): A815 South (from Toward to the B836);
- Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny);
- Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny); and
- Link 7: A83(T) between Inveraray and Tarbet.

13.3.9 **Figure 13.1** shows the location of each of the Links within the study area and how they relate to construction access route options.

13.3.10 Traffic count data for the roads within the study network identified have been obtained from both independent traffic surveys undertaken on the study network in October 2022 for a period of 1 week and from the DfT. This data was provided as two-way AADT flows, by vehicle type including HGVs.

13.3.11 A summary of the two-way AADT flows on the surveyed Links, is presented in **Table 13-4**, while the locations of the traffic count sites are shown in **Figure 13.2**.

Table 13-4 – Existing Two-Way AADT Flows

Location	Baseline Traffic Flows		
	Total	HGV's	% HGV's
Link 1: A885 High Road (between the A815 and Dunoon Substation)	4,082	207	5.07
Link 2: B836 (between A815 and A886)	818	238	29.10
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	299	37	12.37
Link 4(a): A815 North (from B836 to the A83(T))	1,680	81	4.82
Link 4(b): A815 South (from Toward to the B836)	4,677	313	6.69
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	478	18	3.77
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	90	3	3.33
Link 7: A83(T) between Inveraray and Tarbet	4,952	407	8.22

Accident Review

13.3.12 PIA data for the three-year period covering 2019 to 2021 was obtained for the above Links and the associated junctions have been reviewed and are summarised in **Table 13-5**.

Table 13-5 – PIA Data Summary

Location	Severity		
	Slight	Serious	Fatal
Link 1: A885 High Road (between the A815 and Dunoon Substation)	1	2	0
Link 2: B836 (between A815 and A886)	4	1	0
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	0	0	0
Link 4(a): A815 (from Dunoon to the A83(T))	6	6	2
Link 4(b): A815 South (from Toward to the B836)	2	2	0
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	0	1	0
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	1	0	0
Link 7: A83(T) between Inveraray and Tarbet	13	16	0
Total	**27 (47%)**	**28 (49%)**	**2 (4%)**

13.3.13 Looking at each Link in detail, a more comprehensive review of each accident has been provided, to determine any trends in the accident types, for example types of vehicles, weather conditions etc. and is included as **Appendix 13.2 Personal Injury Accident Data**.

13.3.14 The statistics indicate that of the PIA recorded, 46% were Slight, 50% were Serious and 4% were Fatal. The majority of recorded PIA occurred as a result of driver, rider or pedestrian error, with the majority occurring at locations where the national speed limit is in place, or at locations of increased vehicle

interaction. Specifically in relation to PIAs involving HGVs there were no clusters at any specific locations, with a total of nine accidents recorded, or 16% of the total.

13.3.15 Looking at fatalities within the Study Area, a total of two were recorded, both on Link 4 the A815. The accidents were recorded at different locations and there were no common themes other than driver error.

13.3.16 Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Proposed Development site that currently require to be addressed or would be exacerbated by the construction of the Proposed Development. There are no clusters of PIAs at any location on the study network and there are no high numbers of accidents involving HGV's or vulnerable road users for example.

Pedestrian Facilitates

13.3.17 There are a number of pedestrian facilities within the Argyll and Bute Council area in close proximity to the Proposed Development, with a summary provided within **Appendix 13.3 Pedestrian and Core Path Facilities**.

Core Path Network

13.3.18 There are a number of Core Paths within the Argyll and Bute Council area in close proximity to the Proposed Development and on Links proposed to be used to access the various construction areas. A summary of these is provided within **Appendix 13.3 Pedestrian and Core Path Facilities**.

Cycle Facilitates

13.3.19 There are limited cycle facilities within the Argyll and Bute Council area in close proximity to the Proposed Development. A summary for those Link sections that have facilities in place is provided below:

- Link 2: B836 (between A815 and A886) – The B836 runs in an east to west direction between Dalinlongart and Auchenbrek and is part of the NCN, namely NCR 75.
- Link 4 (a) and (b): A815 (from Toward to the A83(T)) – The section of the A815 between Dalinlongrat and the Hunters Quay forms part of the NCR 75. There is currently a shared pedestrian/ cycle route linking Dunoon with Ardbeg House, which runs on the eastern side of the carriageway.

Trends and Future Baseline

13.3.20 It is anticipated that construction will commence in 2024 (subject to consents and approvals being granted). A provisional construction period of 30 months in total is anticipated, with energisation of the project scheduled for 2026.

13.3.21 To assess the likely effects during the construction phase, base year traffic flows for traffic data undertaken in 2021 and 2022 were determined by applying a National Road Traffic Forecast 97 (NRTF97) low growth factor to the surveyed traffic flows.

13.3.22 The NRTF97 low growth factor for 2021 to 2024 is 1.016 and 2022 to 2024 is 1.011. These factors have been applied to the survey data to estimate the 2024 base traffic flows shown in **Table 13-6**.

Identified Receptors on Study Network

13.3.23 Based on the classifications set out in **Table 13-2** the following receptors have been identified on the Links within the Study Area, with the sensitivity classified for each highlighted in **Table 13-6**.

Table 13-6 – Link Sensitivity Classification

Location	Users of Roads	Users / Residents of Locations
Link 1: A885 High Road (between the A815 and Dunoon Substation)	Medium to Low Sensitivity	Medium to High Sensitivity
Link 2: B836 (between A815 and A886)	Medium Sensitivity	Negligible Sensitivity
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	High Sensitivity	Negligible Sensitivity
Link 4(a): A815 (from Dunoon to the A83(T))	Medium to Low Sensitivity	Low Sensitivity
Link 4(b): A815 South (from Toward to the B836)	Medium to Low Sensitivity	Medium to High Sensitivity
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	High Sensitivity	Low to Negligible Sensitivity
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	High Sensitivity	Negligible Sensitivity
Link 7: A83(T) between Inveraray and Tarbet	Low to Negligible Sensitivity	Medium to Low Sensitivity

13.3.24 The classifications shown in **Table 13-6** are then used throughout the following assessment.

13.4 Issues Scoped Out

13.4.1 On the basis of the desk-based study undertaken, the professional judgement of the EIA team, experience from other relevant projects, and feedback received from consultees, the following topic areas have been 'scoped out' of detailed assessment as proposed in the Scoping Report (February 2022):

- The impact of increased traffic associated with the Proposed Development on existing/ proposed on-site access tracks.
- Numerous minor roads and tracks branch from the aforementioned A and B Class roads, and the unclassified roads used to access the site, however, the impact of Proposed Development traffic on these roads will be diluted and is considered to have a negligible impact.
- The effects of traffic associated with the operational stage. Once the Proposed Development is operational, the amount of traffic generated will be minimal (significantly less than the construction stage) and will relate to monitoring and maintenance only. Vehicles used are likely to be a small number of private cars and/ or utility vehicles (typically 4x4s or light goods vehicles (LGVs)). With respect to traffic and transport, the operational stage of the Proposed Development is therefore not assessed in this chapter.
- The effect of construction traffic on junction capacity along the road network with respect to traffic flows both in isolation and cumulatively. As this is highly unlikely to be significant in terms of congestion, it is considered that detailed junction capacity assessments are not required and have subsequently not been carried out.
- It is anticipated that the volume of traffic associated with the construction of the Proposed Development will not have a discernible effect on roads and sensitive receptors out-with the Study Area as the effects of traffic are reduced with increasing distance from the point of origin.

13.5 Assessment of Effects, Mitigation and Residual Effects

Embedded Mitigation

Introduction

13.5.1 There are a number of mitigation measures proposed to reduce the magnitude of effects of construction traffic on the surrounding road network. These measures are both physical measures i.e. those that require specific works to be undertaken whether on the existing road network or as part of the Proposed Development or management measures, used to change contractors' behaviours.

Physical Measures

13.5.2 As detailed within the CTMP a number of physical mitigation measures are proposed within the study area, to mitigate against the potential impacts of construction traffic associated with the Proposed Development. The proposed Traffic and Transport mitigation measures (TT) include the following:

13.5.3 TT1: Passing Places – Passing places will be constructed along the local roads in advance of the works commencing. The location and size of each passing places will be determined and agreed with Argyll and Bute Council for each route. During the works the access routes will be monitored for damage caused by indiscriminate passing of vehicles. Where considered necessary additional passing places will be provided in these locations.

13.5.4 TT2: Site Access Improvements – Existing and new accesses will be improved to double gate access bell mouth layouts. Where required visibility will be improved or provided at the access points, appropriate for the nature and speed of the road. Visibility will be measured from a point 2.4 m or 4.5 m back from the carriageway edge as agreed by Argyll and Bute Council. All public road improvement works will be approved by Argyll and Bute Council and individual traffic management plans agreed before works commence.

13.5.5 TT3: Route Signage – Temporary construction site signage will be erected on the local road network in the vicinity of each of the proposed construction accesses, and at other locations as considered necessary, to warn people of construction activities and associated construction vehicles. The purpose of such signage is to provide driver information and to maintain road safety along the construction vehicle route. The exact nature and location of the signage would be agreed with Transport Scotland and Argyll and Bute Council prior to construction activity on site.

TT4: Good Construction Practices and General Construction Traffic Management

13.5.6 Prior to the commencement of any construction work activities on Site, a detailed CTMP would be prepared and agreed with Argyll and Bute Council and Transport Scotland. The CTMP would be developed using experience gathered during the construction of recent projects in the Local Authority area and would include a number of measures to reduce the effects of the construction of the Proposed Development on local receptors and communities. **Appendix 13.1 Framework CTMP** appended to this chapter would be updated as and when additional information becomes available.

13.5.7 There are a number of traffic management measures that are proposed to reduce the magnitude of effects of construction traffic on the surrounding road network, where there is the potential for impact. These measures will be agreed with Argyll and Bute Council prior to construction and full detailed measures shall be included within the finalised CTMP. Included within **Appendix 13.1** is the framework CTMP prepared to take account of similar project experience on Traffic and Transport matters.

13.5.8 The measures proposed as part of the full CTMP would include as a minimum the following:

- the Principal Contractor will liaise with all relevant Local Authorities and Transport Scotland to determine appropriate traffic management arrangements for construction vehicle movements;
- the Principal Contractor will agree appropriate and safe routes to and from the Site with the relevant Local Authorities and Transport Scotland. All construction vehicles will be required to use approved access routes only;
- enforcement of routing to the Site for all personnel and deliveries;
- appropriate measures will be taken to avoid congestion and queuing at site entrances;
- issues relevant to the public road network that the Principal Contractor should consider and mitigate against include, inter alia, measures to minimise dust and dirt being deposited due to construction operations;
- a Travel Plan to encourage lift sharing/ shuttle bus access to site for construction staff;
- requirement for all drivers to attend an induction to include a safety briefing, the need for appropriate care and speed control, particularly in sensitive areas, identification of specific sensitive areas, identification of the specified route, and the requirement not to deviate from the specified route;
- appropriate signage warning other motorists of the presence of construction vehicles should be implemented, where appropriate;
- road brushes will be deployed to keep the roads as clean as reasonably practicable when required;
- during times of high frequency deliveries or large loads, local residents shall be notified in advance, and with sufficient notice, to avoid any disruption;
- appropriate signage restricting vehicle speeds to be considered in discussion with the relevant Local Authorities and Transport Scotland;
- core paths and other recreational routes are designed to cater for non-motorised travel and general public access. The alignment of the proposed OHL and associated access tracks does cross core paths. An Outdoor Access Plan would be produced to demonstrate how public access will be maintained and managed during construction;
- public access safety advice signage will be installed at all access points from the public road network. All excavations shall be surrounded by barriers. All construction works will be undertaken with strict adherence to the current Construction Design and Management regulations;
- information on the project will be distributed using a variety of methods to the public and local communities, including the project website, local newsletters, public notices and public meetings by the project community liaison officer. A construction liaison committee comprising of the project community liaison officer will meet periodically to provide updates on the construction programme, vehicle movements and public road improvements. Representatives from SSEN Transmission and the Principal Contractor will attend. Contact details for key project staff will be provided to the community in order for any complaints or information requests to be actioned; and
- the Principal Contractor will monitor and ensure that agreed mitigation measures are being implemented.

Construction Phase

13.5.9 The assessment was undertaken assuming a worst-case scenario of the construction phase taking up to 30 months. The construction phase includes all activities prior to the operation of the Proposed Development, from establishment of the temporary site compounds to landscaping and restoration. It is anticipated that construction will run from Q1 2024 to Q2 2026.

13.5.10 The assessment below on the potential impacts of the construction of the Proposed Development has been undertaken to demonstrate the potential effects on the Study Area and to provide mitigation measures in this regard. For the purposes of the assessment, the construction phase includes all activities prior to the operational phase of the Proposed Development.

Predicted Traffic Generation (General Construction)

13.5.11 This section provides a predicted assessment of the level of effects caused by vehicles during the construction phases of the Proposed Development on existing traffic during a worst case scenario. Detail of the construction phases are provided in **Chapter 3 Description of the Proposed Development**.

13.5.12 Construction traffic associated with the Proposed Development will comprise the following:

- vehicles transporting workers;
- vehicles transporting construction plant and machinery; and
- vehicles transporting construction material such as stone and aggregates.

13.5.13 Construction activities will, in general, be undertaken during daytime periods only. For weekdays, this will involve work between approximately 07:00 to 19:00 in the summer and 07:30 to 17:30 (or as daylight allows) in the winter. Seven day working will be required due to the phased nature of the works, limitations of outage availability and working patterns of some contractors.

13.5.14 Any other out of hours working would be agreed in advance with Argyll and Bute Council. With regards to weekend working, this would be planned to minimise construction traffic and areas of work would be restricted to those locations which would have the least impact on the local communities and general public.

13.5.15 No abnormal load vehicles with regards to length (over 18.3 m) or width (over 2.9 m), are anticipated to be needed to access to the Proposed Development site. The largest vehicles anticipated to require access are road legal standard articulated lorries, including low loaders importing construction equipment.

13.5.16 Although no abnormal loads with regards to length or width are required, abnormal loads with regards to vehicle weight over 44 tonnes may be required to access the Proposed Development site. These vehicles include low loaders when loaded with construction equipment and the mobile cranes required for the erection of the towers and installation of the conductors. The mobile cranes typically have a road legal weight of 60 tonnes and a maximum axle weight of 12 tonnes, which would make them abnormal loads, moveable under a special types general order.

13.5.17 The predicted number of construction traffic movements is provided in **Table 13-7**. This shows the total number of construction vehicle trips associated with the construction phase of the Proposed Development, assuming all materials are brought to site, as stated within the CTMP.

Table 13-7 – Total Construction Phase Vehicle Movements (2024 to 2026)

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 1: A885 High Road (between the A815 and Dunoon Substation)	1,954	766	1,188
Link 2: B836 (between A815 and A886)	9,100	3,724	5,376
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	3,766	1,570	2,196

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 4(a): A815 (from Dunoon to the A83(T))	37,188	17,851	19,337
Link 4(b): A815 South (from Toward to the B836)	15,938	7,651	8,287
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	12,280	6,748	5,532
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	31,972	16,602	15,370
Link 7: A83(T) between Inveraray and Tarbet	78,539	38,438	40,100

13.5.18 As previously detailed, the most onerous periods during construction will occur over a three month period in each of the two years, namely June to August. Within those 3 month periods, up to 15% of the total construction traffic movements will occur, i.e. 15% in 2024 and 15% in 2025, with the remaining 70% occurring over the remaining construction period. This has been used to inform the assessment.

13.5.19 Applying the above to the total number of construction trips across the whole construction phase, results in the following daily two-way construction vehicle movements as detailed in **Table 13-8**.

Table 13-8 – Daily Construction Vehicle Movements (worst case)

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 1: A885 High Road (between the A815 and Dunoon Substation)	3	1	2
Link 2: B836 (between A815 and A886)	15	6	9
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	6	3	4
Link 4(a): A815 (from Dunoon to the A83(T))	62	30	32
Link 4(b): A815 South (from Toward to the B836)	27	13	14
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	20	11	9
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	53	28	26
Link 7: A83(T) between Inveraray and Tarbet	131	64	67

13.5.20 In addition to the above general construction traffic movements, there would be trips associated with timber felling within the development areas. Current estimates are that timber felling will take place over a period of five and a half months and current programming shows this overlapping with the predicted three month busiest period. As such, the timber felling has been spilt equally across the five and a half month felling programme resulting in the daily trips shown in **Table 13-9**. In terms of routing of timber haulage approximately 65 % of loads will be delivered to Sandbank pier to be transported by ship to market. The remaining 35 % will travel north to the A83(T). As such the vehicle movements associated with this have been applied to the relevant Links.

Table 13-9 – Daily Timber Felling Vehicle Movements

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 1: A885 High Road (between the A815 and Dunoon Substation)	3	1	2
Link 2: B836 (between A815 and A886)	7	2	5
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	1	0	1
Link 4(a): A815 (from Dunoon to the A83(T))	8	2	6
Link 4(b): A815 South (from Toward to the B836)	14	3	12
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	15	4	12
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	0	0	0
Link 7: A83(T) between Inveraray and Tarbet	11	2	9

13.5.21 Taking both the general construction vehicle movements and the timber felling vehicle movements together, the total number of vehicle movements for the estimated busy days can be seen in **Table 13-10**.

Table 13-10 – Total Daily Construction Vehicle Movements (worst case)

Location	Baseline Traffic Flows		
	Total	HGV's	Non-HGV's
Link 1: A885 High Road (between the A815 and Dunoon Substation)	6	2	4
Link 2: B836 (between A815 and A886)	22	8	14
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	7	3	4
Link 4(a): A815 (from Dunoon to the A83(T))	70	31	38
Link 4(b): A815 South (from Toward to the B836)	41	16	25
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	36	15	21
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	53	28	26
Link 7: A83(T) between Inveraray and Tarbet	142	67	76

Comparing Construction Traffic Against Baseline Conditions

13.5.22 The estimated Baseline plus Construction Traffic flows and percentage impact for the Study Area are shown in **Table 13-11**. This illustrates the percentage impact of both construction trips and tree felling trips assigned to the network based on the proposed access routes included within the CTMP.

Table 13-11 – Baseline plus Construction Traffic flows and percentage impact for the Study Area

Location	Scenario	Baseline Traffic Flows		
		HGV's	Non-HGV	Total
Link 1: A885 High Road (between the A815 and Dunoon Substation)	Baseline	210	3,937	4,147
	Baseline + Construction Traffic	212	3,941	4,153
	% Impact	**0.9%**	**0.1%**	**0.1%**
Link 2: B836 (between A815 and A886)	Baseline	242	589	831
	Baseline + Construction Traffic	250	604	854
	% Impact	**3.4%**	**2.4%**	**2.7%**
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	Baseline	37	265	302
	Baseline + Construction Traffic	40	269	309
	% Impact	**7.2%**	**1.6%**	**2.3%**
Link 4(a): A815 (from Dunoon to the A83(T))	Baseline	82	1,625	1,707
	Baseline + Construction Traffic	114	1,663	1,777
	% Impact	**38.1%**	**2.4%**	**4.1%**
Link 4(b): A815 South (from Toward to the B836)	Baseline	318	4,434	4,752
	Baseline + Construction Traffic	334	4,459	4,793
	% Impact	**4.9%**	**0.6%**	**0.9%**
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	Baseline	18	467	486
	Baseline + Construction Traffic	33	488	521
	% Impact	**80.7%**	**4.5%**	**7.3%**
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	Baseline	3	88	91
	Baseline + Construction Traffic	31	114	145
	% Impact	**907.8%**	**29.0%**	**58.3%**
Link 7: A83(T) between Inveraray and Tarbet	Baseline	414	4,618	5,031
	Baseline + Construction Traffic	480	4,693	5,173
	% Impact	**16.1%**	**1.6%**	**2.8%**

13.5.23 With regards to Rule 1 of the IEA Guidelines, the impact would exceed 30% increases in HGV traffic on the Links listed below:

- Link 4 (a): A815 (from Toward to the A83(T));
- Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny); and
- Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny).

Capacity

13.5.24 A review of existing road capacity has been undertaken using the DMRB, Volume 15, Part 5 "The NESA Manual". The theoretical road capacity has been estimated for each of the road links that makes up the Study Area. The theoretical road capacity equates to the maximum traffic volumes which a road is able to accommodate in each direction. Above this level, traffic conditions would become unstable and queuing along the road section would occur.

13.5.25 Theoretical capacity has been estimated for each Link on the Study Area and the results are summarised in **Table 13-12**.

Table 13-12 – 2024 Daily Traffic (12hr) Capacity Review Summary

Location	Average Two-Way Traffic Flows				% Spare Road Capacity
	Theoretical Road Capacity (12 hour period)	Total Base Traffic Flows	Base + Construction Traffic Flows	Spare Road Capacity	
Link 1: A885 High Road (between the A815 and Dunoon Substation)	28800	4147	4153	24647	85.58
Link 2: B836 (between A815 and A886)	21600	831	854	20746	96.05
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	3360	302	309	3051	90.79
Link 4(a): A815 (from Dunoon to the A83(T))	21600	1707	1779	19821	91.77
Link 4(b): A815 South (from Toward to the B836)	21600	4752	4794	16806	77.81
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	19200	486	522	18678	97.28
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	3360	91	146	3214	95.65
Link 7: A83(T) between Inveraray and Tarbet	28800	5031	5177	23623	82.02

13.5.26 The results above show that with the addition of the worst case construction traffic levels, there are no road capacity issues as a result of the construction of the Proposed Development and there would be significant spare capacity on all of the Links. As such, it is considered that the temporary increase in traffic during the worst case scenario would not result in a change in the impacts on road capacity, within the Study Area.

13.5.27 Based on the above assessment, the level of existing traffic and taking account of the traffic generated by the construction of the Proposed Development, the sensitivity of receptors to changes in road conditions would be Low and the magnitude of change would be Minor. Therefore, there is predicted to be a **Neutral or Slight Adverse** (**not significant**) change in road capacity. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Severance

13.5.28 The predicted change in severance on the Links has been evaluated based on the percentage increase in total traffic levels expected during the construction phase, in line with IEA Guidelines. The significance of the predicted change in severance has been determined based on factors including the road conditions, traffic flows and level of pedestrian activity etc. **Table 13-13** provides a summary of the Proposed Development Severance on the road network, based on the anticipated levels of construction trips associated with the construction phase and sensitivity of users and residents.

Table 13-13 – Severance Summary

Location	% Total Traffic Increase	Sensitivity of Receptor to Change	Magnitude of Impact	Comment	Significance of Effect
Link 1: A885 High Road (between the A815 and Dunoon Substation)	0.1	Medium to High	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. It is however noted that construction traffic would be required to pass a local primary school at this location and if necessary, consideration within the full CTMP will be given to restricting HGV movements should Argyll and Bute Council deem this necessary.	Slight
Link 2: B836 (between A815 and A886)	2.7	Negligible	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. There are no dedicated pedestrian facilities at this location, however it is noted that Core Path C223a and C223c cross the Link to the west of the A815. As such consideration within the full CTMP, prepared post consent, in relation to signage and management of HGV traffic at this location will be required. Furthermore, liaison with Argyll and Bute Council Access Officer would be undertaken to ensure any required mitigation measures are implemented and would form part of any Access Management Plan required by way of a Planning Condition.	Neutral
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	2.3	Negligible	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. There are no pedestrian facilities of note along the affected route and as such it is unlikely that there is a high demand to cross the Link.	Neutral
Link 4(a): A815 (from Dunoon to the A83(T))	4.1	Low	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. There are no pedestrian facilities of note along the	Neutral or Slight

Location	% Total Traffic Increase	Sensitivity of Receptor to Change	Magnitude of Impact	Comment	Significance of Effect
				affected route and as such it is unlikely that there is a high demand to cross the Link.	
Link 4(b): A815 South (from Toward to the B836)	0.9	Medium to High	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. It is however noted that construction traffic would be required to pass through built up areas within the town centre and on approach to the town and as such consideration within the full CTMP, prepared post consent, in relation to signage and management of HGV traffic at this location will be required.	Slight
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	7.3	Low to Negligible	Negligible	The percentage increase in total construction traffic at 7.5% is considered low on this Link, with the increase being as a result of the already existing low traffic volumes. It is however noted that construction traffic would be required to pass through areas with residential properties and as such consideration within the full CTMP, prepared post consent, in relation to signage and management of HGV traffic at this location will be required.	Neutral or Slight
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	58.3	Negligible	Moderate	The percentage increase in total construction traffic at 58.3% could be considered as high, this is as a result of the extremely low levels of existing traffic using this Link. There are however no existing pedestrian facilities at this location, so demand to cross the Link would be low.	Neutral or Slight
Link 7: A83(T) between Inveraray and Tarbet	2.8	Medium to Low	Negligible	The percentage increase in total construction traffic is statistically insignificant on the Link and well within the daily fluctuations of traffic. It is however noted that construction traffic would be required to pass through built up areas within the settlements on the Link and as such consideration within the full CTMP will be captured, given to management of construction traffic at this location.	Neutral or Slight

13.5.29 As can be seen from **Table 13-13**, the sensitivity of receptors to changes in severance is Negligible to High and the magnitude of change is predicted to be Negligible to Moderate. It is therefore considered that the change in severance is considered to be **Neutral or Slight Adverse (not significant)**. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Driver Delay

13.5.30 Minimal driver delay would be expected when vehicles are accessing the various Site access locations. The IEA Guidelines states that driver delay is only likely to be significant when traffic on the network

surrounding the Proposed Development is already at, or close to, the capacity of the system. As established in **Table 13-12** there are no Links on the proposed access routes that are close to capacity, with significant spare capacity available. Furthermore, the Site will be accessed via a number of locations with a number of access routes utilised and as such construction vehicles will be dispersed across the Study Area.

13.5.31 Based on the above, the significance of change in driver delay is considered to be **Neutral** or **Slight Adverse (not significant)**. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Pedestrian Delay

13.5.32 Across large sections of the proposed access routes within the Study area, there is expected to be limited pedestrian activity due to the rural nature of the Proposed Development. There would of course be pedestrian activity within Dunoon and the other settlements within the Study Area in addition to those people using the area for recreational purposes. Where pedestrian activity is expected, there are existing pedestrian facilities in place as identified in **Section 13.4**. On the majority of Links the increase in construction traffic is statistically low and where there are higher increases, it is on Links where there are no pedestrian facilities in place and as such there would be unlikely to be a significant level of pedestrian activity occurring.

13.5.33 It is considered that, based on professional judgement, any delay to pedestrians would be unlikely to be materially affected by the additional trips associated with the construction of the Proposed Development. Therefore, the sensitivity of receptors to changes in severance is considered to be Low and the magnitude of change is predicted to be Negligible. It is considered that the effect of the construction traffic on pedestrian delay and amenity within the Study Area is **Neutral or Slight Neutral (not significant)**. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Pedestrian Amenity

13.5.34 The IEA Guidelines considers that a suitable threshold for assessing the significance of traffic flow increase on pedestrian amenity is a 100% increase in traffic levels. Based on the increase in traffic flows shown in **Table 13-15** there are no Links where the increase in total traffic flows is 100% or more. The largest increase was on Link 6 where there is expected to be a 58.3% % increase. It should however be noted that there are no existing pedestrian facilities at this location, so demand to cross the Link would be low.

13.5.35 Based on the above, the sensitivity to pedestrian amenity is considered to be Negligible. It is therefore considered that the effect of the construction traffic on pedestrian delay and amenity within the Study Area is **Neutral or Slight Neutral (not significant)**. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Fear and Intimidation

13.5.36 Construction traffic would be routed via a mixture of primarily A and B class roads in the vicinity of the Proposed Development site. Sections of the proposed access routes, making use of A class roads for example, are designed to accommodate construction traffic of the type likely to be used in the construction of the Proposed Development.

13.5.37 On those sections of the proposed access routes that pass through areas where there are likely to be higher number of pedestrians and cyclists accessing local amenities, there are dedicated facilities in place, including segregated footways and cycleways. Within the centre of Dunoon there are dedicated crossing locations, including zebra crossings and kerb build outs with drop kerbs. In addition, where

routes pass local schools, for example Sandbank Primary School there are temporary speed limits in place.

13.5.38 A number of the Links within the Study Area provide access to areas of employment, areas used for timber extraction and to access the harbour within Dunoon where HGVs will regularly use these routes. In addition, areas within the town centre will be used frequently by HGVs for deliveries associated with local commercial activities.

13.5.39 A number of the roads on the access routes form part of the agreed route network used for the extraction of timber in the area. The Agreed Timber Route Map[210] has been developed by the timber transport groups at Local Authority level and categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage i.e. HGV traffic. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.

13.5.40 **Table 13-14** below shows the Links within the agreed Study Area and the classification of them based on the Timber Transport Forum.

Table 13-14 – Timber Transport Forum Road Classification within Study Area

Location	Road Classification
Link 1: A885 High Road (between the A815 and Dunoon Substation)	Southern most section – Consultation Route
Link 2: B836 (between A815 and A886)	Entire length – Agreed Route
Link 3: Unclassified Road – Turn off at Invereck Countryside Holiday Park (between A815 and Deargacha Burn)	Entire length – Consultation Route
Link 4(a): A815 (from Dunoon to the A83(T))	A Road – Agreed Route (A Roads are agreed routes by default)
Link 4(b): A815 South (from Toward to the B836)	A Road – Agreed Route (A Roads are agreed routes by default)
Link 5: A880 Shore Road (between A815 at Ardbeg House and Ardentinny)	Southern most section – Agreed Route Remainder of route – Consultations Route, with small section of Severely Restricted Route
Link 6: Unclassified Road – Turn off A815 at Whistlefield Inn (between the A815 and Ardentinny)	Majority of route – Consultations Route, with small section of Severely Restricted Route
Link 7: A83(T) between Inveraray and Tarbet	A Road – Agreed Route (A Roads are agreed routes by default)

13.5.41 Of the routes proposed to be utilised during the construction of the Proposed Development, all of Links 2, 4(a), 4(b), 7 and a section of Link 5 are 'Agreed Routes', which are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as Agreed Routes by default unless covered by one of the other road classifications. All other Links are classified as 'Consultation Routes', which are categorised as a route which is key to timber extraction, but which are not up to 'Agreed Route' standard. Consultation with the relevant Local Authority, in this case Argyll and Bute Council is required, and it may be necessary to agree limits of timing, allowable tonnage etc.

[210] The Timber Transport Forum (online). Available at: https://timbertransportforum.org.uk/maps/agreed-routes

before the route can be used. B-roads are classified as 'Consultation Routes' by default unless covered by one of the other classifications.

13.5.42 The above further demonstrates that the proposed access routes are of the standard suitable to accommodate the type of vehicles used in the construction of the Proposed Development.

13.5.43 It should be noted that both Link 2 and Link 4(a) and (b) form part of the NCR 75 and there are also a number of Core Paths in the vicinity of these and the other Links. As such there may be an increased level of cyclist activity through these sections, including general recreational cycling. Although HGV's regularly use these routes, consideration should be given to this when implementing mitigation measures to reduce fear and intimidation of road users and those likely to be more affected by increased levels of HGV traffic. This could include, for example, liaison with local cycling groups to ensure that there are no conflicts with local cycling events in the area. It would be proposed that this is included within the full CTMP likely to be required as a Condition of the Section 37 Consent.

13.5.44 Based on the above, it is considered that the composition of the traffic already using the routes and the class of roads used, namely A and B class roads, they can accommodate the predicted temporary increase in both HGV and non-HGV traffic associated with the Proposed Development. Therefore, the sensitivity of receptors to changes in fear and intimidation would be Medium. The magnitude of change is predicted to be Minor and therefore, there is likely to be a **Slight Neutral (not significant)** effect. In addition, it would be temporary (short-term) as it would only occur during the construction phase.

Accidents and Safety

13.5.45 A review of the existing accident characteristics of the access routes has been undertaken and summarised in **Appendix 13.2 Personal Injury Accident Data**. The last three-year PIA data was reviewed, which showed that of the recorded PIAs, 47% were Slight, 49% were Serious and 4% were Fatal.

13.5.46 The increase in HGV traffic, in particular around the Proposed Development site access junctions or construction compounds may have an impact on safety due to driver frustration and an increase in turning movements. On those sections in close proximity to local schools, and at other locations where vulnerable road users could be present, for example on sections of the National Cycle Route, cognisance of these issues will be taken when implementing mitigation measures to address any potential issues.

13.5.47 Therefore, based on the above assessment, the level of existing traffic and taking account of potential vulnerable road users on sections of the proposed access routes, the sensitivity of receptors to changes in road safety conditions would be High and the magnitude of change would be Moderate. Therefore, there is predicted to be a **Moderate or Large Adverse (significant)** change in accidents and safety. Despite this, it would be temporary (short-term) as it would only occur during the construction phase. However, it should be noted that this is a potential impact and measures within the CTMP are included to reduce the likelihood of accidents occurring.

Mitigation Measures

13.5.48 One significant effect has been identified in relation to the potential for accidents. However, no additional mitigation measures are proposed further to those which would form part of the full CTMP as discussed in the Embedded Mitigation section.

Residual Effects

13.5.49 As no additional mitigation measures are proposed, the residual effects are unchanged from those in the main assessment.

13.5.50 The traffic effects are temporary in nature and confined to the construction period only, which is expected to last no more than two years. No long-lasting detrimental transport or access issues are associated with the Proposed Development.

Cumulative Effects

13.5.51 It is necessary to consider whether the effects of other developments in conjunction with the Proposed Development would result in an additional cumulative change upon the Study Area, beyond the levels predicted for the Proposed Development alone. There are two developments considered with the potential to have cumulative effects in combination with the Proposed Development:

- decommissioning of the existing OHL; and
- reconductoring and refurbishment of the Loch Long Crossing.

13.5.52 At this time it is expected that the decommissioning of the existing OHL will occur at the same time as the construction of the Proposed Development. The current project construction programme has this occurring in Q1 and Q2 in 2026, which is outwith the most onerous time period in the overall construction programme, which occurs during the months of June to August in 2024 and 2025. As such, it is considered that the assessment undertaken above demonstrates a worst case assessment and there would be no cumulative effects anticipated from the above works.

13.6 Summary

13.6.1 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. These would be of a temporary nature only.

13.6.2 An assessment of the potential effect using IEMA Guidance has been undertaken with the CTMP as embedded mitigation. A **Moderate or Large Adverse (significant)** impact could be expected in relation to Accidents and Safety for sections of the proposed access routes. All other indicators indicate either **a Neutral or Slight,** or **Slight Adverse (not significant)** effect on receptors within the Study Area; the effects would be temporary and reversible.

13.6.3 Although no additional mitigation has been proposed it should be noted that this is a potential impact and measures within the CTMP are included to reduce the likelihood of accidents occurring. The CTMP would be agreed in advance with Argyll and Bute Council and secured by way of condition.

14. CUMULATIVE ASSESSMENT

14.1 Introduction

14.1.1 As discussed in **Chapter 5: Methodology, Section 5.5**, two aspects of cumulative assessment are being considered in the EIA Report; in-combination effects and effect interactions. This chapter sets out the findings of the cumulative effects assessment.

14.2 In-combination effects

14.2.1 In-combination effects are the combined effect of the Proposed Development together with other reasonably foreseeable developments (taking into consideration effects at the stages of site preparation and earthworks, construction and operation). As stated in **Chapter 5,** a search for other developments did not identify application developments which may result in in-combination effects, however elements of the wider project (as detailed in **Chapter 5, Table 5.1**) have the potential to result in-combination effects and have therefore been considered within this report:

- reconductoring and refurbishinf the Loch Long crossing; and
- decommissioning of the existing Dunoon Substation to Loch Long OHL.

14.2.2 Each technical topic has considered these elements of the wider project within the respective chapter (**Chapters 6 – 13**). A summary of the conclusions of the in-combination effects assessments is provided below.

14.2.3 Within the area surrounding the Proposed Development Forestry and Land Scotland are undertaking a programme of felling related to *Phytophthora ramorum*. As this is not a specific application it does not meet the criteria for being included as a cumulative development and in general is being treated as a change to the future baseline of the area. However, for the assessment of landscape and visual impacts (**Chapter 6 Landscape and Visual Assessment**) and forestry impact (**Chapter 12 Forestry**), it has been assessed as part of the in-combination cumulative assessment due to the evolving situation relating to this felling.

Landscape and Visual

14.2.4 The following text summarises the likely cumulative effects as a result of the Loch Long Crossing reconductoring, the decommissioning of the existing OHL and commercial felling of infected larch based (hereafter referred to as the 'cumulative schemes') on a worst-case scenario of simultaneous construction and operation. It should be noted that cumulative operation effects of the Proposed Development and decommissioning of the existing OHL have been included in the initial landscape and visual assessment.

14.2.5 A temporary Major-Moderate adverse cumulative landscape effect is likely to occur on Glen Finart LU as a result of the simultaneous construction of the Proposed Development and the cumulative schemes due to the concentration of large-scale construction activities within a tranquil glen.

14.2.6 A temporary Moderate adverse cumulative landscape effect is likely to occur on Creachan Mòr LU should all the cumulative schemes be constructed simultaneously due to the increased vehicular movement, noise and helicopter flights within a similar area.

14.2.7 A temporary Major adverse and a Major-Moderate to Moderate-Minor adverse cumulative visual effect on residents to the south-east of Barnacabber Farm and users of proposed Holiday Dwellings at Barnacabber Farm, respectively, are likely to arise during the construction phase should the cumulative schemes be constructed simultaneously. Users of the road through Glen Finart are likely to experience a temporary Moderate adverse to Moderate-Minor adverse cumulative effect during the construction

phase. However, whilst more intense, the simultaneous construction would result in construction activity having a shorter duration.

14.2.8 It should be noted that the above represents a worst case whereby the decommissioning of the existing line takes place concurrently with construction of the Proposed Development. The decommissioning of the existing OHL would take place towards the end of the construction programme for the Proposed Development, and concurrently with access track removal, therefore, although lengthening the construction period, is not likely to increase the magnitude of activity substantially.

14.2.9 Mitigation measures to reduce the effect of construction on Glen Finart include the careful siting of construction compounds and the use of hoarding and fencing to screen equipment, stockpiles and areas of movement, minimising the movement of stockpiles, etc as set out in the Construction Environmental Management Plan (CEMP) and General Environmental Management Plans (GEMPs).

Ecology and Nature Conservation

Loch Long Crossing

14.2.10 The terrestrial habitats within the vicinity of Towers 12 and 15 and their access tracks are expected to largely coincide with the Proposed Development's Survey Area and have the potential to support or contain the terrestrial Important Ecological Features (IEFs) assessed within the Ecological Impact Assessment (EcIA).

14.2.11 Mitigation detailed in the EcIA and the Applicant's Species Protection Plans (SpPPs); GEMPs; and CEMP are anticipated to significantly reduce the likelihood of direct and indirect impacts on the EcIA's IEFs and, being a related project to the Proposed Development, it is understood that all mitigation detailed in relation to the terrestrial IEFs (such as riparian and arboreal mammals) would also apply to the Loch Long Crossing project, where relevant. In addition, the project is predicted to use the same proposed accesses and working areas, where applicable. Due to these factors, it is considered cumulative effects on the Proposed Development's IEFs would result in effects of Site level importance and are therefore not significant.

Decommissioning of the Existing Dunoon Substation to Loch Long OHL

14.2.12 As a result of this project, the current tree maintenance/ clearance activities within the existing OHL Operational Corridor would cease. A lesser amount of habitat loss, degradation or fragmentation is anticipated from this project. The redundant Operational Corridor has the potential to promote the establishment of more diverse native habitats, either through natural regeneration or direct action from the landowners. This also has the potential to improve habitat connectivity in these regions. As the existing OHL alignment is located in close proximity to the proposed OHL alignment, the indirect impacts and effects of this project are anticipated to be similar to, or less than, those associated with the Proposed Development. The terrestrial habitats along the proposed OHL alignment largely coincide with the Proposed Development's Survey Area and have the potential to support or contain the terrestrial IEF's assessed within this EcIA.

14.2.13 It is understood that all relevant mitigation in relation to the Proposed Development would apply to this project and would be equally effective. In addition, the project is predicted to use the same temporary access tracks and working areas, where applicable. Due to these factors, it is considered cumulative effects on the Proposed Development's IEFs would result in effects of Site level importance and are therefore not significant.

Ornithology

Loch Long Crossing

14.2.14 The plantation coniferous woodland adjacent on the west side of Loch Long and the open water of Loch Long are unlikely to be utilised by golden eagle, hen harrier or black grouse. Habitat in the vicinity of the tower on the eastern side of loch long, including access tracks, may be utilised by all three species. Mitigation detailed in the Bird SpPP will significantly reduce the likelihood of direct impacts on nesting birds and, being a related project to the Proposed Development, it is understood that all mitigation detailed in relation to black grouse will also apply to the Long Loch Crossing project, if relevant. Works on the eastern side of Loch Long would be undertaken across a maximum of two breeding seasons (one for access and one for works). In addition, the project is predicted to use the same proposed accesses and working areas, where applicable. Due to these factors, it is considered cumulative effects on golden eagle, hen harrier and black grouse will result in effects of Site level importance and are therefore not significant.

Decommissioning of the Existing Dunoon Substation to Loch Long OHL

14.2.15 It is anticipated that the project will encompass a maximum of one breeding season. Effects of the project will be very similar to the Proposed Development as the existing OHL is located in close proximity to the proposed OHL alignment. It is understood that all relevant mitigation in relation to the Proposed Development will apply to the project, particularly in relation to black grouse. In addition, the project is predicted to use the same proposed access tracks and working areas, where applicable. While the additional works activity, extending to three consecutive breeding seasons (including the Proposed Development) with increase the magnitude of potential effects it is anticipated that mitigation described for the Proposed Development will be equally effective on this project.

14.2.16 While decommissioning of the existing OHL will follow immediately on completion of the Proposed Development there will be period (maximum 12 months) when sections of both OHL will be present in the landscape at the same time. Works associated with the decommissioning of the existing OHL will, to an extent, displace golden eagle, hen harrier and black grouse from the area and reduce the frequency of at risk flights. While collision risk could be expected to increase over this short period risk is considered to be negligible for all species with a marginal increase over one year not considered to result in any significant effects on the conservation status of local or regional populations.

14.2.17 Due to these factors, it is considered cumulative effects on golden eagle, hen harrier and black grouse will result in effects of Site level importance and are therefore not significant.

Cultural Heritage

14.2.18 There are no cumulative effects anticipated from the Loch Long reconductoring works as these towers are between 4-5 km north of the closest heritage assets within the baseline.

14.2.19 The decommissioning of the existing OHL is predicted to result in one Negligible Beneficial impact anticipated on Ardnadam Farmstead (WoSAS Pin 45482) (HA9) due to the removal of the existing towers from the vicinity of the heritage asset. No other cumulative effects are anticipated from the decommissioning works.

Hydrology, Hydrogeology, Geology and Soils

14.2.20 Even in the event that these other developments present potentially significant effects to the receiving hydrology, hydrogeology, geology and soils environment in their own right, given that no significant residual effects have been identified associated with the Proposed Development, and assuming the effective ‘source’ controls for each individual development and good practice methodology, significant

cumulative effects are not anticipated. Furthermore, the differing construction programming and activities that would be anticipated to occur across various developments reduces the probability that water quality and flow issues would be coincident across the catchments.

Noise and Vibration

14.2.21 The reconductoring of the Loch Long Crossing occurs at the most northern extent of the Proposed Development. The activity will result in no cumulative noise effects at identified NSRs within the Proposed Development Study Area.

14.2.22 Within the Proposed Development construction programme, the temporary access track removal activity is scheduled to take place during the same time period as the decommissioning of the existing OHL. If the two were to occur within a similar geographical location, cumulative effects would be present. Based on the information available related to the OHL removal, less than a 1 dB increase in construction traffic noise levels would be expected at any of the Noise Sensitive Receptors (NSR). Resulting in a minor significance of effect and non-significant in-combination effects.

14.2.23 When occurring at a similar location within the Study Area, construction activities for the Proposed Development and decommissioning of the existing OHL result in a total of one NSR receiving a noise level of 66 dB (UPRN 125037982) and moderate significance of effect where activities occur near to Tower 23. All other NSRs receive in-combination noise levels below 65 dB.

14.2.24 It is anticipated that the decommissioning of the existing OHL will be undertaken in accordance with Best Practicable Means (BPM) (as per BS 5228-1 and BS 5228-2). The moderate significance of effect is considered as not significant due to the application of BPM at construction activity locations near to Tower 23. As such, there is no significant in-cumulative effects anticipated.

Forestry

14.2.25 The cumulative effect of direct commercial woodland removal associated with creating an Operational Corridor (OC), access tracks and temporary OHL diversions (predicted to be 84.85 ha), combined with the potential indirect (secondary) effect of woodland removal outside of the OC (predicted to be 116.90 ha) (under separate felling consent obtained by landowners and not under the control of the Applicant), would potentially comprise up to 201.75 ha of commercial woodland.

14.2.26 Phytophthora ramorum, a highly infectious tree disease that mainly affects larches, is a common problem encountered in commercial forests within the Argyll and Bute region. Forest management is routinely impacted by Statutory Plant Health Notices (SPHN) necessitating sanitation felling intended to control the spread of P. ramorum. Some 77% of the direct tree removal associated with creating the OC, access tracks and temporary OHL diversions is already scheduled within the next five years or sooner under existing forest management plans, including sanitation felling related to P. ramorum. Within the Benmore Forest Section, significant sanitation felling has taken place over the last year within the route of the Proposed Development.

14.2.27 There is an overlap of woodland removal for the Proposed Development in combination with minor felling works associated with the Loch Long crossing works at existing Towers Ex.14 and Ex.15; the cumulative effects are not significant.

14.2.28 No other developments have been identified that might have significant cumulative impacts on forests and woodland within the vicinity of the Proposed Development.

14.2.29 Overall, the cumulative effect of woodland removal is assessed as a medium magnitude of change. Given the low sensitivity of commercial woodland within the study area, this cumulative effect is assessed as Minor Adverse and Not Significant. There are no additional indirect cumulative effects associated with native woodland.

Traffic and Transport

14.2.30 It is expected that the decommissioning of the existing OHL will occur at the same time as the access track removal for the Proposed Development. The current project construction programme presented in **Chapter 3 Description of the Proposed Development** shows the decommissioning works occurring in Q1 and Q2 in 2026, which is outwith the most onerous time period in the overall construction programme, which occurs during the months of June to August in 2024 and 2025. As such, it is considered that the assessment undertaken in **Chapter 13 Traffic and Transport** represents a worst case assessment and there would be no cumulative effects anticipated from the above works.

14.3 Effect Interactions

14.3.1 Cumulative effect interactions are the combined or synergistic effects caused by the combination of a number of effects on a particular receptor, which may collectively cause a more significant adverse effect than individually.

14.3.2 The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been assessed by more than one technical topic) due to the Proposed Development. The assessment is based upon residual effects only (considered to be effects of minor or greater adverse significance i.e. excluding negligible and beneficial effects).

14.3.3 Only residual effects with the potential for effect interactions are considered, i.e. where there are common receptors with other distinctly different topics. The following technical topics are therefore excluded from **Table 14-1**:

- Landscape and Visual Impact: landscape effects;
- Ecology and Nature Conservation: all effects;
- Ornithology: all effects;
- Cultural Heritage: all effects;
- Hydrology, Hydrogeology, Geology and Soils: all effects; and
- Forestry: all effects.

14.3.4 Ecological receptors are not included in this cumulative assessment as the ecological assessment includes the impacts from the other topics including noise and vibration and impacts from water quality on aquatic receptors. It also considers the combined effects of different ecological impacts on specific receptors. To include it here would effectively double count the effects.

14.3.5 Hydrological receptors (e.g. surface watercourses, groundwater, private water supplies) are also excluded from the assessment as they do not have the potential for effect interactions with other topics.

14.3.6 An overall assessment of the cumulative effects on identified common sensitive receptors has been made using professional judgement and the technical information provided in **Chapters 6-13**. **Table 14-1** presents the residual effects of the individual topics on common receptors for construction phase. The potential for effect interactions are then discussed in the text following the table.

14.3.7 No common receptors have been identified for the operational phase for which there are applicable residual effects and therefore there is no operational phase Effect Interactions assessment.

Table 14-1: Effect Interactions: Residual Effects on Common Receptors - Construction

Topic	Significance of Residual Effect	
	Residences	**Road Users**
Visual	• Property opposite Barnacabber Farm / Glenfinart Hotel and Deer Farm - Moderate-Minor adverse. • Remaining Residential Properties in Glen Finart - Minor adverse to Negligible. • Ballochyle - Minor adverse. • Remaining Residential Properties in Strath Eachaig - Moderate-Minor adverse to Negligible. • Residents on the western edge of Sandbank, including at Ardnadam Farmstead - Minor-Negligible adverse.	• Users of Minor Road along Glen Finart - Minor adverse to Negligible (Link 6). • Users of A815 - Minor-Negligible adverse (Link 4).
Noise and Vibration	• Noise: Potential for up to thirty-two NSRs, occur where activities occur concurrently at OHL Towers 21 – 24, OHL Towers 52 – 55, OHL Towers 59 –62 and OHL Towers 76 – 77 and access track locations within the same area, to receive moderate significance of effect. These receptors align with the Visual locations above at Barancabber Farm, remaining Glen Finart, Ballochyle and Ardnadam Farmstead. • Vibration: During percussive piling activities eight NSRs receive a moderate significance of effect, which align with Ardnadam Farmstead; and vibratory roller and compaction activities result in up to eleven NSRs receiving a moderate significance of effect, which align with Barancabber Farm, remaining Glen Finart, Ballochyle and Ardnadam Farmstead.	Not applicable
Traffic and Transport	Not applicable	• Links 4a, 4b and 6: Capacity, Severance, Driver Delay, Pedestrian Delay, Pedestrian Amenity, Fear and Intimidation – neutral to slight. • Links 4a, 4b and 6: Accidents and Safety – Moderate to Large Adverse.

Assessment of Effect Interactions

14.3.8 Potential effect interactions during the construction phase have been identified for the following receptor types:

- Residences; and
- Road users.

14.3.9 These effects are discussed in more detail in the following section.

14.3.10 During the operational phase no effect interactions on residential receptors have been identified. It is acknowledged that there may be an overall sense of disturbed amenity as a whole, however this is not considered to be a significant cumulative effect.

Residences

14.3.11 During the construction phase the assessment has identified the following:

- Likely moderate adverse noise effects which align with visual effects at Barnacabber Farm (moderate to minor adverse), remaining residential properties in Glen Finart (minor adverse to negligible), Ballochyle (minor adverse) and Ardnadam Farmstead (minor to negligible).
- Likely moderate adverse vibration effects during percussive piling activities which align with visual effects at Ardnadam Farmstead (minor to negligible).
- Likely moderate adverse vibration effects during vibratory roller and compaction activities which align with visual effects at Barnacabber Farm (moderate to minor adverse), remaining residential properties in Glen Finart (minor adverse to Negligible), Ballochyle (minor adverse) and Ardnadam Farmstead (minor to negligible).

14.3.12 For activities such as piling and rock breaking, as per the mitigation in **Chapter 11 Noise and Vibration** consideration will be given to a noise barrier which would provide full line of sight screening from the NSR, where practicable, to minimise significant effects.

14.3.13 This is considered to result in an adverse temporary cumulative effect on the residents of these properties. The effect will occur over a short temporal scale and during this time may result in a significant cumulative effect.

Road Users

14.3.14 Visual impacts from the road network surrounding the Proposed Development have been assessed in addition to impacts on traffic and transport.

14.3.15 During construction, temporary visual impacts of negligible to minor adverse, and minor beneficial from the A885, have been predicted. Traffic impacts, with the exception of accidents and safety, of neutral to slight have been identified in relation to road capacity, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation. A traffic impact of moderate to large adverse has also been identified in relation to accidents and safety. Considering the variable nature of traffic impacts throughout the construction period and their level of significance it is considered that cumulative impacts will not result in significant cumulative impacts upon the identified receptors.

15. SCHEDULE OF ENVIRONMENTAL MITIGATION

15.1 Introduction

15.1.1 **Chapters 6 to 13** discuss the potential for significant effects to occur as a result of the construction and operation of the Proposed Development and present additional mitigation measures for managing significant effects where applicable. This chapter provides a summary of mitigation measures and good practice environmental management commitments to be followed to avoid, reduce or offset the potential effects of the Proposed Development on the receiving environment. These mitigation measures are listed in **Table 15-1: Schedule of Environmental Mitigation** and are a commitment of the Applicant.

15.1.2 Embedded mitigation comprising 'Design Mitigation' and general 'Construction Good Practice' has been incorporated into the description of the Proposed Development; and as such has been assessed as being part of the development proposals. The Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plan (SpPPs) have been included within the schedule of environmental mitigation for completeness.

15.1.3 The implementation of the Construction Environmental Management Plan (CEMP) would be managed on-site by the Principal Contractor and their suitably qualified Environmental Clerk of Works (ECoW), with support from other environmental professionals as required (i.e. the Planning Monitoring Officer).

15.1.4 The following mitigation codes are used in this section:

- LV – Landscape and Visual;
- BD – Biodiversity;
- OM - Ornithology;
- CH – Cultural Heritage;
- HYD – Hydrology, Hydrogeology, Geology and Soils;
- NV – Noise and Vibration;
- FR – Forestry;
- TT – Traffic and Transport, and
- CD – Construction and Design.

Table 15-1: Schedule of Environmental Mitigation

Ref	Description	Timing
LV1	Replacement planting of the broadleaf woodland on the floor of Glen Finart will be undertaken to reinstate the native woodland along the existing OHL Operational Corridor and temporary diversion OHL Operational Corridor, subject to agreement with the landowner.	Post-Construction
BD1	A portion of felled tree stems, limbs and brash will be retained in piles within the operational corridor (subject to landowner agreement) to help mitigate the loss of habitat connectivity for small mammals; and to create habitat resources for invertebrates; reptiles; and amphibians. This, in turn, will help provide new foraging opportunities for protected species such as pine marten and bats due to a potential greater abundance in their prey species.	Construction
BD2	Invasive non-native species will be demarcated by the ECoW and treated by the Principal Contractor or their appointed agent(s) to prevent further spread during the construction period. No works will occur within at least 7 m of identified invasive non-native plant species to prevent further spread[211].	Construction
OM1	In accordance with the Bird SpPP pre-construction black grouse lek surveys will be undertaken within 1.5 km of the Site (including helicopter routes) across the northern and central sections of the proposed OHL alignment. Surveys should encompass the dawn period, one hour before sunrise to two hours after and could be undertaken by the ECoW if suitably qualified. If works are scheduled to commence within the March to May period pre-construction surveys must be undertaken the previous year.	Pre-commencement, Construction
OM2	No helicopter flight routes will be permitted within 1000 m of any identified lek sites during the period March to May inclusive during the peak lekking periods (one hour prior to sunrise until two hours after sunrise and two hours before sunset to one hour after). The above default stand-off distance will be implemented until and unless pre-construction surveys identify that lekking ends earlier or later than 2 hours after sunrise. A flight plan will be developed to show identified lek sites and exclusion zones.	Construction
OM3	For all other works a default stand-off distance of 750 m from identified lek sites will be applied. As above the timings of the stand-off period will be determined by lekking activity recorded during the pre-construction surveys. The default stand-off will apply from March to May inclusive during the peak lekking periods (one hour prior to sunrise until two hours after sunrise and two hours before sunset to one hour after). The stand-off distance of 750 m is a precautionary distance that may be revised following an evaluation by the ECoW of factors including the nature of works proposed in the area and the line of sight between the works and the lek (e.g. hills or woodland could screen the works).	Pre-commencement, Construction
OM4	Works will be scheduled to limit the program of activities, including helicopter flights, between the period March to May inclusive across the central section (Towers 28 to 47). This is particularly relevant to works 'commencing' during this period, e.g. mobilisation and installation of access tracks as such works would disturb any black grouse in the area.	Pre-commencement, Construction
OM5	The ECoW will monitor identified leks throughout the period March to May inclusive to determine if lek sites are still occupied, and therefore if stand-off distances still apply, and to monitor compliance with the above mitigation.	Construction
CH1	Heritage assets with visible remains that are within the 50 m construction area around a tower, or within the access tracks related to the Proposed Development will be demarcated prior to the commencement of construction to ensure visibility of the heritage asset location to all members of the construction crew.	Pre-construction and throughout construction

[211] Environment Agency (2013). Managing Japanese knotweed on development sites. Available at: https://www.gov.uk/government/publications/japanese-knotweed-managing-on-development-sites

Ref	Description	Timing
	Demarcation will be achieved using high visibility marker posts set 5 m from the visible remains of the heritage asset, with the markers retained throughout the construction phase. Demarcation of heritage assets will be the responsibility of the Principal Contractor, with identification of the heritage assets made on the ground by an experienced archaeologist using the baseline information provided in Appendix 9.1 Cultural Heritage Gazetteer. The heritage asset to be demarcated are as follows: • Ballochyle Sheepfold (***HA16***)	
CH2	In the event that a heritage asset cannot be avoided by construction works, a programme of archaeological recording will be undertaken to ensure its preservation by record. Any archaeological works required will be set out within a Written Scheme of Investigation (WSI) to be agreed with West of Scotland Archaeological Services (WoSAS). The works may involve topographic survey, building recording, excavation etc. The methodology for dealing with any archaeological features or artefacts will be detailed within the WSI.	Construction
CH3	Where a tower construction area or access track is within an area of high archaeological potential and ground breaking works are required, archaeological monitoring of construction works at those locations is recommended. The monitoring works will be conducted according to a WSI detailing the defined locations for monitoring to be agreed between WoSAS and the appointed archaeologist prior to construction commencing. The WSI will detail the methodology for the monitoring and any subsequent excavation, sampling, recording, reporting, and post-excavation requirements for any archaeological discoveries.	Construction
HYD1	Private Water Supplies (PWS) will require further investigation by the Principal Contractor prior to construction to verify the infrastructure location, supply type, properties supplied and their uses. Further consultation will be required with property owners as part of this process and further unregistered PWS may need to be established. The Principal Contractor will be required to consider all construction activities and satisfy themselves that they are aware of all PWS in the local area that may be at risk of adverse effects as a result of the Proposed Development. Should any PWS be identified which require protection, specific mitigation will be developed and agreed with SEPA. Tower micrositing to be considered to avoid the infrastructure. If applicable, water quality and/ or quantity monitoring of PWS before, during and after construction will be implemented.	Pre-construction and throughout construction
HYD2	The Principal Contractor will undertake consultation with SEPA and Scottish Water at the pre-construction stage to ascertain current abstraction operations and confirm local sources and asset locations. The Principal Contractor is then responsible for establishing the potential for impact and agree precautions with SEPA to protect these assets during the construction of the Proposed Development.	Pre-construction
HYD3	Peat stability mitigation measures include, as listed in Section 8 of **Appendix 10.1 Peat Landslide and Hazard Risk Assessment**: • Ground investigation (including further peat depths using methodology agreed with an Unexploded Ordnance Engineer) will be undertaken at locations where ground works are required, as confirmed by the Principal Contractor(s). • Microsite the tower or access track in order to avoid the area of concern (subject to non-violation of other constraints). • Avoid placing excavated material or other forms of loading on or immediately above breaks of slope or any other potentially unstable slopes. • Avoid removing slope support, particularly where slope stability has been highlighted as of concern. Consider floating track at appropriate locations to avoid removing slope support. • Use of retaining structures, such as gabion terracing to support specific slopes.	Pre-construction and throughout construction

Ref	Description	Timing
	• Mitigation measures will be monitored by an ECoW throughout construction.	
HYD4	All structures will be designed and constructed following good practice techniques and will be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change. Key measures identified to minimise alterations to surface water drainage patterns include: • application of sustainable drainage techniques to increase peak lag time and implementation of cross-drains at appropriate intervals and frequent discharge points to reduce scour potential; • minimising the size and duration of in-channel works; and • appropriate design of crossing structures to ensure sufficient capacity to convey 1:200-year storm flows and enable fish passage.	Pre-construction and throughout construction
HYD5	Key measures identified to minimise increase to surface water flows include: • slowing surface water and channel flows in the surrounding forested areas to encourage infiltration and increase lag time to downstream channels and potentially reduce peak flows; • planting vegetation and retaining forestry material within the catchments to encourage infiltration and evapotranspiration; and • silt traps can also be designed to slow flow of run-off and promote settlement and retention of sediment.	Pre-construction and throughout construction
FR1	Review of tree retention at detailed design stage. The areas of ancient and semi natural woodland impacted by the Proposed Development could potentially be further reduced through micrositing within the Limit of Deviation (LoD) where a combination of factors (e.g. topography, tower height, tree species and tree height) may reduce the area of Ancient Woodland defined as being within the Operational Corridor (OC) and therefore requiring removal. For example, the extent of tree clearance may be reduced where it can be demonstrated through further detailed survey that the trees can be safely overflown by the OHL conductors or that the trees can be accommodated within closer proximity to the Proposed Development. This is likely to include ravines, or deeper edged watercourses with riparian, Ancient Woodland and broadleaved semi-natural woodland, e.g. such as that found between Towers 17 and 18. There may also be opportunities to further retain native scrub/ understorey layers in areas where existing tree cover does not breach safety clearances and allows for safe construction activity.	Pre-construction and throughout construction
FR2	The Woodland Reports, included within **Appendix 12.1**, identify all areas of felling required to form the OC, access tracks and temporary OHL diversions. In addition, the Woodland Reports have sought where necessary to reduce the risk of future wind throw by identifying felling to stable forest edges outside of the OC. The Woodland Reports have also sought to agree good forest landscape design following best practice as defined by Forestry Commission (Scottish Forestry) Guidance (1998)[212]. The delivery of the felling identified in the Woodland Reports has been developed in conjunction with the landowners / forest managers to deliver felling and restocking out with the OC. The Applicant has agreed the use of the 'Woodland Report' and associated woodland impact assessments to confirm the extent of woodland removal required. This proposed felling will be further reviewed with the landowners to link in with their existing Long Term Forestry Plan (LTFP), which will, once amended, be required to adhere to the UK Forestry Standard (UKFS) guidance[213] as part of the approval process with Scottish Forestry. This approval is required prior to any felling being undertaken out with the Proposed Development	Pre-construction and throughout construction

[212] Forestry Commission (1998). Forest Design Planning: A Guide to Good Practice. Available at: https://forestry.gov.scot/publications/291-forest-design-planning

[213] Forestry Commission (2017). United Kingdom Forestry Standard (UKFS), Available at: https://forestry.gov.scot/sustainable-forestry/ukfs-scotland#:~:text=What%20is%20the%20UK%20Forestry,guidelines%20for%20sustainable%20forest%20management.

Ref	Description	Timing
	OC or proposed access tracks. This method of addressing felling has been successfully used on a number of recent large OHL projects and has delivered forest design to the satisfaction of Scottish Forestry as the statutory authority.	
FR3	Given that the Proposed Development would result in the loss of 84.85 ha of forest and woodland (including the temporary removal of 3.8 ha of Ancient Woodland and broadleaved semi-natural woodland associated with temporary OHL diversions), the Applicant is committed to making arrangements to plant off-site the equivalent area of woodland as set out in **Appendix 12.4 Compensatory Planting Strategy**, meeting the Scottish Government's CoWRP[214] objective of no net loss of woodland. Following the removal of the existing OHL, there is potential for woodland expansion within the historical OC. This presents an opportunity to replant part of the compensatory planting requirement within close vicinity to the Proposed Development, although this requires to be discussed and agreed with the respective landowners.	Pre-construction
NV1	For activities such as piling and rock breaking, a noise barrier which provides full line of sight screening from the Noise Sensitive Receptor (NSR) will be utilised, to minimise significant effects. BS 5228-1 advises that noise barriers can provide a reduction in noise levels of 10 dB when the plant is completely screened from a receptor. The effectiveness of a noise barrier depends upon its length, effective height, position relative to the noise source and to the receptors, and the material from which it is constructed. During the development of the project, if significant rock breaking activities are identified as required at specific locations for ten consecutive days or more, the CEMP should provide a clear procedure for the Principal Contractor to apply effective management and mitigation of the activity, in line with best practicable means. If required, the rock breaking activity will be re-assessed following specific details of location and duration of the activity becoming available.	Construction
NV2	The assessment identifies the potential for significant effects during the proposed helicopter operations associated the movement of materials, for OHL tower assembly and during the conductoring phase. Due to the nature of helicopter noise, specific measures that can be undertaken to reduce noise generated at the source are limited. Mitigation measures generally relate to the operation of the helicopters, rather than specific measures that can be taken to reduce the noise generated at the source. Mitigation measures that will be adopted are detailed below: • provision of information to the public on expected helicopter activity duration, number of flights, flight paths, in particular for those dwellings within set-back distance of 300 m from proposed helicopter routes; • provision of information to the public related to the aircraft operation and methods of ensuring the safety of both the local residents and helicopter operators; • helicopter fleet will be selected to provide quieter helicopter operation as practicable;	Construction

[214] Forestry Commission (2009). The Scottish Government's Policy on Control of Woodland Removal. Available at: https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal)

Ref	Description	Timing
	• review of the locations of helicopter routes and tower assembly areas to maximise the separation distance from NSRs; • provide contact details for a nominated site contact for local residents to contact with complaints and for engaging with local residents; • training of helicopter operatives to raise awareness of noise, nearby NSRs and the importance of reducing impacts where practicable and safe to do so; and • restrictions on activities to allow for a reduction of potential effects e.g. helicopter flights limited to between 0900 – 1900 hours, to ensure some respite for local residents within setback area.	
NV3	If rock breaking or vibratory roller and compaction activities are identified as required along the access tracks (within 100m and 50m of nearby NSRs, respectively) for a duration of ten days or more, the activities should be re-assessed following confirmation of the details of location and anticipated duration of the activity becoming available.	Pre-construction, Construction
NV4	All works will be undertaken in accordance with a CEMP. Noise and vibration mitigation during the construction phase of the Proposed Development will include Best Practicable Means (BPM) as per BS 5228-1 and BS 5228-2. The CEMP will incorporate the inclusion of BPM and the measures presented below, as a minimum: • the appropriate selection of plant, construction methods and programming: Only plant conforming with or better than relevant national or international standards, directives or recommendations on noise or vibration emissions will be used; • construction plant will be operated and maintained appropriately, having regard to the manufacturer's written recommendations or using other appropriate operation and maintenance programmes which reduce noise and vibration emissions; • all vehicles and plant will be switched off when not in use; • choice of routes and programming for the transport of construction materials, spoil and personnel to reduce the risk of increased noise and vibration impacts; • vehicle and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, be maintained in good working order and operated in such a manner as to minimise noise emissions; • plant items that comply with the relevant UK noise limits applicable to that equipment will be used; • the positioning of construction plant and activities to minimise noise and vibration at sensitive locations; • equipment that breaks concrete by munching or similar, rather than by percussion, will be used as far as is practicable; • design and use of localised screens, where necessary, to provide acoustic screening at the earliest opportunity; • the use of mufflers on pneumatic tools, will be used as far as is practicable; • provision of information to the public on expected construction noise and vibration, including duration, in particularly for those likely to be exposed to moderate or large effects; • prior consent agreement for any works outside core hours, where there is potential for significant adverse effects; • contact details for nominated site contact for local residents to deal with complaints and engaging with local residents; • training of site personnel to raise awareness of noise, vibration and nearby NSRs;	Construction

Ref	Description	Timing
	• selection of quiet and low noise equipment and methodologies, where practicable; • selection of construction method and plant to minimise the vibration generated, where practicable; • restrctions on some activities to less sensitive times e.g restricting piling activities to daytime only; and • use of less intrusive alarms, such as broadband vehicle reversing warnings. A Framework CTMP has been prepared (see mitigation ref TT4) as part of the application (as provided in **Appendix 13.1 Framework CTMP).** The CTMP provides information to demonstrate how construction traffic is to be managed to minimise the impacts on the surrounding road network and nearby NSRs.	
TT1	Passing places will be constructed along the local roads in advance of the works commencing. The location and size of each passing place will be determined and agreed with Argyll and Bute Council for each route. During the works the access routes will be monitored for damage caused by indiscriminate passing of vehicles. Where considered necessary additional passing places will be provided in these locations.	Pre-construction and during construction
TT2	Existing and new accesses will be improved to double gate access bell mouth layouts. Where required visibility will be improved or provided at the access points, appropriate for the nature and speed of the road. Visibility will be measured from a point 2.4 m or 4.5 m back from the carriageway edge following agreement by Argyll and Bute Council. All public road improvement works will be approved by Argyll and Bute Council and individual traffic management plans agreed before works commence.	Pre-construction
TT3	Temporary construction site signage will be erected on the local road network in the vicinity of each of the proposed construction accesses, and at other locations as considered necessary, to warn people of construction activities and associated construction vehicles. The purpose of such signage is to provide driver information and to maintain road safety along the construction vehicle route. The exact nature and location of the signage will be agreed with Transport Scotland and Argyll and Bute Council prior to construction activity commencing on site.	Pre-construction and throughout construction
TT4	Prior to the commencement of any onsite activities, a detailed Construction Traffic Management Plan (CTMP) will be prepared and agreed with Argyll and Bute Council and Transport Scotland. **Appendix 13.1 Framework CTMP** will be updated as and when additional information becomes available. There are a number of traffic management measures that are proposed to reduce the magnitude of effects of construction traffic on the surrounding road network, where there is the potential for impact. These measures will be agreed with Argyll and Bute Council prior to construction and full detailed measures shall be included within the finalised CTMP. Included within **Appendix 13.1** is the **Framework CTMP** prepared to take account of similar project experience on Traffic and Transport matters. The measures proposed as part of the full CTMP will include as a minimum the following: • the Principal Contractor will liaise with all relevant Local Authorities and Transport Scotland to determine appropriate traffic management arrangements for construction vehicle movements; • the Principal Contractor will agree appropriate and safe routes to and from the Site with the relevant Local Authorities and Transport Scotland. All construction vehicles will be required to use approved access routes only; • enforcement of routing to the Site for all personnel and deliveries; • appropriate measures will be taken to avoid congestion and queuing at site entrances;	Pre-construction, construction

Ref	Description	Timing
	• issues relevant to the public road network that the Principal Contractor should consider and mitigate against include, inter alia, measures to minimise dust and dirt being deposited due to construction operations; • a Travel Plan to encourage lift sharing/ shuttle bus access to site for construction staff; • requirement for all drivers to attend an induction to include a safety briefing, the need for appropriate care and speed control, particularly in sensitive areas, identification of specific sensitive areas, identification of the specified route, and the requirement not to deviate from the specified route; • appropriate signage warning other motorists of the presence of construction vehicles should be implemented, where appropriate; • road brushes will be deployed to keep the roads as clean as reasonably practicable when required; • during times of high frequency deliveries or large loads, local residents shall be notified in advance, and with sufficient notice, to avoid any disruption; • appropriate signage restricting vehicle speeds to be considered in discussion with the relevant Local Authorities and Transport Scotland; • core paths and other recreational routes are designed to cater for non-motorised travel and general public access. The alignment of the proposed OHL and associated access tracks does cross core paths. An Outdoor Access Plan will be produced to demonstrate how public access will be maintained and managed during construction; • public access safety advice signage will be installed at all access points from the public road network. All excavations shall be surrounded by barriers. All construction works will be undertaken with strict adherence to the current Construction Design and Management regulations; • information on the project will be distributed using a variety of methods to the public and local communitites, including the project website, local newsletters, public notices and public meetings by the project community liaison officer. A construction liaison committee comprising of the project community liaison officer will meet periodically to provide updates on the construction programme, vehicle movements and public road improvements. Representatives from SSEN Transmission and the Principal Contractor will attend. Contact details for key project staff will be provided to the community in order for any complaints or information requests to be actioned; and • the Principal Contractor will monitor and ensure that agreed mitigation measures are being implemented.	
CD1	Adhere to all the General Environmental Management Plans (GEMPs) included in **Appendix 3.2: General Environmental Management Plans**.	Pre-commencement, Construction
CD2	Adhere to all the Species Protection Plans (SpPPs) included in **Appendix 3.3: Species Protection Plans.**	Pre-commencement, Construction