Lewis Hub (AC Substation and HVDC Converter Station)

Environmental Impact Assessment Report

Volume 2 – Main Report

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Scottish & Southern Electricity Networks
TRANSMISSION

CONTENTS

GLOSSARY OF TERMS AND ABBREVIATIONS

Term/Abbreviation	Expanded Term/Definition
ADT	Average Daily Traffic
ACoW	Archaeological Clerk of Works
ACIfA	Associate of Chartered Institute for Archaeologists
Ambient Noise Level	The all encompassing noise level measured in $L_{Aeq,T}$. The Ambient Noise Level incorporates background sounds as well as the industrial source noise under consideration.
AOD	Above Ordnance Datum
Background Noise Level	The noise level in the absence of the industrial source noise under consideration, measured in L_{A90}.
BAP	Biodiversity Action Plan
Baseline Studies	Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed
BNG	Biodiversity Net Gain
BRP	Bat Roost Potential
CA	Conservation Area
CAR	Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)
CDM Regulations	Construction (Design and Management) Regulations 2015
CEMP	Construction (or Contract) Environmental Management Plan
Characteristics	Elements, or combinations of elements, which make a contribution to distinctive landscape character.
CIEEM	Chartered Institute of Ecology and Environmental Management
CifA	Chartered Institute for Archaeologists
CIHT	Chartered Institution of Highways & Transportation
CnES	Comhairle nan Eilean Siar
Core Path	Recreational routes identified by Planning Authorities considered to provide the public reasonable access throughout their area.
Crannog	Artificial island, typically interpreted as a settlement their date ranges from the Neolithic to Medieval
CTMP	Construction Traffic Management Plan
Cumulative Effects	Effects arising from the additional or combination of developments which are in construction, have been consented or are reasonably foreseeable. May be experienced in combination, concurrently or sequentially.
dB (A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

Term/Abbreviation	Expanded Term/Definition
dB (decibel)	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value and the scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2x10^{-5}$ Pa).
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
DfT	Department for Transport
Direct Effect	An effect that is directly attributable to the proposed development.
DMRB	Design Manual for Roads and Bridges
DSA	Desk Study Area
EcIA	Ecological Impact Assessment
Ecological Features	Habitats, species and ecosystems.
ECoW	Ecological Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIA Regulations	
EIAR	Environmental Impact Assessment Report
Feature	Particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposals.
FLS	Forestry and Land Scotland
FPM	Freshwater Pearl Mussel
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
FSA	Field Survey Area
GDL	Gardens and Designed Landscapes
GE	Geotechnical Engineer
GEMP	General Environmental Management Plan
GIS	Geographical Information System
GPP	Guidance for Pollution Prevention
GSP	Grid Supply Point
GWDTE	Groundwater Dependent Terrestrial Ecosystem
ha	Hectare
HER	Historical Environment Record
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
HES	Historic Environment Scotland

Term/Abbreviation	Expanded Term/Definition
HGV	Heavy Goods Vehicle
HMP	Habitat Management Plan
HRA	Habitat Regulations Appraisal
HVDC	High Voltage Direct Current
IEMA	Institute of Environmental Management and Assessment
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Key Characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.
km	Kilometre
kV	Kilovolt – one thousand volts
L_{10} & L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
Land Cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Land Use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Assessment (LCA)	The process of identifying and describing variation of the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes

Term/Abbreviation	Expanded Term/Definition
	distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Type (LCT)	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Features	A prominent eye-catching element, e.g. wooded hilltop and church spire
Landscape Quality (or Condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
LB	Listed Building
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LDP	Local Development Plan
LGV	Light Goods Vehicles
LHRSG	Lewis and Harris Raptor Study Group
LOD	Limit of Deviation
LVIA	Landscape and Visual Impact Assessment
m	Metre(s)
m^2	Square Metres
mAOD	Metres Above Ordnance Datum
MAGIC	Multi-Agency Geographic Information for the Countryside
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
MBBS	Moorland Bird Breeding Surveys
Methodology	The specific approach and techniques used for a given study.
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints
Mitigation Measures	Measures including any process, activity or design process to avoid, reduce, remedy or compensate for adverse impacts of a development.

Term/Abbreviation	Expanded Term/Definition
mm	Millimetre
Mph	Miles per hour
MW	Megawatt
NGR	National Grid Reference
NPF	National Planning Framework
NPF4	National Planning Framework 4
NRHE	National Record of Historic Environment
NS	NatureScot
NTS	Non-Technical Summary
NVC	National Vegetation Classification
OHL	Overhead Line
OHMP	Outline Habitat Management Plan
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
PIA	Personal Injury Accidents
PLHRA	Peat Landslide Hazard Risk Assessment
PMP	Peatland Management Plan
PoE	Port of Entry
PPG	Pollution Prevention Guidance
PWS	Private Water Supply
Receptor	Physical landscape resource, special interest or individual or group experiencing view liable to change as a result of the Proposed Development.
Receptor Location	Location occupied by identified receptors.
Residual Noise Level	The Ambient Noise Level in the absence of the industrial source noise under consideration, measured in $L_{Aeq,T}$.
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
Scoping	The process of identifying likely significant effects of a development on the environment and establishing the environmental topics to be assessed as part of the Environmental Impact Assessment, via the scoping process as defined within regulation 12 of the EIA Regulations.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
SEPA	Scottish Environment Protection Agency

Term/Abbreviation	Expanded Term/Definition
Setting	Setting is more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape of townscape, the view from it or how it is seen from areas round about, or areas that are important to the protection of the place, site or building (SPP 2014).
Shieling Hut	Hut or small dwelling, usually situated in upland areas and associated with seasonal grazing practices.
Significance	A measure of importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic.
Significant Effect	An effect which is considered by the assessor to be "significant" in terms of the EIA Regulations which require the identification of significant effects.
Site	The site is defined as the area of land occupied by the Proposed Development
SM	Scheduled Monument
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area – designated under Directive 2009/147/EC on the conservation of wild birds (the Birds Directive)
Specific Noise Level	The noise level measured in $L_{Aeq,T}$ attributed to the industrial noise source under consideration alone.
SPP	Species Protection Plan
SSEN Transmission	Scottish and Southern Electricity Networks Transmission
SSSI	Site of Special Scientific Interest
Stakeholders	Organisations and individuals who could affect or could potentially be affected by the Proposed Development
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences
SuDS	Sustainable Drainage Systems
TA	Techincal Appendix
TMP	Transport Management Plan
TN	Target Note
UK	United Kingdom
UKHab	UK Habitat Classification
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual Effects	Effects on specific views and on the general visual amenity experienced by people
Visual Receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visualisation	A computer simulation, photomontage or other techniques illustrating the predicted appearance of a development from a

Term/Abbreviation	Expanded Term/Definition
	known location. Presented either as a wireline image (outline of the development) or as a photomontage which merges a rendered version of the development into a photograph of the view/landscape.
Volts	The international unit of electric potential and electromotive force
VP	Viewpoint (relating to Landscape and Visual)
VP	Vantage Point (relating to Ornithology)
WFD	Water Framework Directive
Wireline	A computer-generated line drawing of the DTM (digital terrain model) and the Proposed Development from a known location.
WoSAS	West of Scotland Archaeology Service
ZOI	Zone of Influence
ZTV (Zone of Theoretical Visibility)	A map, usually digitally produced, showing areas of land within which, a development is theoretically visible.

1. INTRODUCTION & BACKGROUND

1.1 Overview

1.1.1 This Environmental Impact Assessment Report (EIAR) has been prepared by Ramboll UK Ltd on behalf of Scottish Hydro Electric (SHE) Transmission plc ("the Applicant") who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), owns, operates and develops 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. This EIAR has been prepared to accompany an application for planning permission under the Town and Country Planning (Scotland) Act 1997 (as amended) ('the 1997 Act')1.

1.1.2 The Applicant is seeking Planning Permission in Principle (PPiP) under the 1997 Act for consent to construct and operate a new strategic transmission hub approximately 2 km southwest of Stornoway on the Isle of Lewis (the 'Site'). The project is referred to and described as the Lewis Hub (and hereafter also referred to interchangeably as 'the Proposed Development').

1.1.3 The location of the Site is shown on **Figure 1.1: Site Location (EIAR Volume 3a).** The key components of the Proposed Development would be:

- High Voltage Direct Current (HVDC) Converter Station;
- 132 kV AC and 400 kV Substation; and
- Ancillary works, including construction of temporary and permanent access, establishment of new junctions from the A859 and the minor Arnish road, vegetation clearance, rock extraction and reinstatement and restoration of peat.

1.1.4 The Proposed Development is set out in further detail Chapter 2: Description of the Proposed Development (EIAR Volume 2).

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

1.1.6 The scope of this application is limited to construction and operation of the Proposed Development. The Proposed Development would not have a fixed operational life, and it is assumed that the Proposed Development will be operational for 40 years or more. The effects associated with the construction phase can be considered to be representative of worst case decommissioning effects, and therefore no separate decommissioning assessment is proposed as part of the EIAR.

1.2 Project Need

1.2.1 The Applicant owns and maintains the electricity transmission network across the north of Scotland and holds a transmission licence under Section 6(1)(b) of the *Electricity Act 1989* ("the 1989 Act"). The Applicant has a statutory duty under Section 9(2) of the 1989 Act to develop and maintain an efficient, co-ordinated, and economical system of electrical transmission, and a separate duty to facilitate competition between current and new generators of electricity. Where there is a requirement to extend, upgrade or reinforce its transmission network, the Applicant's aim is to achieve an environmentally aware, technically feasible and economically viable option which would cause the least disturbance to the environment and the people who use the area.

National Significance

1.2.2 In July 2022, National Grid ESO (as of 1st October 2024 now known as the National Energy System Operator(NESO)) published the Pathway to 2030 Holistic Network Design, detailing the onshore and offshore electricity transmission network infrastructure required to enable the forecasted growth in renewable electricity across Great Britain, specifically the UK and Scottish Government's 2030 offshore wind allocations of 50GW and 11GW (through the Crown Estate and ScotWind leasing rounds) which are the main drivers for these upgrades. This confirmed the need for a significant and strategic increase in the capacity of onshore and offshore electricity transmission infrastructure to deliver 2030 targets and support the pathway to net zero across

[1] Town and Country Planning (Scotland) Act 1997. [Online] Available at: https://www.legislation.gov.uk/ukpga/1997/8/section/46 [Accessed: November 2024]

Great Britain and Scotland and both the UK and Scottish Government commitments to meet legally binding net zero targets by 2050 and 2045 respectively.

1.2.3 To enable the delivery of the required transmission infrastructure for 2030, Ofgem established a new regulatory framework for the Transmission Operators, including SSEN Transmission, to provide regulatory approval for the delivery and funding of the required transmission system infrastructure known as the Accelerated Strategic Transmission Investment (ASTI) framework[2]. For SSEN Transmission, the ASTI Framework gives regulatory approval for the delivery of the network infrastructure identified in the Pathway to 2030 Holistic Network Design. Ofgem and the Department for Business, Energy and Industrial Strategy (BEIS), now the Department for Energy Security and Net Zero (DESNZ), have supported and endorsed the Pathway to 2030 Holistic Network Design through the establishment of the Offshore Transmission Network Review (OTNR) and Central Design Group (CDG). This makes clear that all of the reinforcements identified in the Holistic Network Design are required and essential if the UK and Scottish Government's offshore wind targets are to be met.

1.2.4 The Pathway to 2030 Holistic Network Design states that an integrated design for the electricity transmission network is needed to connect the new, large-scale renewable sources of energy. It is crucial that this investment, including the Proposed Development, is delivered in full along with the other elements of the transmission system reinforcement required. Failing to progress any part of this holistic design will lead to 2030 targets being missed.

1.2.1 In April 2024, the Scottish Government announced that an interim target of a 75% reduction on the baseline 1990 national greenhouse gas levels by 2030 would not be achievable. New legislation is now set to be introduced with regard to the ongoing management and monitoring of emissions to 2045, but at present the net zero 2045 target remains in place. The fact that the interim 2030 targets will not be reached emphasises that, while progress has been made with respect to greenhouse gas emission being reduced and the deployment of renewable energy in Scotland, there is still a way to go in reaching overall targets. Therefore, there is a requirement to deploy additional clean energy resource to meet Scotland's energy and climate change objectives.

1.2.2 The Proposed Development forms a key part of the Western Isles Connection Project, which will connect the Western Isles to the mainland of Scotland, allowing renewable energy generation to connect to the existing transmission network on the mainland.

1.2.3 The need for these reinforcements is also underlined within the British Energy Security Strategy (BESS), which recognised the significant impact on the cost of living from rising gas prices and sets out a plan to increase the supply of electricity from zero-carbon British sources to deliver affordable, clean, and secure power in the long term.

1.2.4 In addition, the Western Isles Connection will reinforce the transmission network locally, supporting the ability to decarbonise heating systems as set out in the Scottish Government Energy Efficient Scotland Roadmap. In terms of Net Zero and long term energy use, this will support a reduction in the use of non-renewable generation sources to power homes and businesses as well as support forecast increases in electricity consumption driven by the electrification of homes, businesses and vehicles.

1.2.5 The Proposed Development would have capacity for further connections from other generation sources, such as onshore wind. Whilst these are developed by third party developers and not SSEN Transmission, it is deemed economic and efficient for SSEN Transmission to provide for capacity to permit connections from such developments beyond those connections which are currently contracted.

National Development

1.2.6 The Proposed Development is classed as a National Development under Section 3A of the 1997 Act and is of a type that falls within National Development 3 'Strategic Renewable Energy Generation and Transmission Infrastructure' in National Planning Framework 4 (NPF4)[3]. The National Developments identified in NPF4 are described as: "*significant developments of national importance that will help to deliver the spatial strategy*".

[2] https://www.ofgem.gov.uk/decision/decision-accelerating-onshore-electricity-transmission-investment

3 Scottish Government, National Planning Framework 4 (NPF4). [Online] Available at: https://www.gov.scot/publications/national-planning-framework-4/pages/5/

1.3 Legislative and Statutory Context

1.3.1 PPiP for the Proposed Development is sought from Comhairle nan Eilean Siar ('CnES') under the 1997 Act.

1.3.2 The Applicant, as a transmission licence holder under the 1989 Act, has a statutory duty under paragraph 3 of Schedule 9 to the 1989 Act when formulating relevant proposals 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".

1.4 Purpose of the EIAR

1.4.1 The purpose of this EIA Report is to identify and assess the potential direct and indirect environmental and social impacts of the Proposed Development, so steps can be taken to mitigate or minimise them.

1.4.2 The EIA Regulations contain two schedules: Schedule 1 lists projects where EIA is mandatory, while Schedule 2 lists projects where EIA may be required 'where proposed development is considered likely to give rise to significant effects on the environment by virtue of factors such as its nature, size or location'.

1.4.3 The Proposed Development is not of a type listed within Schedule 1 and it is not directly identified within Schedule 2 of the EIA Regulations. However, given the Proposed Development's scale and nature, the Applicant has decided to undertake an EIA for the Proposed Development.

1.5 EIA Report Structure

1.5.1 This EIAR comprises five volumes:

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

1.5.2 Volume 1 includes a standalone NTS which describes the Proposed Development, and the likely significant effects predicted in a concise, non-technical manner.

1.5.3 Volume 2 of the EIA Report sets out the following information:

- Chapter 1: Introduction and Background;
- Chapter 2: Description of the Proposed Development;
- Chapter 3: Site Selection and Alternatives;
- Chapter 4: EIA Process and Scope;
- Chapters 5 to 12: technical topic chapters that include an assessment of the likely significant effects of the Proposed Development on receptors of relevance to each of the topic-based assessments, a description of the proposed mitigation measures, and confirmation of the predicted residual effects. A consideration of in-combination cumulative effects is also discussed where relevant;
- Chapter 13: Summary of Effects; and
- Chapter 14: Schedule of Environmental Mitigation.

1.5.4 Volume 3 contains supporting figures referred to in Volume 2 of the EIA Report. It also comprises photomontage visualisations of the Proposed Development from a series of viewpoints that have been agreed with CnES and NatureScot in accordance with the requirements of the Scoping Opinion.

1.5.5 Volume 4 comprises supporting appendices for Volume 2 of the EIA Report. Appendices include further detailed reporting or information to support the EIA Report and technical assessments contained therein.

1.5.6 Volume 5 comprises the confidential information supporting appendices for Volume 2 of the EIA Report. Certain environmental information is exempt from disclosure if the information would, or is likely to, prejudice the protection of the environment to which the information relates.

1.6 Supporting Documents

1.6.1 Additional documentation that will be submitted with this application includes:

- The TCPA application (the content of the application is set out in **Chapter 2: Description of the Proposed Development, EIAR Volume 2);**
- Cover Letter;
- Planning Statement;
- Biodiversity Net Gain Assessment Report;
- Pre-application Consultation Report; and
- a series of technical design drawings.

1.7 EIA Quality

1.7.1 The EIAR has been prepared to meet the requirements of Schedule 4 of the EIA Regulations and the Institute of Environmental Management and Assessment (IEMA) Quality Mark Criteria.

1.7.2 In accordance with regulation 5(5) of the EIA Regulations, the EIAR has been compiled and approved by professional EIA practitioners at Ramboll, holding relevant undergraduate and post-graduate degrees, and/or membership of Institute of Environmental Management and Assessment (IEMA) (MIEMA) and Chartered Environmentalist (CEnv) status with the Society for the Environment.

1.7.3 The EIAR meets the requirements of the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark scheme. This is a voluntary scheme operated by IEMA that allows organisations to make a commitment to excellence in EIA and to have this commitment independently reviewed on an annual basis.

1.7.4 Each of the technical chapters provides details of the relevant professional memberships of the authors and the code of practice followed in order to confirm relevant competence. Details of each of the competent experts who have provided input to the EIAR are provided in **Technical Appendix 1.1 (EIAR Volume 4)**. The chapters also include details of the assessment methodology used, including the specific criteria for defining the sensitivity of the baseline environment, quantifying the magnitude of change and for assessing whether the effects are deemed significant or not significant under the terms of the EIA Regulations.

1.7.5 Best practice guidance as set out within the IEMA Quality Mark scheme requires identification of key limitations affecting the EIA process and the resultant EIAR. Limitations in methods are identified and discussed in each technical Chapter (6-10) 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 for the assessment and conclusions.

1.8 Notifications

1.8.1 In accordance with Regulation 21 of the EIA Regulations, the application and this EIAR will be advertised on the application website, in the Edinburgh Gazette and in the Stornoway Gazette.

1.8.2 Notice of the PPiP application, including this EIAR and associated documents and figures, will be available for viewing at the following public locations during normal opening hours:

- Comhairle nan Eilean Siar, Council Offices, Sandwick Road, Stornoway, HS1 2BW

1.8.3 Stornoway Library, 6 Kenneth Street, Stornoway HS1 2DP. Electronic versions of the application, including this EIAR are available to view and download from the Applicant's website: https://www.ssen-transmission.co.uk/projects/project-map/western-isles/ , and via the CnES online portal: https://www.cne-siar.gov.uk/planning-and-building-standards/planning/planning-applications/view-planning-applications/national-major-andor-eia-development-applications

1.8.4 The EIAR is available in other formats if required. For details, including costs, please contact:

Post: Mairi Rigby, Scottish and Southern Electricity Networks, 10 Henderson Road, Inverness, IV1 1SN

Email: LT14Lewishub@sse.com

1.8.5 Any representations should be made via the CnES online portal provided above.

2. PROJECT DESCRIPTION

2.1 Introduction

2.1.1 This chaper provides a description of the Proposed Development for the purposes of identifying and assessing likely significant effects. The chaper provides:

- a description of the location of the Proposed Development;
- a description of the physical characteristics of the Proposed Development, including the land-use requirements during construction and operational phases;
- a description of the main characteristics of the operational phase of the development; and
- an estimate, by type and quantity of the expected residues and emissions produced during construction and operation phases.

2.1.2 The description of the main characteristics, including expected residues and emissions, of the operational phase is made by reference to the typical activities associated with the operation of the Proposed Development. It is noted that there are no 'production processes' associated with this type of development.

2.1.3 This chapter is supported by the following Figures and Technical Appendices:

- Figure 2.1: Site Layout;
- Technical Appendix 2.1: Drainage Strategy;
- Technical Appendix 2.2: SSEN General Environmental Management Plans
- Technical Appendix 2.3: SSEN Species Protection Plans

2.1.4 Details of the project need are provided in **Chapter 1: Introduction (EIAR Volume 2)**, and discussion of the Site Selection process can be found in **Chapter 3: Consideration of Alternatives.**

2.2 Location of the Proposed Development

2.2.1 The Proposed Development is located on land approximately 2 km southwest of Stornoway on the Isle of Lewis ('the Site'), (approximate British National Grid reference for Site centre: 140348, 931932). The Site comprises an area of approximately 285 hectares (ha) and is split between two distinct geographical areas know as Arnish Moor on the eastern side and Creed North on the western Side of the A859 road. The location of the Site is shown on **Figure 1.1: Location Plan (EIAR Volume 3a).**

2.2.2 There are no residential properties within the Site boundary. The closest residential property is located approximately 200 m north of the Site infrastructure at Macaulay farm. The next closest settlement area is Marybank which is located approximately 1 km north of the Site.

2.2.3 The Site predominantly comprises modified grassland and wet heathland, as well as a line of trees and a small area of woodland. The landscape of the Site is relatively flat with a gentle slope from north to south. The River Creed (Abhainn Ghrioda) is located approximately 400 m north of the Site and there is an engineered drain which crosses the Site from west to east and discharges from the Site to the north. There is a second engineered drain to the south of the Site which flows into a tributary of the River Creed.

2.2.4 There are no designated assets located within the Site boundary. The closest designation is Lews Castle and Lady Lever Garden and Designed Landscape (GDL), located approximately 200 m northeast of the Site at its closest point. There are two Historic Environment Record (HER) assets recorded within the southern half of the Site (remains of shielings), as well as a number of assets recorded in the northern half of the Site, the largest of which is associated with the former Lewis Chemical Works.

2.2.5 There are no statutory designated sites within the Site. The Site lies approximately 6 km east of Lewis Peatlands Special Area of Conservation (SAC) and 3.6 km southwest of Tong Saltings Site of Special Scientific Interest (SSSI), which have no connectivity to the Proposed Development.

2.3 Characteristics of the Proposed Development

2.3.1 The Proposed Development would comprise a series of buildings, up to a maximum height of 27.5 m. The Site would comprise a new High Voltage Direct Current (HVDC) Converter station and associated 132 kV and 400 kV AC substation as illustrated in **Figure 2.1: Site Layout (EIAR Volume 3)**. These structures would be sited on two separate platforms, with a total area of 164,200 m^2. The Proposed Development would consist of the following key components.

High Voltage Direct Current (HVDC) Converter Station;

2.3.2 The HVDC Converter station would have an overall platform footprint of around 320 m by 310 m and a maximum height of 27.5 m and would consist of the following:

- two main converter buildings housing transformers, converters, dynamic brake system and DC hall;
- service and control building between the converter buildings;
- two AC Hall and Filter Equipment buildings; and
- a number of smaller auxiliary buildings (diesel generator, spares building, etc).

132 kV and 400 kV Substation

2.3.3 A series of buildings would be situated on a joint 400 kV/132 kV Substation platform. The platform footprint would be approximately 260 m by 250 m. The buildings that would be situated on the platform would comprise the following:

- three 132/400 kV Super Grid Transformer (SGTs) buildings, each with an overall footprint of around 45 m by 78 m and a maximum height of 20m. They would be enclosed to protect from the weather and reduce the noise impact;
- 400 kV GIS substation building and associated control building; and
- 132kV GIS substation building and associated control building.

Ancillary Works

2.3.4 Ancillary works would be required to facilitate construction and operation of the Proposed Development and would include:

- vegetation clearance;
- establishment of new junction bellmouths;
- Removal of existing land drainage channel as part of the peat removal/site clearance;
- extraction of rock from borrow pits;
- establishment of temporary and permanent access for the construction and maintenance of the Proposed Development;
- establishment of new drainage channels and attenuation ponds for site drainage (see **Technical Appendix 2.1: Drainage Strategy, EIAR Volume 4** for further detail);
- establishment and reinstatement of temporary site compounds; and
- establishment and reinstatement of borrow pit areas for peat management (see **Technical Appendix 10.2: Outline Peat Management Plan, EIAR Volume 4** for further detail),

Transmission / Distribution Line Connections

2.3.5 Connections will be required from the Proposed Development to the existing electricity transmission network on Lewis, as well as to the consented landfall point at Arnish. The connections to the existing network would comprise a number of overhead lines and underground cables carrying voltages of 400kV and 132 kV, as well as connections of lower voltages (33 kV, likely underground cables). The HVDC cable connection to the consented landfall point would also be placed underground; underground cables would comprise Permitted Development in accordance with Class 40 of the *Town and Country Planning (General Permitted Development) (Scotland) Order 1992 (as amended)*, while overhead lines would be the subject of separate consent application to Scottish Ministers, under the *Electricity Act 1989*.

Peat Reuse Proposals

2.3.6 The excavated peat on-site would potentially be re-used within the Site boundary, for example to infill borrow pit areas, as shown on **Figure 2.1 (EIAR Volume 3a),** and potentially to reinstate areas of degraded peat within the northern part of the Site, west of the A859. An Outline Peat Management Plan (PMP) providing further details on the management of peat is in **Technical Appendix 10.2: (EIAR Volume 4)**.

Drainage

2.3.7 A surface and foul water drainage strategy has been prepared for the Proposed Development (see **Technical Appendix 2.1, EIAR Volume 4)** and includes drainage and sustainable drainage (SuDS). SuDS mimic natural drainage processes to reduce the effect on the quality and quantity of runoff from developments and provide benefits to amenity and biodiversity. The SuDS have been integrated within the landscape proposals to enhance amenity, biodiversity, and habitat, whilst protecting and/or enhancing water quality.

2.3.8 The platforms would be drained via infiltration through the platform drainage blanket and an underground gravity pipe network for the buildings. The runoff from the platform and buildings would be collected and conveyed by a series of swales and attenuation basins. The swales and attenuation basins would be implemented to treat and attenuate the surface water runoff from the Site before discharging to adjacent watercourses within the Site boundary (see **Figure 2.1, EIAR Volume 3a**).

2.3.9 The proposed foul drainage scheme, including domestic flows from the office and welfare facilities, is discussed in **Technical Appendix 2.1, EIAR Volume 4.**The preferred option is to discharge the foul water via a pumping station, rising main and gravity sewer to the existing Scottish Water foul network. However, due to the technical challenges associated with the low flows and long length of mains to the connection point, this may not be possible. Alternative methods may be required such as a septic tank or package sewage treatment plant within the Site and subject to relevant SEPA licencing.These alternatives have not been assessed within the EIAR.

Security Fencing

2.3.10 A 3 m high palisade fence with 0.5 m diameter razor coil above would be installed around the perimeter of the platform. A 2.5 m high internal palisade fence would also be installed segregating the AC and HVDC platforms.

2.3.11 In addition, stock proof fening would be installed around elements of the infrastructure outside of the pallisade fencing (i.e. drainage, access roads, landscape areas). This would be a stock/deer proof fence to exclude grazing animals from impacting and damaging access and infrastructure, and allow establishment of landscaping and screen planting. The final alignment and location of access gates would be agreed through the detailed design stage and in consultation with landowners. Woodland planting is present at the Site perimeter which will be reinforced as part of the landscape strategy; it is anticipated that the fence would be installed on the inside of the woodland planting.

2.4 Land Take

Permanent Land Take

2.4.1 The permanent land take of the Proposed Development would be limited to the footprint of the operational development, this would comprise: hardstanding areas for the converter station and substation substation platforms and access tracks (all areas of the Proposed Development). This accounts collectively for approximately 10% of the total area within the Site.

Temporary Land Take

2.4.2 The temporary land take of the Proposed Development would be limited to: laydown areas, construction compounds, borrow pits and temporary access areas. This accounts collectively for approximately 10% of total area within the Site.

Summary of Land Take

2.4.3 The area of temporary and permanent land take associated with the Proposed Development is presented in **Table 2.1.**

Table 2.1: Summary of Land Take

Project Construction Element	Temporary (ha)	Permanent (ha)
Access Tracks	3.0	1.6
Substation Platform	0	7.2
Convertor Station Platform	0	9.4
Borrow Areas	16.3	0
Laydown Areas	5.8	0
Peat Restoration Areas	0	4.8

2.5 Construction

Typical Construction Activities

2.5.1 Key tasks during construction of the Proposed Development would relate to:

- enabling works;
- platform earthworks and creation of level platforms;
- bund/screening earthworks;
- construction of perimeter and site drainage, including SuDS;
- construction and installation of the buildings;
- installation of electrical plant;
- erection of a palisade security fence up to approximately 3 to 4 m in height around platforms;
- commissioning; and
- reinstatement and planting.

2.5.2 The construction of the Proposed Development would be carried out in five phases, as detailed below. It is anticipated that the construction would be completed by 2030. Phase 1 - Enabling Works

2.5.3 The first phase of construction would take approximately 22 months to complete and would comprise the following:

- formation of temporary and permanent access to Site;
- excavation of peat from borrow areas (as detailed in **Technical Appendix 10.2, EIAR Volume 4**);
- reinstatement of peat cuttings to peat restoration areas;
- excavation of rock from borrow areas;
- processing of site won rock;
- formation of platforms, drainage areas and temporary compounds; and
- reinstatement of temporary compounds and borrow areas 4, 5 and 6 with peat removed from platforms and drainage areas.

Phase 2 - HVDC and AC Building Works

2.5.4 The second phase of construction would take approximately 27 months to complete. It is anticipated that Phase 2 is likely to overlap with Phase 1, beginning approximately 12 months after Phase 1 commences.

2.5.5 Phase 2 would comprise the following:

- construction of the HVDC and AC building and equipment foundations, drainage and electrical cable trenches/troughs;
- construction of HVDC and AC building structures; and
- construction of internal access roads and fencing.

Phase 3 - HVDC and AC Equipment Fit Out

2.5.6 The third phase of construction would take approximately 25 months to complete. Phase 3 is likely to overlap with Phase 2, beginning 18-24 months after Phase 2 commences. Phase 3 would comprise the following:

- Installation of HVDC and AC electrical equipment; and

- Installation of building ancillary supplies.

Phase 4 – Landscaping

2.5.7 The fourth phase of construction would take approximately 11 months and would comprise:

- Final site clearance;
- Reinstatement of temporary laydown areas;
- Access and drainage; and
- Installation of remaining landscape measures, including landscape bund in place of eastern laydown area.

Phase 5 – Testing and Commissioning

2.5.8 The fifth and final phase would comprise the testing and commissioning of the Proposed Development. This phase is likely to overlap with Phase 4, possibly completing prior to the completion of Phase 4.

Road Improvements and Access during Construction

2.5.9 To construct the Proposed Development, two new permanent access tracks would be constructed, as well as a series of temporary access tracks, as illustrated on **Figure 2.1, EIAR Volume 3a**. The two new permanent access tracks would provide access to the HVDC and AC building platforms, one from the A859 to the west and the other from the (upgraded) Arnish Road to the east. Temporary access tracks would also be required for accessing two of the borrow areas in the southern part of the Site, as well as for accessing the peat restoration areas identified in the northern part of the Site.

2.5.10 Further information on the proposed track excavation and construction methods for the temporary access required for excavators and peat haulage vehicles to the peat restoration areas is provided in **Technical Appendix 10.2 (EIAR Volume 4)**.

2.5.11 The temporary tracks would be restored as closely as possible to their pre-existing condition using natural regeneration techniques on completion of the works.

Construction Traffic

2.5.12 A Construction Traffic Management Plan (CTMP) would be prepared by the Principal Contractor prior to any works commencing, in consultation with CnES and Transport Scotland, as required. The CTMP would describe all mitigation and signage measures proposed on the public road network. An Outline CTMP is provided in **Technical Appendix 12.1: Outline Construction Traffic Management Plan (EIAR Volume 4)**. An estimate of the type and volume of site traffic anticipated for a project of this scale is included in the Outline CTMP.

2.5.13 The largest plant items for the Proposed Development would be the seven DC interface transformers, three AC transformers and two reactors. Whilst the transformer manufacturer has not been confirmed at the time of writing, it is anticipated that these items would be classed as abnormal loads. Indicative dimensions of the transformers are approximately 9 m length, 6 m width and 6 m height. It is anticipated that there would be up to 18 abnormal load vehicle movements to the Site (defined as trips in and out of the Site), over the duration of the construction works.

2.5.14 All materials would be delivered to their allocated construction compound within the Site, or direct to their place of installation from any off-Site compounds and storage areas.

2.5.15 Further detail on the anticipated traffic movements associated with construction of the Proposed Development, and an assessment of the likely effects and suggested mitigation measures, is provided in **Chapter 12: Traffic and Transport chapter (EIAR Volume 2)**.

Construction Compounds

2.5.16 Temporary construction compound locations would be required during construction, located within the Site boundary. These would provide office and welfare facilities for site staff, parking, laydown areas and holding and servicing space for construction plant. The Applicant is currently seeking to secure access to off-Site storage/compound areas.

Construction Employment

2.5.17 The Applicant takes community responsibilities seriously. The delivery of a major programme of capital investment provides the opportunity to maximise support of local communities.

2.5.18 Employment of construction staff will be the responsibility of the Principal Contractor but SSEN Transmission encourages the Principal Contractor to make use of suitable labour and resources from local areas.

Construction Programme and Working Hours

2.5.1 It is anticipated that construction of the Proposed Development would commence in 2026 (subject to consents and approvals being granted), and completed in 2030, with full energisation of the project scheduled for late 2030.

2.5.2 Construction hours, including construction deliveries, are anticipated to be as follows unless otherwise agreed with CnES:

- Monday to Friday – 07:00 to 19:00;
- Saturday – 07:00 to 19.00; and
- Sundays and Bank Holidays – no construction works.

2.5.3 The Principal Contractor may, following prior agreement with CnES, undertake construction works outside of these hours when there is a programme critical operation that cannot be postponed until the next working day, or where it is more appropriate to undertake the works outside these hours.

2.5.4 There may also be occasions where, for example to deal with emergencies, there is the need to undertake construction work outside of these hours without the prior agreement of CnES. The Contractor will endeavour to keep these measures to a minimum and for no longer than is strictly necessary.

2.5.5 Every effort would be made to cause least disturbance to landowners and local residents during construction by providing regular updates on works via the on-site Construction Manager and Community Liaison Officer.

Environmental Management During Construction

2.5.6 The assessment in this EIAR has been carried out on the basis that all works would be carried out in accordance with industry best practice construction measures, guidance and legislation, together with the following documents and procedures.

CEMP

2.5.7 A contractual management requirement of the Principal Contractor would be the development and implementation of a Construction Environmental Management Plan (CEMP). This document would detail how the Principal Contractor would manage the site in accordance with all commitments and mitigation detailed in the EIA Report, statutory consents and authorisations, and industry best practise and guidance. **Chapter 12: Schedule of Mitigation** provides a summary of all mitigation measures included in this EIAR.

2.5.8 The CEMP would also reference the GEMPs and SPPs. The implementation of the CEMP would be managed on site by a suitably qualified and experienced ECoW, with support from other environmental professionals as required. The Applicant would carry out regular inspections and audits to monitor the implementation of the CEMP.

GEMPs

2.5.9 General Environmental Management Plans (GEMPs) have been developed by the Applicant. The GEMPs considered relevant for this project are identified in **Technical Appendix 2.2 (EIAR Volume 4)**.

SPPs

2.5.10 Species Protection Plans (SPPs) have been developed by the Applicant and have been agreed with NatureScot (formerly Scottish Natural Heritage (SNH)). These can be found in **Technical Appendix 2.3 (EIAR Volume 4)**.

2.6 Reinstatement

2.6.1 Following commissioning of the Proposed Development, all temporary work areas would be reinstated.

2.6.2 Reinstatement would form part of the contract obligations for the Principal Contractor and include the removal of all temporary works areas and the re-vegetation of the construction compound to recreate the former habitat as far as possible.

2.7 Landscape Mitigation Measures and Biodiversity Enhancement

2.7.1 Landscape mitigation measures have been proposed for the Proposed Development to mitigate potential adverse effects on local landscape character and visual amenity. The objective for landscape mitigation is to use landform and planting to minimise potential impacts, which has emerged by responding to the local rural landscape character, the natural contours and vegetation pattern. A series of development platforms have been designed to sit within the landscape, partially hiding the Proposed Development from surrounding visual receptors. Working with the levels to create the development platforms the predicted fill generated has been used within the design to create a series of landforms to partially screen potential views from surrounding residential properties, public highways and footpath routes.

2.7.2 An environmental colour study has been undertaken to identify the natural hues and tones found within the local landscape. Photographs were used from winter months from four selected viewpoints to test and identify an appropriate colour strategy to be adopted as part of a Design Code for the final design. The objective of the colour strategy is to reduce the scale of the mass of built form and to marry the buildings into the natural characteristic hues and tones of the rural landscape. A range of styles were used to test various colour patterns with a range of colours found naturally within the locality.

2.7.3 Once created, the new landforms and detention basins would be vegetated by relaying turves which would be stripped from the Site, stored and maintained by overseeding with local provenance grasses and ground coverand planted with stands of local provenance woodland mixes comprising groundcover, shrubs and trees. The woodlands would vary in type from a mixed predominantly native conifer/deciduous woodland to broadleaved woodland to wet woodland on low lying areas. Some low lying areas such as the base of landforms, ditches and detention basins would be allowed to regenerate naturally.

2.7.4 Further details on the landscape mitigation strategy are provided in **Chapter 5: Landscape and Visual Impact (EIAR Volume 2)**, and **Figure 5.6 (EIAR Volume 3a)** provides an illustrative landscape plan showing indicative landscaping measures.

2.8 Biodiversity Net Gain (BNG)

2.8.1 The Applicant has developed a BNG toolkit based upon the Natural England metric[1] which aims to quantify biodiversity based upon the value of habitats for nature. It is an efficient and effective method for demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.

2.8.2 For BNG to be used appropriately and to generate long-term gains for nature, the good practice principles established by the Business and Biodiversity Offset Programme (BBOP) should be followed. These principles have been established in the context of UK development by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA).

2.8.3 The construction and operation of the Proposed Development will be carried out in line with these commitments.

2.8.4 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission has made commitments within its Sustainability Strategy (2018)8 , Sustainability Plan (2019) and RIIO-T2 Business Plan, for new infrastructure projects to:

- ensure natural environment considerations are included in decision making at each stage of a project's development;
- utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design;
- positively contribute to the UN and Scottish Government Biodiversity strategies by achieving an overall 'No Net Loss' on new infrastructure projects gaining consent in 2020 onwards and achieving Net Gain on projects gaining consent in 2025 onwards;
- work with their supply chain to gain the maximum benefit during asset replacement and upgrades;

[1] https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides?fbclid=IwAR3t_S8djN97HZzsb8H9ISdfVqDiUZJcSR7pp4Kz5zHRFK5KWoLjPBlmRcw

- avoid all impacts on irreplaceable habitats, wherever possible. Where there is an unavoidable impact SSEN Transmission commits to mitigate, restore more than what is lost, and enhance to support greater biodiversity growth in the long term; and
- No Net Loss (NNL) of woodland cover with tree loss only considered as a last resort. Where unavoidable, compensatory planting of native species mitigates any woodland loss to enhance local ecosystems and create a biodiversity net gain.

2.8.5 The construction and operation of the Proposed Development will be carried out in line with these commitments.

2.9 Operation and Maintenance

2.9.1 It is anticipated that the Proposed Development will be operational for 40 years or more.

2.9.2 The Proposed Development would require maintenance and inspection at regular intervals. It is anticipated there would be a number of operational and maintenance staff permanently based at the Lewis Hub during normal operations. During unplanned emergency events and planned major maintenance works these numbers will be supplemented depending on the nature of the emergency/maintenance works.

2.10 Residues and Emissions

2.10.1 The EIA Regulations require that the EIAR provides an estimate, by type and quantity, of expected residues and emissions (such as water, air and soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced) resulting from the construction and operation of the Proposed Development.

2.10.1 The expected residues and emissions associated with the construction phase are described through reference to the typical activities associated with the construction and commissioning of the Proposed Development, as well as reinstatement of construction sites.

2.10.2 **Table 2.2** provides a summary of the anticipated residues and emissions, which have been used to inform the scope of this EIA.

Table 2.2: Residues and Emissions

Topic	Potential Residue/Emission
Water	Construction: Surface water runoff and discharge is likely during construction. In addition, occasional discharges may arise from pumping, or over-pumping in order to dewater foundation excavations. Pollution sources may arise as a result of soil erosion or from oil/ fuel or chemical storage and use. Operation: No water emissions or pollution sources have been identified for the operational phase.
Air	Construction: The construction phase would require the transport of people and materials by road and ferry, with associated emissions to the atmosphere. There are no air quality management areas within the vicinity of the Proposed Development. No significant air emissions are anticipated. Operation: Due to the nature of the Proposed Development no significant point source or diffuse air emissions would be produced during its operation.
Soil and Subsoil	Construction: Soil and subsoil excavation, handling and storage would be required during construction. All soil and subsoil would be stored temporarily for use in reinstatement. An outline Peat Management Plan is included as **Technical Appendix 10.2 (EIAR Volume 4)** and provides detail of the proposed management techniques for handling, storing and depositing peat for reinstatement. Operation: No requirement for soil or subsoil excavation or handling during the operation phase has been identified. No pollution sources have been identified for the operational phase.
Noise and Vibration	Construction: Increased traffic flows and noise and vibration from construction activities and breaking and blasting rock. Liaison with landowners and local residents will be carried out to ensure minimal disturbance. Appropriate working hours will also be agreed with the local planning authority. Operation: The substation would generate noise during operation. The location of residential receptors in relation to the proposed development was a consideration in the design development process and the predicted noise levels are within acceptable limits without the requirement for mitigation. No significant sources of vibration have been identified for the operation of the Proposed Development.

Topic	Potential Residue/Emission
Light	Construction: The temporary construction compounds are likely to be equipped with lighting installations for use during low light conditions and security lighting. All temporary lighting installations would be downward facing and all lights would be switched off during daylight hours and out with working hours. Any effect would be temporary and not expected to be significant. Operation: Substations are not generally illuminated during operation. Floodlights would be installed at the Proposed Substation but would only be used in the event of a fault or when essential maintenance needs to be carried out during the hours of darkness.
Heat and Radiation	Construction: No heat or radiation sources have been identified during the construction phase. Operation: No significant heat or radiation sources have been identified during the operational phase.
Waste	Construction: Construction would generate general waste in the form of domestic wastes and other materials, for example, wood, metals, plastics and stone. The CEMP, to be produced by the Principal Contractor, would provide details on pollution prevention control and site waste management that would be implemented during construction. Operation: The general maintenance of the proposed development has the potential to produce a small amount of waste. This is likely to be restricted to waste associated with employees and visiting contractors. All waste arising on site would be managed in accordance with the appropriate waste regulations.
Electric and Magnetic Fields (EMFs)	Construction: There is no potential for public or occupational exposure EMFs above appropriate thresholds as a result of the construction of the Proposed Development. Operation: There is no potential for public or occupational exposure EMFs above appropriate thresholds as a result of the Operation of the Proposed Development.

2.11 Decommissioning

2.11.1 Planning permission is sought in perpetuity. Should the Proposed Development be decommissioned full details of the decommissioning plan would be agreed with the appropriate authorities and the landowners prior to any decommissioning works commencing.

3. SITE SELECTION AND ALTERNATIVES

3.1 Introduction

3.1.1 In accordance with Regulation 5(2)(d) and Schedule 4, paragraph 2 of the EIA Regulations, this chapter outlines the reasonable alternatives studied by the Applicant, which are relevant to the Proposed Development and its specific characteristics. The chapter also describes the main reasons for the option chosen, taking into account the effects of the Proposed Development on the environment.

3.1.2 The need for the Proposed Development, and studies undertaken to inform the strategic electricity transmission infrastructure requirements, is described in **Chapter 1: Introduction (EIAR Volume 2).**

3.1.3 This chapter summarises the key stages in the site selection process and the alternatives which have been considered at each stage in order to reach the final design, namely the Proposed Development, as described in **Chapter 2: Description of the Proposed Development (EIAR, Volume 2).**

3.2 Key Policy Considerations

3.2.1 The 1989 Act imposes certain duties upon the Applicant, including: :

(i) the development and maintenance of an efficient, coordinated and economical system of electricity transmission;
(ii) to facilitate competition in the supply and generation of electricity;
(iii) to ensure that the security of the network is maintained as the demand and/or generation connections change over time; and
(iv) to have regard of potential effects to people and the environment.

3.2.2 Under the terms of its transmission licence, the Applicant is obliged to comply with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS), 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) require that the design aims to minimise hazards and reduce risks across the whole project lifecycle.

3.2.3 The Applicant is required, under Schedule 9 of the 1989 Act 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*".

3.2.4 Taking account of these obligations, the Applicant has considered environmental, technical and economic factors in evaluating the reasonable alternatives for the Proposed Development, with the objective of identifying a Proposed Site which is technically feasible and economically viable and which causes the least disturbance to the environment and to the people who live, work, visit in proximity to the Proposed Development.

3.3 Design Alternatives

3.3.1 The EIA Regulations require the Applicant to report upon the main 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 the project development:

- the "*Do Nothing*" scenario;
- alternative technical options; and
- alternative site options across the study area.

Do Nothing Scenario

3.3.2 The "*Do Nothing*" scenario is a hypothetical alternative considered which provides a context for understanding the implications of the Proposed Development. The "*Do Nothing*" scenario assumes that no options are taken forward.

3.3.3 In this case, the "*Do Nothing*" scenario is not considered a sustainable development option, as it would compromise the project need, as described in **Chapter 1: Introduction (EIAR Volume 2),** and would be inconsistent with the Applicant's licence obligations to develop and maintain an efficient, coordinated, and economic electricity system. Consequently, this option has not been considered further.

Alternative Technical Options

3.3.4 Following Ofgem's approval of SSEN Transmission's Pathway to 2030 projects, including the Lewis Hub, the Applicant considered design solutions that could mitigate likely significant environmental effects and ensure the provision of other benefits such as biodiversity net gain (BNG). Such solutions include the use of Gas-insulated Switchgear (GIS) for the 400 kV and 132 kV substations and converter stations. GIS substations and converter stations use a dense gas as the insulating medium, usually Sulphur Hexa-Fluoride (SF6) although in this case an alternative SF6 free technology solution will be used). Benefits of using GIS are that it allows substations to be enclosed to protect from the weather and reduce noise impacts. It also typically allows safe clearance distances between live conductors to be reduced resulting in a smaller footprint and land requirements compared to the more traditional substations comprising Air Insulated Switchgear (AIS). In this case, the Applicant is obliged to use a GIS solution, to protect the equipment from salt pollution.

3.3.5 To reduce the need for additional infrastructure in the form of reactive power compensation, and ultimately reduce the size and cost of the Proposed Development, it is an objective to minimise to the greatest extent possible the distance between the High Voltage Direct Current (HVDC) converters and the alternating current (AC) connection point at the 400 kV substation. The optimal distance was considered to be less than 1 km, which supported the co-located arrangement at the Proposed Development.

3.3.6 Proximity to the existing transmission network and the previously consented Arnish Point Landfill was also considered in order to minimise the amount of new overhead lines or underground cables that would be required to connect the Lewis Hub to the existing network and, where possible, reduce potential impacts associated with installing new connections.

3.3.7 Consideration was also given to the non-infrastructure elements of the Proposed Development to establish the total land requirement for the Site. Non-infrastructure elements include peat restoration, works associated with BNG, screening and bunding to reduce potential visual and noise impacts, and all elements associated with water management and treatment, both during construction and permanent operations.

Alternative Site Options

3.3.8 The project was first introduced to stakeholders in 2022. At this stage the Applicant shared the general project scope and identified search areas for a new substation and convertor station Site.

3.3.9 A site selection exercise was undertaken between April 2023 to September 2024 in compliance with the SSEN Substation Site Selection guidance[1], which describes a process that aims to balance environmental, technical, and economic considerations throughout the Site Options appraisal process. The purpose of the site selection process was to refine the options against the initial constraints . Undertaking a further detailed appraisal of appropriate sites against environmental, engineering, cost and grantor considerations to find an optimal site:

- Stage 1: Initial Site Screening;
- Stage 2: Detailed Site Selection.

3.3.10 Each stage is an iterative process and involves an increasing level of detail and resolution, bringing technical, environmental and economic considerations together in a way which seeks to achieve the best balance.

[1] Substation Site Selection procedures for Voltages at or above 132 kV (document reference: PR-NET-ENV-502).

3.3.11 In consideration of the principles outlined in the guidance document, the method of identifying a Preferred Site involved the following four key tasks:

- identification of the baseline situation within a study area of within a 5 km radius of the required connection point;
- identification of alternative site options;
- environmental, technical and economic analysis of site options; and
- identification of a Preferred Site.

3.3.12 Following the identification of a Preferred Site, stakeholder and public consultation was undertaken to further inform the site selection process. Feedback from the consultation was reviewed and amendments made to address any concerns raised. At the conclusion of this, a Proposed Site to be taken forward to the consenting process was selected.

3.4 Stage 1: Initial Site Screening

3.4.1 At Stage 1 of the site selection process five initial Site Options were identified, after desk study and site walkovers. The Site options identified at Stage 1 of the site selection process are shown on **Figure 3.1: Stage 1 Site Options (EIAR volume 3a)** and are described as follows:

- Site Option 1: Arnish – this option was located adjacent to the proposed landfall location, and is a site previously identifiedfor the Western Isles Connection project, at a time when the design was for a smaller capacity connection (600MW) compared to the present design. As this site area was of insufficient size to accommodate the Proposed Development, this site option was considered purely from the point of view of a split site, i.e. where the HVDC converter station only would be located on this site, with the AC substation located on any one of the other site options.
- Site Option 2: Arnish West – this option was located approximately 700 m inland from the landfall location, on the west side of the minor road to Arnish Point.
- Site Option 3: Creed Business Park – this option was located to the east of Creed Business Park, approximately 2.5 km inland from the proposed landfall location.
- Site Option 4: Stornoway Grid Supply Point (GSP) – this option was located to the west of the existing Stornoway GSP, on the west side of the A859 road, approximately 3.3 km inland from the proposed landfall location.
- Site Option 5: Marybank – this option was located to the north of Stornoway GSP, on the west side of the A859 road and approximately 3.5 km inland from the proposed landfall location.

3.4.2 Assessment of the five options was undertaken against the key metrics outlined in the site selection guidance. This resulted in two of the five options being discounted on the basis of environmental and technical considerations as follows:

- Site 1 was eliminated on the basis of limitations relating to its size and its topography. In addition, its relative remoteness from new sources of onshore generation would result in difficulties in accomodating the number of onshore connections within the available footprint; and
- Site 4 was eliminated on the basis of its limited size, its proximity to the existing Stornoway GSP, which would necessitate the re-routeing of existing circuits to allow these to tie in to the GSP, and its proximity to the A859, with associated visual impact.

3.4.3 The above short list was presented at a public consultation event in April 2023. Following the receipt of feedback from the subsequent consultation period, further consideration of the options was undertaken including the evaluation of alternatives in proximity to existing short-listed sites.

3.5 Stage 2: Detailed Site Selection

3.5.1 Following the completion of Stage 1, a short list of three site options (Site, 2, Site 3 and Site 5) was taken forward for further assessment at Stage 2.

3.5.2 During November 2023, further public consultation was undertaken on both the preferred site option (Site 5) and on the preferred route of the underground cable connecting the preferred site with the landfall location at Arnish Point. To address

consultation feedback and in conjunction with the Site Selection Guidance, a further three site options were identified for analysis at Stage 2, as follows:

- Site 6: Creed North – this option was identified as as an option within the initial Site 5 search area following receipt of the peat probe data, which indicated lesser depths of peat for Site 6. It provided an option further from the main settlement of Marybank, although closer to a number of roadside dwellings.
- Site 7: Arnish North – this option was introduced in response to feedback from the April 2023 public consultation, which indicated a preference for the Arnish area from certain sections of the public, particularly those closest to Site 5. This site option was located between Site 3 - Creed Business Park and Site 2 - Arnish West, comprising varied topographical terrain as well as disparate pockets of deep peat.
- Site 8: Macaulay Farm – this option was introduced in response to feedback from the local community in the November 2023 public consultation.

3.5.3 The Site options identified at Stage 2 of the site selection process are shown on **Figure 3.2: Stage 2 Site Options (EIAR Volume 3a).**

3.5.4 Conclusions from the Stage 2 site selection study are summarised as follows:

- Site Options 5 and 8 were identified as having least variation in elevation across the respective sites, with associated lesser cut and fill volumes. This would minimise disturbance to soils as advocated by the mitigation hierarchy in NPF4 although peat volumes would be greater than for other site options.
- Site Option 8 has the third lowest peat volume estimate but contains no blanket bog habitat and therefore is preferred in terms of habitat loss.
- Site 8 has good access opportunities from both the main public road (A859) and Arnish Road without the need to share an access junction with other users.
- No utilities have been identified on Site 8 that would require diversion prior to works being undertaken.

3.5.5 Therefore, on balance, the preferred site was identified as Site 8: MacAulay Farm.

3.5.6 The Applicant then prepared an EIA Scoping Report based upon Site 8, the Proposed Development, and submitted their request for a Scoping Opinion in August 2024.

3.5.7 In September 2024, stakeholders were consulted on the preferred site, Site 8 – Macaulay Farm, and invited to provide feedback. Details of the feedback from consultees are summarised in the Pre-Application Consultation Report, submitted as a separate document with the application: **Lewis Hub: Report on Consultation and Site Selection Decisions**.

3.6 Further Consideration of Alternatives in the EIA Process

3.6.1 Changes to the design of the Proposed Development during the EIA process have been minimised. This is due to the work undertaken during the site selection stage to carefully consider and minimise site constraints, whilst giving cognisance to the technical requirements for constructing and operating the Proposed Development and the connecting overhead lines and underground cables.

3.6.2 The consideration of alternatives during the EIA process has focussed on the siting of infrastructure, landform and screening, as a result of the availability of more detailed environmental and engineering information including surveys and further studies, such as peat depth information prepared during Stage 2 and identification of more sensitive viewpoints in the EIA Scopng Opinion and from public consultation.

3.6.3 The peat management strategy has proposed that the Creed North area of the Site would be used for the storage/restoration of peat removed from the borrow pit areas at the outset of the construction period (enabling works period). Consequently, the EIA is based on a maximum potential area for peat reuse within the northern part of the Site in order to present and assess a worst-case scenario.

3.6.4 The landscape design has established the height and dimensions of the two bunds that will be required; one to the immediate east of the HVDC platform in order to provide sufficient screening in views from the east, including from Sandwick; the other to the west of the AC platform to provide sufficient screening from the A859 road.

3.6.5 The layout design also minimises the internal road network required within the Site and associated areas of hardstanding.

3.6.6 The new access from the A859 has been designed and positioned to provide increased and safer visibility to the junction.

3.6.7 The evolution of the Site between September and November 2024 is shown on **Figure 3.3: Layout Design Evolution (EIAR Volume 3a).** In summary, the main changes made between Layout 1 and Layout 2 are as follows:

- Layout 1 showed three laydown areas, which were subsequently reduced to two in Layout 2. This change was made in response to peat depth data (i.e. to avoid siting a laydown area on deep peat) and following confirmation that off-site compounds/storage areas could be used;
- Layout 2 shows a refined location for the western access link, which was relocated following the loss of one of the laydown areas and in order to provide increased and safer visibility to the junction;
- Layout 2 shows the proposed borrow areas, which were identified and sized during the design refinement process;
- Layout 2 shows the potential peat resuse area identified in the northern part of the Site, which was identified as the peat management strategy was established; and
- Layout 2 shows three attention ponds which were sized and positioned during the design refinment process, in response to peat depth data and to development of the drainage strategy.

3.7 Summary

3.7.1 The site selection process and the final configuration of the Proposed Development has been informed throughout by the consideration of a balance of factors including engineering feasibility, environmental sensitivities, network resilience and cost factors as well as landowner considerations. The Applicant has considered a number of alternatives in determining the key parameters of the Proposed Development, as well as key feedback from statutory bodies and the local community.

3.7.2 The site selection process has also been supported throughout by an ongoing process of consultation with statutory consultees, landowners, and the local community. A summary of how consultation has influenced the design is provided within each technical chapter, as well as in the Pre-Application Consultation Report: **Lewis Hub Substation and Convertor Station: Report on Consultation and Site Selection Decisions.**

3.7.3 A summary of all site selection and consultation and documents is provided in **Table 3.1**.

Table 3.1: Summary of Site Selection and Consultation Documents through Project Evolution

Year	Site Selection / Consultation Stage	Document / Website Reference
April 2023	Initial consultation undertaken in April – May 2023 to present the initial Stage 1 screening exercise and sites shortlisted to be considered at Stage 2. From this process, a further two site options were identified to address consultation feedback.	Consultation Document. Site Selection. Lewis Hub Substation and Convertor Station. Reference LT00014. https://www.ssen-transmission.co.uk/globalassets/projects/western-isles-downloads/western-isles-consultation-booklet.pdf
November 2023	Further stakeholder consultation was undertaken in November-December 2023 in order to present the Stage 2 site selection exercise, to explain how this responded to initial consultation feedback and present the then preferred site (Site 6). Feedback from the November/ December 2023 consultation led to the de-selection of Site 6 as the preferred site. A new preferred site (Site 8) was subsequently appraised and selected	Consultation Document. Site Selection. Lewis Hub Substation and Convertor Station. Reference LT00014. https://www.ssen-transmission.co.uk/globalassets/projects/western-isles-downloads/western-isles-connection-project-oct23-final-2.pdf

Year	Site Selection / Consultation Stage	Document / Website Reference
August 2024	The EIA Scoping Report was submitted to CnES with the Proposed Site.	Lewis Hub, Substation and Convertor Station. Scoping Report **(Technical Appendix 4.1, EIAR Violume 4)**
September 2024	Further stakeholder consultation was undertaken in September-December 2024 to present the Proposed Site and to provide an overview of the Proposed Development characteristics.	Consultation Booklets. Western Isles PAC 1 and PAC 2. https://www.ssen-transmission.co.uk/globalassets/projects/western-isles-downloads/western-isles-pac-1-consultation-booklet.pdf https://www.ssen-transmission.co.uk/globalassets/projects/western-isles-downloads/western-isles-pac-2-consultation-booklet.pdf

4. EIA PROCESS AND SCOPE

4.1 Introduction

4.1.1 Environmental Impact Assessment (EIA) is a process that considers how a proposed development is predicted to change existing environmental conditions and what the consequences of such changes will be (both adverse and beneficial). It therefore informs both the project design and the decision-making processes related to the grant of development consents.

4.1.2 This chapter sets out the regulatory context for undertaking an EIA and the assessment methodology applied in the evaluation of effects, approach to mitigation and assessment of the significance of likely environmental effects.

4.1.3 The general approach to the assessment of environmental effects is summarised in the flow diagram in **Plate 4.1**. Any variation to this approach is described within the respective technical chapters of this EIAR (**Chapters 5 to 12**).

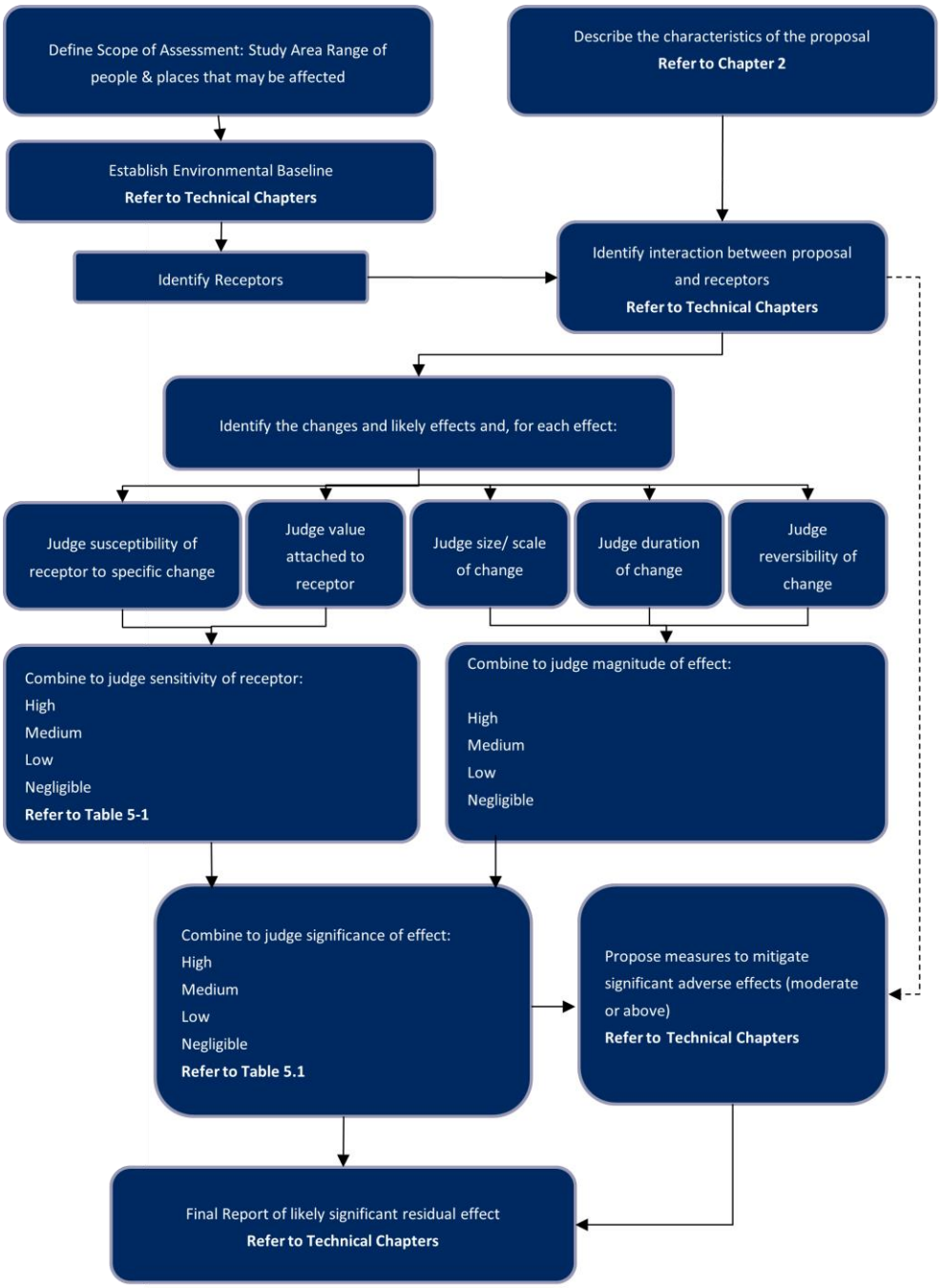


Plate 4.1: Summary of EIA Assessment Methodology

4.2 EIA Regulations, Policy and Guidance

4.2.1 As discussed in Chapter 1: Introduction and Background (EIAR Volume 2), the EIA Report has been prepared in accordance with the *Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017* ('the EIA Regulations').

4.2.2 This EIA Report contains the information specified in Regulation 5 of, and Schedule 4 to, the EIA Regulations.

The approach to the assessment has been informed by current best practice guidance, including the below. Please note that this is not an exhaustive list; guidance specific to technical assessments is outlined in those respective chapters:

- Scottish Government Good Practice Guidance[1];
- Scottish Government Planning Advice Note (PAN) 1/2013 (revision 1.0)[2];
- Planning Circular 1/2017: Environmental Impact Assessment Regulations[3];
- Historic Environment Scotland and NatureScot 'Environmental Impact Assessment Handbook' Version 5, 2018[4];
- Institute of Environmental Management and Assessments guidance documents including: Delivering Proportionate EIA[5]; Environmental Impact Assessment Guide to Shaping Quality Development[6]; and Environmental Impact Assessment Guide to Delivering Quality Development[7]; and

4.2.3 An overarching technical assessment methodology is summarised in **Plate 4.1**. An overview of the guidance and methodology adopted for each technical study is provided within the respective technical chapters of this EIAR (**Chapters 5 to 12**).

4.1 EIA Scoping and Consultation

4.1.1 Scoping of potential likely significant effects, having regard to the impacts of a proposed development, provides a basis for ensuring that the assessment of environmental effects is appropriately limited to issues of genuine potential significance. This ensures a proportionate approach to EIA that is focused on likely significant effects to be considered and assessed. Consultation and engagement with stakeholders early in the process, with advice and input from key consultees being sought at the early stages of a project, helps greatly to inform decisions about the design and EIA work for a proposed development.

4.1.2 A request for a Scoping Opinion was made to CnES under Regulation 17 of the EIA Regulations in September 2024. A Scoping Report was submitted to support the request (**Technical Appendix 4.1: EIA Scoping Report, EIAR Volume 4**) which sought input from CnES, and statutory and non-statutory consultees regarding the information to be included within this EIAR.

4.1.3 A Scoping Opinion was provided by CnES on 26 November 2024 and is included in **Technical Appendix 4.2: EIA Scoping Opinion (EIAR Volume 4)**. The contents of this and other consultation responses received are summarised in **Technical Appendix 4.3: Consultation Register (EIAR Volume 4)**, along with a list of all bodies consulted during the scoping exercise.

4.1.4 In addition to seeking a Scoping Opinion, the Applicant conducted two public exhibitions, to seek the views of the local community. Exhibitions were held as follows:

- 5th September 2024, Stornoway; and
- 14th November 2024, Stornoway.

4.1.5 A summary of the representations received during the public exhibitions is provided in the Pre-Application Consultation Report submitted with the consent application. Further detail on the key issues identified through the scoping and consultation process are described in **Chapter 3: Site Selection and Alternatives (EIAR Volume 2)**.

4.1.6 Following scoping and baseline characterisation the EIAR provides an impact assessment chapter for each of the following:

- Landscape, and Visual Impact Assessment (Including RVAA);
- Archaeology and Cultural Heritage;

[1] Scottish Government Energy Consents and Deployment Unit (2013) Good Practice Guidance
[2] Scottish Government (2013, revised 2017) Planning Advice Note 1/2013 (revision 1.0): Environmental Impact Assessment
[3] Scottish Government (2017) Planning Circular 1/2017: Environmental Impact Assessment Regulations 2017.
[4] Historic Environment Scotland and NatureScot 'Environmental Impact Assessment Handbook' Version 5, 2018. https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0
[5] IEMA (2017). Delivering Proportionate EIA. Lincoln: IEMA
[6] IEMA (2015). Environmental Impact Assessment Guide to Shaping Quality Development. Lincoln: IEMA
[7] IEMA (2016). Environmental Impact Assessment Guide to Delivering Quality Development. Lincoln: IEMA

- Ecology and Nature Conservation;
- Ornithology;
- Hydrology;
- Geology and Soils;
- Noise; and
- Traffic and Transport

Topics Scoped out of the EIA

4.1.7 Several topics or elements of topics have been scoped out of the EIA and are therefore not reported in the EIAR. Table 4.1 provides a summary of the topics and elements that are scoped out. As noted in **Chapter 2: Description of Development (EIAR Volume 2)**, potential effects associated with the construction phase are considered representative of worst-case decommissioning effects; therefore, no separate assessment of impacts associated with decommissioning of the Proposed Development has been undertaken as part of this EIA. The scope of the EIA was agreed within the Scoping Opinion; responses to each comment raised in the Scoping Opinion are detailed in **Technical Appendix 4.3 (EIAR Volume 4)**.

Table 4.1: Topics and topic elements scoped out of the EIA Report

Environmental Factor	Scoped Out
Landscape Character and Visual Amenity	• Linear Crofting LCT; • Dispersed Crofting LCT; • The South Lewis, Harris and North Uist NSA; • Wild Land Area (WLA) 30: Harris - Uig hills; • WLA33: Quinag; • Northbound vehicle travellers on the A857; • North and southbound road users of the A858; • Eastbound road users on the A886; • Northbound vehicle travellers on the B895; • Southbound road users on the B897; and • Hebridean Way Cycle Route.
Cultural Heritage	• Battlefields; • World Heritage Sites; • Listed buildings within the Stornoway townscape; • Designated heritage assets that lie outside of the zone of theoretical visibility (ZTV) for the Proposed Development; and • Assessment of setting impacts on designated heritage assets more than 3 km from the Proposed Development.
Ecology and Nature Conservation	• Disturbance caused by construction activities; • Statutory designated sites within 10 km of the Proposed Development where there is no potential pathway to impacts; • Reptiles and amphibians; and • Surveys for terrestrial invertebrates.
Ornithology	• Habitat Loss (Construction and Operational Phase); and • Disturbance (Operational Phase)
Hydrology, Hydrogeology, Geology, and Soils	• Flood risk; • Private Water Supplies; and • Watercourse Crossings.
Noise	Not applicable
Traffic and transport	• Operational Traffic
Land Use	Whole topic The Scottish Government Soil Map[8] classifies the land as being capable of use as improved grassland (Class 5.3); as the Proposed Development is not located on high agricultural quality land, there would be minor potential for impact.

[8] Scotland's Environment (2021) Scotland Environment Map. https://map.environment.gov.scot/Soil_maps/?layer=5

Environmental Factor	Scoped Out
	Due to the distance of the Site from designated core paths and the River Creed, it is anticipated that the Proposed Development would have a negligible impact on recreational land use in the surrounding area, during both the construction and operational phase of the development.
Socio-economics, recreation and tourism	Whole topic The socio-economic assessment undertaken as part of the needs case for National Developments, as defined in National Planning Framework 4, is an established and settled policy in Scotland. Given that the Proposed Development fits within the provisions of the policy and its supporting framework it is unnecessary to revisit or argue material relevance of socio-economic impact. Instead, a separate socio-economic statement has been prepared as part of the application to provide information on potential socio-economic impacts.
Population and Human Health	Whole topic The Proposed Development would be located within a predominantly rural area. The impacts on human health for a development of this nature and scale are limited to increased exposure to noise and changes in amenity value of residential or recreational resources. These are considered in EIAR Volume 2, Chapter 5: Landscape and Visual Amenity and Chapter 10: Noise; therefore, a specific Human Health assessment has been scoped out of the EIA.
Electric and Magnetic Fields (EMF)	Whole topic The UK Health Protection Agency (HPA) is the government body responsible for policy and guidance on Electric and Magnetic Fields (EMF). Exposure guidelines have been developed by the International Commission on Non-Ionising Radiation Protection (ICNIRP) to ensure protection of human health in different situations, occupational exposure and public exposure, which have been adopted by the HPA for application in the UK. Whilst substation equipment is known to generate EMFs, these have been observed to drop away to background levels quickly with distance from source. In addition, EMF generated by substation infrastructure has been consistently recorded to be lower than that associated with incoming/outgoing overhead line or underground cables associated with the substation. All EMF generating infrastructure will be set back from the site boundary and accounting for this, the nearest properties to the Site (those immediately south / east of the Proposed Development at Macaulay Farm) are unlikely to be located within 150-200 m of any electrical infrastructure. It is therefore anticipated that EMF would be at, or close to background levels at the Project site boundary. The Proposed Development will adhere to the relevant regulations and guidance relating to EMF and no significant effects are likely.
Major Accidents and Disasters	Whole topic The EIA Regulations require the consideration of the vulnerability of the Proposed Development to major accidents and disasters. Given the nature of the Proposed Development, the potential for effects related to the vulnerability to major accidents and disasters are likely to be limited to those associated with unplanned power outages, due to extreme weather or structural damage. Crisis management and continuity plans are in place across the SSE Group. These are tested regularly and are designed for the management of, and recovery from, significant energy infrastructure failure events. Where there are material changes in infrastructure (or the management of it) additional plans are developed. Potential significant effects on the vulnerability of the Proposed Development to Major Accidents and Disasters has therefore been scoped out of the EIA Report.
Air Quality and Climate	Whole topic

Environmental Factor	Scoped Out
	There are no Air Quality Management Areas (AQMAs) in the CnES area, indicating that the area is meeting national air quality objectives and European directives[9] limits and target values for the protection of human health. The Proposed Development has the potential to give rise to some localised and temporary construction related releases associated with dust (foundation construction, passage of vehicles along access tracks) and construction plant and traffic exhaust emissions. However, the nature of the construction activities is that these would be localised, short term for individual activities and intermittent. Any potential for nuisance effects on residential or recreational amenity during construction would be strictly controlled in accordance with a CEMP. In regard to climate, in the context of the EIA process, climate is assessed both in relation to the contribution of the Proposed Development to increasing or decreasing the nature and magnitude of greenhouse gas emissions (GHGs), and the vulnerability of the Proposed Development to climate change. Based on the above, it is therefore proposed that Air Quality and Climate can be scoped out of the EIA Report, though a Carbon Calculator is included in this EIAR as a Technical Appendix (TA10.4). Further details on benefit of the Proposed Development are detailed within Chapter 1.

4.2 Environmental Baseline Conditions

4.2.1 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. This is because likely significant effects are described in relation to the extent of changes to the existing (and future) baseline environment, as a result of the construction and/or operation of the Proposed Development.

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

- site visits and surveys;
- desk-based studies;
- review of existing information including third party data;
- modelling;
- review of relevant national and local planning policies;
- consultation with the relevant statutory consultees and where appropriate, non-statutory consultees; and,
- identification of sensitive receptors.

4.2.3 The environmental baseline adopted for the purposes of the EIA is stated in each of the technical assessment chapters provided in the EIAR. The baseline is normally taken as the current character and condition of the site and surrounds, and the likely significant environmental effects of the development are then assessed in the context of the current conditions.

Future Baseline

4.2.4 The approach for future projections in baseline assessment is outlined and justified in each technical chapter, in accordance with the EIA Regulations. This considers the progression of baseline conditions and receptors in the absence of the Proposed Development.

4.3 Assessment of Likely Significant Environmental Effects

4.3.1 The next stage in the EIA process was to complete an impact assessment to address the likely significant effects remaining following the implementation of mitigation by design[10]. An assessment chapter has been provided for each issue where it is

[9] Directive 2008/50/EC, Directive 2004/107/EC and 2001/81/EC

[10] Mitigation by Design is the act of incorporating measures into the development of the design and thereby minimising the risks to the project and the local environment.

considered that there are likely significant effects associated with the construction[11] and operational[12] phases of the Proposed Development.

4.3.1 The defined study area for the consideration of effects (including direct, indirect and cumulative) on each factor defined under Regulation 4(3) of the EIA regulations varies across each issue. Each respective technical chapter outlines and justifies its specific study area.

4.3.2 The characteristics of an effect will vary depending on the duration of the activity, the sensitivity of the receptor and the resultant change. Therefore, it is necessary to assess whether the effect is temporary or permanent; beneficial or adverse and direct or indirect. Temporary effects are usually reversible and generally confined to the construction period. For the purposes of this EIAR the terms used in the assessment are 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 reversible;
- 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 5.7 below);
- Beneficial - an effect beneficial to one or more environmental receptors; and
- Adverse - a detrimental, or negative, effect on one or more environmental receptors.

4.3.3 Where a more appropriate definition of the above terms is applicable to a technical discipline this is clearly outlined within the technical chapters (**Chapters 5 to 12**).

4.3.4 The result of the assessment is the determination of whether the likely effect of the Proposed Development on the receptors in the study area would be significant or not significant, and, adverse or beneficial. Receptor should be defined as meaning the factors of the natural and built environment, including people and communities, which may be significantly affected by the Proposed Development. Examples include cultural heritage, landscapes, populations, animal and plant species, and the water environment.

4.3.1 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.

4.3.2 The assessment of significance has evaluated the magnitude of change (from baseline conditions), the nature of change (beneficial or adverse), the sensitivity of affected receptors, and the extent to which mitigation efforts can alleviate adverse effects. Further influences have been factored into the assessment using professional judgement, such as:

- likelihood of occurrence;
- geographical extent;
- the value of the affected resource;
- adherence of the Proposed Development to international, national, and local legislation and planning policy; and
- reversibility and duration of the effect.

4.3.3 Where a more appropriate definition of the above terms is applicable to a technical discipline this is clearly outlined within the technical chapters in of this EIA Report.

[11] This period covers the effects arising from the enabling works, construction works, commission and reinstatement.

[12] This period covers the effects arising from the existence of the Proposed Development, including its operation and maintenance activities.

4.3.4 Each effect has been assessed taking account of the predicted magnitude of change and the sensitivity of the receptor/receiving environment, as shown in **Table 4.2** below and defined within each of the technical chapters of this EIAR, to determine overall significance.

Table 4.2: Matrix for Determination of Significant Effects

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

4.3.5 Unless otherwise stated within a technical chapter, major and moderate effects are considered to be significant in the context of the EIA Regulations. Minor and negligible effects are not considered significant.

4.3.6 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 or adverse; and indirect or direct.

4.3.7 It should be noted that **Table 4.2** shows the scale that is generally used in EIA to determine overall significance; however, the methodology used by each technical discipline is identified in each of the technical **Chapters (5 to 12)** of this EIAR. Specific criteria have been adopted for certain technical assessments in accordance with widely recognised EIA guidelines published by professional bodies. Where applicable, these are provided in the respective technical chapters.

4.4 Cumulative Effects

4.4.1 In accordance with the EIA Regulations, the assessment has considered 'cumulative effects'. The assessment of cumulative effects is a key part of the EIA process and is concerned with identifying circumstances in which several potential and/or predicted effects from separate existing or future development projects could combine to cause a significant effect on a particular receptor. Cumulative effects have been assessed within each technical chapter in Volume 2 of this EIA Report.

4.4.2 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 future 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 several 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.

In-Combination Effects

4.4.3 The developments that have broadly been considered with respect to in-combination cumulative effects within this EIAR are listed in Table 4.3 (see also **Figure 4.1: Cumulative Developments, EIAR Volume 3a**).

4.4.4 Such developments include those for which consent has been granted, or future development for which it is reasonable to assume, at the date that the list of cumulative developments is frozen, that the developer will proceed with an application for consent. The above list of developments to be considered in the cumulative effects assessment has been frozen three months prior to publication of the EIAR to allow sufficient time to compile the EIAR. The individual topic based technical chapters within Volume 2 of this EIAR consider the in-combination cumulative effects of the Proposed Development with other existing or future

committed development that have the potential to result in significant cumulative effects in combination with those resulting from the Proposed Development.

4.4.5 A study area of 3 km from the Proposed Development has been used to identify Cumulative Developments for all environmental topics.

Table 4.3: Cumulative Developments

Development Name	Application Status	Description and distance/direction to the Lewis Hub
Harris-Stornoway 132kV OHL Replacement	Consented, in construction	A proposed double circuit wood pole 132 kV OHL to connect into the existing GSP site on the western side of the A859, south of Creed Bridge, approximately 58 km in length. It is currently under construction, with energisation programmed for 2025.
Stornoway Wind Farm	Consented	A proposed wind farm comprising up to 34 turbines, located immediately to the west of the Site. Construction is anticipated to last 30 months, commencing in 2025.
Arnish Road Upgrade	Approved	Approved proposal for the re-alignment and widening of the minor road between the A859 and Arnish Point, located immediately north of the Site. Construction works are anticipated to last 18 months and are scheduled from spring 2025, with completion anticipated in late 2026. The road upgrade is expected to include a cable duct for the underground cable associated with the Proposed Development, which would connect into the consented landfall point at Arnish.
Stornoway Deep Water South project	EIA Scoping stage (CnES Planning Reference: 24/00185/HROSCO)	Proposal for a second deep water port terminal located to the south of the existing (newly constructed) deep water port platform within Stornoway Bay.
Marybank Quarry extension	Approved (CnES Planning Reference: 23/00197/MIN)	Approved proposal for the extension of the existing Bennadrove Quarry, for the purposes of rock extraction. The site is approximately 800 m north of the proposed Lewis Hub site, at its closest point. The quarry extension would extend the existing quarry eastwards over an area of circa 1.85 ha.

4.4.6 Two further cumulative developments at Scoping stage have been identified within the 3 km study area; the proposed Grimshader Wind Farm project, and the proposed onshore substation relating to the proposed Spiorad na Mara offshore wind farm project.

4.4.7 As both of the projects are at Scoping stage, there is not sufficient design detail for these proposed projects for them to be considered within the cumulative assessment for the Proposed Development. . However, a high-level indication of potential additional significant effects is given in **Chapter 13: Summary of Effects (EIAR Volume 2)**.

Effect Interactions

4.4.8 The potential effect interactions as a result of the Proposed Development are considered within **Chapter 13: (EIAR Volume 2)**.

4.5 Approach to Monitoring

4.5.1 The approach to monitoring is outlined and justified within each respective technical chapter, in accordance with Regulation 30 of the EIA Regulations.

4.6 Approach to Mitigation

4.6.1 Mitigation measures are identified to prevent, reduce, or remedy any potentially significant adverse environmental effects identified, beyond that already considered as normal good practice.

4.6.2 Mitigation strategies consist of two distinct categories, those measures embedded into the design, construction and / or operation of the Proposed Development (i.e. embedded mitigation for example, the Construction Environment Management

Plan (CEMP)) and those additional elements for inclusion as a result of the EIA. The embedded mitigation measures are outlined and justified in Chapter 2: Development Description. Each technical chapter of this EIA Report details the additional measures recommended to mitigate identified likely significant effects. A summary of these recommended mitigation measures is provided in **Chapter 14: Schedule of Mitigation Measures (EIAR Volume 2)**.

4.6.3 Any remaining predicted effects after considering available mitigation measures are known as 'residual effects. This assessment considers the mitigation as specified in the EIA Report to identify the residual effects, based on the assumption that the identified mitigation is implemented. The residual predicted effects are discussed for each potential effect that has not been scoped out of the assessment and a significance level identified.

5. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

5.1 Introduction

5.1.1 This chapter reports on the likely significant effects with respect to Landscape receptors and Visual amenity associated with the construction, operation and decommissioning of 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 Environmental Impact assessment (EIA) Report (**EIAR Volume 2, Chapters 1-4**).

5.1.2 The assessment has been carried out by Roz Maclennan, BA Hons in Landscape Architecture and Member of the Landscape Institute (Design Division). Roz is a partner in Horner + Maclennan Landscape Architects and has over 30 years professional experience in both environmental assessment and landscape design.

5.1.3 The assessment summarises the methodology for the LVIA, defines the Study Area for LVIA, confirms the scope of the assessment, describes the baseline condition of the landscape and the visual amenity baseline, presents an assessment of the effects, describes design input and mitigation measures, and reports significant residual effects. Cumulative effects arising from the addition of the Proposed Development to other relevant proposed developments are also assessed.

5.1.4 This chapter is supported by the following Figures and Technical Appendices:

Figures (EIAR Volume 3a):

- Figure 5.1 LVIA Study Area (25 km radius and focussed 5 km radius);
- Figure 5.2 Zone of Theoretical Visibility 25 km radius);
- Figure 5.3 Zone of theoretical visibility (5 km radius);
- Figure 5.4 Landscape Character Types);
- Figure 5.5 Landscape Designations;
- Figure 5.6 Visual Receptors;

Figures (EIAR Volume 3b):

- Figure 5.7 Building Receptor B1 Marybank;
- Figure 5.8 Building Receptor B2 Plasterfield;
- Figure 5.9 Building Receptor B3 Lower Sandwick
- Figure 5.10 Building Receptor B4 Olivers Brae/Sandwick Cemetery;
- Figure 5.11 Building Receptor B5 Newton;
- Figure 5.12 Recreation Receptor Rec1 Lewis War Memorial;
- Figure 5.13 Recreation Receptor Rec2 Iolaire Memorial car park;
- Figure 5.14 Recreation Receptor Rec3 Rhuba Àirinis;
- Figure 5.15 Recreation Receptor Rec4 Below Cnoc na Croic;
- Figure 5.16 Recreation Receptor Rec5 Golf Course;
- Figure 5.17 Recreation Receptor Rec6 Creed Bridge car park/Chemical Works
- Figure 5.18 Recreation Receptor Rec7 Marybank picnic benches;
- Figure 5.19 Route Receptor Ro2 A859 at Creed;
- Figure 5.20 Route Receptor Ro2 A859, The Arena;
- Figure 5.21 Route Receptor Ro6a B897;
- Figure 5.22 Route Receptor Ro7 Ferry Route;
- Figure 5.23 Route Receptor R08 Hebridean Way Walking Route;
- Figure 5.24 Cumulative Viewpoint B6 Knock, Point; and
- Figure 6.3 Druim Dubh Stone Circle.[1]

Technical Appendices (EIAR Volume 4):

- Technical Appendix 5.1 LVIA Methodology;
- Technical Appendix 5.2 Description of Baseline Conditions;
- Technical Appendix 5.3 Detailed Assessment Tables;

[1] This visualisation is representative of the view seen by road users heading north on the A859.

- Technical Appendix 5.4 Colour Study; and
- Technical Appendix 5.5 Residential Visual Amenity Assessment.

5.1.5 Figures and Technical Appendices are referenced in the text where relevant.

5.2 Assessment Methodology and Significance Criteria

Scope and Purpose of Assessment

5.2.1 This chapter presents the Landscape and Visual Impact Assessment (LVIA). It describes the key sensitivities and potential changes to the physical and visual environment arising from the Proposed Development. The receptors within this chapter are categorised in the following sections:

- Landscape; and
- Visual Amenity.

5.2.2 The landscape and visual resources are defined respectively within paragraph 3.21 of the Guidelines for Landscape and Visual Impact Assessment (GLVIA 3)[2] as: "…the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape" and "…the people who will be affected by changes in views or visual amenity at different places".

5.2.3 To help determine the potential scope of the assessment, an initial desk-based landscape and visual appraisal has been undertaken, to identify the following:

- The landscape character of the site and surrounding area;
- The location and extents of landscape designations across the site and surrounding Study Area;
- Important views and viewpoints towards the site from the surrounding landscape (candidate viewpoints);
- Any potentially significant landscape and visual effects during construction and post- completion; and
- Recommendations for mitigating any potentially significant adverse effects.

5.2.4 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application[3]. Operational and under construction and developments are considered as part of the baseline.

5.2.5 The assessment is based on the Proposed Development as described **in Chapter 2: Project Description (EIAR Volume 2)**.

5.2.6 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4).**

5.2.7 The purpose of the LVIA is to identify, predict and evaluate significant effects on particular elements of the landscape and visual resource arising from the Proposed Development.

Objectives of the Assessment

5.2.8 The objectives of the assessment are:

- To establish the existing nature of the landscape and visual environment in the site and surroundings, including any relevant changes likely to occur independently of the Proposed Development. This includes information on the value attached to different landscape and visual resources;
- Systematically identify and describe the effects of the Proposed Development which are likely to occur, including whether they are adverse or beneficial;
- Systematically and transparently assess the likely significance of the effects identified; and
- Identify measures to avoid/prevent, reduce or offset (or compensate for)any significant negative adverse effects.

[2] Landscape Institute and Institute of Environmental Management and Assessment, 2013, Guidelines for Landscape and Visual Impact Assessment, Third Edition, Abingdon, Routledge

[3] This includes Section 36 (Windfarms) and Section 37 (Overhead electricity lines) consents

5.3 Method of Baseline Data Collection

Extent of the Study Area

5.3.1 The Study Area shown on **Figure 5.1 (EIAR Volume 3a)** was selected on a realistic and pragmatic basis, as a 10 km radius beyond which the Proposed Development is unlikely to result in significant effects. A wider, 25 km study area was identified at Scoping Stage to cover the following landscape designations:

- South Lewis, Harris and North Uist National Scenic Area (NSA)
- Wild Land Area 30 Harris – Uig Hills (WLA 30); and
- Wild Land Area 31 Eishken (WLA 31).

5.3.2 The NSA and WLAs were scoped out of the assessment due to limited or no theoretical visibility.

Desk Study

5.3.3 Establishment of the baseline conditions has been undertaken through a combination of desk study and site appraisal. The desk review has involved a review of the following general documents and sources:

- National Planning Framework 4 (NPF4)[4];
- Outer Hebrides Local Development Plan (CnES, 2018)[5];
- Online mapping and aerial photography resources from Ordnance Survey, Google and Bing; and
- NatureScot Landscape Character Types (LCTs) and Descriptions (SNH, 2019 [online])[6].

5.3.4 Other internal sources of information were reviewed:

- Scoping responses and other consultation responses for the Proposed Development (Technical Appendix 4.1: Consultation Register (EIAR Volume 4)); and
- The Zone of Theoretical Visibility (ZTV) for the Proposed Development (see Figure 5.2, EIAR Volume 3).

Field Study

5.3.5 Field work was undertaken by a Chartered Landscape Architect and Landscape Assistant in December 2022, March and November 2023, and March and September 2024.

5.4 Method of Assessment

5.4.1 The detailed assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 5.1: LVIA Assessment Methodology (EIAR Volume 4)**. Key aspects of the methodology are set out under Methods of Prediction below.

Methods of Prediction

5.4.2 For LVIA potential effects are identified and their significance is assessed for each stage of the Project lifecycle and significance attributed relative to the baseline conditions. These are presented in accordance with Chapter 8 of GLVIA3.

Sensitivity of Receptors

Sensitivity to Change

5.4.3 The relative sensitivity is assessed in terms of two sets of criteria:

- Susceptibility to the change; and
- Value of the landscape receptor or value attached to views experienced by receptors.

4 The Scottish Government, 2024, Fourth National Planning Framework (NPF4)

5 CnES (2018) Outer Hebrides Local Development Plan, available at https://www.cne-siar.gov.uk/planning-and-building-standards/planning/planning-policy-and-guidance/current-development-plan, accessed 27/01/2025

6 NatureScot (2019), Scottish Landscape Character Types – Map and Descriptions [online]. Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

Magnitude of Change

Magnitude of Change

5.4.4 The magnitude of change is assessed in terms of three sets of criteria: (GLVIA3)

- Size or scale;
- Geographical extent; and
- Duration and reversibility.

Significance of Effect

5.4.5 The sensitivity of the receptor and the magnitude of effect are combined to define the effect. In this assessment, significant effects are considered to be moderate or above.

5.4.6 For the purposes of the LVIA methodology, the effect matrix is presented in **Table 5.1** below.

Table 5.1 Determination of Effect

Sensitivity / Magnitude	Very High	High	Medium	Low	Negligible
Major	Major	Major	Major	Moderate	Minor
Moderate	Major	Major	Moderate	Minor	Negligible
Minor	Moderate	Moderate	Minor	Minor	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Limitations and Assumptions

5.4.7 Site visits in December 2022 and March 2023 were undertaken in very poor visibility conditions. Data collection during these visits was, however, verified during subsequent visits when weather conditions and visibility was good. Site photography was undertaken while a large cruise ship was docked at the deep water port. Where time permitted, photographs were retaken after the ship had departed. This was not possible for all viewpoints but the assessment discounts the detracting nature of the large scale vessel where it appears in baseline photographs. Other site visits were undertaken in more favourable visibility as listed at 5.3.5.

5.5 Baseline Conditions

Current Baseline

5.5.1 The baseline description of landscape character types, landscape designations and building-based, recreation-based and route based visual receptors is presented in **Technical Appendix 5.2 (EIAR Volume 4)**.

Future Baseline

5.5.2 In the event that the Proposed Development does not go ahead, the future baseline of the Study Area may include other development *inter alia:* the expansion of existing quarries; road improvements; electrical infrastructure upgrading; expansion of residential, commercial and industrial development; additional electricity generation development; and changes to land cover resulting from climate change.

Summary of Sensitive Receptors

Scoped Out Receptors

5.5.3 Receptors scoped out of the LVIA are listed, together with justifications, in Table 5.2.

Table 5.1: Summary of Scoped Out Receptors

Feature/Effect	Justification
LCT 318 Linear Crofting	There is theoretical visibility from 0.20% of this LCT at distances in excess of 7 km and it is unlikely that significant effects would occur.
LCT 319 Dispersed Crofting	There is theoretical visibility from 0.35% of its area at distances in excess of 8 km and it is unlikely that significant effects would occur
South Lewis, Harris and North Uist National Scenic Area (NSA)	There is no theoretical visibility from the small part of the NSA which is within 25 km.
Wild Land Area 30 Harris – Uig Hills (WLA 30)	The theoretical visibility extends to 0.60% of the area of WLA within the study areas and 0.16% of the total area of the WLA, and no significant effects are anticipated
Wild Land Area31 Eishken (WLA 31)	There is theoretical visibility from 21.70% of the area of WLA within the study areas and a total of 6.39% of the total area of WLA at distances in excess of 21 km and no significant effects are anticipated
A857 North Bound	North bound vehicle travellers would be heading away from the Proposed Development.
A858	There is no theoretical visibility from this route.
A866 East Bound	East bound vehicle travellers would be heading away from the Proposed Development.
B859 North Bound	North bound vehicle travellers would be heading away from the Proposed Development.
B897 South Bound	South bound vehicle travellers would be heading away from the Proposed Development.
Hebridean Way (Cycle Route)	There is no theoretical visibility from this route.

Scoped In Receptors

5.5.4 The sensitivity of Scoped in Receptors is described in **Tables 5.2.1** – 5.2.6 in **Technical Appendix 5.2** and summarised in **Table 5.2** below.

Table 5.2: Summary of Scoped in Receptors

Receptor	Sensitivity	Justification
LCT 317 Gently Sloping Crofting	Medium	Moderate quality and condition; locally valued
LCT 322 Boggy Moorland – Outer Hebrides	Medium - High	Moderate quality and condition; designation (Garden and Designed Landscape – in part).
LCT 323 Rocky Moorland – Outer Hebrides	Medium	Moderate quality and condition; locally valued
LCT 324 Cnoc and Lochan	Medium	Moderate quality and condition; locally valued
Lews Castle and Lady Lever Park Garden and Designed Landscape	High	High quality and condition; designation Garden and Designed Landscape
Viewpoint B1 Marybank	Medium - High	Residents; view contributes to setting
Viewpoint B2 Plasterfield	Medium - High	Residents; view contributes to setting
Viewpoint B3 Lower Sandwick	Medium - High	Residents; view contributes to setting
Viewpoint B4 Olivers Brae	Medium - High	Residents; view contributes to setting
Viewpoint B5 Newton	Medium - High	Residents; view contributes to setting
Viewpoint B6 Knock, Point (cumulative assessment only)	Medium - High	Residents; view contributes to setting

Receptor	Sensitivity	Justification
Viewpoint Rec1 Lewis War Memorial	High – Very High	Visitors to heritage assets; view from built features with important historic attributes
Viewpoint Rec2 Iolaire Memorial Car Park	High – Very High	Visitors to heritage assets; view from built features with important historic attributes
Viewpoint Rec3 Rhubha Àirinis	Medium	People engaged in recreation where appreciation of the landscape contributes to the setting.
Viewpoint Rec4 Cnoc na Croic	Very High	Visitors to heritage assets; Garden and Designed Landscape
Ro1. A857 – Southbound	Medium	Travellers on road; view contributes to setting
Ro2. A859	Medium	Travellers on road; view contributes to setting
Ro4. A886 – westbound	Medium	Travellers on road; view contributes to setting
Ro5. B859 - Southbound	Medium	Travellers on road; view contributes to setting
Ro6. B897 – northbound	Medium	Travellers on road; view contributes to setting
Ro7. Ullapool to Stornoway Ferry	Medium	Travellers on ferries; view contributes to setting
Ro8 Hebridean Way (Walking Route)	High	Users of long distance footpaths; view contributes to setting
Ro10 Core Paths	High	Users of Core Paths; Garden and Designed Landscape (in part)

5.6 Assessment of Likely Effects

5.6.1 This section identifies potential effects which may occur as a result of the proposed Development.

Potential Construction Effects

5.6.2 Potential direct construction effects on the landscape resource would only occur for the LCT in which the activity associated with the Proposed Development would be located (LCT 322 Boggy Moorland – Outer Hebrides). All other potential landscape effects during construction would be indirect and would be related to the visibility of operations taking place in those parts of the Site to the north and south of the minor Arnish road. Potential visual effects may arise for the building based, recreation-based and route based receptors due to the temporary changes to visual amenity arising from visibility of construction works in both parts of the Site (i.e. north and south of the minor Arnish road).

Potential Operational Effects

5.6.1 Potential direct operational effects on the landscape resource would only occur for the LCT (LCT 322 Boggy Moorland – Outer Hebrides) in which the Proposed Development would be located. All other potential landscape effects would be indirect and would be related to the visibility of the Proposed Development (i.e. the buildings and associated permanent infrastructure south of the A859). Potential visual effects may arise for the building based, recreation-based and route-based receptors due to changes to visual amenity arising from visibility of the Proposed Development (i.e. the buildings and associated permanent infrastructure south of the Arnish road).

Potential Cumulative Effects

5.6.2 Other developments included in the cumulative assessment are:

- Stornoway Wind Farm;
- Harris – Stornoway 132 kV OHL Replacement;
- The Proposed Upgrade to Arnish Road;
- Deep Water South Project; and
- Bennadrove Quarry Expansion.

5.6.3 The assessment of cumulative landscape and visual effects has been limited to operational effects for other developments except Stornoway Wind Farm as it is unlikely that construction of the Proposed Development and the other cumulative developments would occur concurrently.

5.6.4 Potential Cumulative effects are limited to those receptors which have been assessed as accruing greater than negligible effects from the Proposed Development in isolation.

5.6.5 Receptors which have been assessed as accruing negligible or no effect and which are not included in the cumulative assessment are:

- LCT 317 Gently Sloping Crofting;
- LCT 324 Cnoc and Lochan; and
- Rec6 Creed Bridge car park.

5.6.6 Potential cumulative operational effects are those effects arising from the addition of the Proposed Development to other proposed developments in isolation or in combination.

5.7 Mitigation

5.7.1 **Chapter 2: Project Description** and **Chapter 13: Schedule of Mitigation (EIAR Volume 2)** provides details all of the embedded landscape and visual mitigation during construction and operation.

5.7.2 All embedded mitigation measures are taken into account in the assessment:

5.7.3 Much of the mitigation for landscape and visual purposes has been embedded in the design for the Proposed Development, in the form of earthworks bunding and woodland planting to the east and west of the Site. The landscape and visual assessment has established the height and dimensions of the bund that will be required to the immediate east of the HVDC platform in order to provide screening of the lower parts of the Proposed Development, in views from the east, including from Sandwick.

5.7.4 Care has been given to minimise the potential prominence of the Proposed Development in views from properties, routes and recreation locations.

Construction Stage Embedded Mitigation

5.7.5 Mitigation measures to be considered during the implementation of the Proposed Development would include the use of best practice construction and restoration techniques. The reinstatement of areas disturbed during construction would be fundamental to ensuring that the Proposed Development would be successfully accommodated into the existing landscape in the longer term. Careful reinstatement of landform would be employed across working areas and temporary tracks, re-using materials excavated during the construction period to reflect the terrain within adjacent areas as far as practicable.

5.7.6 Landform would be remodelled around building platforms and new, permanent tracks to ensure that these tie smoothly into their surroundings and to minimise the visual extent of these features where possible – for example, to help conceal foundations or the running surfaces of tracks from visual receptor locations or within the wider landscape.

5.7.7 Reinstatement of landform would include the creation of suitable gradients for cut and fill slopes associated with access tracks to enable the replacement of peat/soils and re-establishment of vegetation. Where the receiving terrain is not suitable to allow these gradients, the use of suitable geoengineering techniques, such as jute matting would be utilised to help establish vegetation and prevent erosion.

5.7.8 The natural regeneration of native species would normally be the preferred method of achieving vegetation restoration. In the harsh climate of the Western Isles, this would be augmented with seeding of local provenance ground flora and the planting of native trees and shrubs of local provenance where possible.

Earthworks

5.7.9 Earthworks would include screen bunding to the east of the Proposed Development, to screen the buildings and structures as far as possible from visual receptors which lie to the northeast, east and southeast, and to the western boundary where a stone retaining wall and earth mounding would screen the Proposed Development as far as possible from people travelling on the A859.

Planting

5.7.10 Planting would include the establishment of native trees and shrubs to increase the effectiveness of screen bunding east and west of the Proposed Development and to visually reinforce and extend existing woodland in the vicinity of Lews Castle grounds.

5.8 Residual Effects

5.8.1 The assessment of residual effects takes into account all of the embedded landscape and visual mitigation described in **Chapters 2 and 13**. The detailed assessment of landscape and visual effects is set out in **Technical Appendix 5.3** and has been undertaken in accordance with the sensitivity and magnitude criteria described in **Technical Appendix 5.1** against the baseline landscape and visual conditions described in **Technical Appendix 5.2**. The findings of the detailed assessment of residual construction effects are summarised in **Table 5.6**. All effects are adverse unless otherwise stated. Significant effects are highlighted in bold.

Table 5.6 Residual Construction Effects

Receptor	Sensitivity	Magnitude	Effect	Significance
LCT 317 Gently Sloping Crofting	Medium	Negligible indirect	Negligible indirect	Not significant
LCT 322 Boggy Moorland Outer Hebrides	Medium Locally high within GDL)	Minor direct Locally Major	Minor direct, **Locally Major direct**	Not significant **Locally Significant**
		Moderate indirect	**Moderate indirect**	**Significant**
LCT 323 Rocky Moorland	Medium	Minor indirect	Minor indirect	Not significant
LCT 324 Cnoc and Lochan	Medium	Negligible indirect	Negligible indirect	Not significant
Lews Castle and Lady Lever Park Garden and Designed Landscape	High – Very High	Minor indirect	**Moderate indirect**	**Significant**
B1 Marybank	Medium - High	Minor	Minor - Moderate	Not significant
B2 Plasterfield	Medium - High	Minor	Minor - Moderate	Not significant
B3 Lower Sandwick	Medium - High	Minor - Moderate	**Moderate**	**Significant**
B4 Olivers Brae/ Sandwick cemetery Entrance	Medium - High	Minor - Moderate	**Moderate**	**Significant**
B5 Newton Street	Medium - High	Minor	Minor - Moderate	Not significant
Rec1 Lewis War Memorial	High – Very High	Minor	**Moderate**	**Significant**
Rec2 Iolaire Memorial Car Park	High – Very High	Minor	**Moderate**	**Significant**
Rec3 Rhubha Àirinis	Medium	Minor	Minor	Not significant
Rec4 Below Cnoc na Croic	Very High	Moderate	**Major**	**Significant**
Rec5 Golf Course	High – Very High	Negligible	Minor	Not significant
Rec6 Creed Bridge car park/ chemical works	Medium	Negligible	Negligible	Not significant
Rec7 Marybank picnic benches	Medium - High	Major	**Major**	**Significant**
R1a A857Southbound	Medium	Negligible	Negligible	Not significant
R3a A859 Southbound	Medium	Moderate	**Moderate**	**Significant**
R3b A859 Northbound	Medium	Major	**Major**	**Significant**
R4a A886 Westbound	Medium	Minor	Minor	Not significant
R5a B859 - Southbound	Medium	Minor	Minor	Not significant
R6a B897 – northbound	Medium	Minor	Minor	Not significant

Receptor	Sensitivity	Magnitude	Effect	Significance
R7 Ullapool to Stornoway Ferry	Medium	Minor - Moderate	Minor - Moderate	Not significant
R8 Hebridean Way (Walking Route)	Medium - High	Minor	Minor - Moderate	Not significant
R10 Core Paths	High	Negligible	Negligible	Not significant

Summary of Significant Construction Effects

5.8.2 Of the total of six LCTs within the Study Area, one (LCT 322 Boggy Moorland) was assessed as accruing minor direct not significant effects, locally major direct significant effects and moderate significant effects during construction.

5.8.3 Lews Castle and Lady Lever Park GDL was assessed as accruing moderate indirect and significant effects during construction.

5.8.4 Of the six building-based visual receptors, two, B3 Lower Sandwick and B4 Olivers Brae/Cemetery Entrance were assessed as accruing moderate significant effects during construction.

5.8.5 Of the seven recreation-based receptors, four were assessed as accruing significant effects during construction:

- Rec 4 Below Cnoc na Croic (major);
- Rec 7 Marybank picnic benches (major);
- Rec 1 Lewis War Memorial (moderate); and
- Rec2 Iolaire Memorial Car Park (moderate).

5.8.6 Of the ten route-based receptor roads within the Study Area, one was assessed as accruing significant effects during construction - R3 A859 (major northbound, moderate south bound).

Residual Operational Effects

5.8.7 The findings of the detailed assessment of residual construction effects are summarised in **Table 5.7**. All effects are adverse unless otherwise stated. Significant effects are highlighted in bold.

Table 5.7 Residual Operational Effects

Receptor	Sensitivity	Magnitude	Effect	Significance
LCT 317 Gently Sloping Crofting	Medium	Negligible	Negligible	Not significant
LCT 322 Boggy Moorland 0Outer Hebrides	Medium (locally high in GDL)	Direct: Minor, Locally Major	Minor direct, **Locally Major direct**	Not significant **Locally Significant**
		Indirect: Moderate	**Moderate indirect**	**Significant**
LCT 323 Rocky Moorland	Medium	Minor	Minor	Not significant
LCT 324 Cnoc and Lochan	Medium	Negligible	Negligible	Not significant
Lews Castle and Lady Lever Park Garden and Designed Landscape	High – Very High	Minor	**Moderate**	**Significant**
B1 Marybank	Medium - High	Minor	Minor - Moderate	Not significant
B2 Plasterfield	Medium - High	Minor	Minor – moderate	Not significant
B3 Lower Sandwick	Medium - High	Moderate	**Moderate - Major**	**Significant**
B4 Olivers Brae/ Sandwick cemetery Entrance	Medium - High	Minor - moderate	**Moderate**	**Significant**
B5 Newton Street	Medium - High	Minor	Minor -Moderate	Not significant
Rec1 Lewis War Memorial	High – Very High	Negligible	Minor	Not significant
Rec2 Iolaire Memorial Car Park	High – Very High	Minor -Moderate	**Moderate**	**Significant**
Rec3 Rhubha Àirinis	Moderate	Minor	Minor	Not significant

Receptor	Sensitivity	Magnitude	Effect	Significance
Rec4 Below Cnoc na Croic	Very High	Major	**Major**	**Significant**
Rec 5 Golf Course	High – Very High	Negligible	Minor	Not significant
Rec6 Creed Bridge car park/ chemical works	Medium	Negligible	Negligible	Not significant
Rec7 Marybank picnic benches	Medium - High	Major	**Major**	**Significant**
R1a A857Southbound	Medium	Minor	Minor	Not significant
R3a A859 Southbound	Medium	Moderate	**Moderate**	**Significant**
R3b A859 Northbound	Medium	Moderate - Major	**Moderate - Major**	**Significant**
R4a A886 Westbound	Medium	Moderate	**Moderate**	**Significant**
R5a B895 - Southbound	Medium	Minor - Moderate	Minor - Moderate	Not significant
R6a B897 – northbound	Medium	Minor	Minor	Not significant
R7 Ullapool to Stornoway Ferry	Medium	Minor - Moderate	Minor - Moderate	Not significant
R8 Hebridean Way (Walking Route)	Medium - High	Minor	Minor - Moderate	Not significant
R10 Core Paths	Medium - High	Minor	Minor - Moderate	Not significant

Summary of Significant Operational Effects

5.8.8 Of the total of six LCTs within the Study Area, one (LCT 322 Boggy Moorland) was assessed as accruing and minor direct not significant effects, locally major direct significant effects and moderate significant effects during operation.

5.8.9 Lews Castle and Lady Lever Park GDL was assessed as accruing moderate indirect and significant effects during operation.

5.8.10 Of the six building-based visual receptors, one, B3 Lower Sandwick, was assessed as having moderate - major significant effects during operation and one, Olivers Brae/Cemetery Entrance was assessed as accruing moderate significant effects during operation.

5.8.11 Of the seven recreation-based receptors, three were assessed as accruing significant effects during operation:

- Rec 4 Below Cnoc na Croic (major);
- Rec 7 Marybank picnic benches (major); and
- Rec2 Iolaire Memorial Car Park (moderate).

5.8.12 Of the ten route-based receptor roads within the Study Area, two were assessed as accruing significant effects during operation- R3 A859 (moderate - major northbound, moderate south bound) and R4a A886 Westbound (moderate).

Cumulative Effects

5.8.13 With the exception of Stornoway Wind Farm, the cumulative assessment is limited to permanent effects as it is unlikely that temporary construction operations for the Proposed Development and the other cumulative developments would occur concurrently.

5.8.14 The assessment is restricted to those receptors predicted to accrue effects from the Proposed Development in isolation greater than negligible. It is considered that receptors which would experience negligible effects from the Proposed Development in isolation would be unlikely to experience greater levels of effect from the addition of the Proposed Development to other developments than those arising from the other developments in isolation or in combination.

Residual Cumulative Operational Effects

5.8.15 The detailed assessment of cumulative operational effects is presented in **Technical Appendix 5.3, Tables 5.3.4 – 5.3.6** and includes an assessment of the effects of the addition of the Proposed Development to other developments individually and collectively.

5.8.16 **Table 5.8** summarised the collective cumulative effects. All effects are adverse unless otherwise stated. Significant effects are highlighted in bold.

Table 5.8 Residual Cumulative Effects

Receptor	Period	Effect of the Proposed Development in isolation	Cumulative Effect	Significance
LCT 322 Boggy Moorland - Outer Hebrides	**Construction**	Minor direct, **Locally Major** direct	**Moderate - Major[7]**	**Significant**
		Moderate indirect	**Moderate - Major[7]**	**Significant**
	Operation	Minor direct, **Locally Major direct**	**Moderate – Major[8]**	**Significant**
		Moderate indirect	**Moderate – Major [8]**	**Significant**
LCT 323 Rocky Moorland	Construction	Minor indirect	Moderate - Major[9]	Significant
	Operation	Minor indirect	**Moderate – Major[9]**	**Significant**
Lews Castle and Lady Lever Park GDL	Construction	**Moderate indirect**	**Major** [7]	**Significant**
	Operation	**Moderate indirect**	**Major** [7]	**Significant**
B1 Marybank	Construction	Minor - Moderate	Minor - Moderate[10]	Not significant
	Operation	Minor - Moderate	Minor - Moderate[11]	Not significant
B2 Plasterfield	Construction	Minor - Moderate	**Moderate-Major to Major[7]**	**Significant**
	Operation	Minor – moderate	**Moderate-Major to Major[7]**	**Significant**
B3 Lower Sandwick	Construction	**Moderate**	**Major**	**Significant**
	Operation	**Moderate - Major**	**Major**	**Significant**
B4 Olivers Brae/ Sandwick cemetery Entrance	Construction	**Moderate**	**Moderate-Major to Major[7]**	**Significant**
	Operation	**Moderate**	**Moderate-Major to Major[7]**	**Significant**
B5 Newton Street	Construction	Minor - Moderate	**Moderate-Major to Major**	**Significant**
	Operation	Minor -Moderate	**Moderate-Major to Major**	**Significant**

[7] No greater than for Stornoway Wind farm in isolation

[8] No greater than for Stornoway Wind Farm in isolation or combination with other developments.

[9] This level of effect would be experienced over a wider area than the 3km assessed for the Stornoway Wind Farm in isolation.

[10] No greater than for the Proposed Development in isolation.

[11] No greater than for the Proposed Development or Stornoway Wind farm in isolation or combination with the other developments.

Receptor	Period	Effect of the Proposed Development in isolation	Cumulative Effect	Significance
B6 Knock (Cumulative Viewpoint)	Construction	-	**Moderate - Major[8]**	**Significant**
	Operation	-	**Moderate - Major[8]**	**Significant**
Rec1 Lewis War Memorial	Construction	Moderate	**Major[8]**	**Significant**
	Operation	Minor	**Major[8]**	**Significant**
Rec2 Iolaire Memorial Car Park	Construction	**Moderate**	**Moderate – Major[7]**	**Significant**
	Operation	**Moderate - Major**	**Moderate – Major[11]**	**Significant**
Rec3 Rhubha Àirinis	Construction	**Minor**	**Moderate – Major[8]**	**Significant**
	Operation	**Negligible - Minor**	**Moderate – Major[8]**	**Significant**
Rec4 Below Cnoc na Croic	Construction	**Major**	**Majo[11]**	**Significant**
	Operation	**Major**	**Major[11]**	**Significant**
Rec 5 Golf Course	Construction	Minor	Minor[11]	Not significant
	Operation	Minor	Minor[11]	Not significant
Rec7 Marybank picnic benches	Construction	**Major**	**Major[11]**	**Significant**
	Operation	**Major**	**Major[11]**	**Significant**
R1a A857Southbound[12]	Operation	Minor	**Moderate[8]**	**Significant**
R3a A859 Southbound	Construction	**Moderate**	**Moderate – Major [8]**	**Significant**
	Operation	**Moderate**	**Moderate – Major [8]**	**Significant**
R3b A859 Northbound	Construction	**Major**	**Major[10]**	**Significant**
	Operation	**Moderate - Major**	**Major[8]**	**Significant**
R4a A886 Westbound	Construction	**Minor**	**Moderate – Major [8]**	**Significant**
	Operation	**Moderate**	**Moderate – Major [8]**	**Significant**
R5a B895 - Southbound	Construction	Minor	**Major/Moderate to Major[8]**	**Significant**
	Operation	Minor - Moderate	**Major/Moderate to Major[8]**	**Significant**
R6a B897 – northbound	Construction	Minor	**Moderate[8]**	**Significant**
	Operation	Minor	**Moderate[8]**	**Significant**
R7 Ullapool to Stornoway Ferry	Construction	Minor - Moderate	**Moderate[8]**	**Significant**
	Operation	Minor - Moderate	**Moderate[8]**	**Significant**
R8 Hebridean Way (Walking Route)	Construction	Minor - Moderate	**Major/Moderate to Major[8]**	**Significant**
	Operation	Minor - Moderate	**Major/Moderate to Major[8]**	**Significant**
R10 Core Paths[12]	Operation	Minor - Moderate	**Major[8] but localised**	**Significant**

Summary of Significant Cumulative Effects

Construction Phase

5.8.17 One landscape receptor would accrue significant cumulative effects over a wider area from the addition of the Proposed Development to Stornoway Wind Farm but these effects would be no greater than those arising from Stornoway Wind Farm in isolation.

- LCT 323 Rocky Moorland (moderate – major adverse).

[12] Cumulative construction effects have not been assessed for this receptor as the construction effects of the Proposed Development were assessed as negligible.

5.8.1 Two building-based receptors would accrue significant cumulative effects from the addition of the Proposed Development to Stornoway Wind Farm:

- B3 Lower Sandwick (major); and
- B5 Newton Street (moderate – major to major).

5.8.2 Two recreation-based receptors would accrue significant cumulative effects from the addition of the Proposed Development to Stornoway Wind Farm but these effects would be no greater than those arising from the Proposed Development or Stornoway Windfarm in isolation.

- Rec4 Below Cnoc na Croic; (major); and
- Rec 7 Marybank picnic benches (major).

5.8.3 For all other landscape and visual receptors, significant cumulative effects arising from the addition of the Proposed Development to Stornoway Wind Farm would be no greater than those arising from Stornoway Wind Farm in isolation (one building based receptor and one recreation based receptor would experience not significant effects).

Operation Phase

5.8.4 One landscape receptor would accrue significant collective cumulative effects over a wider area from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination but these effects would be no greater than those arising from Stornoway Wind Farm in isolation.

- LCT 323 Rocky Moorland (moderate – major adverse).

5.8.5 Two building-based receptors would accrue significant collective cumulative effects from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination:

- B3 Lower Sandwick (major); and
- B5 Newton Street (moderate – major to major).

5.8.6 Two recreation-based receptors would accrue significant collective cumulative effects from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination but these effects would be no greater than those arising from the Proposed Development or Stornoway Windfarm in isolation.

- Rec4 Below Cnoc na Croic; (major); and
- Rec 7 Marybank picnic benches (Major).

5.8.1 For all other landscape and visual receptors, significant cumulative effects arising from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination would be no greater than those arising from Stornoway Wind Farm in isolation ((one building based receptor and one recreation based receptor would experience not significant effects).

Summary and Conclusion

5.8.2 The Landscape and Visual Impact Assessment has established that there would be significant adverse construction effects for people who may be present:

- Within LCT 322 Boggy Moorland;
- Within Lews Castle and Lady Lever Park GDL;
- At building-based receptors B3 Lower Sandwick and B4 Olivers Brae/Cemetery;
- At recreation-based receptors Rec 4 Below Cnoc na Croic, Rec 7 Marybank picnic benches, Rec 1 Lewis War Memorial, Rec 2 Iolaire Memorial Car Park and Rec 3 Rhubha Airinis; and
- Travelling on route-based receptor R3 A859 north and south-bound.

5.8.3 There would be significant adverse effects during operation for people who may be present:

- Within LCT 322 Boggy Moorland;
- Within Lews Castle and Lady Lever Park GDL;
- At building-based receptors B3 Lower Sandwick and B4 Olivers Brae/Cemetery;

- At recreation- based receptors Rec 4 Below Cnoc na Croic, Rec 7 Marybank picnic benches and Rec2 Iolaire Memorial Car Park; and
- Travelling on route-based receptor R3 A859 north and south-bound.

5.8.4 The cumulative landscape and visual assessment has established that the majority of construction effects arising from the addition of the Proposed Development to Stornoway Wind Farm would not result in any increase in the levels of effect arising from either the Proposed Development or Stornoway Wind Farm in isolation.

5.8.5 The cumulative landscape and visual assessment has established that the majority of operational effects arising from the addition of the Proposed Development to Stornoway Wind Farm and/or Stornoway Windfarm plus any of the other developments (Harris – Stornoway 132 kV OHL Replacement; The Proposed Upgrade to Arnish Road; Deep Water South Project; and Bennadrove Quarry Expansion) in isolation or combination would not result in any increase in the levels of effect arising from either the Proposed Development or Stornoway Wind Farm in isolation.

5.8.6 One landscape-based receptor would accrue significant collective cumulative construction effects over a wider area from the addition of the Proposed Development to Stornoway Wind Farm but these effects would be no greater than those arising from Stornoway Wind Farm in isolation. It would also experience cumulative operational effects over a wider area from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination but these effects would be no greater than those arising from Stornoway Wind Farm in isolation:

- LCT 323 Rocky Moorland (moderate – major adverse).

5.8.7 Two building based receptors would accrue significant cumulative effects during construction from the addition of the Proposed Development to Stornoway Wind Farm and during operation from the addition of the Proposed Development to Stornoway Wind Farm and any of the other developments in isolation or combination:

- B3 Lower Sandwick; and
- B5 Newton Street.

5.8.8 The assessment takes into account all mitigation measures and it can be expected that operational effects will diminish over time as the proposed mitigation planting establishes and matures.

6. CULTURAL HERITAGE

6.1 Introduction

6.1.1 This chapter reports on the likely significant effects with respect to cultural heritage (hereafter 'heritage assets') associated with the construction, operation and decommissioning of 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 Environmental Impact assessment (EIA) Report (EIAR Volume 2, Chapters 1-4).

6.1.2 The assessment has been carried out by Linn Glancy MA, MA (Hons) ACIFA of CFA Archaeology Ltd (CFA), a Registered Organisation (RO) of the Chartered Institute for Archaeologists (ClfA), based in Musselburgh, East Lothian. Linn Glancy is a Consultant with 25 years post-graduate experience as an Archaeologist, 17 years of which as a Consultant, and is an Associate of the Chartered Institute for Archaeologists (ACIfA).

6.1.3 This chapter is supported by the following Figures and Technical Appendices:

6.1.4 Figures (EIAR Volume 3a):

- Figure 6.1: Cultural Heritage: Inner Study Area (EIAR Volume 3);
- Figure 6.2: Cultural Heritage: Outer Study Area (EIAR Volume 3);

6.1.5 Technical Appendices (EIAR Volume 4):

- Technical Appendix 6.1: Cultural Heritage Assessment Methodology;
- Technical Appendix 6.2: Heritage Assets in the Inner Study Area;
- Technical Appendix 6.3: Assessment of Designated Assets in the Outer Study Area;
- Technical Appendix 6.4: Listed Buildings Not Taken To Individual Operational Impact Assessments.

6.1.6 Figures and Technical Appendices are referenced in the text where relevant.

6.2 Assessment Methodology and Significance Criteria

Scope of Assessment

6.2.1 This chapter considers effects on:

- Scheduled Monuments (SM) and other archaeological features;
- Listed Buildings (LB) and other buildings of historic or architectural importance;
- Inventory Gardens and Designed Landscapes (GDL);
- Conservation Areas (CA); and.
- Non-designated Heritage Asset.

6.2.2 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application or consents. Operational, under construction and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

6.2.3 The assessment is based on the Proposed Development as described in Chapter 2: Project Description (EIAR Volume 2).

6.2.4 The scope of the assessment has been informed by consultation responses detailed in Technical Appendix 4.1: Consultation Register (EIAR Volume 4) and relevant legislation, policy and guidelines/policies.

- The Ancient Monuments and Archaeological Areas Act 1979
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997
- National Planning Framework for Scotland 4 (NPF4) (2023)
- Historic Environment Policy for Scotland (HEPS) (2019)
- Outer Hebrides Local Development Plan, Adopted Plan (November 2018)
- Planning Advice Note 2/2011: Planning and Archaeology (PAN2/2011)

- Standards and guidance for Historic Environment Desk-Based Assessment[1]
- Code of Conduct: Professional Ethics in Archaeology[2]
- Designation Policy and Selection Guidance[3]
- Managing Change in the Historic Environment: Setting[4]
- Environmental Impact Assessment Handbook[5]
- Principles of Cultural Heritage Assessment[6]
- Guidance for Peatland Restoration and the Historic Environment in Scotland[7]

Extent of the Study Area

6.2.5 The following study areas will be adopted for the cultural heritage assessment:

- Inner Study Area: the Site boundary (Figure 6.1). This area forms the study area to identify any heritage assets, both those previously recorded in the Historic Environment Record (HER) and on designation lists, and those identified through detailed desk-based assessment, that could be directly affected by the Proposed Development.
- Outer Study Area: A wider study area, extending to 3 km from the Site boundary (Figure 6.2), has been used to identify heritage assets with statutory or non-statutory designations that could have their settings affected by the Proposed Development. No designations beyond that distance have been identified as having settings likely to be sensitive to change arising from the Proposed Development.

Desk Study

6.2.6 A detailed desk-based assessment was conducted covering the Inner Study Area, using a range of documentary, archival, and bibliographic sources. Up-to-date information was obtained on the locations and extents of heritage assets with statutory protection and non-statutory designations within the study area. Sources consulted for the assessment include:

- CnES Historic Environment Record (HER): a digital database extract was obtained in July 2024;
- The National Record of the Historic Environment (NRHE) database[8] (Canmore): checked for any information additional to that contained in the HER;
- Historic Environmental Scotland (HES) Spatial Data Warehouse[9] : for up-to-date data on the locations and extents of Scheduled Monuments, Listed Buildings, Conservation areas, and Inventory Gardens and Designed Landscapes;
- Map Library of the National Library of Scotland: for historic Ordnance Survey maps and other historic maps;
- Local resources and bibliographic references were consulted to provide background and historic information[10,11,12,13];
- Aerial photography and satellite imagery (Google Earth, Bing maps, ESRI World Imagery); and
- Historic Land-Use Assessment Data for Scotland (HLAMap)[14]: for information on the historic land use character of the Inner Study Area.

[1] Chartered Institute for Archaeologists (2014) Standard and Guidance for the Historic Environment Desk-Based Assessment, London
[2] Chartered Institute for Archaeologists (2014) Code of Conduct: Professional Ethics in Archaeology, London
[3] Historic Environment Scotland (2019b) Designation Policy and Selection Guidance, Edinburgh
[4] Historic Environment Scotland (2016) Managing Change in the Historic Environment: Setting Edinburgh
[5] Scottish Natural Heritage and Historic Environment Scotland (2018) Environmental Impact Assessment Handbook, Edinburgh
[6] IEMA (2021) Principles of Cultural Heritage Impact Assessment In the UK, London
[7] Mann, B (2022) Guidance for Peatland Restoration and the Historic Environment in Scotland, Association of Local Government Archaeological Officers Scotland
[8] Historic Environment Scotland (HES, 2024a) 'National Record for the Historic Environment (NRHE)'. (Available at: http://pastmap.org.uk/.
[9] Historic Environment Scotland (HES, 2024b) 'Spatial Data Warehouse'. (Available at: http://portal.historic-scotland.gov.uk/spatialdownloads).
,[10] https://angusmacleodarchive.org.uk/
[11] https://hebrideanconnections.com/
[12] https://stornowayhistoricalsociety.org.uk/
[13] Whiteford a (2017) An Enormous Reckless Blunder, The Story of the Lewis Chemical Works, Lewis
[14] Historic Environment Scotland (HES, 2022c) 'Historic Land-Use Assessment Data for Scotland (HLAMap)'. (Available at: http://hlamap.org.uk/.

Field Study

6.2.7 A reconnaissance walk-over field survey was carried out of the Site between 20th and 22nd August 2024 with the following aims:

- to locate and record the baseline character and condition of heritage assets identified through the desk-based assessment;
- to identify any further heritage assets not revealed through the desk-based study that could be affected by the Proposed Development;
- to identify any areas of archaeological potential within the Inner Study Area; and
- to assess and record the heritage value of the heritage assets identified through the desk-based assessment and field survey.

6.2.8 Site visits to selected heritage assets in the Outer Study Area were also undertaken between 20th and 22nd August 2024 to assess the potential impact of the Proposed Development on their settings.

6.3 Method of Assessment

6.3.1 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in Technical Appendix 6.1: Cultural Heritage Assessment Methodology, this methodology has been guided by the EIA Handbook[15].

Limitations and Assumptions

6.3.2 The desk-based assessment draws on the records in the CnES HER, provided in a digital Geographic Information System (GIS) dataset in July 2024. It is assumed that the data provided was accurate and up to date at the time it was acquired. It is unlikely that there have been significant changes to the dataset since it was acquired, and it is assumed to be a reliable and accurate reflection of the recorded cultural heritage baseline for the purpose of this assessment.

6.3.3 Designated heritage assets within the Outer Study Area (EIAR Volume 3a: Figure 5.2 and Figure 5.3) have been identified from the HES Spatial Data Warehouse and were downloaded from the HES website in October 2024. This data is assumed to have been accurate and up to date at the time of its acquisition.

6.4 Baseline Conditions

Current Baseline

Heritage Assets within the Inner Study Area

Designated Heritage Assets

6.4.1 There are no designated heritage assets (Scheduled Monuments, Listed Buildings, Conservation areas, Inventory Garden and Designed Landscapes, or Inventory Historic Battlefields) within the Inner Study Area.

Non-Designated Heritage Assets

6.4.2 Ten non-designated heritage assets have been identified within the Inner Study Area. Numbers in brackets in the following text refer to these heritage assets which are shown on Figure 6.1, with numbers in brackets denoting the Site Number which can be cross referenced with the more detailed description provided in Technical Appendix 6.2: Heritage Assets in the Inner Study Area.

[15] SNH & HES (2018) Environmental Impact

PREHISTORIC PERIOD

6.4.3 There is no evidence of prehistoric activity recorded within the Inner Study Area. There is however evidence of prehistoric settlement, funerary and ritual activity in the wider surrounding area including the Scheduled Monuments Druim Dubh, stone circle (SM 5504), Cnoc na Croich, chambered cairn (SM 6550) and Loch Arnish, dun (SM 5397) (in the Outer Study Area).

6.4.4 Given the known prehistoric activity in the surrounding area the absence of recorded prehistoric assets in the Inner Study Area may reflect the absence of intrusive archaeological works within the Inner Study Area and it cannot be discounted that prehistoric remains may survive subsurface within the Inner Study Area.

MEDIEVAL PERIOD TO MODERN

6.4.5 Within the Inner Study Area, the majority of recorded assets date to the post medieval to modern period and are the remains of shieling huts, small huts which are typically associated with medieval to post-medieval summer grazing activity, with the shepherds staying on the remote grounds with their stock. The occasional use of shielings continued into the modern period.

6.4.6 The sites vary in size from single shielings (1, 5, 6 and 9) to small groups of two to four possible shielings (2 and 8) and include one larger group of eight shielings (7). The shielings all survive as turf mounds or turf footings, with the exception of one (9) which is recorded as the ruined remains of a modern timber shieling. The shielings are components of the local historical landscape and are assessed to be of heritage value at the local level and of low sensitivity.

6.4.7 Also related to the agricultural use of the landscape, to the west of the A859 is an area of possible strip cultivation (3) on the south facing side of a large grassy knoll. This is an example of the relic cultivation and as such is a component of the local historical landscape and is assessed to be of heritage value at the local level and of low sensitivity.

6.4.8 The largest heritage asset within the Inner Study Area is the site of the Lewis Chemical Works (4) which covers much of the area to the west of the A859. The Lewis Chemical Works was opened in 1851 and closed in 1875, during which time it cut and dried peat which was then distilled to produce paraffin. Today, within the Inner Study Area, the chemical works is apparent in the large area of peat cuttings, the remains of the chemical works buildings (4.1 and 4.2), tramway embankments (4.3), a cartway (4.4), and a canal (4.5). Although relatively short lived, the chemical works was an example of Victorian experimental science and technology and is an important part of the development and history of Lewis. As such the Lewis Chemical Works is considered to be an asset of heritage value at a regional level and of medium sensitivity.

Designated Heritage Assets in the Outer Study Area

6.4.9 Within 3 km of the Proposed Development, there are four Scheduled Monuments of heritage value at national level and of high sensitivity.

6.4.10 Within 3 km of the Proposed Development there are 80 Listed Buildings, three Category A Listed Buildings of heritage value at national level and of high sensitivity, 52 Category B Listed Buildings of heritage value at regional level and of medium sensitivity and 25 Category C Listed Buildings of value at a local level and of low sensitivity.

6.4.11 Within 3 km of the Proposed Development there is one Inventory Garden and Designed Landscape, Lews Castle and Lady Lever Park (GDL 00263) of heritage value at a national level and of high sensitivity.

6.4.12 Within 3 km of the Proposed Development there is one conservation area, Stornoway Conservation Area (CA317) of heritage value at a regional level and of medium sensitivity.

6.4.13 There are no further designated assets (World Heritage Sites, Inventory Battlefields) within the Outer Study Area.

Archaeological Potential

6.4.14 The desk-based assessment and field surveys have shown that sites from the post medieval to industrial period are preserved within the Inner Study Area.

6.4.15 From the medieval period through to the modern period, the main land use in the peat covered interior of Lewis was the seasonal grazing of livestock and the cutting of peat. The cultural heritage assets recorded within the Inner Study

Area reflect this, with the majority of assets being shieling huts. Given the number of shieling huts recorded within the Site it is considered that while some may have become overgrown with peat and vegetation and therefore not previously identified, the majority of shieling huts will have previously been recorded as upstanding features.

6.4.16 Dating to the industrial period, the Lewis Chemical Works (4) was located in the area to the north of the A859 Road, the remains of the chemical works are relatively well documented and while it may be excepted to find previously unrecorded features related to the works in the area immediately surrounding the area of the chemical works buildings (4.1 and 4.2), any other remains are likely to be continuation of recorded peat cuttings, cartways, tramways and the canal.

6.4.17 Given the known prehistoric activity in the wider surrounding area and the extent of peat coverage across much of the Inner Study Area, it is possible that hitherto undiscovered prehistoric archaeological remains survive deeply buried beneath the layers of peat.

6.4.18 In addition to prehistoric remains surviving below peat, the peat itself is of archaeological importance in terms of paleoenvironmental evidence for past climates and land cover[16]. With peat found across much of the Site and with peat depths of up to 4m, the peat has the potential to increase our understanding of the timing, extent, and mechanisms for woodland decline and increase our understanding of the interactions between first farmers and woodlands in the Western Isles[17].

6.4.19 Taking into account the current land-use, the level of peat coverage and the evidence for prehistoric activity in the Outer Study Area, the potential is assessed as being moderate for hitherto undiscovered archaeological remains to survive subsurface.

Future Baseline

6.4.20 If the Proposed Development was not to proceed, there would likely be no change to the baseline condition of the various heritage assets that presently exist within the Inner Study Area. Current rough pasture and moorland land-use would most likely continue limiting the potential for disturbance to heritage assets, and only natural decay (weathering and erosion) would affect the surviving upstanding remains.

6.4.21 The exception to this would be if other future developments were to take place within the Inner Study Area, dependant on the type and size of such potential developments they could result in varying levels of effect on the heritage assets within the Inner Study Area. Such potential developments would be subject to planning constraints.

6.4.22 Designated heritage assets in the Outer Study would be subject to normal statutory requirements and planning constraints.

Summary of Sensitive Receptor

Scoped In Receptors

6.4.23 A summary of the receptors identified as being sensitive to the Proposed Development and which have been 'scoped in' to the assessment (as set out in the scoping report and following consultation with HES and the CnES Archaeologist) are given in Table 6.1 together with the justification for inclusion.

Table 6.1: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Scheduled Monuments up to 3 km from the Proposed Development. A list of these is provided in **Technical Appendix 6.3: (EIAR Volume 4).**	High	These are monuments protected by statute. The consent of Scottish Ministers is required before any works are carried out which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument. In addition, effects of the Proposed Development works upon the setting of a Scheduled Monument form an important consideration in the granting or refusal of planning consent to conduct development works.

[16] Mann B (2022) Guidance for Peat Restoration and the Historic Environment in Scotland (ALGAO), p7

[17] Bishop R.R, Church M.J, Lawson I.T, Roucoux K.H, O'Brien C, Ranner H, Healds A.J and Flitcroft C.E (2018) Deforestation and Human Agency in the North Atlantic Region: Archaeological and Palaeoenvironmental Evidence from the Western Isles of Scotland, Proceedings of the Prehistoric Society 84, 2018, pp. 145–184 © The Prehistoric Society. doi:10.1017/ppr.2018.8 First published online 02 October 2018, p146

Receptor	Sensitivity	Justification
		Such assets will be considered for direct operational phase impacts on setting.
Listed Buildings up to 3 km from the Proposed Development. A list of these is provided in **Technical Appendix 6.3 (EIAR Volume 4)**, along with their relative sensitives.	Low to High	Buildings which are statutorily protected as buildings of special architectural or historic interest. They are protected under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. Planning authorities and Scottish Ministers are required to have special regard for the desirability of preserving Listed Buildings and their settings and any features of special architectural or historic importance they possess. Such assets will be considered for direct operational phase impacts on setting.
Inventory Gardens and Designed Landscapes up to 3 km from the Proposed Development. A list of these is provided in **Technical Appendix 6.3 (EIAR Volume 4)**.	High	The impact of a development on a designated Garden or Designed Landscape listed in 'An Inventory of Gardens and Designed Landscapes in Scotland or its Supplements' (Inventory; published by HES) is a material consideration in the determination of a planning application, although the designation is non-statutory in effect. Under the provisions of the Town and Country Planning (General Development Procedure) (Scotland) Order 1992 (1992 Order), planning authorities must consult HES on any development that may affect a site contained in the Inventory. Such assets will be considered for direct operational phase impacts on setting.
Conservation Areas up to 3 km from the Proposed Development. A list of these is provided in **Technical Appendix 6.3 (EIAR Volume 4)**.	Medium	Areas proposed by Local Development Plans as areas of special architectural or historic interest and contain key features which it is desirable to conserve, sustain and enhance. Planning authorities are required to consider planning applications affecting the appearance, character or setting of Conservation Areas. Such assets will be considered for direct operational phase impacts on setting.
Other non-designated historic environment assets within the Site / Inner Study Area. A list of these is provided in **Technical Appendix 6.2 (EIAR Volume 4)**.	Negligible to Medium	A range of other non-designated archaeological sites, monuments and areas of historic interest which do not have statutory protection but are curated by the local planning authority. Such assets will be considered for direct physical construction phase impacts.

Potential Effects Scoped Out

6.4.24 Table 6.2 provides a summary of issues scoped out of the assessment.

Table 6.2: Issues Scoped Out of the EIA

Feature/Effect	Justification
Assessment of the direct operational phase impacts of the of the Proposed Development on the settings of World Heritage Sites and Inventory Historic Battlefields has been scoped out.	There are no assets with these designations within 3 km of the Proposed Development.
Of the 80 Listed Buildings within the Outer Study Area , 64 (one Category A, 45 Category B and 18 Category C) are located within the townscape of Stornoway. Assessment of the effect of the direct operational phase impacts of the Proposed Development on the settings of Listed Buildings within the Stornoway townscape has been scoped out.	The settings of these buildings are characterised by their urban setting and their association with the built environment of the town and would not be affected by the Proposed Development.

Feature/Effect	Justification
Assessment of the direct operational phase impacts of the of the Proposed Development on the settings of designated heritage assets more than 3 km from the Site will be scoped out	None have been identified beyond that distance as having settings sensitive to change arising from the Proposed Development.

6.5 Assessment of Likely Effects

Potential Construction Effects

6.5.1 Any ground-breaking activities associated with the construction of the Proposed Development (such as those required for the HVDC Convertor Station, the AC Substation, laydown areas, temporary and permanent drainage access tracks, etc.) have the potential to disturb or destroy features of cultural heritage interest within the Site; and any such impacts would be a permanent and irreversible. Other construction activities, such as vehicle movements, materials storage, soil and overburden storage and landscaping also have the potential to cause permanent and irreversible effects.

6.5.2 The Proposed Development layout has been designed to avoid impacts on heritage assets as far as possible, but two heritage assets would be directly affected by construction works associated with the Proposed Development. These are:

- A probable shieling mound (2) of low sensitivity, would be removed by the construction of the western part of the AC substation platform and the part of the temporary laydown area within which footprint it is located. This would be a high magnitude adverse impact on the integrity of the shieling mound as a whole. The resulting effect would be of moderate/minor significance (significant in EIA terms). Proposed mitigation measures at the construction stage to offset the effect are outlined in Section 6.13: Mitigation.
- The Lewis Chemical Works (4) an asset of medium sensitivity, would see the construction of the Peat Restoration Access tracks, Peat Restoration Areas and Access Tracks within its area, impacting on a possible area of the Chemical Works buildings (4.2), trackway (4.3), the inscribed marker stone (4.6) and a small area of the historic peat cutting. The result would be of moderate magnitude adverse impact with moderate significance (significant in EIA terms). Proposed mitigation measures at the construction stage to offset the effect are outlined in Section 6.13: Mitigation.

6.5.3 In addition to direct construction effects identified above one asset has been identified which has the potential to be accidently affected by the Proposed Development.

- The Arnish Shielings (1) of low sensitivity is located within the southern construction area, and there is potential for accidental damage to the asset from construction traffic traversing the scheduled area. This would be a high magnitude adverse impact on the integrity of the shielings as a whole. The resulting effect would be of moderate/minor significance (significant in EIA terms). Proposed mitigation measures at the construction stage to offset the effect are outlined in Section 6.13: Mitigation.

6.5.4 It has been assessed that there is moderate potential for hitherto undiscovered archaeological remains to be present subsurface within the Site and within the peat deposits which cover the majority of the Site Taking into account the assessed low to medium sensitivity of most of the known archaeological remains within the Site boundary and assuming potential impacts of high magnitude arising from construction works, it is assessed that, without mitigation, any adverse direct effects on buried archaeological remains could be of moderate significance (significant in the context of the EIA regulations). Proposed mitigation measures for the construction stage are outlined in Section 6.13: Mitigation.

Potential Operational Effects

6.5.5 The Proposed Development could result in adverse effects on the settings of cultural heritage assets within the Outer Study Area, although such effects would diminish with increasing distance from the Site. At distances greater than 3 km, it is considered that, in most instances, the Proposed Development would not appreciably alter characteristics or the settings of the heritage assets that contribute to their cultural significance. Neither would it appreciably alter how a heritage asset is understood, appreciated and experienced. There are no designated heritage assets beyond 3 km from the Site boundary that have been identified, either through appraisal of the ZTV or identified through consultation with HES or the CnES, that require consideration of potential impacts on their settings.

6.5.6 Technical Appendix 6.3 (EIAR Volume 4) contains tabulated assessments of the predicted operational effects on the settings of designated heritage assets with cogitation of the degree of predicted theoretical visibility of the Proposed Development based on analysis of the ZTVs, without screening (the ZTV does not take into account the potential screening from intervening buildings or vegetation).

6.5.7 The assessment of operational effects on the settings of heritage assets has been carried out with reference to the layout of the Proposed Development and the locations of the cultural heritage assets shown on Figure 6.2. The criteria detailed in Technical Appendix 6.1, Table 6.1.3, Table 6.1.4 and Table 6.1.5 have been used to assess, in combination with professional judgement, the nature and magnitude of the effects set out in the Technical Appendices.

6.5.8 The following discussion addresses those assets where potentially significant adverse effects have been identified through the tabulated assessment (Technical Appendix 6.3, EIAR Volume 4), and those assets identified by HES as requiring detailed consideration, even where the significance of the predicted effect is assessed as being not significant in EIA terms. The assessments are supported with cultural heritage visualisations (Figures 6.3 and 6.4). The visualisations are referenced in the tabulated assessment set out in Technical Appendix 6.3 (EIAR Volume 4), where relevant, and are referenced where relevant in the assessment below.

6.5.9 There are seven designated heritage assets within the Study Areas (Table 6.3) that the consultees (HES and the CnES Archaeologist) requested be focused upon in the assessment. Each of these is discussed below with Lews Castle (LB18677) and Lews Castle and Lady Lever Park (GDL00263) being assessed as a group.

Table 6.3: Designated Assets Raised by Consultees for Setting Assessment

Reference No.	Designation Title
SM5347	Arnish Point, gun emplacements
SM5397	Loch Arnish, dun
SM5504	Druim Dubh, stone circle
SM6550	Cnoc na Croich, chambered cairn
LB18677	Lews Castle
GDL00263	Lews Castle and Lady Lever Park Inventory Garden and Designed Landscape
LB19211	Stornoway War Memorial

Arnish Point, gun emplacements (SM 5347)

6.5.10 The Arnish Point gun emplacements are the remains of a Second World War emergency coastal battery which are comprised of the concrete emplacements of two large coastal guns and two searchlights, a concrete command post, and remains of a hutted encampment and associated infrastructure. As a Scheduled Monument, the gun emplacements are of heritage value at national level and an asset of high sensitivity.

6.5.11 The gun emplacements are located on the southern cliff tops of Arnish Point with wide views, southwest to northeast, over the Minch and along the coastline and the entrance to Stornoway Harbour. This is an important strategic defensive location, from which to protect the island, Stornoway Harbour and to control access through the Minch. Their position makes them clearly visible to those approaching Stornoway by sea. To the west, the view from the gun emplacements is over slightly rising ground beyond which is the industrial area of Arnish and the large shed of the Fabrication Yard, although these inland views are of little or no importance to the setting or cultural significance of the Scheduled Monument.

6.5.12 The upstanding structures of the Proposed Development would be located approximately 2.6 km to the northwest of the gun emplacements, beyond the buildings of the Fabrication Yard, and beyond the land of the Arnish moor both of which would partly screen the Proposed Development. The key views from the gun emplacements to and from the seaward approach would remain unaffected.

6.5.13 Overall, as a result of the change to its wider surroundings, the Proposed Development would have an impact of **negligible adverse magnitude** on the setting of the Arnish Point, gun emplacements, an asset of **high sensitivity**. It is assessed that this would result in an effect that is of **negligible** significance and not significant in EIA terms.

6.5.14 Furthermore, in the context of the NPF4 Policy[18] 7h ii test, it is considered that the ability to understand, appreciate and experience the siting of this Scheduled Monument, and the key aspects of the setting of relevance to the gun emplacements, would be retained such that the integrity of its setting would not be significantly adversely affected.

Loch Arnish, dun (SM 5397) Figure 6.2

6.5.15 Loch Arnish, dun is a small crannog (artificial island) that survives within Loch Arnish. Recent archaeological investigations (Garrow & Strut 2019) have demonstrated that it was in use from the Neolithic period through to the post-medieval period, although it was most likely not continuously occupied throughout this timeframe. As a Scheduled Monument, the dun is of heritage value at national level and is an asset of high sensitivity.

6.5.16 Located in Loch Arnish, the dun has views over water to rising heather moorland to the south, southeast and west. While the area surrounding the loch was planted with saplings as part of a Diamond Jubilee Wood in 2012, it appears few if any of these trees have established. The view to the northwest is over the shore of Loch Arnish to the Fabrication Yard Road, the Booster Power Station, and the cleared ground of the Deep Sea Harbour. The surrounding ground, rising relatively steeply from the loch shore, hides Loch Arnish and the dun from views from the wider landscape and limits views outwards.

6.5.17 The ZTV for the Proposed Development (**Figure 6.2**) demonstrates that there would be no visibility of the Proposed Development from the Scheduled Monument nor from the limited land surrounding the Loch (the shoreline and rising ground immediately surrounding the loch) from which this asset was and is visible. Given the lack of any views from the dun or containing the dun with potential visibility of the Proposed Development it is considered the Proposed Development would have **no impact** on Loch Arnish dun (SM 5397) and this asset is not considered further.

Druim Dubh Stone Circle (SM 5504)

6.5.18 Druim Dubh stone circle consists of 16 fallen stones arranged in an elliptical ring measuring 28 m by 21 m. The site is a Scheduled Monument, of heritage value at the national level, and is assessed as being of high sensitivity.

6.5.19 The stone circle stands on a low natural mound 250 m west of the A859 junction with the B897, directly beside the A859, with panoramic views overlooking undulating moorland. The view to the east-southeast is obscured in the foreground by the former Halfway Garage buildings and an adjacent copse of trees, beyond which lie the three turbines of Arnish Moor Wind Farm, 1 km away. Peat cuttings occupy the foreground to the northeast and west, while flat bog and lochans extend across the view to the northwest and south. A wind turbine at Creed Enterprise Park is visible to the northeast, 1.9 km away. Currently, the routes of three overhead lines are visible from the stone circle approaching from the northeast and continue west-southwest with a branching line heading southeast toward the Arnish Moor turbines.

6.5.20 The stone circle is sited on a low mound in the relatively flat, though undulating, moorland landscape. It is not clear that the stone circle was located in reference to any particular viewpoints, although the surrounding distant hills may have had significance. As the stones are all now prone, with nine of the stones buried beneath peat and the visible stones exposed by peat cutting, the monument is not visible from any distance. Indeed, it is only distinguishable from the surrounding landscape when within its immediate vicinity. Views into the monument, therefore, add little to the current understanding, appreciation and experience of it.

6.5.21 The photomontage (**Figure 6.3**) demonstrates that the buildings of the Proposed Development would be visible 1.9 km to the northeast of the stone circle sitting directly behind Creed Enterprise Park and its turbine. The wider setting of the stone circle would be slightly altered through the addition of these buildings, though the key aspects of its setting within a wide low-lying moorland would remain.

[18] Scottish Government (2023) National Planning Framework for Scotland 4, Edinburgh, available at: https://www.gov.scot/publications/national-planning-framework-4/

6.5.22 Overall, as a result of the change to its wider surroundings, the Proposed Development would have an impact of **low adverse magnitude** on the setting of Druim Dubh stone circle, an asset of **high sensitivity**. It is assessed that this would result in an effect that is of **minor significance** and not significant in EIA terms.

6.5.23 Furthermore, in the context of the NPF4 Policy[19] 7h ii test, it is considered that the ability to understand, appreciate and experience the siting of this Scheduled Monument and the key aspects of the setting of relevance to the stone circle would be retained such that the integrity of its setting would not be significantly adversely affected.

Cnoc na Croich, chambered cairn (SM 6550)

6.5.24 Cnoc na Croich, chambered cairn comprises the remains of a cairn, a prehistoric burial monument, situated on the summit of Cnoc na Croich (Gallows Hill). The cairn is sub circular in shape measuring 30 m in diameter and has been subject to stone robbing, now standing at 0.5 m in height with the central cist exposed. The cairn has been partly clipped by a mid-19th century track (part of the GDL walkways) and a modern cairn built in 1902, from material robbed from the cairn, surmounts the east edge of the cairn next to the central cist. This modern cairn which originally supported a flagpole, was built to mark the supposed location of a medieval gallows from which the hill gains its name. As a Scheduled Monument, the cairn is of heritage value at national level and is an asset of high sensitivity.

6.5.25 The cairn is located on the summit of Cnoc na Croich, at 66m AOD, and is surrounded by trees of the GDL which block views out from the cairn in all directions, with the exception of a small, filtered view through the trees to Stornoway Harbour to the northeast. However, in the absence of the trees, the cairn would have had wide panoramic views over Stornoway Bay to the northeast and east, to Arnish Point and the open sea of the Minch beyond to the southeast, while to the south through west to the north the view would have been out over the surrounding moorland of the interior of Lewis.

6.5.26 The location of the cairn, on the summit of a hill, was probably chosen in order that the cairn would be a prominent and recognisable feature overlooking the everyday activities of the people who built it. A key view for this asset would therefore be that between it and the lower land particularly to the north and northeast of Stornoway Bay. Given the prominent position of this cairn overlooking Stornoway and the entrance to the Minch it is also possible that it was built to overlook this seaward approach. However, the cairn is now heavily denuded by stone robbing, is largely covered by scrub vegetation and is surrounded by trees and there is, therefore, limited visibility of the cairn until in its immediate vicinity.

6.5.27 Those aspects of the setting that contributed most to the chambered cairn's cultural significance are its topographical location which provided it with far reaching views over the surrounding landscape and in particular over Stornoway Bay. However, as the cairn is now surrounded by trees it has no uninterrupted views. The setting of the cairn is currently a clearing within the GDL woodland passed by a pathway from its north through east to south. The cairn itself is not instantly recognisable due to it being covered by vegetation, the modern marker cairn being the prominent feature within the clearing. An information board to the north of the cairn informs the visitor of the presence of the cairn.

6.5.28 The buildings of the proposed development would be at nearest 0.95 km away from the cairn. A wireline showing the predicted 'bare-earth' view of the proposed development from the asset (**Figure 6.4**) indicates that in the absence of trees, the Proposed Development would be visible sitting in the area of moorland to the southwest of the monument. Taking into consideration the screening provided by surrounding trees of the GDL it is assessed that the Proposed Development would not have an impact on the Cnoc na Croich chambered cairn (a photomontage has not been produced as due to the trees surrounding the cairn, there would be no potential visibility of the Proposed Development from the cairn and a photomontage would have only shown the closest trees).

6.5.29 The trees form part of the planting of the GDL and as such it is expected that they will continue to be managed and maintained. However, if the trees currently surrounding the cairn were to be felled in future, this would open up the surrounding landscape returning views from the cairn over wider surrounding landscape including to the interior moorland to the southwest and the Proposed Development would be visible within the wider landscape setting of the burial cairn. It would remain possible to understand why this cairn was built in this hilltop position and to appreciate and experience the wide panoramic views over the surrounding landscape the position would have provided in particular the likely key views over Stornoway Bay. As such, the integrity of the setting of the cairn, its capacity to inform and

[19] ibid

convey its cultural significance, will not be compromised. If the trees surrounding the cairn were to be felled, the Proposed Development would have an impact of low magnitude on the Cnoc na Croich chambered cairn.

6.5.30 Overall, presuming that the trees of the GDL will be maintained, the Proposed Development would not have an impact on the setting of Cnoc na Croich chambered cairn, an asset of high sensitivity.

6.5.31 In the worst-case scenario, the trees surrounding the cairn would be felled and the Proposed Development would be visible from the Cnoc na Croich chambered cairn, it is assessed that this impact of the Proposed Development on the setting of the chambered cairn would be of low adverse magnitude and **minor** significance, not significant in EIA terms.

6.5.32 In the context of the NPF4 Policy[20] 7h ii test it is considered that in either scenario the ability to understand, appreciate and experience the siting of this Scheduled Monument and the key aspects of the setting of relevance to the cairn would be retained such that the integrity of its setting would not be significantly adversely affected.

Lews Castle (LB 18677) and Lews Castle and Lady Lever Park Inventory Garden and Designed Landscape (GDL 00263),

6.5.33 For the purposes of this assessment the following assets are considered together as a group: Lews Castle and Lady Lever Park Inventory Garden and Designed Landscape (**GDL 00263**) and its associated Listed Buildings, Lews Castle (**LB 18677**), Lews Castle Lodge at Bayhead including Quadrant Walls (**LB 18815**), Lews Castle Creed Lodge including Gateway and Driveway Bridge Nearby (**LB 18816),** Lews Castle Driveway Bridge at NGR NB 4210 3321 (**LB 18826**), Lews Castle Driveway Bridge close to north end of Mansion (**LB 18827**), Lews Castle, Lodges, Boundary Walls, Sea Walls and Tower near Stornoway Harbour including Cuddy Point (**LB 19206**), and Lews Castle, Matheson Memorial (**LB 19207**).

6.5.34 Lews Castle (LB 18677), was built between 1848 and 1850, incorporating the earlier late 18th century Seaforth Lodge in the kitchen quarters. The estate landscape including the associated driveways and buildings also date from the mid-19th century and the design of the estate has changed little from that date. Lews Castle has recently undergone extensive renovation and is now a museum, apartments, shop and café, while the majority of the north parkland is occupied by Stornoway Golf Club. The HES listing entry for the GDL rates it as having 'outstanding' artistic, historical, horticultural, architectural, and scenic value. It also rated as having 'high' nature conservation and archaeological value. As an Inventory GDL, it is of heritage value at a national level and of high sensitivity.

6.5.35 Lews Castle and Lady Lever Park are built on sloping ground to the north and west of Stornoway Harbour, overlooking the town. The designed landscape and Lews Castle are prominent features on the approach to Stornoway by sea. The HES list entry for the GDL states that "Lews Castle makes an outstanding contribution to the setting of Stornoway and seaward views towards Lewis.". The designed landscape is considered to provide a "dramatic contrast between the well-wooded policies of Lews and the surrounding, treeless countryside". Views out from Lews Castle and Lady Lever Park are often restricted by the topography and the dense woodland of the estate, which provides the estate with a sense of seclusion and privacy. However, where views out of the estate are possible, they mainly overlook Stornoway town, harbour and bay.

6.5.36 With the exception of the Category C Listed Creed Lodge (**LB 18816**) all of the Listed Buildings, including the Category A Listed Lews Castle (**LB 18677**), are outside the Proposed Development bare earth ZTV (**Figure 6.2**) and would have no visibility of the Proposed Development. Creed Lodge itself sits at a former entrance to the GDL on the east side of the A859 road, this Lodge currently has no wide views out from its local area due to mature woodland.

6.5.37 Furthermore, the majority of the GDL lies outwith the bare earth ZTV, with the exception of the wooded areas of higher land. As the ZTV uses a bare earth model, which does not incorporate vegetation or buildings and may not include very localised rock outcrops, the visibility within the GDL will be substantially less than the bare earth ZTV indicates. The Proposed Development would, however, be visible to the immediate south of the Arnish Road in some filtered views through the woodland planting of the GDL.

6.5.38 The Proposed Development would not be visible in any views from the Listed Buildings of the GDL and there would be very limited visibility of the Proposed Development in views from the GDL or to the GDL. It would remain possible to

[20] ibid

understand, appreciate, and experience the siting of the Castle and layout of the GDL, and enjoy the coastal views and the GDL's close proximity to Stornoway and its harbour. The Proposed Development would not compete for prominence with Lews Castle and the GDL in views from the seaward approach as they would not appear in the same view, and the GDL and Castle would remain visually attractive in views from within Stornoway town and harbour. As such, the integrity of the setting of the Lews Castle and Lady Lever Park, its capacity to inform and convey its cultural significance, would not be compromised.

6.5.39 Overall, as a result of the change to its wider surroundings, the Proposed Development would have an impact of **negligible adverse magnitude** on the setting of the Lews Castle and Lady Lever Park Inventory Garden and Designed Landscape (GDL 00263), an asset of **high sensitivity**. It is assessed that this would result in an effect that is of **negligible significance** and not significant in EIA terms. It is further considered that there would be **no impact** on the setting of the Listed Buildings within the GDL as a result of the Proposed Development.

6.5.40 Furthermore, in the context of the NPF4 Policy[21] 7i test it is considered that Proposed Development will preserve the cultural significance, character and integrity of the GDL and will not significantly impact on important views to, from and within the site, or its setting. In the context of NPF4 Policy[22] 7c test it is considered that the Proposed Development would not affect the setting of Listed Buildings within the GDL.

Stornoway War Memorial (LB 19211)

6.5.41 Stornoway War Memorial (LB 19211) is a tall castellated tower erected around 1920 in memory of those lost in the First World War. The site is a Category B Listed Building, of heritage value at a regional level, and is assessed as being of medium sensitivity.

6.5.42 The war memorial stands on the summit of Cnoc nan Uan and has wide views over the surrounding landscape, in particular over the town of Stornoway to its immediate southeast.

6.5.43 As a war memorial this tower has been located in a prominent position overlooking the town of Stornoway. The key views to and from the war memorial are to Stornoway and Stornoway bay. The memorial was constructed to remember the lost of World War One, the majority of whom would have left Lewis through Stornoway. Today the war memorial remains a prominent landmark feature on the hillside overlooking Stornoway.

6.5.44 The Proposed Development would be located on the moorland 2.6 km to the southwest from the war memorial. The photomontage (LVIA VP 4) demonstrates that the buildings of the Proposed Development would be heavily screened by the intervening coniferous woodland and would not be a noticeable feature in the landscape if the woodland remains. If the trees were felled the Proposed Development would be visible in distant views on the moorland to the southwest. The wider setting of the war memorial would be slightly altered through the addition of these buildings, however the key aspects of its setting its relationship with Stornoway would remain unchanged.

6.5.45 Overall, as a result of the change to its wider surroundings, the Proposed Development would have an impact of **negligible adverse magnitude** on the setting of Stornoway War Memorial, an asset of **medium sensitivity**. It is assessed that this would result in an effect that is of **negligible significance** and not significant in EIA terms.

Potential Cumulative Construction Effects

6.5.46 The Proposed Development has the potential to result in significant effects on any subsurface archaeological remains that may survive within the Inner Study Area.

6.5.47 Based on the list of cumulative developments (Chapter 4: EIA Process and scope), no other development lies within, or extends into, the Site; therefore there is no potential for cumulative construction effects arising as a result of these developments in combination with the Proposed Development. Accordingly, no cumulative effect is predicted.

[21] ibid
[22] ibid

Potential Cumulative Operational Effects

6.5.48 The Proposed Development could, in combination with other developments in the area that are operational, consented, or are the subject of valid planning applications (or other consents), result in adverse cumulative effects on the setting of cultural heritage assets. Operational developments are considered as part of the baseline and are taken to be such for the assessment of effects on the settings of heritage assets described above. Developments that are consented but not yet under construction and those that are the subject of valid planning applications are considered as being potential additions to the baseline and are considered in the cumulative impact assessment.

6.5.49 Based on the list of cumulative developments (**Chapter 4: EIA Process and scope**), two developments are considered to have the potential to give rise to cumulative operational effects on heritage assets:

- Stornoway Wind Farm – consented development
- Harris to Stornoway 132 kV Overhead Line (OHL) – under construction

6.5.50 Cumulative impacts are assessed where the predicted operational impact of the Proposed Development on its own is of greater than negligible significance. It is considered that the remaining assets within the Outer Study Area (**Technical Appendix 6.3, EIAR Volume 4**) have no potential to be subject to significant cumulative operational impacts and are therefore not considered further.

Cnoc na Croich, chambered cairn (SM 6550)

6.5.51 The cumulative impact on the setting of the Cnoc na Croich, chambered cairn as a result of adding the Proposed Development to a baseline, including the proposed Stornoway Wind Farm and or the Harris to Stornoway OHL, is assessed as being of no impact if the trees surrounding the cairn are maintained, as there would be no visibility of any of these developments. If the trees were felled the turbines of the Stornoway Wind farm would be visible beyond and to the northwest of the Proposed Development and the Harris to Stornoway OHL would be visible beyond and to the west and southwest of the Proposed Development, this would be an impact of low magnitude and minor adverse significance (not significant in EIA terms). As both the Stornoway Wind Farm and the Harris to Stornoway OHL would effectively be seen beyond the Proposed Development and not in the key views of the cairn over Stornoway bay, the impact would be **no greater** than that assessed for the Proposed Development alone (minor significance: not significant in EIA terms).

6.5.52 If the trees surrounding the chambered cairn were felled, the Proposed Development and the proposed Stornoway Wind Farm and the Harris to Stornoway OHL would be visible in views from the cairn, but it would remain possible to understand, appreciate and experience the setting of the cairn. As such, in the context of the NPF4 Policy 7h ii test it is considered that the Scheduled Monument would be adequately retained such that the integrity of setting would not be significantly adversely affected by the cumulative impact.

Druim Dubh Stone Circle (SM 5504)

6.5.53 The cumulative impact on the setting of the Druim Dubh stone circle as a result of adding the Proposed Development to a baseline, including the proposed Stornoway Wind Farm, would place the buildings of the Proposed Development to the south and east of the structures and turbines of the proposed Stornoway Wind farm in views from Druim Dubh stone circle. It is assessed as being an impact of low magnitude and minor adverse significance (not significant in EIA terms). As the Stornoway Wind Farm would effectively be seen beyond the Proposed Development, and the moorland setting of the stone circle would remain, the impact would be **no greater** than that assessed for the Proposed Development alone (minor significance: not significant in EIA terms).

6.5.54 The cumulative impact on the setting of the Druim Dubh stone circle as a result of adding the Proposed Development to a baseline including the Harris to Stornoway OHL, would see the OHL in views arcing from the northeast to the south of the stone circle with the Proposed Development visible at the northeast end of the Harris to Stornoway OHL. The Harris to Stornoway OHL will replacing the existing OHL at a greater distance from the stone circle. It is assessed as being an impact of low magnitude and minor adverse significance (not significant in EIA terms). As the Harris to Stornoway OHL would effectively be seen to the west of the Proposed Development, and the moorland setting of the stone circle would remain, the impact would be **no greater** than that assessed for the Proposed Development alone (minor significance: not significant in EIA terms).

6.5.55 While the Proposed Development and the proposed Stornoway Wind Farm and the Harris to Stornoway OHL would be visible in views from the stone circle, it would remain possible to understand, appreciate and experience the setting of the stone circle. As such, in the context of the NPF4 Policy 7h ii test it is considered that the Scheduled Monument would be adequately retained such that the integrity of setting would not be significantly adversely affected by the cumulative impact.

6.6 Mitigation

Mitigation during Construction

6.6.1 All mitigation works presented in the following paragraphs would take place prior to, or, where appropriate, during, the construction of the Proposed Development. The scope of works would be detailed in one or more Written Scheme(s) of Investigation (WSI) developed in consultation with (and subject to the agreement of) the CnES Archaeologist.

6.6.2 A professionally qualified Archaeological Contractor would be appointed to act as an Archaeological Clerk of Works (ACoW) for the duration of the construction phase. The role of the ACoW would be to provide advice to the appointed Construction Contractor regarding micro-siting of development components, where there is a possibility of intersecting with identified heritage assets, and to undertake archaeological monitoring of topsoil stripping operations in areas designated and approved by the CnES Archaeologist. The activities of the ACoW would be carried out according to the scope of work and terms specified under the WSI and approved by the CnES Archaeologist.

Preservation In Situ

6.6.3 Within the peat restoration area, one heritage asset Caunters Original Chemical Works building (4.1) has been identified as lying close to, though avoided by, the peat restoration works. As the remains of an original chemical works building, this asset is of medium sensitivity.

6.6.4 Caunters Original Chemical Works building (4.1) would be marked out for avoidance during the construction phase. Any required micro-siting of the peat restoration works would be managed to avoid the visible remains and the demarcated areas. The markers would be left in place for the duration of the construction phase and removed on completion of the Proposed Development.

6.6.5 Within the southern construction area, one heritage asset the Arnish shielings (1) has been identified as lying close to though avoided by the construction footprint. As the remains of shielings this is an asset of low sensitivity.

6.6.6 The Arnish Shielings (1) would be marked out for avoidance during the construction phase. Any vehicle movements through the Site would be managed to avoid the visible remains and the demarcated areas. The markers would be left in place for the duration of the construction phase and removed on completion of the Proposed Development.

Peat Probing

6.6.7 Given the paleoenvironmental potential of the peat and as requested in the CnES Archaeologist's consultation advice (Team Call 7/10/2024 and Scoping Response 16/10/2024 as detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4)**) a peat coring strategy will be put in place and carried out according to the scope of work and terms specified under the WSI.

Archaeological Investigations

6.6.8 Two heritage assets, the possible sheiling mound (2), and the Lewis Chemical Works (4) in an area of possible building (4.2) the tramway (4.3), the inscribed stone (4.6) and the historic peat cuttings, would be directly affected by construction; effects that warrant offsetting by archaeological investigations and recording.

- The possible sheiling mound (2): would be investigated and excavated to a strategy and standard acceptable to the CnES Archaeologist. This may require excavation of the mound.
- The Lewis Chemical Works (4): would be investigated and recorded to a strategy and standard acceptable to the CnES Archaeologist. The inscribed stone (4.6) would be repositioned at an appropriate location within the Lewis Chemical Works area not affected by the Proposed Development.

6.6.9 Investigations and recording of these features would result in the acquisition of archaeological knowledge and result in preservation by record, thereby offsetting the predicted effects and reducing the significance of the predicted adverse impacts.

6.6.10 Given the medium archaeological potential, and as specified in the CnES Archaeologist's consultation advice (Team Call 7/10/2024 and Scoping Response 16/10/2024) it is likely that archaeological investigation of the site, prior to development will be required by the CnES Archaeologist to cover the possibility that archaeological remains may be present within the site.

6.6.11 The scope of archaeological works would be agreed through consultation with the CnES Archaeologist and carried out by a professional archaeological organisation, in accordance with the relevant Chartered Institute for Archaeologist (CIfA) guidelines, under the terms of any condition attached to planning consent. Such works is likely to include a programme of archaeological evaluation trenches within the areas which will be subject to ground disturbance from construction works.

6.6.12 The scope of works required would be detailed in a WSI developed in consultation with (and subject to the agreement of) the CnES Archaeologist. The WSI would make provision for appropriate post-excavation analysis and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records.

Construction Guidelines

6.6.13 Written guidelines would be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known heritage assets. The guidelines would set out arrangements for calling upon retained professional support if buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts, etc.) should be discovered during any construction activities.

6.6.14 The guidelines would make clear the legal responsibilities placed upon those who disturb artefacts or human remains.

Mitigation during Operation

6.6.15 As the as-built infrastructure would be used to facilitate maintenance, repair and replacement activities, no mitigation is required in relation to cultural heritage during the operational lifetime of the proposed development.

6.7 Residual Effects

Residual Construction Effects

6.7.1 Taking account of the mitigation proposals set out above, the following residual construction effects have been identified:

- Residual effect of no more than **minor** significance (not significant in EIA terms) on the remains of the shieling mound (2) and the Lewis Chemical Works (4), as a consequence of investigation and recording to a standard agreed with the CnES Archaeologist.
- Residual effects of no more than **minor** significance (not significant in EIA terms) on any buried archaeological remains revealed through archaeological watching briefs and investigated and recorded to a standard agreed with the CnES Archaeologist.

6.7.2 Furthermore, following mitigation there will be no potential for accidental construction effects on the Arnish Shielings (1) and there will be no residual effects on this asset.

Residual Operational Effects

6.7.3 During its operational lifetime, the residual effects of the Proposed Development on the settings of heritage assets in the wider study area would be the same as the predicted effects:

- The residual effects on Scheduled Monuments would be no greater than **minor significance**: not significant in EIA terms for the Proposed Development alone or in combinations with other cumulative developments.
- The residual effects on Lews Castle and Lady Lever Park GDL would be of **negligible significance**: not significant in EIA terms for the Proposed Development alone or in combinations with other cumulative developments.

6.7.4 No further mitigation is possible to offset the impact on these assets and the residual effect will remain one of at most minor significance (significant in EIA terms) and would not significantly adversely affect the integrity of the setting of the assets concerned. It would remain possible to understand and appreciate and experience the setting of these assets.

Residual Cumulative Construction Effects

6.7.5 No cumulative construction effects are predicted hence there would be no residual cumulative construction effects.

Residual Cumulative Operational Effects

6.7.6 During its operational lifetime, the residual cumulative effects of the Proposed Development on the settings of heritage assets in the wider study area would be the same as the predicted cumulative effects. Any changes to the cumulative operational effects during the operational lifetime of the development would come as a result of changes to the surrounding cumulative developments.

6.8 Monitoring

Construction Phase Monitoring

6.8.1 Post-construction monitoring would be carried out to:

- check that marking out of the heritage asset (Caunters Original Chemical Works building 4.1) within the Site has been effective and that the heritage asset has not been disturbed during construction works; and
- check that all markers have been removed from heritage assets following completion of the Proposed Development.

Operation Phase Monitoring

6.8.2 No monitoring is required for the operational phase.

6.9 Summary and Conclusion

6.9.1 A desk-based assessment and field survey have been carried out to establish the cultural heritage baseline, within the application boundary (Inner Study Area) and in the wider landscape (Outer Study Area). The assessment has been informed by scoping responses provided by HES and CnES Archaeologist and further consultation undertaken with CnES Archaeologist.

6.9.2 There are no designated assets within the Inner Study Area.

6.9.3 Ten non-designated heritage assets have been identified within the Inner Study Area; the majority of these assets are post medieval sheilings, though covering the largest area is the site of the Lewis Chemical Works, an asset of heritage value at a regional level and of medium sensitivity. The majority of the non-designated heritage assets within the Inner Study Area are of heritage value at a local level, and of low sensitivity.

6.9.4 An assessment of the identified cultural heritage resource within the Site, and consideration of the current and past land-use, indicates that there is moderate potential of hitherto unidentified archaeological remains of prehistoric or post-medieval date being present within the Site. It is probable that any remains that do survive are most likely to be of post-medieval date and associated with farming activities. It is possible that, without mitigation, there would be an impact of up to moderate significance on previously unrecorded cultural heritage assets. A programme of mitigation would be put in place in agreement with the CnES Archaeologist. Following mitigation, the residual effect on previously unrecorded archaeological remains will be of no more than minor significance (not significant in EIA terms).

6.9.5 The layout of the Proposed Development has been designed as far as possible to avoid direct effects on the identified heritage assets within the Site. Direct adverse construction impacts on two heritage assets have been identified. For a shieling mound (2) of low sensitivity, a direct adverse construction impact of moderate/minor significance has been identified. For the Lewis Chemical Works (4) and impact of moderate significance has been identified. These effects would be offset through a programme of mitigation to recover any archaeological information that may be present at the affected locations. Following mitigation, the residual effect on the shieling mound (2) and the Lewis Chemical Works (4) will be of minor significance (not significant in EIA terms).

6.9.6 The potential for operational effects on the setting of asset within 3 km of the Proposed Development has been considered. No impacts of greater than minor significance have been identified.

6.9.7 The potential for cumulative construction and operational effects arising from the Proposed Development in combination with other developments in planning. No significant cumulative effects were identified.

Table 6.4: Summary of Potential Significant Effects of the Proposed Varied Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
Potential high adverse direct impact on the possible sheiling mound (2) from construction of the HVDC Substation and laydown area	Targeted archaeological evaluation	To be agreed through consultation with the CnES Archaeologist in advance of development works commencing and would be set out in the WSI.	Not Significant
Potential moderate adverse direct impact on the Lewis Chemical Works (4) from Peat Restoration Works	Programme of Archaeological Works	To be agreed through consultation with the CnES Archaeologist in advance of development works commencing and would be set out in the WSI.	Not Significant
Potential moderate adverse direct construction impact on previously undiscovered subsurface archaeological features	Targeted archaeological evaluation trenches and peat probing	To be agreed through consultation with the CnES Archaeologist in advance of development works commencing and would be set out in the WSI.	Not Significant
Operation			
N/A	N/A	N/A	N/A
Cumulative Construction			
N/A	N/A	N/A	N/A
Cumulative Operation			
N/A	N/A	N/A	N/A

7 ECOLOGY

7.1 Introduction

7.1.1 This chapter reports on the likely significant effects with respect to ecological features associated with the construction, operation and decommissioning of 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 EIAR (**Chapters 1-4, EIAR Volume 2**).

7.1.2 The assessment has been carried out by Danny Oliver who is a Managing Consultant Ecologist at Ramboll and a Member of Chartered Institute of Ecology and Environmental Management (CIEEM), with a BSc in Biological Sciences (Ecology) and 12 years' experience undertaking ecology surveys and Ecological Impact Assessments (EcIAs). Cecilia Nielsen, Graduate Ecologist at Ramboll, with a BSc in Ecology and over a years' professional experience in ecological consultancy, also worked on this assessment and provided support on baseline surveys.

7.1.3 This chapter is supported by the following Figures and Technical Appendices:

Figures (EIAR Volume 3a):

- Figure 7.1: Ecology Designated Site;
- Figure 7.2: UKHab; and
- Figure 7.3: GWDTE.

Technical Appendices (EIAR Volume 4):

- Technical Appendix 2.2: General Environmental Management Plan (GEMP);
- Technical Appendix 7.1: Ecology Survey Methodology and Results;
- Technical Appendix 7.2: Ecology Assessment Methodology; and
- Technical Appendix 7.4: Outline Habitat Management Plan.

Confidential Technical Appendix (EIAR Volume 5):

- Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report

7.1.4 Figures and Technical Appendices are referenced in the text where relevant. The specific objectives of this chapter and the accompanying Technical Appendices are to:

- Describe the assessment methodology and significance criteria used in completing the impact assessment;
- Describe the ecological baseline of the Proposed Development site and its zone of influence (ZoI), including designated nature conservation sites, habitats and protected species, and thereby identify the ecological features that will be the focus of this assessment;
- Evaluate the sensitivity of ecological features;
- Describe the potential impacts from the Proposed Development, both direct and indirect, on ecological features and assess whether they result in likely significant adverse effects for the ecological features;
- Describe the mitigation measures proposed to avoid, reduce or offset likely significant adverse effects; and
- Assess the significance of residual effects remaining following the implementation of mitigation.

7.2 Assessment Methodology and Significance Criteria

Scope of Assessment

7.2.1 This chapter considers effects on:

- Designated nature conservation sites, such as Special Areas of Conservation (SACs);
- Sensitive habitats, such as Groundwater Dependent Terrestrial Ecosystems (GWDTEs), Annex I habitats under the EU Habitats Directive[1] and those with protection under the Scottish Biodiversity List (SBL)[2]; and
- Protected species, such as Otter *Lutra lutra*.

[1] The Habitats Directive - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en. [11/10/2024]

[2] NatureScot (2022). Scottish Biodiversity List. URL: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list?msclkid=1ad92c2aaf6411ecb1b489e38efae9db. [11/10/2024]

7.2.2 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other existing or approved cumulative developments.. Operational, under construction and consented developments are considered as part of the baseline.

7.2.3 The assessment is based on the Proposed Development as described in **Chapter 2: Description of Proposed Development (EIAR Volume 2)** and aligns with best practice EcIA Guidelines developed by CIEEM[3]. Potential impacts and effects on ornithological features are addressed separately in **Chapter 8: Ornithology (EIAR Volume 2).**

7.2.4 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4)** and the following guidelines/policies:

Legislation

- EC Directive on the Conservation of Natural Habitats and Wild Flora and Fauna, 92/43/EEC 1992[4];
- Conservation of Habitats and Species (Amendment) (EU Exit) Regulation 2019[5];
- Conservation (Natural Habitats Etc.) Regulations 1994[6];
- Wildlife and Countryside Act 1981[7];
- Nature Conservation (Scotland) Act 2004[8];
- UK Biodiversity Framework 2024[9];
- Electricity Act 1989[10]; and
- Town and Country Planning (Scotland) Act 1997 (as amended) ('the 1997 Act')[11].

Planning policy

- National Planning Framework 4 (NPF4) 2023[12];
- UK Biodiversity Action Plan (BAP) 2010[13];
- Scottish Biodiversity List (SBL) 2020[14];
- 2020 Challenge for Scotland's Biodviersity[15];
- Scottish Biodiversity Strategy to 2045[16];
- Scottish Biodiversity Delivery Plan 2024 to 2030[17]; and
- Western Isles Local BAP[18].

[3] CIEEM, (2018), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf [11/10/2024]
[4] The Habitats Directive - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en. [11/10/2024]
[5] The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019), URL: The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 [07/02/2025]
[6] The Conservation (Natural Habitats Etc.) Regulations (as amended) (1994), URL: https://www.legislation.gov.uk/uksi/1994/2716/contents. [11/10/2024]
[7] The Wildlife and Countryside Act (as amended) (1981), URL: http://www.legislation.gov.uk/ukpga/1981/69. [11/10/2024]
[8] Nature Conservation (Scotland) Act (as amended) (2004), URL: http://www.legislation.gov.uk/asp/2004/6/contents. [11/10/2024
[9] JNCC on behalf of the Four Countries' Biodiversity Group (4CBG) (2024). UK Biodiversity Framework. URL: UK Biodiversity Framework [21/01/2025]
[10] Electricity Act (1989), URL: https://www.legislation.gov.uk/ukpga/1989/29/contents. [11/10/2024]
[11] Town and Country Planning (Scotland) Act 1997. [Online] Available at: https://www.legislation.gov.uk/ukpga/1997/8/section/46 [Accessed: November 2024]
[12] National Planning Framework 4 (Scottish Government) Available at: National Planning Framework 4 - gov.scot [21/01/2025].
[13] UK BAP (2010), URL: https://jncc.gov.uk/our-work/uk-bap/. [11/10/2024]
[14] The Scottish Biodiversity List (2020), URL: https://www.nature.scot/doc/scottish-biodiversity-list. [11/10/2024]
[15] The 2020 Challenge for Scotland's Biodiversity (2013), URL: http://www.gov.scot/Publications/2013/06/5538. [11/10/2024]
[16] Scottish Government (2024). Scottish Biodiversity Strategy to 2045. URL: Scottish Biodiversity Strategy to 2045 - gov.scot. [07/02/2025]
[17] Scottish Government (2024). Biodiversity: Delivery Plan 2024 to 2030. URL: Biodiversity: delivery plan 2024 to 2030 - gov.scot. [07/02/2025]
[18] Western Isles Local Biodiversity Action Plan (2002). URL: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0beaeee5e1c0c13a3403ffe0fc92abc4062dd5ba. [14/10/2024]

7.3 Method of Baseline Data Collection

Extent of the Study Area

7.3.1 As detailed in **Technical Appendix 7.1: Ecology Methodology and Results (EIAR Volume 4),** the ecology Study Area comprises a desk Study Area of a 2 km buffer around the Proposed Development and a field Survey Area of 250 m around the Proposed Development, as shown in **Figure 7.1: Ecology Constraints** and **Figure 7.2: UKHab (EIAR Volume 3)**.

Desk Study

7.3.2 A desk study was undertaken to collect existing baseline data about the ecology Study Area, as defined above. The desk study searched for:

- The locations of statutory and non-statutory designated nature conservation sites;
- Other natural features of potential ecological importance, such as waterbodies; and
- Protected and/or notable species records.

7.3.3 The following data sources were consulted:

- NatureScot (NS) Sitelink[19];
- Scotland's Environment carbon and peatland map[20];
- Multi-Agency Geographic Information for the Countryside (MAGIC) website[21]; and
- Google™ Earth Pro.

7.3.4 Details of the desk study methodology is found in Technical Appendix 7.1: Ecology Methodology and Results (EIAR Volume 4).

Field Study

7.3.5 Field surveys were undertaken by Ramboll ecologists in January and August 2023. The surveys included an extended UK Habitat Classification (UKHab) survey and protected species surveys for Otter (no other terrestrial protected faunal species are present on Lewis). The objective of these initial site visits was to inform the site selection process. Further habitat surveys were undertaken in July 2024 to provide National Vegetation Classification (NVC) coverage of the Site, including a Peatland Condition Assessment.

7.3.6 Details of the field survey methodology is found in **Technical Appendix 7.1: Ecology Methodology and Results (EIAR Volume 4).**

7.3.7 Details and findings of the ornithological survey and assessment are presented separately in Chapter 8: Ornithology (EIAR Volume 2).

7.4 Method of Assessment

7.4.1 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 7.2: Ecology Assessment Methodology**. The assessment was undertaken following best practice guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)[22], with surveys following the relevant best practice guidelines, as set out in **Technical Appendix 7.2: Ecology Assessment Methodology (EIAR Volume 4)**. The assessment process involves determining the importance of ecological features and characterising the potential impacts in order to determine which impacts are significant.

Limitations and Assumptions

7.4.2 It should be noted that the availability and quality of the data obtained during desk studies is reliant on third party responses and recorders. This varies from region and for different species groups. Furthermore, the comprehensiveness of data often depends on the level of coverage, the expertise and experience of the recorder and the submission of records to the local

[19] NS SiteLink (2022). URL: https://sitelink.nature.scot/home. [14/10/2024]
[20] Scotland's Environment Carbon and Peatland Map (2022). URL: https://map.environment.gov.scot/sewebmap/. [14/10/2024]
[21] MAGIC Map (2022). URL: https://magic.defra.gov.uk/. [14/10/2024]
[22] 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. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf. [10/01/2025]]

recorder. However, this is not considered to be a limitation on the desk study data assessed as this was updated and verified with field surveys.

7.4.3 The habitat and faunal surveys provide a snapshot of ecological conditions and do not record plants or animals that may be present in the field Survey Area at different times of the year. The absence of a particular species cannot be confirmed by a lack of field signs and only concludes that an indication of its presence was not located during the survey effort. However, most surveys were undertaken between July - September, which is within the optimal season of April to October for surveying most habitats and species, therefore, the data collected is considered to be an accurate representation of the habitats and species that are present in the field Survey Area.

7.5 Baseline Conditions

Current Baseline

Desk study

Statutory Designated Nature Conservation Sites

7.5.1 The Lewis Peatlands Ramsar site is located 1.7 km west of the Site at its closest point. The Lewis Peatlands Ramsar site is designated for features including acid peat-stained lakes or ponds, wet heathland with cross-leaved heath, and blanket bog habitats. There are also no designated sites located outwith the desk study area with potential connectivity to the Proposed Development.

Non-Statutory Designated Nature Conservation Sites

7.5.2 No non-statutory designated nature conservation sites occur within the desk Study Area with potential connectivity to the Proposed Development.

Field Surveys

7.5.3 Field surveys were undertaken by Ramboll ecologists in January and August 2023, and supplemented in July 2024. The surveys included an extended UKHab survey, NVC survey and protected species surveys. Full details of the results of the field surveys undertaken by Ramboll for the Proposed Development are provided in **Technical Appendix 7.1: Ecology Survey Methodology and Results (EIAR Volume 4)**. Full details of the results of the aquatic surveys undertaken for the Proposed Development are provided in **Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report (EIAR Volume 5)**. Summarised results are provided in this chapter.

UK Habitat Classification Survey

7.5.4 The dominant habitats within the Site are blanket bog, which is most extensive, wet heath and modified grassland. The Site is also comprised of areas of coniferous plantation woodland. The modified grassland is present as rough grazing pasture bordered to the east and south by wet heath habitats.

7.5.5 Potentially sensitive habitats recorded in the field Survey Area include blanket bog and wet heath.

GWDTEs

7.5.6 Areas of GWDTE potential are shown on **Figure 7.3: GWDTE (EIAR Volume 3)**. The Proposed Development lies on an area of high GWDTE potential. This area is a mosaic of M23 (rush pasture) and M15 NVC communities with M23 being the primary community. As per the Scottish Environmental Protection Agency (SEPA) guidance[23] this NVC community is considered to have high potential to be a GWDTE.

7.5.7 The Proposed Development also overlaps with areas of M15 wet heath, which has a moderate GWDTE potential.

Aquatic Surveys

7.5.8 Only one channel was identified as containing habitat of significant quality for fish, the River Creed, with several salmonid spawning points recorded along this channel, eight of which are located within the red line boundary. The primary areas of

[23] Land Use Planning System SEPA Guidance Note 31 (2017) SEPA. URL: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf [20/12/2024]

high quality habitat are concentrated upstream of the red line boundary as detailed in **Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report (EIAR Volume 5).**

7.5.9 The desk study concluded that the River Creed hosts Atlantic salmon *Salmo salar* and sea/resident trout *Salmo trutta* as shown on the database available on the Marine Scotland Science (MSS) map portal NMPi[24] and detailed in **Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report (EIAR Volume 5).** The River Creed is is also likely to support European eel *Anguilla Anguilla* and all three lamprey species; brook, river and sea (*Lampetra planeri*; *Lampetra fluviatilis*; and *Petromyzon marinus*, respectively).

7.5.10 No live Freshwater Pearl Mussel (FWPM) *Margaritifera margaritifera* or dead shells were found during the survey. The habitat was considered to be of lower quality than anticipated in most locations. It is considered that FWPM are not present within the red line boundary. Further detail can be found in **Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report (EIAR Volume 5)**

Protected Species

7.5.11 No records of any protected species were identified during the field surveys, although suitable habitat for otter is considered to be present.

Other Notable Species

7.5.12 No incidental records of reptiles or amphibians were recorded during the field surveys, although these are likely to be present in open moorland and rough grassland.

Future Baseline

7.5.13 The future baseline of the field Survey Area under the "do nothing" scenario is unlikely to change significantly in the absence of the Proposed Development.

7.5.14 The coniferous plantation woodland within the field Survey Area is likely to remain in its current condition (poor) regardless of whether the Proposed Development is to proceed or not.

7.5.15 The blanket bog habitats within the field Survey Area are mainly of good condition. This is considered unlikely to change in the absence of the Proposed Development.

7.5.16 The modified grassland habitat within the field Survey Area consist of grazing pastures. The condition and use of these grasslands are expected to remain unchanged and are therefore considered unlikely to change significantly in the absence of the Proposed Development.

7.5.17 The wet heath habitats within the field Survey Area are of moderate condition and are expected to remain relatively unchanged in the absence of the Proposed Development.

7.5.18 Therefore, the distribution of species present within the field Survey Area and the surrounding habitat is unlikely to change significantly in the future. Climate change may have an adverse effect on species distribution and this could be significant depending on the severity of the effect.

Summary of Sensitive Receptors

7.5.19 A summary of the ecological features (receptors) that have been 'scoped-out' are provided in **Table 7.1**, together with justification for their exclusion. The features and effects that have been 'scoped-out' are Scoped Out Receptors. The ecological features identified as being sensitive to the potential impacts of construction and operation of the Proposed Development and that have been 'scoped-in' to assessment is given in **Table 7.2**, together with the rationale for their inclusion.

7.5.20 CIEEM EcIA Guidelines[25] state that the assessment process does not require consideration of effects on ecological features deemed to be below a predefined nature conservation threshold. Therefore, as set out in **Technical Appendix 7.2: Ecology**

[24] Marine Scotland Science (MSS) map portal NMPi . Available at: Map Layers (NMPi) | marine.gov.scot [25/01/2025]

[25] CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.2. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf. [14/10/2024]

Assessment Methodology, an assessment of the effects upon features of less than regional importance have been excluded from further assessment (**Table 7.1**), with the exception of River Creed.

Table 7.1: Summary of Receptors Scoped Out of Assessment

Receptor	Justification
Modified grassland	Modified grassland habitats within the field Survey Area are mainly of poor condition. These grasslands are grazed and generally species-poor, with Rhododendron present in some areas. These habitats are therefore not considered to significantly contribute to the biodiversity of the Site. As a result, these habitats are considered to be of less than local importance and are therefore not considered further in this assessment.
Acid grassland	Upland acid grasslands is not included under legislative or conservation lists as a priority habitat, and similar habitat is available for protected or priority species in the ecology Study Area. However, these habitats contribute to the biodiversity value of the Site and as a result, are considered to be of local importance. Thus, these are not considered further in this assessment.
Degraded blanket bog	The degraded blanket bog within the field Survey Area is of poor condition, with a lack of *Sphagnum* species, evidence of artificial drainage and Rhododendron. As a result, this is not considered further in this assessment.
Other broadleaved woodland	The broadleaved woodland within the field Survey Area is small and of poor condition. There is a lack of diversity in the age distribution and vertical structure of the woodland, as well as evidence of significant browsing pressure and high tree mortality or disease. This is therefore considered to be of less than local importance. Thus, this is not considered further in this assessment.
Other mixed woodland	The other mixed woodland within the field Survey Area is a small area of plantation woodland. This is not a priority habitat but contributes to the biodiversity value of the site by potentially suppporting a range of local popoulations of species and as a result, is considered to be of local importance. As a result, this habitat will not be considered further in this assessment.
Other coniferous woodland	The areas of coniferous woodland within the field Survey Area are plantation on bog habitat, some of which are fragmented. Despite a degree of fragmentation, this habitat has the potential to support a range of local populations of species, thus contributing to the biodiversity value of the site and as a result, is considered to be of local importance. As such, this habitat is not considered further in this assessment.
Developed land with sealed surface	This habitat is species-poor and is not included under legislative or conservation lists as a priority habitat type. It is therefore not considered that this provides significant supporting habitat or contributes to the biodiversity value of the site, and is therefore considered to be below local importance and as a result, it is not considered further in this assessment.
Otter	Otter are likely to be present and using the watercourses in and around the Proposed Development, though no field signs of otter were recorded within the field Survey Area. However, in-water working is not anticipated and key infrastructure of the Proposed Development will be installed outside of riparian zones, where possible. Construction would follow best practice methods including the adherence to Guidelines for Pollution Prevention (GPP)[26]; thus pollution of watercourses is not anticipated. A pre-construction survey would be undertaken for otter to identify resting sites prior to construction. This would allow micro-siting of the design and would also inform licensing requirements if resting sites cannot be avoided. It is therefore not anticipated that there would be significant effects to otter and this feature is scoped out of further assessment.
Invasive species	The mitigation measures required to avoid the spread of invasive species will be included within the Construction Environmental Management Plan (CEMP). It is therefore considered that no significant effects will occur from the spread of Rhododendron as a result of the Proposed Development and these features are scoped out of further assessment.
Reptiles and amphibians	Reptiles and amphibians are likely to be present in open moorland and rough grassland. Reptiles and amphibians may be negatively affected by vegetation clearance works associated with the Proposed Development. However, the impacts are considered to be small in scale relative to the extensive habitat that will still remain available for these species. Pre-construction surveys will confirm the presence of sensitive features used for shelter and hibernation and will inform micro-siting of the design. Where this is not possible, surveys will inform non-licensed precautionary methods of working under the supervision of the Ecological Clerk of Works (ECoW). As a result, this species group is not considered further.

[26] GPP Documents (2024). URL: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/. [14/10/2024]

Receptor	Justification
Terrestrial invertebrates	Surveys of this species group were considered unnecessary as the EcIA adopts a precautionary approach and includes appropriate mitigation, where required, to avoid significant effects.

Scoped In Receptors

Table 7.2: Summary of Sensitive Receptors

Receptor	Importance	Justification
Blanket bog	National	This habitat type is included in Annex I of the EC Habitats Directive[27] and is sensitive to environmental change, such as changes to hydrology, carbon function, species composition and nutrient status. Much of the peatland habitat in the UK is in poor condition due to anthropogenic activities including drainage, peat cutting and burning, grazing, plantation planting and claimed for agricultural purposes. Blanket bog is further identified as a priority habitat in the UK BAP[28] and SBL[29]. The examples of the blanket bog within the field Survey Area are of good condition with the majority of these habitats (excluding two) assessed as being of 'possible national interest' based on the NatureScot Peatland Assessment[30]. The blanket bog habitats on Site support peat-forming vegetation, have an absence of woodland/scrub invasion but with some hags/areas of peat cutting evident throughout. This means that, overall, the peatland on the Site is capable of forming peat and any significant effects are likely to be of national interest. As such, this feature is considered to be of national importance.
Upland heathland	Regional (Wet heath) Regional (Dry heath)	Wet heath is included in Annex I of the EC Habitats Directive[31]. Similarly to blanket bog, wet heath is sensitive to environmental change, such as changes to hydrology, carbon function, species composition and nutrient status. The condition of wet heathland habitat in the UK is not well known due to under-recording however, it is likely to be in the same condition as other heathland habitats due to anthropogenic activities including drainage, burning, grazing, claimed for agricultural and hunting purposes. Wet heath is further identified as a priority habitat in the UK BAP[32] and Scottish Biodiversity List (SBL)[33] (upland heathland). This is further included in the Western Isles Local BAP[34]. The wet heath on Site supports a range of priority species and any significant effects are likely to be of regional interest. As such, this feature is considered to be of regional importance. Dry heath is included in Annex I of the EC Habitats Directive and is sensitive to anthropogenic management activities such as grazing, burning, cutting and plantation planting, as well as environmental changes to nutrients. This habitat type is abundant in the uplands of the UK but threatened by agricultural practices and afforestation, amongst others. Dry heath is further identified as a priority habitat in the UK BAP and SBL (upland heathland). This is further included in the Western Isles Local BAP. The dry heath on Site supports a range of priority species and any significant effects are likely to be of regional interest. As such, this feature is considered to be of regional importance.
Oligotrophic and	Regional	This habitat type is included in Annex I of the EC Habitats Directive. This habitat type is sensitive to impacts associated with climate change through changes in weather patterns, as well as environmental changes to hydrology and nutrient status. Oligotrophic and dystrophic

[27] The Habitats Directive – Council Directive 92/43/EEC of May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en. [14/10/2024]
[28] UK BAP Priority Habitats (2024). URL: https://jncc.gov.uk/our-work/uk-bap-priority-habitats/. [14/10/2024]
[29] Scottish Biodiversity List (2020). URL: https://www.nature.scot/doc/scottish-biodiversity-list. [14/10/2024]
[30] NatureScot (2018). Guidance: *Advising on carbon-rich soils, deep peat and priority peatland habitat in development management.* URL: https://www.nature.scot/sites/default/files/2020-11/Guidance%20-%20Advising%20on%20carbon-rich%20soils%2C%20deep%20peat%20and%20priority%20peatland%20habitat%20in%20development%20management.pdf. [14/10/2024]
[31] The Habitats Directive – Council Directive 92/43/EEC of May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en. [15/10/2024]
[32] UK BAP Priority Habitats (2024). URL: https://jncc.gov.uk/our-work/uk-bap-priority-habitats/. [15/10/2024]
[33] Scottish Biodiversity List (2020). URL: https://www.nature.scot/doc/scottish-biodiversity-list. [15/10/2024]
[34] Western Isles Local Biodiversity Action Plan (2002). URL: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0beaeee5e1c0c13a3403ffe0fc92abc4062dd5ba. [15/10/2024]

Receptor	Importance	Justification
dystrophic lakes		lakes is considered a priority habitat in the UK BAP and dystrophic lakes are further mentioned in the Western Isles Local BAP. Although this habitat is common in the Western Isles, the lochans link together to form a network of standing water habitats otherwise only found in the Caithness Flow Country and it is therefore considered to be of regional interest. As such, this feature is considered to be of regional importance.
River Creed	Local	The River Creed and its tributaries occurs within the red line boundary, with several identified salmonid spawning points as well as sporadic areas of high quality fish habitat throughout. This river network provides habitat for otter and invertebrates and is known to host Atlantic salmon, sea/resident brown trout and is likely to support European eel and all three lamprey species; brook, river and sea. Survey findings identified that the River Creed was the only channel that contains habitat of significant quality for fish with several spawing habitats identified suitable for salmonids (eight within the Red Line Boundary surveyed as part of the Fish Habitat Assessment as detailed within **Technical Appendix 7.3: River Habitat and Freshwater Pearl Mussel Survey Report (EIAR Volume 5)**. However, the River Creed is significantly impacted by anthropogenic barriers, mostly emplaced to create slack water to hold salmon for fishing (i.e weirs). Morphological pressures in the form of straightening are also noted within the River Creed and elsewhere within the survey area. Rivers providing fish spawning habitat are common throughout Lewis, with the River Creed the most impacted by human activity (on the Isle of Lewis). As such, it is considered that significant effects on the River Creed fish populations are likely to be at a local level. As a result, this feature is considered to be of local importance.

Potential Effects Scoped Out

7.5.21 **Table 7.3** provides a summary of issues scoped out of the assessment.

Table 7.3: Issues Scoped Out of the EIA

Feature/Effect	Justification
Lighting, noise, dust and visual disturbance	It is considered that all ecological features identified within the EIAR could be affected by inappropriate lighting, noise, dust and visual disturbance caused by construction activities. However, it is considered reasonable to expect that these potential effects are managed through best practice construction methods and guidance. In addition, a Construction Environmental Management Plan (CEMP) would be produced, which would capture all mitigation measures required in respect of ecological features, both as a result of the outcome of the EcIA and in order to comply with relevant legislation mentioned above. The implementation and audit of these measures would be overseen by an ECoW. With the adherence to a CEMP, as overseen by an ECoW, it is not considered that there is potential for significant effects. Therefore no further assessment is required.

7.6 Assessment of Likely Effects

7.6.1 The assessment of effects in this section considers the significance of the associated effect in the absence of mitigation, excluding mitigation that has already been undertaken e.g. mitigation by design. The assessment considers the effect of the Proposed Development on the ecological features detailed in **Table 7.2.**

Mitigation by Design

7.6.2 The layout of the Proposed Development has, as far as possible, been designed to avoid the habitats of highest ecological importance and with the highest sensitivity to impact, as detailed in **Chapter 2: Description of Proposed Development** and **Chapter 3: Site Selection and Alternatives (EIAR Volume 2).** This included areas of active peatland habitat (i.e. supporting vegetation capable of forming peat). Where it has not been possible to avoid peatland habitats, infrastructure has been positioned as close to the edge of those habitat types and on the shallowest peat as possible, avoiding areas of higher quality, active and deep peat as detailed in **Chapter 10: Geology and Soils (EIAR Volume 2)**, to reduce impacts on the natural functions of those habitats.. The Proposed Development would follow mitigation measures included in the CEMP.

7.6.3 Measures already taken into account during the design include the management of surface water drainage on the Site, as set out within the drainage strategy (Technical Appendix 2.1, EIAR Volume 4).Potential Construction Effects

7.6.4 The assessment of likely effects associated with construction is based on the typical activities described in **Chapter 2: Description of Proposed Development (EIAR Volume 2).**

Habitat Loss

7.6.5 Construction activities have the potential to degrade or destroy sensitive habitats either directly, through excavation, compaction or modification (e.g. vegetation removal), or indirectly as a result of dewatering or from the accidental release of fuels, lubricants or other chemicals. The construction of the Proposed Development would cause permanent habitat loss. The establishment of temporary access tracks and improvements to existing tracks would cause habitat degradation or loss in the short- to medium-term until habitats are reinstated or established following the completion of the Proposed Development. The significance of these effects per habitat type is considered below. The main impact is considered to be on blanket bog and heathland habitat loss.

7.6.6 **Table 7.4** and **Table 7.5** set out the percentage of temporary and permanent habitat loss, respectively, by habitat type within the field Survey Area. Direct habitat loss during construction would include the permanent footprints for the High Voltage Direct Current (HVDC) Converter station (320 m x 310 m) and the Substation (260 m x 250 m), as well as the area of proposed temporary or permanent access tracks).

Table 7.4: Temporary Habitat Loss from Proposed Development During Construction

		Direct Habitat Loss	
Habitat	**Total Habitat in Field Survey Area (ha)**	**Area Lost (ha)**	**Percentage Lost (%)**
Blanket bog	184.81	4.17	2.26
Upland heathland	52.36	5.66	10.81
Totals	237.17	9.83	4.14

Table 7.5: Permanent Habitat Loss from Proposed Development During Construction

		Direct Habitat Loss	
Habitat	**Total Habitat in Field Survey Area (ha)**	**Area Lost (ha)**	**Percentage Lost (%)**
Blanket bog	184.81	2.44	1.32
Upland heathland	52.36	7.09	13.54
Totals	237.17	9.53	4.02

Blanket Bog

7.6.7 Without consideration of mitigation, the temporary loss of blanket bog would comprise 4.17 ha (2.26%) of the total recorded in the Field Survey Area (see **Table 7.4**). The permanent loss of blanket bog would comprise 2.44 ha (1.32%) of the total recorded in the Field Survey Area (see **Table 7.5**). As blanket bog is an Annex I habitat[35] and much of the blanket bog in Scotland is in poor condition, further loss or degradation of this habitat is considered to be an adverse effect on a feature of national importance.

7.6.8 However, as this would be a low magnitude adverse impact that would still leave functioning habitat, with the majority being temporary loss that would be short-term and reversible, further loss or degradation, though an adverse effect, is considered to be **not significant**. Peatland restoration is considered as a good practice measure in section 7.7.2 and 7.7.3 and in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)**.

Upland heathland

7.6.9 The temporary loss or degradation of upland heathland would comprise 5.66 ha (10.81%) of the total recorded in the Field Survey Area (see **Table 7.4**). The permanent loss of upland heathland would comprise 7.09 ha (13.54%) of the total recorded in the Field Survey Area (see **Table 7.5**). Wet and dry heath are listed as Annex I habitat[36], and loss of these features is considered to be an adverse effect on features of regional importance.

[35] The Habitats Directive – Council Directive 92/43/EEC of May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en. [25/10/2024]
[36] *Ibid.*

7.6.10 As wet heath is an Annex 1 habitat[37], loss of this feature is considered to be an adverse effect on a feature of county importance. However, as this would be a low-magnitude adverse impact that would still leave functioning habitat, with the majority being temporary loss that would be short-term and reversible, further loss or degradation, though an adverse effect, is considered to be **not significant**.

Standing and Running Water – Pollution Events

7.6.11 The River Creed is situated approximately 100 m northeast of the Proposed Development area at its nearest point. Engineered drains are present within and around the Site, which discharge surface water into the River Creed watercourse, one of which crosses the Site and discharges to the north. Several tributaries of the River Creed are present within the area south of the Site. Furthermore, Loch Cnoc Choilich lies immediately adjacent west of the Site. Due to the proximity of standing and running water to the Proposed Development, there is potential for pollution or surface water run-off to enter into these waterbodies or watercourses. However, based on the successful implementation of pollution prevention measures outlined in the CEMP, impacts are predicted to be very unlikely, low magnitude and reversible and are predicted to be **not significant**.

Potential Operational Effects

Disturbance During Maintenance

7.6.12 During operation of the Proposed Development, maintenance activities would likely involve monthly site visits by maintenance personnel to undertake routine checks and operational switching. More specialist works, such as maintenance repairs or environment management, would be required periodically. Once operational, it is anticipated that the Proposed Development would have an operational lifetime of 40 years or more, with the possibility of upgrading infrastructure to continue operation or for the Proposed Development to be decommissioned. Maintenance works would make use of existing access tracks. As such, impacts from maintenance activities are considered to be low magnitude, short-term, temporary and are considered to be **not significant**.

Potential Cumulative Effects

7.6.13 This section considers the potential for cumulative effects on ecological features from the cumulative developments listed in **Chapter 4 (EIAR Volume 2)**. The assessment has been undertaken by first describing the known conditions on each of those sites and then summarising the potential cumulative effect with the Proposed Development. These cumulative developments occur within 2 km and are in the same Zone of Influence (ZoI) as the Proposed Development.

7.6.14 EIARs and other relevant environmental reports, such as survey reports, for nearby developments were consulted, and relevant details are presented below.

Stornoway Wind Farm

7.6.15 A maximum of thirty-five wind turbines are proposed for Stornoway Wind Farm, which is located to the west of the Proposed Development. The development contains similar habitats to the Proposed Development, including blanket bog of national importance (due to the presence of the rare Austin's bog-moss *Sphagnum austinii*, which is an indicator of undisturbed, pristine bog and found mostly in Western and northern distributions in Scotland and the UK[38]), wet and dry heath, fragmented plantation coniferous and broadleaved woodland, marshy grassland and moderate and high GWDTEs, including M15, M25, M23 and M6. The development also occurs 1.07 km from Lewis Peatlands SAC. Otter activity was recorded in the form of spraints, prints and resting sites (holts and couches), with the highest activity in the Abhainn Ghrioda catchment, surrounding Loch a Chlachain, Loch Speireag and Fedan Loch Lochan. Atlantic salmon and brown trout were recorded, noted to be present within the River Creed catchment. Freshwater pearl mussel was not recorded within the study area, with the habitat surveyed considered to be unsuitable or suboptimal for this species.

7.6.16 The potential effects considered were disturbance of otter from Lewis Peatlands SAC, loss of blanket bog, wet heath, and marshy grassland, and pollution of watercourses. The loss of 108.2 ha (7.8%) of blanket bog and 3.7 ha (11.6%) of wet heath was considered to lead to a significant effect. Mitigation included avoiding peat deeper than 3 m, floating tracks on peat >1 m

[37] EC Directive on the Conservation of Natural Habitats and Wild Flora and Fauna (1992), URL: http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm [10/01/2025].

[38] British Bryological Society (2025) Sphagnum austinii. Available at : Sphagnum austinii - British Bryological Society [Accessed: 25/01/25]

deep, pre-construction surveys for Austin's bog-moss and otter, restoration of 33 ha of blanket bog and wet heath, a 50 m buffer around watercourses, pollution prevention measures, a protected species licence to disturb otter resting sites and various measures to reduce otter disturbance, such as avoiding work and artificial lighting during the hours of darkness and speed limits on access tracks.

7.6.17 The loss of blanket bog and heathland habitat in combination with the non-significant losses from the Proposed Development has the potential to result in a significant cumulative impact, however it is proposed to reinstate more peatland habitat than that impacted. Following these actions, significant cumulative impacts are predicted to be **not significant.,**

Harris – Stornoway 132 kV OHL Replacement

7.6.18 An approximately 58 km 132 kV overhead line (OHL) is under construction between the existing Harris Grid Supply Point (GSP) and the existing Stornoway Substation, which, at its northern point, is located northwest / west of the Proposed Development, on the western side of the A859. The development contains similar habitats to the Proposed Development, including blanket bog, wet and dry heath, degraded blanket bog, marshy grassland, acid grassland, semi-natural broadleaved and mixed woodland, and plantation woodland (broadleaved and mixed), as well as moderate and high GWDTEs, including M10a, M15c, M25 and M21. The development crosses the Lewis Peatlands Ramsar site, which is one of the largest and most intact areas of blanket bog in the world. No trees or structures with Bat Roost Potential (BRP) were recorded in the Field Survey Area. No protected species field signs were recorded although the larger running water habitats were considered to be suitable to support otter.

7.6.19 The potential effects considered were loss of semi-natural woodlands, active peatland habitats and potential GWDTEs. The loss of 3.26 ha (14%) of broadleaved and mixed woodland was considered to lead to a significant effect. Mitigation included limited / selective felling through micro-siting, compensatory woodland planting, peatland reinstatement and restoration (habitat restoration of a minimum of 0.6 ha of peatland off-site), pre-construction surveys for otter, floating tracks through peatlands and GWDTEs >1 m deep, a 30 m buffer around watercourses, pollution prevention measures, and protected species enhancement for slow worm (i.e the provision of artificial refugia within the operational corridor to provide suitable sheltering habitat for slow worm) .

7.6.20 The potential in-combination impacts would be minor and **not significant** given the non-significant losses from the Proposed Development and as neither habitat loss of blanket bog or wet and dry heath habitat was considered to be significant for the Harris – Stornoway 132 kV OHL.

Arnish Road Upgrade

7.6.21 A 3.3 km long upgrade to the Arnish Road from the junction with the A859 to the Arnish Point Industrial Estate is in planning, which is located east of the Proposed Development. The development contains similar habitats to the Proposed Development including blanket bog, degraded bog, semi-natural broadleaved woodland and coniferous plantation woodland, modified grassland, marshy grassland, and dry and wet heath. Otter activity was recorded within the survey area and suitable habitat for roosting and foraging bats was identified, though no potential roosting features were identified.

7.6.22 It was concluded that considering the generally poor condition of the habitats present within the survey area due to anthropogenic disturbance, degradation and modification while taking local context into account, the development is not anticipated to result in any significant habitat loss or degradation. Despite this, mitigation measures to further minimise disturbance and habitat loss have been considered such as habitat reinstatment of approximately 0.65 ha of the existing road as peatland habitat, avoidance of sensitive habitats, where possible, through micro-siting, restoration of peatland and heathland habitats, compensatory planting with native trees where trees with a stem diameter of ≥75 mm are felled, removal of rhododendron, and various measures to reduce negative impacts on otter including installation of otter tunnels, fencing and signage.

7.6.23 The potential in-combination impacts would be minor and **not significant** given the scale and nature of the works relating to the upgrade of the Arnish Road to provide access to the Site, which would localised and on a much smaller scale when compared to the Proposed Development.

Marybank Quarry Extension

7.6.24 An approved proposal for the extraction of rock from Bennadrove Quarry, Marybank.

7.6.25 The potential effects considered for this development would be habitat loss. However the habitats impacted by the Quarry Extension would be different from those for the Proposed Development (coniferous woodland and grassland as opposed to blanket bog and heathland).

7.6.26 Without further knowledge of this development, the potential in-combination impacts would be considered to be minor and **not significant** given the scale and nature of the development.

Deep Water South

7.6.27 A Development to create a deep water port, associated level development platform and access road links to connect the port with the existing Arnish Industrial Estate Road and Arnish Point Industrial Estate (via the coast) approximately 2.5 km southeast of the Proposed Development.

7.6.28 Moderate significant impacts are predicted for otter from disturbance and from accidental damage. Minor adverse impacts are predicted for all terrestrial habitats associated with Deep Water Port.

7.6.29 Due to the low magnitude of impacts from both developments on habitats, no significant cumulative impacts on habitats are predicted. No impacts from the Proposed Development are predicted on otter so no significant cumulative impacts on otter are predicted.

7.7 Mitigation

- In the absence of mitigation, **non-significant effects** are predicted on blanket bog and heathland habitats. However, in line with planning guidance habitats shall be reinstated and restored in order to provide a measurable net gain from the Proposed Development. Specific mitigation for these features is provided below. No mitigation is required for other ecological features as there are no significant effects predicted as a result of the construction and operation of the Proposed Development. However, the Applicant would implement a suite of standard mitigation and good practice working measures that would provide additional protection. These would be detailed in the CEMP and are summarised below. Further mitigation measures can be found in **Chapter 14: Schedule of Mitigation (EIAR Volume 4)**. SSEN would follow working guidance via General Environmental Management Plans (GEMPs) as detailed in **Technical Appendix 2.2: General Environmental Management Plan (EIAR Volume 4).**

Mitigation during Construction

Habitat Reinstatement – Blanket bog and Upland Heathland

7.7.1 Areas of temporary infrastructure, such as floating tracks, would be reinstated as soon as possible after construction has been completed to allow the recolonisation of natural habitats, particularly in areas of blanket bog. Details on the proposed approach to habitat reinstatement would be set out in the CEMP and the Principal Contractor would be required to provide a habitat reinstatement plan prior to the start of the reinstatement works. The methodology for peatland reinstatement is also detailed in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)**.

Habitat Restoration – Blanket Bog

7.7.2 Active restoration of peatland habitats would be carried out in line with **Technical Appendix 7.4: Outline Habitat Management Plan (EIAR Volume 4)** and would be secured by planning condition. Active restoration is defined here as the process of actively encouraging the regeneration of degraded peatland habitats and verges through specific management interventions. Degraded peatland habitats are those that are reduced in quality. In order to account for the loss of blanket bog and wet heath habitats, the excavated peat on-site would be re-used within the Site boundary for example to reinstate degraded areas of bog (i.e areas which no longer contain a significant proportion of peat-forming vegetation) and in areas of planned reinstatement interventions.

7.7.3 In line with NFP4 requirements, developments must make every effort to restore a significant area of blanket bog habitat compared with that lost, with a 1:10 lost to restored/enhanced ratio required. The Proposed Development would result in the permanent loss of 2.44 ha of blanket bog. Therefore the requirement would be to restore 24.4 ha of blanket bog, at least. The

mechanisms for doing this are set out in the **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)**, **Technical Appendix 7.4: Outline Habitat Management Plan (EIAR Volume 4).** These documents set out the areas where blanket bog restoration/enhancement are proposed and how this will be achieved. There is also possibility of off-site blanket bog restoration/enhancement, as has been discussed with NatureScot during pre-application consultation.

CEMP

7.7.4 The CEMP would be prepared by the Appointed Contractor and include an outline of the proposed approach to construction methods and environmental protection during all aspects of the construction phase, with reference and adherence to **Technical Appendix 2.2: SSEN General Environmental Management Plan** and **Technical Appendix 2.3: SSEN Species Protection Plan (EIAR Volume 4)**, as appropriate.

7.7.5 A suitably qualified and experienced ECoW and/or an Environmental Clerk of Works (EnvCoW) would be employed to input into the CEMP and would oversee the implementation of ecological mitigation measures during construction.

OHMP

7.7.6 The Outline Habitat Management Plan (OHMP) (**Technical Appendix 7.4, EIAR Volume 4**) sets out criteria for identifying and delivering the compensatory peatland habitat restoration which would compensate for the area of blanket bog and wet heath that would be permanently lost lost due to the Proposed Development, which is further detailed in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)**.

Pre-construction Protected Species Survey

7.7.7 SPPs (**Technical Appendix 2.3: SSEN Species Protection Plan, EIAR Volume 4**) would be followed during construction of the Proposed Development. In implementing the SPPs, a pre-construction protected species survey would be undertaken as close to the construction period as possible, and no more than three months before the start of the works[39]. The protected species surveys undertaken to inform the EIAR can be used to inform the pre-construction surveys. Although no field signs of protected species were found during initial surveys, suitable otter habitat is present within the Site boundary and are further known to be present within the wider area. A suitably qualified ecologist would be appointed to undertake this survey.

Maintaining Hydrological Connectivity/Characteristics

7.7.8 Suitable drainage and surface water measures would be used to maintain hydrological connectivity in peatland habitats, particularly blanket bog and wet heath. This would include measures such as diverting drainage around working areas and maintaining hydrological connectivity in tracks where upgrades are required, further details can be found in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4).**

7.7.9 Greenfield run-off (i.e. non-silty surface water flow that has not yet passed over any disturbed construction areas) would be kept separate from potentially contaminated water from construction areas, where possible. Where appropriate, interceptor ditches and other drainage diversion measures would be installed immediately in advance of any excavation works in order to collect and divert greenfield run-off around areas disturbed by construction activities. All surface water within disturbed areas would be managed in accordance with sustainable drainage system techniques, using a multi-tiered approach to provide both flow attenuation and treatment through infiltration, where possible, and physical filtration prior to discharge so as not to alter the hydrological connectivity of peatland habitats, as well as River Creed and its tributaries.

7.7.10 Ditches would follow the natural flow of the ground with a generally constant depth to ditch invert. They would have shallow longitudinal gradients, where possible. Regular check-dams would be used where necessary to control the rate of run-off. The ditches would be designed to intercept any stormwater run-off and to allow clean water flows to be transferred independently through the works without mixing with construction drainage.The regular interception and diversion of clean run-off around infrastructure would prevent significant disruption to shallow groundwater flow and peatland. This would also reduce the flow of water onto any exposed areas of rock and soil, thereby reducing the potential volume of silt-laden run-off requiring treatment.

[39] NatureScot (2024). Planning and Development: Protected Species. URL: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species. [25/10/2024].

7.7.11 Greenfield run-off would be discharged into an area of vegetation for dispersion or infiltration, mimicking natural flows, so as not to alter downstream hydrology or soil moisture characteristics.

7.7.12 Further details are provided in **Chapter 9: Hydrology (EIAR Volume 2)**.

Mitigation during Operation

7.7.13 No significant effects are predicted and, consequently, no additional mitigation is proposed.

7.8 Residual Effects

Residual Construction Effects

7.8.1 The majority of habitats would be reinstated following completion of the Proposed Development, resulting in an adverse effect for the short- to medium-term, approximately five to ten years, until habitats have re-established. Permanent habitat loss would occur in peatlands due to the excavation and vegetation clearance to create platforms and foundations for the construction of the Proposed Development. This effect is considered to be of low magnitude due to the footprint involved and not significant. In addition, compensatory habitat management / peat re-use would compensate for the permanent loss of blanket bog habitat from the Proposed Development. Once the compensatory restoration areas have established, **no significant residual effects** would occur on peatland habitats.

7.8.2 Implementation of the proposed CEMP would avoid likely adverse effects from pollution events on habitats.

Residual Operational Effects

7.8.3 No significant operational effects were predicted, therefore no mitigation is required and no residual effects are predicted.

Residual Cumulative Effects

7.8.4 The main cumulative effects are considered to be loss of peatlands (primarily blanket bog and upland heathland). Given the predicted significant effects on blanket bog for Stornoway Wind Farm, the loss of blanket bog and upland heathland could be a **significant cumulative effect**, even though the effect of habitat loss for the Proposed Development is considered not significant. However, implementing the mitigation measures outlined in Section 7.7, including peatland restoration, would reduce potential impacts and compensate for the loss of habitat by providing better quality blanket bog in the medium- to long-term.

7.8.5 Standard pollution prevention measures, habitat resinstatement and maintenance of hydrological connectivity would further minimise impacts on peatlands and waterbodies / watercourses.

7.8.6 Although no otter activity was recorded in the field Survey Area for the Proposed Development, a combined disturbance effect could occur. Construction activities would likely have a localised, short-term, low magnitude disturbance effect on this species. As a result, the cumulative effect is considered to be **not significant.**

7.8.7 In summary, **significant cumulative effects** are possible on blanket bog and upland heathland in combination with the above cumulative developments, namely Stornoway Wind Farm (See Paragraph 7.6.15).

7.9 Summary and Conclusion

7.9.1 This chapter has considered potential impacts and their associated effects on ecological features, such as designated nature conservation sites, sensitive habitats, and protected species in line with best practice guidance from CIEEM[40].

7.9.2 The field Survey Area was surveyed in January and August 2023, and July 2024 to provide baseline information on habitats and faunal species. The surveys included an extended UKHab survey, NVC survey and protected species surveys. The dominant habitats were modified grassland, blanket bog and wet heath. No field signs of protected species were recorded, though the habitats were considered to be suitable for otter.

[40] CIEEM, (2018), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf [25/10/2024]

7.9.3 Following the application of mitigation and good practice measures, such as habitat reinstatement / restoration, the implementation of a CEMP, pre-construction protected species surveys and run-off / pollution prevention measures, no adverse residual effects are predicted.

7.9.4 Significant cumulative effects on blanket bog and upland heathland are predicted from the Proposed Development in combination with Stornoway Wind Farm.

Table 7.7: Summary of Potential Signficiant Effects of the Proposed Varied Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
None predicted	Good practice measures and standard mitigation would still be completed, including peatland reinstatement and restoration and pollution prevention measures.	OHMP, CEMP and planning condition.	N/A
Operation			
None predicted	N/A	N/A	N/A
Cumulative Construction			
Blanket bog and upland heathland habitat loss	Peatland reinstatement / restoration; compensatory habitat management.	OHMP, CEMP and planning condition.	Significant until compensatory peatland restoration areas have established.
Cumulative Operation			
None predicted	N/A	N/A	N/A

8 ORNITHOLOGY

8.1 Introduction

8.1.1 This chapter reports on the likely significant effects with respect to ornithology associated with the construction, operation and decommissioning of 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 Environmental Impact assessment (EIA) Report (EIAR Volume 2, Chapters 1-4).

8.1.2 The assessment has been carried out by two Ramboll ecologists, Teodora Bokonyi and Danny Oliver. Teodora is a consultant ecologist with 5 years' experience of ecological and ornithological surveys and a Postgraduate Degree in Wildlife and Conservation Biology. Danny is a principal ecologist, a Member of the Chartered Institute of Ecology and Environmental Management (CIEEM)and has twelve years' of experience in undertaking ecological and ornithological surveys and environmental assessments at Ramboll.

8.1.3 This chapter is supported by the following Figures and Technical Appendices:

Figures (EIAR Volume 3a):

- Figure 8.1: Ornithology Designated Sites (EIAR Volume 3a);
- Figure 8.2: Ornithology Survey Locations – Vantage Point Locations (EIAR Volume 3a);
- Figure 8.3: Desk Study Results (CONFIDENTIAL) (EIAR Volume 5);
- Figure 8.4a: Vantage Point survey Results For Birds Of Prey (EIAR Volume 3a);
- Figure 8.4b: Vantage Point Survey Results For Waterfowl (EIAR Volume 3a); and
- Figure 8.5: Moorland Bird Survey Results (EIAR Volume 3a).

Technical Appendices:

- Technical Appendix 8.1: Ornithology Assessment Methodology (EIAR Volume 4); and
- Technical Appendix 8.2: Confidential Results (EIAR Volume 5).

8.1.4 Figures and Technical Appendices are referenced in the text where relevant.

8.2 Assessment Methodology and Significance Criteria

Scope of Assessment

8.2.1 This chapter will assess the potential effects on ornithological interests resulting from the construction and operation phase of the Proposed Development following Ecological Impact Assessment (EcIA) Guidelines from the Chartered Institute of Ecology and Environmental Management[1] hereafter the 'CIEEM EcIA Guidelines').

8.2.2 Ornithological interests include:

- protected sites designated for ornithological species; and
- bird species and populations in and around the Proposed Development at all times of year.

8.2.3 The specific objectives of the assessment would be to:

- Identify where there is potential for significant effects on designated sites (for birds);
- Detail the presence/possible presence of protected bird species of particular conservation value;
- Describe the mitigation measures that have been committed to in order to avoid or reduce impacts; and
- Assess the significance of residual effects that are likely to remain following implementation of mitigation and restoration measures and describe if any result in a significant impact on ornithological features.

[1] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Available: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf [Accessed October 2024]

8.2.4 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational, under construction and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

8.2.5 The assessment is based on the Proposed Development as described in **Chapter 2: Project Description (EIAR Volume 2)**.

8.2.6 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4).**

8.3 Method of Baseline Data Collection

Extent of the Study Area

8.3.1 The ornithology baseline was established using an Ornithology Desk Study Area (Ornithology DSA) and an Ornithology Field Survey Area (Ornithology FSA).

8.3.2 The Ornithology DSA is defined as a buffer of up to 10 km around the Site Boundary, for features of International Importance, and up to 2 km around the Site Boundary, for those of national importance. In addition, a search for publicly available biological records was undertaken using a 2 km buffer around the Site Boundary (Figure 8.1).

8.3.3 The Ornithology FSA covered the footprint of the Proposed Development and a buffer of up to 2 km.

Desk Study

8.3.4 The following sources have been used to identify designated nature conservation sites (within the Ornithology DSA) and to search publicly available biological records:

- NS Sitelink[2]; and
- The Multi-Agency Geographic Information for the Countryside (MAGIC)[3] .
- Data purchased from Lewis and Harris Raptor Study Group (LHRSG), such as hen harrier *Circus cyaneus* nesting data.

Field Study

8.3.5 Field surveys were undertaken between March 2023 and February 2025. All field surveys were undertaken by subcontractors from Redwing Ecological Surveys (Redwing)[4]. Redwing surveyors are very experienced and specialise in bird surveys on Lewis and Harris.

8.3.6 More detailed information on the surveys undertaken is provided in Technical Appendix 8.1: Ornithology Methodology (EIAR Volume 4). The survey locations described below are shown on Figure 8.2: Ornithology Survey Locations (EIAR Volume 3).

VP Surveys

8.3.7 Vantage Point (VP) Surveys commenced in March 2023 and are due to be completed in February 2025. Surveys commenced from one location, VP Location 1, with a second location, VP Location 2, added in March 2024. These surveys are proposed to be carried on during the application process in order to understand bird activity within the Site. These post-submission surveys are not being used to establish the ornithological baseline.

Moorland Breeding Bird Surveys

8.3.8 Moorland Breeding Bird Surveys (MBBS) were undertaken to identify the suite of breeding bird species that could be impacted by the construction/operation of the Proposed Development. These surveys involved walking the Ornithology FSA on three occasions in 2023: early breeding season (early April to early May), mid breeding season (mid-May to mid-June) and late breeding season (mid-June to mid-July). All birds observed or heard were recorded along with the activity they were

[2] https://sitelink.nature.scot/home
[3] https://magic.defra.gov.uk/
[4] While surveys were being undertaken Stagfire have changed their operational name to Redwing Ecological Surveys

exhibiting. This survey covered the Moorland Bird Survey Area, as shown on **Figure 8.2: Ornithology Survey Locations (EIAR Volume 3a)**. Further surveys to cover the full extent of the Proposed Development will be undertaken in Spring/Summer 2025.

8.4 Method of Assessment

8.4.1 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 8.1: Ornithology Assessment Methodology (EIAR Volume 4)**.

Limitations and Assumptions

8.4.2 It should be noted that the availability and quality of the data obtained during desk studies is reliant on third party responses and recorders. This varies from region to region and for different species groups. Furthermore, the comprehensiveness of data often depends on the level of coverage, the expertise and experience of the recorder and the submission of records to the local recorder.

8.4.3 Due to changes during design process, field surveys are ongoing at the time of writing this assessment. VP Survey Location 2 was added in March 2024 so at time of writing a full year of flight activity data has not been collected from this location. The VP survey programme is due to run to the end of February 2025, at which point a full 12 months of flight activity data will have been collected. MBBS undertaken in 2023 covered a partial extent of the Proposed Development. It is proposed to undertake a further MBBS survey in 2025, to provide complete coverage. This gap in data is not considered to be a limitation on the EIA as data on important ornithological constraints has been obtained from LHRSG, showing territories of Schedule 1 Raptors, and no colonies or other important nesting sites are known to be present based on other field surveys undertaken.

8.4.4 The limitations or assumptions are not considered to undermine the validity of the assessment provided that further data will be added to the records from ongoing surveys.

8.5 Baseline Conditions

Current Baseline - Desk study

Designated Sites

8.5.1 The designated sites within the Ornithology DSA are shown on **Figure 8.1 (EIAR Volume 3a**). There are no statutory designated sites within the Site. Two statutory designated sites of international and national importance were identified within 10 km of the Site.

8.5.2 The list of designated sites and their qualifying features are provided in Table 8.1.

Table 8.1: Statutory Designated Sites of International and National Importance

Site Name	Designation	Qualifying Feature	Distance and Direction from Site[5]
Lewis Peatlands	Special Protection Area (SPA) and Ramsar	This SPA is classified for: • Breeding black-throated diver *Gavia arctica*; • Breeding dunlin *Calidris alpina schinzii*; • Breeding golden eagle *Aquila chrysaetos*; • Breeding golden plover *Pluvialis apricaria*; • Breeding greenshank *Tringa nebularia*; • Breeding merlin *Falco columbarius*; and • Breeding red-throated diver *Gavia stellata*.	The Site lies approximately 6 km east of the Lewis Peatlands SPA and Ramsar.

[5] Measured from the closest point

Site Name	Designation	Qualifying Feature	Distance and Direction from Site[5]
		The Ramsar is notified under Criterion 2 for breeding: • Black-throated diver; • Golden plover; • Greenshank; and • Red-throated diver. The Ramsar is also notified under Criterion 6 for breeding dunlin.	
Tong Saltings	Site of Special Scientific Interest (SSSI)	This SSSI is notified for its breeding bird assemblage.	The Site lies approximately 2.7 km southwest of Tong Saltings SSSI.

8.5.3 The locations of the designated sites are shown on **Figure 8.1: Ornithology Designated Sites (EIAR Volume 3a)**. No connectivity of these sites was identified with the Proposed Development by the Desk Study.

8.5.4 There are no non-statutory designations identified with potential connectivity to the Proposed Development.

Biological records: Purchased data

8.5.5 Further information on the Breeding Raptor Data provided by LHRSG is provided in Technical Appendix 8.2: Confidential Results (EIAR Volume 4).

8.5.6 Data purchased from the LHRSG shows six hen harrier territories within a 2 km buffer of the Site between 2019 and 2023. The closest territory identified lies approximately 0.6 km from the Proposed Development at its closest point, while the second closest territory, lies approximately 1.2 km from the Site at its closest point.

Ornithological Field Surveys

Flight activity surveys-VP surveys

8.5.7 VP surveys were conducted between March 2023 and November 2024[6]. The results of these surveys are shown on **Figure 8.4a: Vantage Point Survey Results for Birds of Prey (EIAR Volume 3a)** and **Figure 8.4b: Vantage Point Survey Results for Wildfowl (EIAR Volume 3a)**. Out of the 22 target species, seven target species were recorded within the survey area up to date: 72 flights of 128 individual birds in total. The results are summarised in Table 8.2.

Table 8.2 : Vantage Point Survey Results

Species	Total	
	Flights	Individuals
Black-throated diver	4	4
Hen harrier	23	23
Merlin	2	2
Great skua	23	28
Red-throated diver	8	12
White-tailed eagle	10	10
Whooper swan	2	49

[6] Surveys are ongoing, due to be completed in February 2025. Only surveys up to November 2024 have been digitised and are included in the assessment.

Black-throated diver

8.5.8 Black-throated diver flights are shown on **Figure 8.4b: Vantage Point Survey Results for Waterfowl ((EIAR Volume 3)** Four black-throated diver flights of individual birds were recorded, commuting in an east to west/west to east direction, to the north of the Site Boundary. Two of these flights occurred in the immediate vicinity of the proposed Peat Restoration Area.

Hen harrier

8.5.9 Hen Harrier flights are shown on **Figure 8.4a: Vantage Point survey Results for Birds Of Prey (EIAR Volume 3)**. 23 hen harrier flights of individuals birds were recorded within the survey area including male and female birds hunting or looking for a roost. Hen harrier sightings were regular and relatively evenly spread within the norther section of the survey area, with the majority of the flights recorded to the northwest of the Site Boundary and within the Site Boundary, to the west of the Peat Restoration Area. These flights were recorded in the area where active hen harrier territories had already been identified during previous surveys. Flights were also recorded in the immediate vicinity of the southern section of the Site where female and male birds were seen hunting.

Merlin

8.5.10 Merlin flights are shown on **Figure 8.4a: Vantage Point survey Results for Birds Of Prey (EIAR Volume 3)**. Two merlin flights of two individual birds were recorded within the survey area with one flight over the Peat Restoration Area and one flight within 0.1 km south of the Site.

Great skua

8.5.11 Great skua flights are shown on **Figure 8.4a: Vantage Point survey Results for Birds Of Prey (EIAR Volume 3)**. 23 great skua *Stercorarius skua* flights of 28 individuals were recorded. Birds were observed flying in pairs on five occasions. The majority of flights were recorded above the northern section of the Site Boundary, in the vicinity of the proposed Peat Restoration Area. One individual bird was recorded flying within 0.3 km south of the Site Boundary, at its closest point.

Red-throated diver

8.5.12 Red-throated diver flights are shown on **Figure 8.4b: Vantage Point Survey Results for Waterfowl ((EIAR Volume 3).** Eight flights of a total of 12 red-throated diver were recorded crossing the northern section of the survey area. Four pairs were seen flying above the proposed Peat Restoration Area, mostly commuting in an east-west/west-east direction. Two flights were recorded in a north to south direction.

White-tailed eagle

8.5.13 White-tailed eagle flights are shown on **Figure 8.4a: Vantage Point survey Results for Birds Of Prey (EIAR Volume 3).** Ten white-tailed eagle flights of individual birds were recorded commuting through or circling above the survey area, within both the northern and the southern sections of the Proposed Development. Flights occurred from all directions, with one flight recorded above the Site itself.

Whooper swan

8.5.14 Whooper swan flights are shown on **Figure 8.4b: Vantage Point Survey Results for Waterfowl (EIAR Volume 3).** 49 individuals of Whooper swans were recorded with two flights within the site boundaries including both the northern and southern section, involving a group of 33 and a group of 16 birds. The groups were flying in a north-south and east-west direction, respectively, to the west of the proposed Peat Restoration Area and north of the Proposed Development.

8.5.15 Non-target species such as common tern and golden plover were also recorded within the survey area: one flight per species.

Field Surveys - Moorland Breeding Bird Surveys (MBBS)

8.5.16 The results of the MBBS are shown on Figure 8.4: Moorland Bird Survey Results (EIAR Volume 3a). These results are summarised in Table 8.3, 8.4 and 8.5.

8.5.17 Four visits were undertaken to identify moorland bird breeding territories for the survey area located to the West of Stornoway between April and July, 2023.

8.5.18 Breeding behaviour categories where the breeding status was established were the following:

- Breeding;
- Family;
- Colony;
- Nest;
- Pair; and
- Alarm call.

8.5.19 Twelve confirmed breeding territories of seven species were identified during the surveys. Eight species were identified as Possibly Breeding and two species as Probably Breeding within the extended Moorland Breeding Bird Survey area. Breeding Territories were also confirmed to the west of the proposed Peat Restoration Area and Possible Breeding Territories to the west of the Proposed Peat Restoration Area.

8.5.20 The commonest species recorded during the Moorland Breeding Bird Surveys (MBBS) were great black-backed gull with breeding activity recorded on six occasions, including confirmed and possible breeding, followed in number by hen harriers recorded on three occasions.

8.5.21 Five red-listed species of high conservation concern were recorded during the MBBS, these were:

- Great black backed gull;
- Hen harrier;
- Herring gull;
- Great skua; and
- Skylark.

8.5.22 Seven amber-listed species of medium conservation concern were recorded during the MBBS, these were:

- Common tern;
- Greylag goose;
- Lesser black-backed Gull;
- Mallard;
- Common Sandpiper;
- Dipper; and
- Snipe.

8.5.23 The species recorded, their associated breeding status assessed during surveys and their conservation status are presented in Table 8.3, 8.4 and 8.5.

Table 8.3 Moorland Bird Survey Results – Confirmed Breeding. Colour depicts listing on Birds of Conservation Concern (BoCC)[7]

Species	Notes	Number of Birds	BoCC Listing
Common Tern *Sterna hirundo*	Family		Amber
Great Black-backed Gull *Larus marinus*	Colony		Red
Great Black-backed Gull	Nest		Red
Great Black-backed Gull	Pair, alarm calling	2	Red
Greylag Goose *Anser anser*	Nest, 4 eggs		Amber
Hen Harrier	Nest, pair	2	Red
Hen Harrier	Nest		Red
Herring Gull *Larus argentatus*	Nest		Red
Herring Gull	Colony		Red
Lesser Black-backed Gull *Larus fuscus*	Nest		Amber
Lesser Black-backed Gull	Colony, nest		Amber
Stonechat *Saxicola rubicola*	Family		Green

Table 8.4 Moorland Bird Survey Results – Probable Breeding

[7] https://www.bto.org/understanding-birds/welcome-birdfacts

Species	Notes	Number of Records	BoCC Listing
Mallard *Anas platyrhynchos*	Pair	3	Amber
Tufted Duck *Aythya fuligula*	Pair	2	Green

Table 8.5 Moorland Bird Survey Results – Possibly Breeding

Species	Notes	Number of records	BoCC Listing
Common Sandpiper Actitis hypoleucos		2	Amber
Common Sandpiper		2	Amber
Dipper Cinclus cinclus		2	Amber
Great Black-backed Gull	Pair, close to colony	2	Red
Great Black-backed Gull		9	Red
Great Black-backed Gull	Pair	2	Red
Great Skua	Pair, alarm calling	2	Red
Hen Harrier	Territorial display	1	Red
Skylark Alauda arvensis		2	Red
Skylark		3	Red
Snipe Gallinago gallinago	Pair, alarm calling	2	Amber
Stonechat		2	Green

Future Baseline

8.5.24 The future baseline, in the absence of the Proposed Development, the habitats identified within the Ornithology Field Survey Area are likely to continue to be present and maintained due to well established land management regimes. Given that scenario, there is no reason to believe that the suite of birds present would alter greatly. The most likely change would be an expansion of range of hen harriers, corncrake and other species that are colonising Lewis and Harris.

8.6 Sensitive receptors

Designated Sites

8.6.1 As highlighted in the desk study, Lewis Peatlands SPA and Ramsar are the closest statutory designated sites to the Proposed Development. These lies within SPA connectivity distance[8] of the Proposed Development, meaning that impacts from the Proposed Development have potential to effect the qualifying features of the designated sites. This is supported by the flight activity data which shows flights from SPA qualifying species crossing the Proposed Development.

Bird Species

8.6.2 As a result of the information provided by the desk-based study and field surveys, the following ornithological species are considered to be of sufficient sensitivity to warrant inclusion in the this EIA chapter:

- Golden eagle, white-tailed eagle, merlin and hen harrier (all included on Schedule 1 of the Wildlife and Countryside Act 1981);
- Herring gull, great black-backed gull, whooper swan (red-listed species as birds of conservation concern);
- Black-throated diver and red-throated diver (all Schedule 1 species);
- Arctic skua *Stercorarius parasiticus* and great skua (red and amber-listed species of conservation concern, respectively).

[8] NatureScot (2022) Assessing Connectivity with Special Protection Areas (SPAs). Guidance.

Summary of Sensitive Receptors

8.6.3 A summary of receptor sensitivity is presented in **Table 8.9.**

Table 8.9: Summary of Receptor Sensitivity

Receptor	Importance	Justification
Lewis Peatlands SPA and RAMSAR	National	Lewis Peatland SPA and RAMSAR have potential connectivity with the Proposed Development as they lie within 10 km. Qualifying species of the SPA and Ramsar can potentially use the Site for breeding, foraging or commuting. The designated sites and the species within them are considered to have a national level of importance.
Hen harrier	Regional	Hen harriers were regularly recorded in the area during Breeding Raptor Surveys, and breeding was confirmed for hen harrier by the LHRSG and during the MBBS. Hen harrier territories and three proven nests were recorded within disturbance distance from the southern Site Boundary. Hen harrier are in the process of colonising Lewis, with the population around Arnish considered to be of regional importance.
Schedule 1 Diver Species	Local	Black-throated diver were recorded in the area flying through in the immediate vicinity of the Site Boundary. However, the number of flights recorded were low. No breeding activity was recorded for diver species during the ornithological surveys.
Nests/colonies of Birds of Conservation Concern (Red and Amber listed species)	Up to Regional	Great black backed gull, and herring gull were identified with confirmed breeding within the northern section of the Site Boundary during MBBS. However, this breeding gull colony lies away from the construction activities for the Proposed Development. The closest activities to these breeding colonies are peat restoration works which would be undertaken approximately 500 m away. Great skua were regularly seen in the area with a high number of flights recorded during VP surveys within the northern Site Boundary. The species was confirmed as breeding within the Site Boundary during MBBS. The Northern Islands are preferred breeding territory for great skua that is also a red-listed species on the list of BOCC[9]. Sensitivity of this species to disturbance during breeding season is high, outside breeding season great skua are not present. Other red or amber listed species, such as whooper swan were also recorded on a few occasions in low numbers. Based on the MBBS results, the Proposed Development is not considered to have the potential to adversely affect the breeding success of great black-backed gull and herring gull colonies during breeding season.

Potential Effects Scoped Out

Sensitive features where no likely significant effects were identified on the basis of the scoping process were excluded from further assessment.

Table 8.10 provides a summary of issues scoped out of the assessment.

Table 8.10: Issues Scoped Out of the EIA

Feature/Effect	Justification
Collision Risk	The collision risk presented to birds passing through the Proposed Development is associated with the Powerline projects connecting into the Proposed Development. Collision Risk would therefore be assessed as part of the supporting documentation for the S37 consent applications for these developments and is not discussed here.

[9] BTO. (2024). Birdfacts. Available at : https://www.bto.org/understanding-birds/birdfacts/great-skua

8.7 Assessment of Likely Effects

8.7.1 Based on the desk study and field surveys, the following key concerns with potential significant effects were identified in this assessment:

- Potential disturbance of hen harrier territories and confirmed nesting locations (the Site);
- Disturbance or nest destruction of great skua (Red listed) breeding territories and nesting locations (Peat Restoration Area); and
- Disturbance or nest destruction of great black-backed gull and herring gull (Red listed species) breeding territories and confirmed nesting locations (Peat Restoration Area).

Potential Construction Effects

Nest Disturbance (Schedule 1 Birds)

8.7.2 There is the possibility that the works could impact on the nests of rare and vulnerable breeding raptors (i.e., specially protected species listed on Schedule 1 of the Wildlife and Countryside Act 1981). The damage, destruction or disturbance of such species' nests is likely to result in the loss of any nesting attempt or production of young in the year of the works, unless the birds initiate a second nesting attempt elsewhere.

Hen harrier

8.7.3 Hen harriers are sensitive to human disturbance and tend to avoid areas with high human activity. They are particularly sensitive to disturbance during breeding season. Construction works and the associated disturbance, including noise and light pollution and increased human presence, could have a direct, adverse effect on hen harriers and their nesting success if works are carried out during breeding season, including abandonment of nests and established territories.

8.7.4 The recommended disturbance distance for hen harriers is 750 m during breeding season. Hen harrier territories were recorded within this distance of the Proposed development meaning that without appropriate mitigation measures, the Proposed Development could have a **direct, adverse, medium magnitude effect** on a feature of regional importance. This has potential to result in a **significant impact**.

Nest Destruction (non-Schedule 1 Birds)

8.7.5 There is a potential for active birds' nests (not including Schedule 1 raptor nests) to be damaged or destroyed where vegetation clearance or other works are required in areas of deeper vegetation/scrub. Ground nesting bird's nests could be destroyed by heavy machinery. While this would result in a **non-significant** effect in EIA terms, due to the relatively small scale of the development and lower importance of breeding bird populations, all species of birds' nests are protected under the Wildlife and Countryside Act 1981. Therefore any nest destroyed would be considered a legal offence and therefore mitigation is required.

Nest Disturbance (non-Schedule 1 Birds)

8.7.6 There is potential for breeding birds to be disturbed by construction works and felling activities conducted near their nest sites. This could result in the abandonment and failure of the nest during the construction works. This effect would be greatest in areas where access track construction or peat excavation are required. For species of the passerine dominated general breeding bird assemblage, typically those not afforded specific protection under Schedule 1 of the Wildlife and Countryside Act 1981, the number of nest sites which could potentially be affected is likely to be small and the impact is unlikely to result in a discernible effect on the local populations of the species concerned. Any such disturbance effects on general breeding birds are therefore considered to be **not significant**.

Great skua

8.7.7 The Outer Hebrides is a preferred area for breeding for this migratory species. Construction works and the associated disturbance, including noise and light pollution and increased human presence could have a direct, adverse effect on this red listed bird species and their nesting success if works are carried out during breeding season, including the abandonment of nests resulting in failed nests.

8.7.8 However the nesting area for great skua lies in the northern section of the Proposed Development where the only works proposed are peat restoration works. The nests recorded were also approximately 500 m from these proposed works. The resulting impact would be adverse, low magnitude and unlikely on features of regional importance. This is considered to be a **not significant** impact.

Great black-backed gull and herring gull

8.7.9 Construction works and the associated disturbance, such as increased noise and light pollution can potentially reduce the breeding success of these red listed species, while movement of heavy machinery could destroy nests on the ground.

8.7.10 However, the nesting area for these lies in the northern section of the Proposed Development where the only works proposed are peat restoration works. The nests recorded were also approximately 500 m from these proposed works. The resulting impact would be adverse, low magnitude and unlikely on features of regional importance. This is considered to be a **not significant** impact.

Potential Operational Effects

8.7.11 The Proposed Development will not pose collision risk for birds due to its relatively small size and static nature. Potential operational effects can however occur as follows:

Displacement of Hen Harrier

8.7.12 Displacement is the process by which species adjust their behaviour to avoid using a location following the construction of a development. In this case it would involve species that have previously been recorded as active within the area, and chose not to use the area following construction. This can occur to species that are sensitive to human presence and repeated disturbance associated with constant noise levels and visual impacts.

8.7.13 Species most at risk from displacement are those that a sensitive to disturbance and use the habitats on which the Proposed Development is to be built for hunting or nesting. This would include hen harrier which forage within the footprint of the Proposed Development. The small size of the Proposed Development means that the area birds are displaced from is low magnitude impact on a feature of regional importance and is **not** considered to be a **significant** impact.

Potential Cumulative Construction Effects

8.7.14 Cumulative effects are considered to include both the total effects resulting from the Proposed Development in combination with other similar developments (present and reasonably foreseeable), and the additional contribution of the Proposed Development to the total cumulative effects taking account of other similar developments. As such, the aim is to identify any likely significant effects associated with the combination or addition of the Proposed Development with the cumulative baseline.

8.7.15 EIA Reports for infrastructure projects within the Zone of Influence from the Site, due to the proposed Development being of relatively small scale in this case is 2 km buffer, were consulted and are presented in Table 8.11. Developments for which no data could be reviewed are also listed in Table 8.11 but have been left out of the assessment. The absence of data for some cumulative developments is not considered to be a considerable limitation on this assessment. The key ornithological issues for development within NHZ 3 have been identified and are fully assessed in this section. Based on professional judgement, specialist local knowledge of the area and the robust and precautionary approach taken in this assessment, we consider it to be unlikely that potentially significant cumulative effects have been overlooked.

8.7.16 Projects included in the cumulative assessment are as follows:

Table 8.11: Cumulative Schemes (existing and planned) within 10 km of the Proposed Development

Scheme	Relevant Cumulative Effects previously identified	Potential for Cumulative Effects with Proposed Development
Stornoway Wind Farm[10]	Displacement; Disturbance (Cumulative traffic noise during construction) Most sensitive receptors identified as: • Black-throated diver • Golden eagle • White-tailed eagle	Yes
Harris – Stornoway 132 kV OHL Replacement	None	No
Creed Quarry Extension	Information unavailable	Yes
Arnish Deep Water South project[11]	45 species from the LBAP were previously recorded in the area[12]. Disturbance to these species from the proposed development is considered not significant. No cumulative effects were identified in the EIAR for this project. Breeding hen harrier have potential to be disturbed by the construction works for the proposed road.	Yes

Cumulative construction effect summary

8.7.17 The potential for significant cumulative impacts on Schedule 1 raptor species must be assessed between the Proposed Development, Stornoway Wind Farm, Creed Quarry Extension and the Deep Water Port Road. The location of these developments means that each has potential to impact a different hen harrier territory. Hen harrier are in the process of colonising Lewis having not been present as a breeding bird as recently as 2015[13]. Disturbance impacts are possible from disturbance on hen harrier during construction since the developments are within disturbance distance to hen harrier nests (750 m). This disturbance can lead to the abandonment of nests and territories. This is due to increased work activities / traffic noise and human presence during construction.

These impacts would be short-term, reversible, adverse impacts on features of regional importance, with the potential to result in a **significant impact**.

Potential Cumulative Operational Effects

8.7.18 There are no potential cumulative operational effects included in this assessment.

8.8 Mitigation

8.8.1 The determination of the appropriate measures to use to address each likely effect considered the mitigation hierarchy in each instance; avoidance, mitigation, compensation and enhancement.

8.8.2 The Site Selection process that the project went through is described in Chapter 3: Consideration of Alternatives (EIAR Volume 2). This process was undertaken with a knowledge of baseline of ornithological sensitivities, including designated sites and golden eagle territories. The Site Selection process was therefore able to avoid these features as much as possible.

8.8.3 Embedded mitigation relevant to this chapter includes tried and tested measures documented within Technical Appendix 2.2: SSEN Transmission General Environmental Management Plans (GEMP) (EIAR Volume 4) and Technical Appendix 2.3: SSEN Transmission Species Protection Plans (SPP) (EIAR Volume 4).

[10] The Scottish Government (2024) Available at https://www.energyconsents.scot/ApplicationDetails.aspx?cr=EC00005238
[11] https://marine.gov.scot/sites/default/files/stornoway_cemp_2.pdf
[12] Stornoway Port Authority (2017) Available at https://marine.gov.scot/sites/default/files/07017_07018_-_scoping_report.pdf
[13] https://community.rspb.org.uk/ourwork/b/scotland/posts/hen-harriers-make-history-on-the-isle-of-lewis [Accessed 10/01/2025]

8.8.4 It is reasonable to assume protocols detailed within the SSEN Transmission GEMPs and SPPs will be implemented successfully.

8.8.5 All additional mitigation will be captured and delivered through the Construction Environmental Management Plan (CEMP).

Mitigation during Construction

Hen Harrier – Disturbance

8.8.6 VP surveys are proposed to continue until the start of the construction period, to collect data on rare and vulnerable raptors and how they are using the site. The surveys should focus on confirmed or probable territories, identified in the survey work already undertaken and should be expanded to include other areas of potentially suitable habitat.

8.8.7 The surveys should seek to locate any new nest sites and advise the Applicant and their Principal Contractor of required mitigation measures in line with the Bird SPP. Surveys should be co-ordinated by the ECoW.

8.8.8 In the event that any confirmed, or suspected active nests are identified within range of potential disturbance, a works exclusion zone will be established around the nest site as stated in the Bird SPP and advised by the ECoW. Works will not be permitted to commence within the exclusion zone until nesting has been completed and the young have fledged, or the ECoW deems, through monitoring each stage of the breeding attempt, that the extent of the exclusion zone may be reduced.

8.8.9 Pre-construction surveys would be required to check for Schedule 1 species nesting close to the Proposed Development. The successful implementation of these Bird SPP is considered sufficient to mitigate the likely disturbance effects on the hen harrier and merlin territories identified. As the hen harrier territory is closer to the Proposed Development, and there is potential for additional territories or roosts at the southern end of the Proposed Development, the following additional mitigation is required.

8.8.10 Hen harrier nests are located within disturbance distance from the Site. Nest searches for hen harrier within the known breeding territory (shown on **Figure 8.3: Desk Study Results (CONFIDENTIAL) (EIAR Volume 3)** would be required. If nests are confirmed, works within 750 m during the breeding season would require a watching brief from an ornithologist. Disturbance distances for each species are recommended by NatureScot's (NS) review of disturbance distances for selected bird species[14].

Nesting birds (Non-Schedule 1) – Nest Destruction

8.8.11 The vegetation clearance, peat excavation and other groundworks associated with the construction of the Proposed Development are due to be undertaken over the first six months of the construction programme. These ancillary works may occur during the breeding bird season (March to September) therefore, pre-construction surveys for nesting birds would be required to avoid destroying or disturbing nests. Surveys would seek to identify the locations of any active nests within, or immediately adjacent to the working areas within the Application Boundary.

8.8.12 All pre-construction bird surveys should extend a sufficient distance out from the Proposed Development to identify any nest sites which may be within the disturbance range of the species in question. For example, pre-construction checks for general nesting birds do not need to extend more 50 m beyond the development footprint, while surveys for rare and vulnerable raptors should extend out to between 500 m and 750 m. These buffers are be defined in the Bird Species Protection Plan (Bird SPP).

8.8.13 Where areas of vegetation are cleared, and prior to any construction activities, it is recommended that dissuasion techniques are employed to prevent birds from nesting on cleared ground. This would include having site personnel walking the areas to cause disturbance or the deployment of bird scarers/frightening devices. These measures are also detailed in the Bird SPP.

8.8.14 The above mitigation is considered sufficient to mitigate any potential cumulative impacts on ornithological features, therefore no further mitigation measures are required.

[14] Whitfield, D.P. & Ruddock, M. (2007). A Review of Disturbance Distances in Selected Bird Species. A report from Natural Research Ltd, SNH.

Mitigation during Operation

8.8.15 No mitigation measures are considered to be required during operation as no significant effects were identified.

8.9 Residual Effects

Residual Construction Effects

8.9.1 Pre-construction surveys, employing an ECoW and adhering to the Bird SPP are proposed to prevent any disturbance impacts on hen harrier. This would reduce the likelihood of an impact and the predicted magnitude to low, resulting in a **not significant** impact.

8.9.2 Mitigation in the form of pre-construction surveys for ground nesting birds in proposed to prevent any nests being destroyed during the construction process. This would reduce the likelihood of an impact and the predicted magnitude to low, resulting in a **not significant** impact.

8.9.3 In both instances the mitigation proposed reduces the likelihood of an impact and following the successful implementation of the proposed mitigation no significant residual construction effects are considered likely to occur.

Residual Operational Effects

8.9.4 The residual operational effects are as defined in Paragraph 8.7.13 as no mitigation is required.

Residual Cumulative Construction Effects

8.9.5 Following the successful implementation of the mitigation implemented for the Construction Phase no significant residual, cumulative construction effects are considered likely to occur.

Residual Cumulative Operational Effects

8.9.6 The residual operational effects are as defined in Paragraph 8.7.13 as no mitigation is required.

8.10 Summary and Conclusion

8.10.1 A programme of desk studies and field surveys were undertaken between 2023 and 2025 to determine the baseline of the study area. Surveys are ongoing and survey area has been adapted to provide optimal coverage to assess potential impacts of the Proposed Development on sensitive ornithological features. Surveys were undertaken following best practice guidance and the assessment was undertaken following CIEEM guidelines. Surveys were conducted by Stagfire and Ramboll ornithologists. One of the key ornithological constraints identified is the presence of hen harrier territories with several nests locations identified within disturbance distance from the Site Boundary of the Proposed Development. Although a number of qualifying features of the Lewis Peatlands SPA were recorded in the area, no significant effects on the species or the SPA are anticipated.

8.10.2 Potential significant impacts on hen harrier territories, including adverse cumulative effects, are predicted therefore pre-construction surveys are recommended to mitigate these.

8.10.3 No significant residual effects or cumulative effects on ornithological features are predicted.

Table 8.12: Summary of Potential Signficiant Effects of the Proposed Varied Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
Disturbance of hen harrier territories	Pre-construction surveys to identify territory locations, an ECoW to enforce protection	Bird SPP and CEMP	Not significant

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	measures and adherence with a Bird SPP.		
Nest destruction/Disturbance of non-Schedule 1 birds (great skua, great-black backed gull, herring gull etc)	Pre-construction surveys for nests in areas of deeper vegetation or where tree felling is required.	Bird SPP and CEMP	Not significant
Operation			
None predicted	N/A	N/A	N/A
Cumulative Construction			
Disturbance of hen harrier territories	Pre-construction surveys to identify territory locations, an ECoW to enforce protection measures and adherence with a Bird SPP.	Bird SPP and CEMP	Not significant
Cumulative Operation			
None predicted	N/A	N/A	N/A

Next Steps

8.10.4 Further surveys are proposed to be undertaken to complete the process of establishing the baseline. This includes continuing with VP Surveys up to the end of February 2025 and the completion of a period of MBBS covering the southern section of the Site in Spring Summer 2025. This information will be reported in a Supplementary Environmental Information (SEI) report, which would also detail where any changes are required in the assessment set out here. Surveys at the Site will continue until the start of construction to maintain an understanding of hen harrier and other Schedule 1 species activity within the site boundary. This is anticipated to be in early 2026, subject to consents.

9. HYDROLOGY

9.1 Introduction

9.1.1 This chapter reports on the likely significant effects with respect to the hydrological environment associated with the construction, operation and decommissioning of 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 Environmental Impact assessment (EIA) Report (EIAR Volume 2, Chapters 1-4).

9.1.2 The assessment has been carried out by Jo Thorp of Ramboll UK Limited (Ramboll) a Senior Consultant who has over seven years' experience in the water industry and is a member of the Chartered Institute of Water and Environmental Management (CIWEM).

9.1.3 This chapter is supported by the following Figures and Technical Appendices:

Figures (EIAR Volume 3a):

- Figure 9.1: Hydrological Setting;
- Figure 9.2: Private Water Supply (PWS) Locations;
- Figure 9.3: Proposed Development within 50m of watercourses;
- Figure 9.4: Proposed Temporary Construction Works;

Technical Appendices (EIAR Volume 4):

- Technical Appendix 9.1: Assessment Methodology; and
- Technical Appendix 9.2: Groundwater Dependent Terrestrial Ecosystem (GWDTE) Assessment.

9.1.4 A drainage strategy prepared by Mott MacDonald, dated October 2024 is provided as **Technical Appendix 2.1 of the EIAR** and provides detail of the proposed management of surface water runoff for the Proposed Development.

9.1.5 Figures and Technical Appendices are referenced in the text where relevant.

9.2 Assessment Methodology and Significance Criteria

Scope of Assessment

9.2.1 There is no published or formalised technical guidance relating to the assessment of the hydrological environment. Professional judgement and experience have therefore been applied to determine the scale, nature and significance of the potential water resources and flood risk effects of the proposed development.

9.2.2 Where applicable, consideration has been given to SEPA regulations and guidance, and in particular those identified in SEPA's scoping response (see **Technical Appendix 4.3: Consultation Register (EIAR Volume 4))**. This chapter considers effects on:

- Water quality (including both surface water and groundwater bodies) and assessment of the impacts from pollution;
- Flood risk; both risk to the Proposed Development and the potential for direct and indirect impacts of the Proposed Development on off-site flood risk;
- Water resources, impacts on flow regimes and the geomorphological characteristics of watercourses as a result of proposed watercourse crossings;
- Any alterations to regimes of water supplying PWS and Potable Public Water Supplies (PPWS), either in the locale of the Proposed Development or with potential hydrological connection to the Proposed Development; and
- The potential for impacts of the Proposed Development on hydrology or hydrogeology to lead to secondary effects on Groundwater Dependent Terrestrial Ecosystems (GWDTE). It is noted, however, that the ecology or biodiversity effects (e.g. on sensitive habitats) are captured in Chapter 7 (EIAR Volume 2).

9.2.3 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational, under construction and consented developments are considered as part of the baseline.

9.2.4 The assessment is based on the Proposed Development as described in **Chapter 2: Project Description (EIAR Volume 2)**.

9.2.5 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.3: Consultation Register (EIAR Volume 4).**

9.3 Method of Baseline Data Collection

Extent of the Study Area

9.3.1 The study area for desktop assessment includes an area of 2 km from the Site boundary. As SEPA assesses surface water and groundwater quality at a river catchment level, the potential for impacts on downstream water quality has been considered at a river catchment level to the River Creed beyond the 2 km study area.

Desk Study

9.3.2 In order to establish the existing baseline hydrological conditions in the study area, relevant data was reviewed and assessed. The data sets and associated sources can be summarised as follows:

Table 9-1: Baseline Information Sources

Topic	Sources of Information
Topography	• Aerial Photography[1] • 5 m contour data derived from Ordnance Survey (OS) Digital Terrain Model (DTM) data[2] • 1:25,000 OS Raster Data[2]
Designated Nature Conservation Sites	• SNHi Sitelink website[3]
Solid and Superficial Geology	• British Geological Survey Digital Data provided at BGS online viewer[4] • BGS Borehole Records[4]
Soils and Peat	• SNH Carbon and Peatland Map (2016)[5] • BGS 1:50,000 and 1:625,000 geological maps (superficial and bedrock)[4]
Surface Water Hydrology	• 1:10,000 OS Raster Data[2] • 1:25,000 OS Raster Data[2] • OS Open Rivers[6]
Flooding	• Indicative River and Coastal Flood Map (SEPA)[7]
Water Quality	• SEPA, Water Classification Hub[8]
Water Resources	• Private water supply information provided by Comhairle nan Eilean Siar's Environmental Health Department • Drinking Water Protected Areas (DWPAs) in the Scotland River Basin District (RBD) maps[9]. • 1:10,000 OS Raster Data[2] • 1:25,000 OS Raster Data[2]
Hydrogeology	• BGS 1:50,000 and 1:625,000 geological maps (superficial and bedrock)[4] • BGS Groundwater Vulnerability Maps[4] • BGS 1:625,000 hydrogeological map of the UK[4] • The River Basin Management Plan For The Scotland 2021 – 2027[10]

[1] Google Earth Imagery, Bing Maps

[2] Under license acquired from Ordnance Survey

[3] SNHi Sitelink. Available online: https://sitelink.nature.scot/map [Accessed June 2024]

[4] BGS Onshore GeoIndex. Available online: www.bgs.ac.uk [Accessed June 2024]

[5] National Soil Map of Scotland. Available online: https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/ [Accessed June 2024]

[6] OS Open Rivers. Available online: https://osdatahub.os.uk/ [Accessed June 2024]

[7] SEPA Flood Maps. Available online: www.sepa.org.uk [Accessed June 2024]

[8] SEPA, Water Classification Hub. Available online: https://www.sepa.org.uk/ [Last accessed June 2024]

[9] Drinking Water Protected Areas (DWPAs) in the Scotland River Basin District (RBD) maps. Available online: https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/ [Accessed June 2024].

[10] https://www.sepa.org.uk/environment/water/river-basin-management-planning/

Field Study

9.3.3 Site reconnaissance was carried out by the Ramboll hydrology team in October 2024. The chapter is also informed by ecological surveying carried out by Ramboll in August 2023 and July 2024 (including National Vegetation Classification (NVC) and aquatic surveys), and peat surveying carried out by Mott Macdonald and Fluid Environmental Consultants in August 2024.

9.4 Method of Assessment

9.4.1 The methodology for the assessment was adopted based on the outcome of the EIA Scoping process and include the following steps:

- Establish a hydrological and water environment baseline. This baseline was used as the reference against which all impacts have been assessed. This has also included identification of any future anticipated changes;
- Define hydrological links between the Site and the study area to establish linkages between the hydrological character of the Site (in terms of runoff quality and quantity) and the identified receptors;
- Based on each linkage, quantify the potential impacts (changes) to the existing baseline and associated effects, based on the following criteria:
  - Magnitude – the size or intensity of the impact;
  - Nature (beneficial, neutral or adverse) – whether the change would result in net loss or degradation of an important hydrological feature or whether it would enhance or improve it;
  - Extent – the spatial area over which the effect is likely to occur;
  - Duration – the length of time over which the effect is likely to occur;
  - Reversibility – the extent to which effects are reversible; and
  - Timing and frequency – consideration of the timing of events.

9.4.2 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 9.1: Hydrology Assessment Methodology**.

Limitations and Assumptions

9.4.3 The assessment has relied on publicly available datasets, as well as publicly available data reported via SEPA's online mapping and the SEPA geo-spatial data. It has been assumed that these data sets have been reported correctly at the time of reference.

9.4.4 The assessment also relies on an assumption that the schedule of good practice measures set out in this chapter would be implemented through a Construction Environmental Management Plan (CEMP), which would be implemented by the Principal Contractor at the construction stage. If significant effects are identified following the implementation of these good practice measures, then further mitigation would be identified. The identified limitations and assumptions are not considered to undermine the validity of the assessment.

9.5 Baseline Conditions

Current Baseline

Surface Water Features

9.5.1 The Site lies within the catchment of the River Creed (also referred to as Abhainn Grioda) which is located approximately 100 meters northeast of the Arnish Moor section of the Site at its closest point, flowing predominantly eastward before discharging into Stornoway Harbour 300 m to the east of the Site.

9.5.2 Surface water drainage from land in the north and west of the Arnish Moor section of the Site is directed via several land drainage channels toward the northeast, eventually feeding into the River Creed. One of these drainage channels intersects the Site.

9.5.3 A further drain is present to the south of the Site. This drain has been artificially modified through straight sections of channel directly to the south of the Site. The eastern course of this southern drain suggests a more naturalised channel, downstream from the Site.

9.5.4 Loch Cnoc Choilich is situated west of the Site, beyond the A859 roadway, and appears to drain to the southern ditch.

9.5.5 Loch Airigh an Sgairbh and Loch Mor na Cairteach are located 50 m south of the Site. These lochans do not lie within the River Creed catchment but drain to the southeast towards the Leiravay River which then discharges via Loch Buaile Bhig to the coast, and are therefore not in hydrological connection to the Site.

9.5.6 The River Creed flows adjacent to the southern boundary of the Creed North land parcel (to the west of the A859) and an unnamed tributary of the River Creed flows in an easterly within this region.

9.5.7 Overall, the drainage across the Site follows a west-to-east gradient, with the majority of the Site lying within the River Creed catchment, which drains into Stornoway Bay to the east, apart from a very minor area of the Site in the south west on which no development is proposed which is within the catchment of the Leiravay River (also referred to as Allt na Craoibhe).

9.5.8 The Site does not share a hydrological connection with the Lewis Peatlands Special Area of Conservation and Special Protection Area (SAC/SPA), located to the west, nor with the Tong Saltings Site of Special Scientific Interest (SSSI).

9.5.9 The surface water features in relation to the Site are shown on **Figure 9.1 (EIAR Volume 3a)**.

Surface Water Resource

9.5.10 According to SEPA mapping[11], the River Creed watercourse extends approximately 18.6 km in length and is classified as being in High overall condition under the Water Framework Directive (WFD) classification system. Stornoway Harbour, identified as a coastal waterbody, is rated by SEPA as having a Good overall status under the same WFD system. The smaller watercourses within the Site are not included in the WFD assessments due to their limited catchment size.

9.5.11 SEPA mapping further identifies the southern extent of the Site as within the Leiravay River operational catchment. The Leiravay River is rated by SEPA as having a Good (2022) overall WFD status. This catchment discharges to the Gob na Greige to Rubha Raerinis coastal waterbody approximately 2 km south-east of the Site.

9.5.12 Scottish Water mapping indicates that there are no Drinking Water Protected Areas (DWPA) for surface water within a 2 km radius of the Site. The nearest DWPA is located approximately 3.8 km to the south and has no hydrological connection to the Site.

9.5.13 A Private Water Supply (PWS) is located approximately 250 m northeast of the Site, serving the Iron Well at Lews Castle, and is recorded as abstracting from groundwater. This PWS is northeast of the Abhainn Ghrioda watercourse. An additional PWS is situated 1 km southwest of the Site, sourcing surface water from Loch Lathamul. The Site is determined to not be in hydrological or hydrogeological connection with either PWS identified.

Flood Risk

9.5.14 According to SEPA flood maps, no areas within the Site are at elevated risk of flooding from rivers, the sea or surface water. A small area in the southwest part of the Site, adjacent to an unnamed drain and outside of the operational area of the Site, is assessed by SEPA to be at High risk of surface water flooding.

Hydrogeology

9.5.15 According to BGS 1:50,000 geological mapping, the Site is directly underlain by superficial deposits of peat. The west of the Site is further underlain by bedrock geology of the Outer Hebrides Thrust Zone Mylonites Complex. The remainder of the Site in the east is underlain by bedrock of the Lewisian Complex.

9.5.16 The underlying geology is assessed by the BGS to comprise of a Low Productivity Aquifer which may yield small amounts of groundwater.

9.5.17 Furthers detailed with regard to the assessment of impacts on peat and other soils is provided in **Chapter 10: Geology and Soils (EIAR Volume 2).**

Ground Water Dependent Terrestrial Ecosystems (GWDTE)

9.5.18 National Vegetation Classification (NVC) surveys undertaken across the Site area in July 2024 identified the presence of potentially Highly and Moderately Groundwater Dependent Ecosystems (GWDTEs). The initial assessment of the potential

[11] SEPA Water Classification Hub. Available online: https://informatics.sepa.org.uk/WaterClassificationHub/ [last accessed January 2025]

presence of these GWDTE was based on the identified NVC community presence only (**Figure 9.2.6**) and did not take account of hydrological, hydrogeological or land use characteristics. Findings of further hydrological assessment of GWDTE is provided in **Figure 9.2.7** and further details of the assessment of potential GWDTE habitats is provided in **Technical Appendix 9.2 (EIAR Volume 4)**.

9.5.19 Based on site-specific hydrogeological and hydrological assessment, the area of High potential for GWDTE (**Figure 9.2.6**) in the centre of the Site is shown to be associated with land use patterns (agricultural practises) and the accumulation of surface water. Areas of Moderate potential for GWDTE within the western extent of the Site are associated with surface water features or areas of surface water accumulation. Based on hydrological and hydrogeological assessment provided in **Technical Appendix 9.2**, areas of bog within the Site boundary are assessed to be ombrogenous (rain-fed) habitats or within areas where surface water runoff is likely to present a greater source of water input to the habitat than groundwater. Based on the cross reference of site-specific ecological and hydrological assessment with underlying hydrogeological conditions, the potential GWDTE is considered as having a Low sensitivity to alterations in groundwater supply, in the context of the Proposed Development.

Future Baseline

9.5.20 There is potential for climate change to impact on future baseline conditions. Climate change studies predict a decrease in summer precipitation and an increase in winter precipitation alongside slightly higher average temperatures. This suggests that there may be greater pressures on PWS in summer months in the future. However, summer storms are predicted to be of greater intensity. Therefore, peak fluvial flows associated with extreme storm events may also increase in volume and velocity. These climate change factors have been taken into account when considering the potential for significant effects.

Summary of Sensitive Receptors

Scoped Out Receptors

9.5.21 In accordance with SEPA's Land Use Planning System[12] PWS situated within a 250 m buffer of development should be identified in order to assess potential risk. While the Iron Well Lews Castle is situated approximately 195 m north of the Site boundary, the nearest element of the Proposed Development (borrow area 3) is 285 m southwest and outside of the buffer at which additional risk assessment would be required under LUPS GN31. Furthermore, the Iron Well Lews Castle PWS is situated to the north at a location from which ground levels fall sharply to the south and the River Creed, before rising again towards the Site. No borrow pit excavation is proposed within a 250m buffer of the PWS and therefore further assessment of the potential impact on the PWS are not applicable under LUPS GN31 and the underlying hydrogeology is not assessed to be productive (the Site and wider surrounding area is underlain by a Low Productivity aquifer). It is therefore very unlikely that the groundwater supply at this location would be impacted by the Proposed Development and no further groundwater abstractions are identified within 1km of the Proposed Development (Figure 9.4). Based on the very low probability of any impact to PWS sources, further assessment of potential impacts on PWS is scoped out.

Scoped In Receptors

9.5.22 **Table 9-2** outlines the receptors scoped into the assessment.

Table 9-2: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
The Abhainn Ghrioda (River Creed) watercourse	High	The Abhainn Ghrioda watercourse is assessed to be of High overall condition under the WFD classification system. The proposed development is situated wholly within the catchment of the Abhainn Ghrioda and tributaries of this river are in close proximity to the north and south of the proposed Development.

[12] Guidance Note 31 (LUPS GN31),

Receptor	Sensitivity	Justification
Stornoway Harbour	High	The coastal waterbody has been assessed to be of Good overall condition. Watercourses within the Site flow to the Abhainn Ghrioda watercourse, which in turn flows to the coastal waters of Stornoway harbour.
Southern and Northern Watercourses	High	Drains into the Abhainn Ghrioda directly upstream of the outfall to Stornoway Harbour. These watercourses are located in close proximity to the Proposed development and crossing points are proposed on the southern watercourse.
GWDTE	Low	The underlying aquifer is assessed to be of Low Productivity and potential GWDTE vegetation communities are assessed in **Technical Appendix 9.2 (EIAR Volume 4)** as likely to be rain-fed habitats and, as such, are not considered sensitive to alterations in groundwater flows. While such habitats remain sensitive to potential alterations in surface water supplies, similar habitats are well distributed at the local and regional scale in similar or better condition.

Potential Effects Scoped Out

Flood Risk

9.5.23 According to SEPA flood mapping[13], the Site is situated within an area of Very Low risk, with a lower than 0.1% chance of fluvial or tidal flooding.

9.5.24 SEPA mapping further identifies isolated areas of up to High (10% chance of flooding) surface water flood risk within the south-western extent of the Site. However, surface water runoff within the site boundary will be accounted for as detailed within the detailed drainage strategy prepared by Mott Macdonald LLP (2024) **Technical Appendix 2.1, EIAR, Vol 4**. The drainage strategy will restrict surface water runoff rates to greenfield rates with conservative allowances for climate change. Surface water runoff arising from the Proposed Development will be conveyed via overland flow into swales and detention basins, before discharging to watercourses to the north and south of the Proposed Development, before flowing to the River Creed to the north of the site. Site platforms of the converter and substation compounds are to be constructed out of permeable granular stone to attenuate flows.

9.5.25 Given that that flood risk mitigation is included within the design of the Proposed Development through the detailed drainage strategy and watercourse crossing design, the risk of flooding is considered as Not Significant and is not considered further within this assessment.

Watercourse Crossings

9.5.26 Three new temporary watercourse crossings would be required for access tracks on the Site, two to the south of the substation and converter site leading to borrow pits, and one on the access track to the proposed area of peat redistribution in the Creed North Site area. The two proposed southern crossings would comprise single-span structures, that would not require construction on the bed of the watercourse and which would affect less than 20 m of the river bank in total. As such these crossings would be subject to Registration under guidance issued by SEPA in relation to Controlled Activity Regulations (CAR)[14]. The single track crossing of the small watercourse in the north west parcel of the site would also be subject to Registration under SEPA CAR licencing requirements. The location of proposed watercourse crossings is shown in Figure 9.1 (EIAR Volume 3a).

9.5.27 The detailed design of each watercourse crossing would seek to ensure hydraulic conveyance is maintained to prevent any restriction of flows, as well as allowing the free passage of mammals and aquatic species. Therefore, detailed assessment of potential flow rates at proposed watercourse crossing locations would be carried out by a contractor at the detailed design stage, such that all of the watercourse crossings identified for the Proposed Development would be designed in compliance with SEPA requirements. The design of watercourse crossings would also take account of the future 'with climate change' baseline and (to avoid altering the flow regime) would be sized for a 1:200 year plus climate change flood event.

[13] SEPA Flood Maps. Available online: https://beta.sepa.scot/flooding/flood-maps/ [last accessed January 2025]
[14] SEPA, July 2024. The Water Environment (Controlled Activities) (Scotland) Regulations: A Practical Guide v9.4

9.5.28 Table 9.3 provides a summary of issues scoped out of the assessment.

Table 9-3: Issues Scoped Out of the EIA

Feature/Effect	Justification
Flood Risk	As previously stated, flood risk mitigation is included within the design of the Proposed Development.
Watercourse Crossings	A minimal number of temporary watercourse crossings are required, which would be subject to Registration under SEPA Controlled Activity Regulations.
Private Water Supplies	PWS are beyond a 250 buffer within from the Proposed Development and therefore further assessment is not required under LUPS GN31. Additionally review of the hydrogeology and topography of the surrounding area shows that there is a very low probability of any impact to PWS sources.

Construction Stage Embedded Mitigation and Standard Best Practice Measures

9.5.29 A schedule of good practice measures is set out below, which provides a summary of measures that would be implemented during construction through a CEMP and detailed assessment of further measures that would be implemented in proximity to watercourses. A detailed CEMP would be prepared by the Principal Contractor prior to the commencement of construction in accordance with conditions applied to the Proposed Development. Additionally, works would be carried out in line with General Environmental Management Plans (GEMPs) prepared by SSEN. Relevant SSEN GEMPs are listed below and provided in **Technical Appendix 2.2, EIAR Volume 4:**:

- Oil Storage and Refuelling (TG-NET-ENV-510);
- Soil Management (TG-NET-ENV-511);
- Working in or Near water (TG-NET-ENV-512);
- Working in Sensitive Habitats (TG-NET-ENV-513);
- Working with Concrete (TG-NET-ENV-514);
- Watercourse Crossings (TG-NET-ENV-515);
- Contaminated Land (TG-NET-ENV-517);
- Private Water Supplies (TG-NET-ENV-518);
- Restoration (TG-NET-ENV-522); and
- Bad Weather (TG-NET-ENV-523).

9.5.30 Details of construction phase mitigation measures for the Proposed Development would be contained within the CEMP.

Temporary Surface Water Runoff Increase

9.5.31 Details of construction phase Sustainable Drainage Systems (SuDS) would be included in the Pollution Prevention Plan (PPP) and the CEMP, as required, to provide a surface water management and treatment train that would mitigate potential adverse impacts on the hydrology of the Site and surrounding areas during the construction phase of the Proposed Development. Measures would ensure that pre-development runoff rates are maintained and that rates of runoff to watercourses are not increased. Works taking place near watercourses would be undertaken in accordance with SEPA guidance and in line with the requirements of the Water Environment (Controlled Activities) (Scotland) Amendment Regulations 2021 (CAR)[15] to prevent or reduce adverse effects to the watercourse.

9.5.32 At the limited number of locations where a track is required to cross a watercourse, or where other infrastructure is necessary within 50 m of a surface watercourse, either as described in this Chapter or as identified by the Principal Contractor as detailed design progresses, the installation of SuDS measures would be supervised by the ECoW during the construction phase of works. A Water Quality Monitoring Plan (WQMP) for watercourses adjacent to and downstream of the Proposed Development would be agreed with the Local Authority and SEPA. and details will be included in the CEMP.

Changes to Downstream Watercourse Hydrodynamic Status

9.5.33 Contamination as a result of silt release on-Site would be managed through measures included in a CEMP which would explicitly consider the erosion and transportation of sediment from the Site to watercourses, prior to the commencement of construction the appointed contractor would submit plans for construction phase SuDS and the management of surface water runoff to SEPA in

[15] Scottish Government, The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available online:

order to apply for a Construction Site Runoff Licence. The proposed construction phase SuDS would be designed to maintain the downstream hydrological characteristics of watercourses.

Contamination of the Water Environment

9.5.34 The potential for impacts on the water environment through the release of pollutants or sediments during the construction phase would be managed through the implementation of a CEMP. The CEMP would incorporate measures to ensure that the release of sediments or pollutants to the surrounding environment is avoided.

9.5.35 Surface water runoff will be managed using SuDS, designed to prevent sediment and pollutants from reaching nearby water bodies, incorporating features like silt fences, sediment traps, and filtration measures where needed. A drainage strategy for the site has been prepared by Mott Macdonald LLP (2024) and is presented as **Technical Appendix 2.1** of the EIAR.

9.5.36 The storage of potentially contaminative materials (oils, cements/ grouts) would be situated at least 50 m from watercourses. Fuels, oils or chemicals stored on-site would be sited over an impervious base and in accordance with the CAR regulations.

9.5.37 The CEMP would set out procedures that would be followed should the accidental release of any pollutants from site plant and machinery occur in proximity to a surface water feature. Immediately following appropriate on-site responses, SEPA would be notified and consulted on appropriate clean up or remediation were such measures required.

9.5.38 Additional measures which would be detailed in the CEMP, will be implemented during construction for groundworks or dewatering activities within 50 m of watercourses. Further mitigation measures would include settlement ponds or attenuation basins to intercept potential sediment erosion. Should these features prove unfeasible within the parameters of the Site area, due to constraints from surrounding peatland and watercourse buffers, free standing settlement tanks would be used for management of sedimental runoff of required dewatering activities. Where works are proposed within 50m of watercourses, silt fencing would be instated prior to the commencement of construction work, and the condition of silt fencing would be monitored by the ECoW throughout construction works, to ensure that required maintenance or removal of accumulated silt would not lead to a loss of function. Works would be avoided in areas closer than 50m to a watercourse during periods of heavy rainfall. Silt fencing would remain in-situ until such time as areas of work ground were stabilised with vegetation or groundworks were such that runoff of sediment laden water were no longer considered a risk (e.g. installation of seeded geotextile, track surfacing or hardstanding). Measures that would be implemented at the proposed temporary watercourse crossings would include the design of crossings to accommodate suitable flows (the 1 in 200 (0.5%) event including allowance for climate change) and good practice measures for engineering on or near watercourses[16] would be followed. These measures would be set out in the CEMP that would be prepared by the appointed contractor.

9.5.39 Construction would be carried out in accordance with best SEPA practice[17] and SEPA Guidance for Pollution Prevention[18]. Splash boards and runoff diversion measures, including silt fencing adjacent and parallel to watercourses beneath bridges and at culvert crossings, would be used at all crossings during construction to prevent direct siltation of watercourses.

GWDTE

9.5.40 Assessment of the sensitivity of potential GWDTE is provided in **Technical Appendix 9.2, EIAR Volume 4**, which finds that areas of potential GWDTE within the Site boundary are supported by surface water flow and rainfall, and are not considered as dependant on groundwater. As such, mitigation measures for surface water runoff management set out in the detailed drainage strategy **Technical Appendix 2.1, EIAR Volume 4**) such as swales and detention basins will be utilised to maintain overland flows which may support habitats assessed in **Chapter 7, Ecology, EIAR Volume 2**. As such no further mitigation is required.

[16] SEPA, November 2010. Engineering in the Water Environment: Good Practice Guide. River Crossings. Available online: https://www.sepa.org.uk/media/151036/wat-sg-25.pdf [Last accessed January 2025]

[17] SEPA, 2021. Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Water Run-Off from Construction Sites. Available online: https://www.sepa.org.uk/media/340359/wat-sg-75.pdf [last accessed January 2025]

[18] SEPA, 2023. Guidance for Pollution Prevention, Working at construction and demolition sites: GPP 6, Version 1. April 2023. Available online: https://www.netregs.org.uk/media/tsybv2y3/gpp6-working-on-construction-and-demolition-sites.pdf [last accessed January 2025]

Operational Stage Embedded Mitigation

9.5.41 Details on the management of surface water runoff during the operational phase are provided in the Mott MacDonald (2024) Drainage Strategy **(Technical Appendix 2.1, EIAR Volume 4)** in order to manage surface water runoff on the Site (including during low probability rainfall events taking into account climate change), to prevent alteration of the downstream hydromorphological characteristics of watercourses**.** A site maintenance programme with regard to site plant and infrastructure would be implemented by the SSEN Transmission and a maintenance schedule for SuDS measures at the site would be submitted to Comhairle nan Eilean Siar (CnES) for their approval. It is anticipated that the requirement for submission of a SuDS maintenance schedule would be conditioned by CnES post-consent.

9.5.42 Safe storage of fuels, oils, chemicals and other materials would be carried out in accordance with SEPA Guidance[19] Emergency plans and materials would be implemented at the site20 . In the unlikely event of an accidental release of hazardous material suitable measures would be followed to prevent the release of pollutants to controlled waters.

9.6 Assessment of Likely Effects

Potential Construction Effects

9.6.1 SEPA recommends a 50 m buffer is maintained around lochs and watercourses in their scoping response, to reduce the risk of direct and indirect impacts to watercourses as a result of developments. The design of the Proposed Development takes this buffer into consideration and the footprint of the proposed substation and converter station are located outside a 50 m buffer. However, there are four locations, apart from track crossings of watercourses, at which construction work is proposed within a 50 m buffer of watercourses. These locations relate to proposed SuDS infrastructure at the Site and are identified in **Figure 9.3, EIA Volume 3a** and described below:

1. Approximately 7,600 m² (430 m in length) of the proposed swale and ground raising (embanking rising towards the substation and converter footprint) to the south of the Proposed Development is within the 50 m watercourse buffer. The watercourse is situated approximately 10 m south of the proposed swale at its nearest point.
2. Approximately 5,600 m² (200 m in length) of the proposed swale and earthworks associated with the southeastern laydown area is within the 50 m watercourse buffer. The small, unnamed watercourse is situated approximately 22 m south of the proposed drainage ditch.
3. Approximately 1,800 m² of the proposed drainage ponds to the north of the Proposed Development extend into the 50 m watercourse buffer. Development within this area does not encroach to within 30 m of the watercourse.
4. Approximately 700 m² (38 m in length) of the proposed access track to Arnish Road, including a 50 m length of drainage channel (leading to a surface water outfall), is within the 50 m watercourse buffer of the unnamed watercourse at the northeastern extent of the Proposed Development.

9.6.2 Additionally, areas of the temporary enabling works are located within a 50 m buffer of watercourses (see **Figure 9.4, EIAR Volume 3a**):

- Approximately 4,750 m² of BA1 is located within 50 m of the unnamed tributary of the River Creed, to the north of the eastern access route. The watercourse is situated approximately 15 m south of BA1 at its nearest point.
- Approximately 12,860 m² of BA2 is located within 50 m of the unnamed tributary of the River Creed, to the north of the eastern access route. The watercourse is situated approximately 15 m north of BA2 at its nearest point.
- Approximately 1,300 m² of BA3 is located within 50 m of the unnamed tributary of the River Creed, to the south of the eastern access route. The watercourse is situated approximately 35 m north of BA2 at its nearest point.
- Approximately 5,290 m² of BA5 is located within 50 m of the unnamed tributary of the River Creed, to the south of the eastern access route. The watercourse is situated approximately 25 m north of BA5 at its nearest point.
- Approximately 175 m² of BA6 is located within 50 m of the unnamed tributary of the River Creed, to the south of Laydown Area 2. The watercourse is situated approximately 45 m north of BA5 at its nearest point.

[19] SEPA (2021) Understanding your environmental responsibilities – good environmental practices: GPP 1 Version 1.2

[20] SEPA (2021) Pollution incident response planning: GPP 21 Version 1.1, . Available online: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-21-pollution-incident-response-planning/ [last accessed January 2025] and SEPA (2018) Dealing with spills: GPP 22, Version 1 Available online: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-22-dealing-with-spills/ [last accessed January 2025]

- Approximately 5,290 m² of temporary access track is located within 50m of the unnamed tributary of the River Creed, to the south of Laydown Area 3. The watercourse is situated approximately 28m south of the maximum proposed extent of the temporary access track at its nearest point.

9.6.3 While works at these areas would encroach to within 50 m of watercourses a minimum buffer of 15 m would be maintained to watercourses. A 6 m minimum buffer around any water features is recommended by SEPA through guidance issued to planning authorities by SEPA[21] and further guidance identifies that a 12 m buffer should be maintained from watercourses of between 1 and 5 m wide[22]. Therefore, although works are proposed within 50 m of watercourses, a suitable buffer strip would be maintained such that construction phase SuDS measures could be implemented in line with the best practice measures and applicable guidance set out in Section 9.5 and 9.7.9 of this chapter., Where works are proposed within 50 m of watercourses works these would be monitored by the ECoW to ensure compliance with the CEMP. Taking in to account the measures that would be implemented at locations where works are proposed within 50m of a watercourse, the potential magnitude of impact would be Small and therefore have the potential to result in a Minor and Not Significant effect.

Temporary Surface Water Runoff Increase

9.6.4 The construction activities on-site would include the removal of vegetation, the creation of construction tracks and compaction of the ground leading to an increase in surface water runoff. Whilst the drainage designs would seek to avoid long term increases in discharge, there may the potential for the Proposed Development to lead to a temporary reduced response time to peak flows following heavy rainfall in advance of the drainage network being completed; therefore, this could lead to temporary direct effects on aquatic ecology and fluvial morphology.

9.6.5 However, whilst the watercourses are assessed to be of High sensitivity, the potential impact of increased surface water runoff is considered to be of small magnitude due to measures set out within the CEMP which would be implemented as soon as construction work was commenced, such that the potential effect is considered Minor and Not Significant in EIA terms. Measures included within the CEMP to manage surface water flow during construction include perimeter swales and settlement lagoons to attenuate surface water runoff.

Changes to Downstream Watercourse Hydrodynamic Status

9.6.6 On-site construction activities could contribute to the alteration of in-channel or overland flow regimes through excavations, disruption to artificial drainage, exposure of bare earth or rock and alteration to field drains. This could lead to an increase in erosion and transport of sediment to watercourses as a result of construction on or in close proximity to watercourses, vegetation and soil stripping, excavations and dewatering activities. Potential effects include long term indirect effects on aquatic ecology and fluvial morphology.

9.6.7 Whilst the watercourses are assessed to be of High sensitivity, the potential impact on downstream hydrodynamic status during construction is considered to be of small magnitude due to measures within the CEMP, including the design and implementation of SuDS measures that would be implemented, such that the potential effect is considered Minor and Not Significant in EIA terms. Measures included within the CEMP to manage surface water flow include perimeter swales and settlement lagoons to attenuate surface water runoff.

Contamination of the Water Environment

9.6.8 The on-site construction activities could temporarily expose large areas of soil and piles of cut and fill material. When exposed, this material could be highly susceptible to erosion, dust deposition and sedimentation in surface water runoff, affecting on-site drains and subsequently the downstream water environment. Potential effects include temporary direct effects on water quality downstream of the Proposed Development and indirect effects on aquatic ecology and fluvial morphology.

9.6.9 However, whilst the watercourses are assessed to be of High sensitivity, the potential impact on downstream hydrology during construction is considered to be of small magnitude due to measures within the CEMP which would be prepared in line with

[21] SEPA 2022. SEPA's triage framework: guidance for planning authorities and SEPA Version 3 – December 2022. Available online: https://www.sepa.org.uk/media/594101/sepa-triage-framework-and-standing-advice.pdf [last accessed Januaru 2025]
[22] SEPA (2017) Background Paper on the Water Environment, LUPS-BP-GU2b

SEPA guidance[23], such that the potential effect is considered Minor and Not Significant in EIA terms. Measures included within the CEMP to manage contaminants in surface waters include, but are not limited to:

- Storage of potentially contaminative substances and fuels within areas of impermeable hardstanding;
- perimeter swales;
- the installation of filter strips where possible;
- the use of silt fences at locations where works are proposed within 50m of a watercourse;
- settlement lagoons;
- the use of settlement tanks;
- the use of a modular treatment system such as 'siltbuster' systems;
- consideration of the treatment of water to manage pH or suspended sediments through the use of dosing or flocculants, and
- vegetated and non-permeable geotextile lined detention basins.

9.6.10 Standards for water quality discharged during the construction phase would be agreed in consultation with SEPA as part of the Construction Runoff Licence.

Effects on GWDTE

9.6.11 The Proposed Development includes the removal and infilling of peatland within the built and hardstanding areas of the proposed platforms. Excavation of soil and bedrock during the construction phase of the Proposed Development could cause localised disruption and interruption to groundwater flows. Interruption of such groundwater flows could potentially reduce the supply of groundwater to GWDTEs thereby causing an alteration/ change in the quality or quantity of and/ or the physical or biological characteristics of the GWDTE. Contamination of groundwater could also cause physical or chemical contamination to the GWDTE.

9.6.12 While ecological NVC surveying identified areas of High and Moderate potential for GWDTE on the site, further hydrological and hydrogeological assessment (**TA 9.2, EIAR Volume 4**), demonstrates that these habitats are supported by direct rainfall and surface water runoff rather than ground water supplies.

9.6.13 Based on this assessment, GWDTE within the Site is considered as having a Low sensitivity with a large magnitude of impact due to removal and infilling of peat. As such, potential effects on GWDTE are considered as Minor and Not Significant.

9.6.14 Assessment of potential impacts on peatland habitats are assessed in **Chapter 10: Geology and Soils (EIAR Volume 2).**

Potential Operational Effects

Contamination of the Water Environment

9.6.15 The operation of the Proposed Development and associated facilities will require the use of chemicals such as oils, fuels, and potentially hazardous substances for operational activities (e.g. transformers, cooling systems, and on-site maintenance). Accidental spills or leaks from storage or operational processes could lead to contamination of surface and groundwater resources. This could lead to a direct effect on the water quality of the downstream environment.

9.6.16 Watercourses are assessed to be of High sensitivity; however, it is considered that the potential for effect as a result of contaminative releases is considered to be greatly reduced through attenuation and treatment of surface waters in permanent detention basins as per the detailed drainage strategy (**Technical Appendix 2.1, EIAR Volume 4**). As such, potential contamination of local hydrology is considered to have small magnitude impact for the operational phase, resulting in minor and Not Significant effects.

Potential Cumulative Construction Effects

9.6.17 The following schemes have been taken into account in assessing the potential for cumulative effects as a result of hydrological interaction with the Proposed Development (as detailed in **Chapter 4 of the EIAR)**:

- Stornoway Wind Farm;
- Harris – Stornoway 132 kV OHL Replacement;

[23] SEPA, 2021. WAT-SG-75 Sector Specific Guidance: Water Runoff from Construction Sites

- The proposed upgrade to the minor Arnish Road;
- Creed Quarry Extension; and
- Deep Water Port (South).

9.6.18 The Stornoway Wind Farm is situated directly adjacent to the western area of the Site boundary. The development is within the catchment of the Abhainn Ghrioda and could therefore lead to cumulative impacts on the watercourse. The Stornoway Wind Farm is subject to EIA under the consenting process, in which it is demonstrated that the scheme would not impact the water environment and that no cumulative construction effects are anticipated as a result of the development.

9.6.19 The Harris – Stornoway 132 kV OHL Replacement is situated directly adjacent to the western extent of the Site boundary. This development comprises the construction and operation of approximately 58 km of OHL between an existing Harris Grid Supply Point (GSP) and the existing Stornoway Substation on Lewis. Through EIA as part of the planning application for the development, it was determined that the scheme would not result in significant cumulative effects to hydrological or hydrogeological receptors including areas of peatland. Therefore, no cumulative construction effects are anticipated.

9.6.20 Upgrades to the minor Arnish Road that runs within the eastern area of the Site boundary comprised proposals of a new twin-track, single carriageway road along the route of the existing public highway. The EIA carried out as part of the planning process determined that the proposed scheme would not create flooding or drainage issues, and that proposed upgrades comply with national planning policy in terms of impacts to peatland. Therefore, no cumulative construction effects are anticipated.

9.6.21 The Creed Quarry Extension would be subject to SEPA regulations and licencing regime, and as such would be required to demonstrate that it would not result in alterations to the water environment. Therefore, no cumulative construction effects are anticipated.

9.6.22 The Deep Water Port (South) would not result in any interactions with watercourses in proximity to the Proposed Development. As no downstream impacts are anticipated as a result of the Proposed Lewis Energy Hub Development, no cumulative effect is anticipated.

9.6.23 Based on Environmental Impact Assessment prepared for schemes that could result in a cumulative impact on the water environment, no cumulative impacts are anticipated; therefore, the cumulative impact with the Proposed Development to the hydrological environment is considered None and Not Significant.

Potential Cumulative Operational Effects

9.6.24 The potential for impacts on the water environment is significantly lower during the operational phase of the Proposed Development and cumulative schemes assessed above. At all cumulative schemes, drainage design for the implementation of SuDS measures during construction would prevent alteration of runoff rates and hydrological conditions in the surrounding area. Additionally, pollution prevention measures would be implemented for the management of any potentially deleterious materials. Therefore, as the potential for cumulative effects during the operational phase is lower than during the construction phase, there would be no cumulative impact on the water environment as a result of the potential interaction of the Proposed Development with operational developments.

9.7 Mitigation

Mitigation during Construction

9.7.1 Through the implementation of Embedded Mitigation and Standard Best Practice measures no potentially significant effects are anticipated to the water environment. Therefore, no further mitigation measures would be required. Proposed Mitigation measures are set out in **Section 9.5** above and in **EIAR Chapter 13: Schedule of Mitigation.**

9.7.2 As no potential cumulative effects have been identified, no additional mitigation is required in this respect.

Mitigation during Operation

9.7.3 A site maintenance programme with regard to site plant and infrastructure would be implemented by SSEN Transmission.

9.7.4 A maintenance schedule would be developed for all SuDS and drainage assets installed at construction stage to ensure that the function and benefit provided by the asset remains for the lifetime of the Proposed Development.

9.8 Residual Effects

Residual Construction Effects

9.8.1 Assessment of potential construction effects finds that, taking in to account the implementation of Embedded Mitigation and Standard Best Practice Measures, no significant effects are anticipated to the water environment. Therefore, the residual effect would be Not Significant.

Residual Operational Effects

9.8.2 The assessment has identified that there are no significant effects arising from the Proposed Development, taking in to account mitigation measures installed in the construction phase. Therefore, the residual effect would be Not Significant.

Residual Cumulative Construction Effects

9.8.3 The potential for Cumulative Construction Effects is assessed in Section 9.6 and no significant effects are anticipated. Therefore, no significant residual cumulative effects would occur.

Residual Cumulative Operational Effects

9.8.4 The potential for Cumulative Operational Effects is assessed in Section 9.6 and no significant effects are anticipated. Therefore, no significant residual cumulative effects would occur.

9.9 Monitoring

Construction Phase Monitoring

9.9.1 The installation of mitigation measures set out in the assessment and further detailed in the CEMP shall be overseen and recorded by the ECoW. Visual inspection of sediment control measures and water quality monitoring would be carried out by the ECoW during the construction phase of works on a weekly basis to ensure no excess accumulation of sediment that could affect the watercourses within the Site area, watercourse crossing culverts, or drainage features. Due to the high sensitivity of watercourses within and in close proximity to the Site, as a precautionary measure daily inspection of watercourse turbidity at the watercourse crossing and construction phase-specific drainage features would be carried out by the ECoW during the construction phase. Details of the water quality monitoring would also be included in the CEMP.

Operational Phase Monitoring

9.9.2 The implementation of a maintenance schedule for all SuDS and drainage assets installed at construction stage to ensure that the function and benefit provided by drainage assets remains for the lifetime of the Proposed Development. The Mott MacDonald LLP (2024) drainage strategy identifies that “an operation and maintenance plan shall be prepared for all [drainage] apparatus” and it is anticipated that this would be submitted to the Local Authority. Therefore, additional monitoring is not considered necessary.

9.10 Summary and Conclusion

9.10.1 This chapter has considered potential impacts and their associated effects on the water environment. Desk based assessment identified potentially sensitive receptors including watercourses on and in close proximity to the Site, the coastal waterbody of Stornoway Harbour a private Water Supply and GWDTE identified through NVC surveying.

9.10.2 Following the application of mitigation and good practice measures, such as the management of surface water runoff through the installation of SuDS measures, the implementation of a CEMP and measures to prevent the release of sediment laden or contaminated water during the construction phase, standard best practice design of watercourse crossings and the monitoring of construction works and water quality by an ECoW, no adverse residual effects are predicted.

Table 9-4: Summary of Potential Significant Construction Effects of the Proposed Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Changes to Downstream Watercourse Hydrodynamic Status	SuDS and sediment control measures. Watercourse crossing design.	CEMP, GEMPs, water quality monitoring. SEPA CAR Licencing regime.	Not Significant
Contamination of the Water Environment	Pollution control measures	CEMP, GEMPs, water quality monitoring. SEPA CAR Licencing regime.	Not Significant
Contamination of the Water Environment	Additional measures at locations within 50m of a watercourse	Use of attenuation ponds or tanks where space is limited. Installation of silt fencing prior to commencement of construction and inspection by ECOW. Avoidance of work during periods of heavy rainfall. Maintenance of sediment control measures until such time surfaces are stabilised.	Not Significant
Contamination of the Water Environment	SuDS measures and maintenance schedule	SuDS Maintenance schedule, to be prepared by appointed by contractor in line with SEPA GBR.	Not Significant

Table 9-5: Summary of Potential Significant Operational Effects of the Proposed Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Changes to Downstream Watercourse Hydrodynamic Status	SuDS measures. Watercourse crossing design.	Drainage strategy **(EIAR TA 2.1)**	Not Significant
Contamination of the Water Environment	Pollution control measures	SEPA CAR Licencing regime. Drainage strategy (**EIAR TA 2.1**) SSE GEMPs	Not Significant
Contamination of the Water Environment	SuDS measures and maintenance schedule	SuDS Maintenance schedule, to be prepared by appointed by contractor in line with SEPA GBR	Not Significant

10 GEOLOGY AND SOILS

10.1 Introduction

10.1.1 This chapter reports on the likely significant effects with respect to geology and soils associated with the construction, and operation of 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 Environmental Impact assessment (EIA) Report (**EIAR Volume 2, Chapters 1-4**).

10.1.2 The assessment has been carried out by Jeff Turner, Director at Ramboll and Andy Mills, Director at OWC Ltd. Jeff is a Chartered Environmentalist and member of the Society for the Environment, Institute of Environmental Science, and Institute of Environmental Management and Assessment (CEnv, MIEnvSc, PIEMA, BSc (Hons)). Jeff has over 24 years' experience in the co-ordination and management of Environmental Impact Assessments, including those for energy infrastructure developments. Andy Mills is a Chartered Geologist (CGeol) with over 25 years experience of mapping and interpreting peatland terrain. Both Jeff and Andy have expertise in managing the potential effects of electrical transmission infrastructure on peat and carbon rich soils, including the identification of suitable mitigation measures to minimise the effects from development.

10.1.3 This chapter is supported by the following Technical Appendices (which include relevant supporting figures) (EIAR Volume 4):

- Technical Appendix 10.1 Peat Depth Survey Report;
- Technical Appendix 10.2 Outline Peat Management Plan;
- Technical Appendix 10.3 Peat Landslide Hazard Risk Assessment;
- Technical Appendix 10.4 Peat Carbon Emissions Assessment; and
- Technical Appendix 10.5: Geology and Soils Method of Assessment.

10.2 Assessment Methodology and Significance Criteria

Scope of Assessment

10.2.1 This chapter considers the likely effects from the construction and operation of the Proposed Development on geology and soils, particularly impacts on peat and carbon rich soils. These include findings from desk-top information, field work and design input.

10.2.2 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational, under construction and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

10.2.3 The assessment is based on the Proposed Development as described in **Chapter 2 (EIAR Volume 2)**.

10.2.4 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4).**

10.3 Method of Baseline Data Collection

Extent of the Study Area

10.3.1 The Study Area covers the Proposed Development as shown on Figure 2.1.

Desk Study

10.3.2 Desktop information covering the baseline geological conditions and peatland data were reviewed and are summarised in this chapter. Sources and background information are included in **Technical Appendix 10.2 Outline Peat Management Plan (EIAR Volume 4)** and **10.3 Peat Landslide Hazard Risk Assessment (EIAR Volume 4)**, and include:

- National Soils Map of Scotland[1];
- British Geological Survey online mapping[2];
- SNH Carbon and Peatland Map (2016)[3]; and
- Online aerial and Google Earth Pro Imagery, and Ordnance Survey mapping and historical mapping[4]..

Field Study

10.3.3 Peat surveys were undertaken at the Site to understand the baseline conditions and potential constraints, and to inform the design of the Proposed Development to minimise, as far as practicable, the potential direct and indirect effects on peat and carbon rich soils.

10.3.4 Peat depth surveys were undertaken by Mott Macdonald, Arcus, and Fluid Environmental Consultants and comprised a Stage 1 peat depth survey completed in April 2024 followed up by a Stage 2 survey in August 2024 with supplementary probing in December 2024. The surveys were undertaken using best practice guidance published at the time of the surveys with regard to surveying for developments on peatland[5,6].

10.3.5 The surveys comprised a total of 7,935 peat depth probes across the Proposed Development, based on a 50 m grid for the Stage 1 survey (310 probe locations) and 10 m grid for the Stage 2 survey (6,852 probe locations). A further 773 supplementary probe locations were completed in December 2024 on a 12.5 m and 25 m grid to infill where deeper peat was encountered.

10.3.6 Peat cores were taken using a Russian auger, with a sample volume of 0.5 l, and a number of field tests and observations were undertaken to identify:

- Depth of acrotelm;
- Degree of humification, to establish amorphous, intermediate, fibrous and content; and
- Degree of humification using the Von Post classification.

10.3.7 A ground investigation was undertaken by BAM Ritchies on behalf of the Applicant between August and November 2024 and comprised:

- 37no. dynamic sampling and rotary drilling boreholes;
- 80no. machine excavated trial pits;
- Insitu and geotechnical field testing; and
- Geotechnical and geochemical laboratory testing .

[1] National Soils Map of Scotland (https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/).
[2] https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/ [Accessed December 2024].
[3] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ [Accessed December 2024].
[4] https://earth.google.com/ [Accessed December 2024].
[5] Scottish Government, Scottish Natural Heritage, SEPA. (2017). Peatland Survey. Guidance on Developments on Peatland, online version only.
[6] Scottish Renewables and SEPA (2012). Development on Peatlands. Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste.

10.4 Method of Assessment

10.4.1 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 10.5: Geology and Soils Method of Assessment (EIAR Volume 4)**.

10.4.2 Potential impacts on geology and soils have been predicted and assessed based on the Proposed Development as described in **Chapter 2: Description of the Proposed Development (EIAR Volume 2)** and in accordance with best practice guidance for EIA assessment.

Limitations and Assumptions

10.4.3 This assessment refers to, and uses, publicly available data sources and relies upon the accuracy of this data.

10.4.4 The assessment also relies on an assumption that the schedule of good practice measures set out in this chapter is implemented through the Construction Environmental Management Plan (CEMP) and final Peat Management Plan (PMP). These documents will be continually reviewed and updated as required to incorporate further mitigation if required, following the implementation of these good practice measures.

10.5 Baseline Conditions

Current Baseline

10.5.1 The Proposed Development is located on gently undulating lowland peatlands located to the south of Stornoway in an area referred to as Arnish Moor, and comprises the area where the proposed High Voltage Direct Current (HVDC) Converter Station and associated Alternating Current (AC) substation infrastructure will be located. A drainage ditch trisects the site to the north and south. The Proposed Development is shown on **Figure 2.1: Site Layout (EIAR Volume 3)**.

10.5.2 At Creed North, the elevations fall from 75 m AOD in the northwest to 40 m where the Abhainn Ghirioda watercourse passes under the A859. Elevations generally fall and rise over a series of gentle ridges towards the River Creed. Nearly the entire extent of Creed North has been heavily cut for peat extraction, with the exception of the limited floodplain adjacent to the River Creed. In the north of the Site, there is a council operated grit store accessed from the A859, and this area forms part of the potential peat reuse proposals as shown on **Figure 2.1: Site Layout (EIAR Volume 3)**.

10.5.3 According to the British Geological Survey (BGS) 'Geology Viewer' website[7] (1:50,000) geological mapping the Site is directly underlain by superficial deposits of peat.

10.5.4 The solid geology in the western part of the Site (approximately 25% of the Site area) is underlain by the Outer Hebrides Thrust Zone Mylonites Complex (protocataclasite). The remainder of the Site is underlain by bedrock of the Lewisian Complex (gneiss). The superficial and solid geology is shown on **Figure 10.3.3** in **Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR Volume 4)**

10.5.5 A review of the SNH (now NatureScot) Carbon and Peatland Map (2016)[8] confirms that peat is present, with the majority of the Site underlain by Class 1 peatland soils, which are defined as nationally important carbon-rich soils, deep peat and priority peatland habitat likely to be of high conservation value.

10.5.6 Geomorphological mapping of the Site from satellite imagery and LIDAR data, supplemented by site walkover by an experienced peat restoration specialist (Fluid Environmental Consultancy) indicates the Arnish Moor site to be a simple, planar bog, with localised rock outcrops (referred to as rock knolls) and with limited evidence for active geomorphological processes (gullying and erosion) or features of interest (bog pools, ladder morphology etc.). No evidence of peat instability within the Arnish Moor or Creed North areas was noted, though bog bursts have been documented within 10 km of Stornoway in at least three locations. Extensive areas of peat cuttings were noted particularly in the Creed North part of the

[7] https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/ [Accessed December 2024]
[8] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ [Accessed December 2024]

Site. This is described and shown in in **Technical Appendix 10.2 Outline Peat Management Plan (EIAR Volume 4)** and **10.3 Peat Landslide Hazard Risk Assessment (EIAR Volume 4)**,

10.5.7 Habitat data collected for the Proposed Development shows National Vegetation Classification (NVC) communities corresponding to modified bog. Modification is understood to have occurred in association with ground improvement experiments undertaken in the early years of the Macaulay Land Use Research Institute (now part of the James Hutton Institute). Surface vegetation was found to have been compromised by ground treatments at Macaulay Farm and by failed forestry planting in an area of ploughing in the east, both in the Arnish Moor part of the Site. There are also localised drains that generally run north-to-south across the Arnish Moor part of the Site (as shown on **Figure 10.3.4 in Technical Appendix 10.3 Peat Landslide Hazard Risk Assessment (EIAR Volume 4)**. This is described further in **Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR Volume 4).**

10.5.8 Findings of the peat surveys and an assessment of potential impacts on underlying peat resources are provided in Technical Appendix 10.1 Peat Depth Survey Report, Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4) and Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR Volume 4).

10.5.9 The findings of the peat depth surveys found that majority of the Site has peat present, with 81.1 % of the Site comprising peat >0.5 m depth. These are further summarised as follows:

- 1,192 no. (18.9 %) samples located on land with less than or equal to 0.5 m depth of peat;
- 1,612 no.(24.6 %) samples located on land with between 0.51 m to 1.0 m depth of peat;
- 1,015 no. (14.2 %) samples located on land with between 1.1 m to 1.5 m depth of peat;
- 1,048 no. (13.7 %) samples located on land with between 1.51 m to 2.0 m depth of peat;
- 1,398 no. (18.0 %) samples located on land with between 2.1 m to 3.0 m depth of peat;
- 556 no. (7.11 %) samples located on land with between 3.1 m to 4.0 m depth of peat;
- 163 no. (2.17 **%)** samples located on land with between 4.1 m to 5.0 m depth of peat;
- 70 no. (0.89 %) samples located on land with between 5.1 m to 6.0 m depth of peat;
- 30 no. (0.38 %) samples located on land with between 6.1 m to 7.0 m depth of peat;
- 5 no. (0.06 %) samples located on land with between 7.1 m to 8.0 m depth of peat; and
- 2 no. (0.03 %) samples located on land with >8.1 m depth of peat.

10.5.10 The deepest peat depth recorded was 8.1 m, located in the southern and southwestern part of the Site. The Proposed Development has avoided the deepest areas of peat as shown on **Figure 10.3.5 in Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR Volume 4)**

10.5.11 The peat was found to comprise a distinct acrotelmic layer across all of the survey points and averaged 0.13 m thickness. Von Post scores for the acrotelm ranged between H1 and H5, defined as 'completely undecomposed peat' to 'moderately decomposed peat'. Catotelmic peat was found to range between H5 and H9, defined as 'moderately decomposed' to 'practically fully decomposed peat with almost no recognisable plant structure'. The peat was mostly wet to very wet. This is discussed in more detail in **Technical Appendix 10.1 Peat Depth Survey Report (Volume 4).**

10.5.12 At Arnish Moor, peat is present over large parts of the Site, typically deepest and exceeding 3 m in the east and west of the Site, thinning rapidly over the rock knolls that occupy the southern side of the gentle ridge and the east end of the Site adjacent to the Arnish Road. Peat remains relatively deep over the wider Arnish Moor area, particularly to the south of the southern burn.

10.5.13 At Creed North, peat depths were found to be generally shallow close to the A859 road, typically less than 1 m in depth, but increasing to over 3 m depth in the west.

10.5.14 The interpolated peat depth contours are shown on Figure 10.2.3 within Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4).

Future Baseline

10.5.15 In the absence of the Proposed Development, it is assumed that the existing peat and carbon rich soils present would be subject to existing land use factors, such as drainage, cutting, and forestry plantation, which has the potential to result in modification to peat. However, it is also assumed that in the absence of the Proposed Development there would be no requirement to excavate peat and carbon rich soils (unless for domestic/commercial peat cutting).

10.5.16 There is potential for climate change to impact on future baseline conditions. Climate change studies predict a decrease in summer precipitation and an increase in winter precipitation alongside slightly higher average temperatures. This suggests that there may be greater pressures on water resources and rain-fed habitats, including peatland.

Summary of Sensitive Receptor

10.5.17 Peatland and carbon rich soils is a sensitive receptor. These habitat types are included in Annex 1 of the EC Habitats Directive and are sensitive to environmental change and are of regional importance. Peatlands which are classified as Class 1 on the SNH Carbon and Peatland Map[5] are considered to be of national importance.

Scoped Out Receptors

10.5.18 The Proposed Development is not likely to result in likely significant impacts on designated geological resource, therefore this has been scoped out of the assessment.

Scoped In Receptors

10.5.19 The receptor to be scoped into the assessment is described in Table 10.1 below.

Table 10.1: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Soils and Peat	High	The majority of the Site is underlain by peat deposits. There are areas of deep peat present, as shown in **Technical Appendix 10.2 and 10.3, EIAR Volume 4**. There is the potential for changes to affect peat condition or soil loss through excavation or erosion to lead to a reduction in carbon sequestration at the Site. Conversely, there is the potential to boost carbon sequestration and storage by restoring areas of degraded bog and cuttings, potentially raising the water table in targeted areas and providing enhanced flood storage. Where carbon rich soil and deep peat with high conservation value are present on the Site they are considered to be of high sensitivity.

Potential Effects Scoped Out

10.5.20 Potential operational effects have been scoped out of the assessment on the basis that the likely effects on the receptor are likely to be during the construction phase. Potential cumulative construction and operation effects have also been scoped out on the basis that no significant cumulative effects have been identified based on the projects included in Chapter 2: Development Description.

10.6 Assessment of Likely Effects

Potential Construction Effects

10.6.1 The Proposed Development has the potential effects on peat and carbon rich soils during the construction phase through changes that could occur due to:

- Compaction of soils/peat from vehicles and infrastructure;

- Potential for increased erosion of peat soils through disturbance, either through direct disturbance or localised drying caused by infrastructure;
- Changes in hydrology;
- Potential for peat slide caused by the construction of infrastructure which could affect human and environmental receptors; and
- Loss of peatland habitats and carbon rich soils through excavations for infrastructure.

10.6.2 The Proposed Development has been designed and refined to avoid the deepest areas of peat where practicable, particularly given the extent and coverage of peat at the Site. Where this is not possible it has been assumed that industry standard construction techniques and methodologies can be used to minimise effects and disturbance of peat and carbon rich soils (i.e. through the Applicant's own General Environmental Management Plans (GEMPs), and the Principal Contractor's Construction Environmental Management Plan (CEMP)). On the basis of peat surveying carried out at the Site, a design strategy has been implemented to minimise potential effects on peat and carbon rich soils. Where practicable, the Proposed Development has utilised areas where it either has no peat present or has a shallow depth (<0.5 m) of peat present.

10.6.3 Detailed assessment of the baseline condition of peat soils and an Outline Peat Management Plan are provided in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)**. The draft OPMP describes principles and best practice methods to be used by the Applicant's infrastructure contractor when excavating, moving and reinstating peat. It includes a volumetric peat balance and contains requirements for the final PMP, which would be developed by the Principal Contractor post consent, prior to construction.

10.6.4 The potential construction effects on soils and peat without the application of mitigation would be Major and Significant.

10.7 Mitigation

10.7.1 The Proposed Development has been subject to embedded mitigation comprising a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects at the design stage. This includes siting the elements of the Proposed Development to avoid the deepest areas of peat, and thereby reducing the volume of peat to be excavated and reused. This is summarised in **Chapter 3 Site Selection and Alternatives.**

10.7.2 Early site selection by the Applicant indicated that the Arnish Moor area was the least constrained part of the Site as describer in Chapter 3: Site Selection and Alternatives.

10.7.3 Best practice measures for the management of construction activities in relation to peat are set out in the OPMP (Technical Appendix 10.2:Outline Peat Management Plan, EIAR Volume 4), and PLHRA (Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment). A detailed CEMP and PMP would be prepared by the Principal Contractor prior to commencement of construction.

10.7.4 The CEMP would include construction methods and environmental protection measures applying best practice guidance as set out in applicable SEPA Guidance for Pollution Prevention (GPPs) and applicable SSEN Transmission GEMPS, as presented in **Technical Appendix 2.2: SSEN Transmission GEMPs (EIAR Volume 4)**. Implementation of these measures during all aspects of the construction phase would ensure construction activity would not cause adverse effects to sensitive receptors.

Mitigation during Construction

10.7.5 Mitigation measures to manage potential effects on peat and soils, including compaction of peat from vehicles and infrastructure, increased erosion of peat soils through disturbance, and loss of peat habitat due to excavations have been considered and are discussed below.

10.7.6 The strategy for peat management for the Proposed Development follows SEPA's guidance for developments on peat and uses of waste peat and aligns with National Planning Framework 4, Soils, Policy 5 in employing the mitigation hierarchy with respect to carbon-rich soils and peatlands. The hierarchy is as follows:

- Avoid - by avoiding peatland (peat soils and their associated habitats) altogether;
- Minimise - by reducing the overlap of infrastructure with peat, where it is possible to do so, and given other site and design constraints that may influence infrastructure locations;
- Restore - by repairing damaged habitats, both those affected by development and those degraded through previous site activities or natural degradation; and
- Offset - by compensating for residual impacts that remain, with preference for on-site over off-site measures.

10.7.7 The mitigation approach for the Proposed Development uses a combination of reuse and restoration which has formed the peat management strategy (as described in **OPMP (Technical Appendix 10.2:Outline Peat Management Plan, EIAR Volume 4)**.

10.7.8 Much of the Site is covered in peat, and opportunities to avoid it altogether are very limited.

10.7.9 The positions of ancillary infrastructure (permanent SUDs ponds), temporary infrastructure (laydown areas) and enabling works (borrow pits) were adjusted through an iterative design process to minimise their overlap with the deepest peat as far as possible (summarised in **Chapter 3 Site Selection and Alternatives).** The size and area of temporary construction laydowns and SUDs ponds in particular were reduced as reasonably practical.

10.7.10 The primary reuse strategy for peat at the Proposed Development is to reinstate temporary construction locations, such as laydown areas, and to reinstate borrow areas for stone that are required for construction of the Proposed Development and ancillary works. This is described in the **OPMP (Technical Appendix 10.2:Outline Peat Management Plan, EIAR Volume 4).**

10.7.11 The Creed North area, an area of extensive peat cuttings, was identified for potential peat restoration. The cuttings cover an extensive area, 49.5 ha, and are typically 5-10 m in width and tens to hundreds of metres in length. It has been estimated that approximately 210,000 m^3 of peat has been excavated from the cuttings to date.

10.7.12 In order to access and restore these areas, which still contain a considerable depth of peat, construction of road infrastructure would be required to enable passage of large tipper trucks (to carry translocated materials) and excavators (to redistribute material once transported). The roads, which must be of cut and fill construction due to the cutting-induced undulating topography of the peat, mean that further peat must be excavated to enable peat reuse in this way. Given the limited capacity available at Creed North and the significant amount of infrastructure that would need to be constructed to translocate peat to it, this option was scaled back to achieve a balance between limiting the construction of new infrastructure (to facilitate transfer of peat) and causing new impacts in one location just to reduce impacts in another. A detailed summary and approach to peat reuse and restoration is included in **Technical Appendix 10.2:Outline Peat Management Plan, EIAR Volume 4).**

10.7.13 At this stage it is estimated that the Proposed Development would result in the excavation of approximately 422,933 m^3 of peat. Potential reuse opportunities, comprising temporary infrastructure reinstatement, borrow area reinstatement and restoration to the Creed North cuttings is estimated to be 474,152 m^3. This demonstrates that all excavated peat can be reused, and that there is a potential surplus in capacity based on conservatives estimates.

10.7.14 General good practice measures relating to excavation and handling, storage and reinstatement, and restoration of peat during construction should be used, and are summarised in **Technical Appendix 10.2:Outline Peat Management Plan, EIAR Volume 4), and PLHRA (Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment).** A detailed CEMP and PMP would be prepared by the Principal Contractor prior to commencement of construction.

10.8 Residual Effects

Residual Construction Effects

10.8.1 The potential for impacts on soils and peat during the construction phase has been managed thorough design to avoid areas of peat. In addition, mitigation and good practice measures to minimise potential effects are set out in the CEMP, PMP and PLHRA, as detailed in **Technical Appendices 10.2: Outline Peat Management Plan, 10.3 Peat Landslide Hazard Risk Assessment, and 7.4: Outline Habitat Management Plan**.

10.8.2 The residual effects on soils and peat would be **Minor** and **Not Significant**.

10.9 Monitoring

10.9.1 Key to the success of the strategy for peat management will be careful monitoring of the post-construction works and any restoration activities. A monitoring programme should be initiated once restoration and peat reinstatement works have been completed, including a detailed PMP and CEMP which would be produced by the Principal Contractor, and operational mitigation would be implemented. This should include:

- Review of % vegetation cover and vegetation composition in areas of bare peat that have been reinstated or in any areas that have been seeded (due to a lack of available turved material);
- Review of stability of deposits in their new locations;
- Fixed point photography in order to aid review over a series of monitoring intervals;
- If required, mitigation recommendations should follow from the monitoring and include specification of seeding appropriate to the target vegetation or stabilisation with geotextile if revegetation is not occurring naturally (which will assist re-wetting and retention of moisture contents) and construction of wood dams (or equivalent) if any creep of peat soils is evident at any restored location.

10.9.2 Monitoring should be carried out for a minimum of five years after construction and reinstatement works have concluded.

10.9.3 Best practice monitoring measures would be set out in the CEMP, PMP and PLHRA, to be prepared by the Principal Contractor. Specific monitoring requirements are outlined in section 10.7, and within **Technical Appendices 10.2: Outline Peat Management Plan, 10.3 Peat Landslide Hazard Risk Assessment, and 7.4: Outline Habitat Management Plan.**

10.10 Summary and Conclusion

10.10.1 This chapter has considered potential impacts and their associated effects on geology and soils. Desk based and field assessment identified sensitive receptors including peat and carbon rich soils, including deep peat, located across the Site.

10.10.2 Following the application of mitigation and good practice measures, such as peat restoration proposals, the implementation of a OPMP and PLHRA to include good practice measures, no significant residual effects are predicted.

Table 10.2: Summary of Potential Significant Effects of the Proposed Varied Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
Effects on Soils and Peat - Major (significant) impacts to peat arising from the excavation and disturbance of peat from construction activities. Changes to local soils and peat habitats could occur as a result of: • Compaction of soils; • Potential for increased erosion of peat soils through disturbance, either through direct disturbance or localised drying caused by infrastructure; • Changes in soil hydrology; • Potential for peat slide caused by the construction of	Embedded mitigation has been used with siting of the Proposed Development to avoid areas of deep peat (where practicable). An OPMP (Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4)) and PLHRA (Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR **Volume 5)** has been prepared for the Proposed Development which documents outline measures to mitigate potential impacts on peat and carbon rich soils through the construction phase, including	Detailed PMP, PLHRA and CEMP to be prepared and approved by the planning authority/ SEPA to be secured by an appropriately worded condition.	Not Significant

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
infrastructure which could affect human and environmental receptors; and • Loss of peatland habitats and carbon rich soils through excavations for infrastructure	monitoring requirements. This is a live document that would be updated further as the project progresses through detailed design and operation. The majority of the Site is considered to be low risk with regards to peat slide risk, but some areas of medium risk will need to be managed using site specific good practice measures.		
Operation			
Effects on Soils and Peat	N/A	N/A	N/A
Cumulative Construction			
Effects on Soils and Peat	N/A	N/A	N/A
Cumulative Operation			
Effects on Soils and Peat	N/A	N/A	N/A

11. NOISE

11.1. Introduction

11.1.1 This chapter reports on the likely significant effects with respect to Noise and Vibration associated with the construction and operation of 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 Environmental Impact Assessment (EIA) Report (EIAR Volume 2, Chapters 1-4).

11.1.2 The specific objectives of the study are as follows:

- describe the assessment methodology and significance criteria used in the assessment;
- describe and define the baseline noise environment;
- identify the noise sensitive receptors (NSRs) in the vicinity of the Proposed Development and the baseline noise environment;
- identify the dominant sound sources associated with the operation and construction of the Proposed Development;
- calculate and assess the potential direct and indirect impacts on NSRs;
- indicate any requirements for mitigation measures, if applicable, to provide sufficient levels of protection for all NSRs; and
- describe the residual effects remaining following the implementation of mitigation.

11.1.3 This chapter was prepared and overseen by experienced acoustic consultants with appropriate memberships of the Institute of Acoustics (IOA).Field surveys and data collection were undertaken by acousticians who had extensive experience and training in undertaking noise surveys for grid and renewable energy projects. The lead author is Fergus McLean, [Engineer, Wood plc]. Fergus has 4 years of experience in the assessment of Noise and Vibration for EIAs. The chapter was reviewed by Eric Donnelly [Team Leader, Wood plc], who is a noise and vibration specialist with 26 years' experience of the noise and vibration impacts associated with power & energy and a Member of the Institute of Acoustics (MIOA).

11.1.4 This chapter is supported by the following Figures and Technical Appendices:

- Figures:
  - Figure 11.1: Study Area with Red Line Boundary and
- Technical Appendices:
  - Technical Appendix 11.1 Legislation and Policy;
  - Technical Appendix 11.2 Calibration Certificates;
  - Technical Appendix 11.3 Meteorological Data;
  - Technical Appendix 11.4 Histograms of Sound Level Meter Data LA90;
  - Technical Appendix 11.5 Method of Assessment;
  - Technical Appendix 11.6 Source Noise Levels;
  - Technical Appendix 11.7 LZ90 Spectra;
  - Technical Appendix 11.8 Construction Activities;
  - Technical Appendix 11.9 Construction Noise Assessment; and
  - Technical Appendix 11.10 Noise Contour Map.

11.1.5 Figures and Technical Appendices are referenced in the text where relevant.

11.2. Assessment Methodology and Significance Criteria

Scope of Assessment

11.2.1 The scope of this assessment is to quantify the impact that may result from the construction and operational phases (including cumulative) of the Proposed Development.

11.2.2 EIA Scoping process, baseline conditions and professional judgement has identified the following direct and cumulative effects for detailed assessment:

- direct and cumulative effects of construction noise on the surrounding area and on NSRs, including effects of blasting, static and quasi-static construction noise from construction plant, such as excavators, dump trucks and cranes;
- direct and cumulative effects of construction vibration on the surrounding area and on NSRs, including traffic of heavy goods vehicles passing by NSRs and vibration due to blasting for the foundations works; and
- direct and cumulative operational effects of noise from the Proposed Development on NSRs, including noise from cooling equipment and ventilation and transformer noise on NSRs.

11.2.3 The chapter assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

11.2.4 The assessment is based on the Proposed Development as described in Chapter 2: Project Description (EIAR Volume 2).

11.2.5 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4).**

11.2.6 The relevant legislation, policy and guidance notes are detailed in **Technical Appendix 11.1: Legislation, Policy, and Guidance**.

Summary of Sensitive Receptor

Scoped Out Receptors

11.2.7 Background noise was measured at four locations prior to the specific siting of the Proposed Development. The following receptor has been scoped out as it is not relevant with the final Proposed Development location:

- Marybank

Scoped In Receptors

11.2.8 Receptors chosen are representative of the closest properties surrounding the Proposed Development, up to approximately 1.5 km. These are detailed in Section 11.3. The noise assessment conducted for these properties will have the highest noise impact from the Proposed Development, and therefore if the chosen properties meet the noise criteria, then any property at greater distances will also pass the criteria. Representative NSRs are shown in Table 11.1 Error! Reference source not found.. These locations are scoped into the assessment. The locations can be found in Error! Reference source not found..

Table 11.1: Summary of Receptors and Sensitivity

Receptor	Distance to Nearest Proposed Building (m)	Sensitivity	Justification
NSR 1 – Creed Lodge	630	High	Residential and at the edge of the Red Line Boundary (RLB).
NSR 2 – Macaulay Farm (BGN 4)	270	High	Residential and at the edge of the RLB.
NSR 3 – Lochside Arena	430	High	Animals and is a quiet outdoor area for recreation. Also, at the edge of the RLB.
NSR 4 – Creed Recycling Centre	590	Medium	Place of work and at the edge of the RLB.

Receptor	Distance to Nearest Proposed Building (m)	Sensitivity	Justification
NSR 5 – Castle Grounds South Path	610	High	Quiet outdoor area for recreation.
NSR 6 – Castle Grounds North of River	590	High	Quiet outdoor area for recreation.
NSR 7 – Castle Grounds Cnoc na Croich	1010	High	Quiet outdoor area for recreation.
NSR 8 – Castle Grounds West Path	570	High	Quiet outdoor area for recreation.
NSR 9 – 19B Moor Cottages	161 (from access track of peat works)	High	Residential and near peat works. Construction noise assessment only.
NSR 10 – Riverside	124 (from access track of peat works)	High	Residential and near peat works. Construction noise assessment only.

Method of Baseline Data Collection

Extent of the Study Area

11.2.9 The Study Area is an area extending 1.5 km from the Site for which all desk-based and field data were gathered to inform the assessment presented in this chapter.

11.2.10 The Study Area around the Site is semi-rural in nature, predominantly consisting of peat moorland rough grazing, but with a small number of residential properties located in proximity of the Site. Castle grounds are situated to the East of the Proposed Development. The Study Area is shown in Error! Reference source not found..

Desk Study

11.2.11 AddressBase data, detailed maps, and aerial photographs of the area surrounding the Proposed Development were examined and nearby NSRs were identified for the purposes of the construction and operational noise impact assessments.

11.2.12 NSRs were identified within a distance of 1.5 km of the RLB.

Field Study

11.2.13 Baseline noise monitoring has been conducted in the vicinity of the Proposed Development to determine the existing prevailing noise environment. Free-field long term monitoring equipment was installed on 5 April 2023 and decommissioned on 26 April 2023. Due to an equipment failure at the Moor Cottages and Macaulay Farm locations, the survey was extended at these locations beyond the initial baseline monitoring period from 26 April 2023 to 10 May 2023 to allow for sufficient data to be collected.

11.2.14 Measurements were conducted using a Rion NL-52 sound level meters which were spot calibrated with a Rion NC-74 calibrator, before, during and after the measurement campaign. These meters were housed in environmental weatherproof enclosures and used to conduct long-term measurements. Calibration certificates can be found in **Technical Appendix 11.2 Calibration Certificates**.

11.2.15 The parameters measured during the background noise (BGN) baseline monitoring campaign include the following:

- LAeq (15 minutes);
- LAeq (15 minutes) one-third octave band spectrum;
- LA90 (15 minutes); and
- LA90 (15 minutes) one-third octave band spectrum.

11.2.16 As the baseline survey is based on long-term unattended measurements, a meteorological station (Vantage Vue) was also set up in the area to monitor for appropriate weather conditions. Meteorological conditions such as wind and rain will affect background noise conditions and have possible effects on noise propagation. Measurements were conducted every 15 minutes to coincide with the measured noise data as per the requirements of British Standard 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound (BS 4142).

11.2.17 Representative measurement positions were found and are detailed in **Table 11.2** and shown in Error! Reference source not found.**.** Since the measurement survey, additional receptors in the Study Area have been identified that are not residential. These include locations in the castle grounds, an equestrian centre and a recycling centre. These receptors will assume the same background noise level as the closest measurement location (BGN 4). The equestrian centre typically operates during daytime hours when anthropogenic activity elevates the pre exiting background noise level. It can be demonstrated that the level is met for the night time requirements therefore daytime is also met.

Table 11.2: Measurement Locations

Location	Easting	Northing	Name/Address
BGN 1	140344	934005	19 Marybank Road
BGN 2	140602	933517	3 Moor Cottages
BGN 3	140498	933241	19B Moor Cottages
BGN 4	140189	932197	Macauley Farm

11.2.18 The measurements were made within free-field conditions, i.e. at least 3.5 m from any acoustically reflective surfaces other than the ground. These measurement positions were deemed to represent the background noise conditions for external amenity for the surrounding NSRs.

11.2.19 Noise measurements were filtered for daytime and night-time conditions (night-time defined as between 23:00 and 07:00) where noise is shown to be at its lowest.

11.2.20 Periods of rain or windspeeds of 5 m/s or above are removed from the analysis as per BS 4142:2014. Meteorological data is shown in **Technical Appendix 11.3 Meteorological Data**.

11.2.21 Statistical analysis of noise levels was conducted of the histogram distribution of LA90 (15 minute) levels. The histograms of noise levels for both measurement locations are presented in **Technical Appendix 11.4 Histograms of Sound Level Meter Data LA90.**

11.2.22 This statistical analysis was conducted for four long term measured BGN locations to define a representative BGN level at each BGN location. Results of the baseline conditions are presented in Section 11.3.

Method of Assessment

11.2.23 The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria, is detailed in **Technical Appendix 11.5: Method of Assessment**.

11.2.24 The construction noise assessment is conducted according to British Standard 5228-1:2009 +A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise (BS 5228-1). As a construction schedule is unavailable at the time of writing, estimated noise emissions from the Proposed Development's construction noise activities and plant items have been based on previous projects of a similar nature. This assessment considers conservative assumptions with the aim to produce a worst-case assessment. This ensures that in practicality, noise levels would be expected to be lower than the assessment details, and uncertainty is reduced as much as possible.. Construction noise level limits will depend on the working hours during weekdays and weekends. The limits are detailed in Section 1.1.11 of **Technical Appendix 11.5: Method of Assessment**.

11.2.25 The construction vibration assessment is conducted according to British Standard 5228-1:2009 +A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration BS 5228-2. As a construction schedule is unavailable at the time of writing, worst-case assumptions have been made.

11.2.26 The operational noise assessment is conducted according to BS 4142, where a detailed noise model of the site is constructed in SoundPLAN 9. Noise data for the proposed equipment have been based on design information from the Applicant. All noise from the units has been assumed to operate at a similar spectra to equipment of the same type. These levels are presented in **Technical Appendix 11.6 Source Noise Levels**. Noise propagation is modelled using ISO 9613-2. The modelled levels are compared to measured data from the baseline noise survey.

11.2.27 The potential effects at this stage are conservative and are expected to reduce upon a more detailed assessment when design information is refined.

11.3. Baseline Conditions

Current Baseline

11.3.1 The current baseline conditions will be described by background noise levels. In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment is a representative average and therefore should be representative of the period being assessed.

11.3.2 **Table 11.3** provides the night-time and daytime representative LA90 results of the baseline noise survey. Both the modal and mean value has been considered alongside the skew of the data set to select the appropriate representative level.

Table 11.3: Representative Background L_{A90} Noise Levels

Location	Easting	Northing	Representative L_{A90} (dB(A)) (Nighttime)	Representative L_{A90} (dB(A)) (Daytime)
BGN 1 – 19 Marybank Road	140344	934005	20	30
BGN 2 – 3 Moor Cottages	140602	933517	22	38
BGN 3 – 19B Moor Cottages	140498	933241	23	35
BGN 4 – Macauley Farm	140189	932197	25	38

11.3.3 The representative LZ90 spectra for both daytime and night for each location are presented in **Technical Appendix 11.7 LZ90 Spectra**.

11.3.4 The BGN data is mostly composed of broadband noise as there are no notable peaks in any third-octave bands. The sound energy is distributed across a wide section of the audible frequency range. This results in a generally very low background noise at the measurement locations.

11.3.5 Daytime levels range from 30 dB – 38 dB LA90. There is a slight elevation in broadband noise centred around the 1000 Hz one-third octave band during daytime. This is likely to be due to increased traffic noise during daytime hours. The noise environment is not dominated by any notable sources. There is occasional traffic noise from A859, but given the rural area, the acoustic environment is generally extremely quiet.

11.3.6 In general, the BGN data is relatively low at nighttime. The results of baseline noise survey show that NSRs in vicinity of the Proposed Development have a noise environment quantified between 20 – 25 dB LA90 during night periods. The nighttime noise environment is not dominated by any notable sources. Given the rural area, the acoustic environment is generally quiet. Any potential noise is likely to emanate from the A859.

Future Baseline

11.3.7 The future background noise conditions within the study area are unlikely to change significantly in the absence of the Proposed Development Therefore, no changes to future baseline noise levels from those measured in this study are expected.

Potential Effects Scoped Out

11.3.8 Table 11.4 provides a summary of issues scoped out of the assessment. The Comhairle nan Eilean Siar EHO agrees that vibration can be scoped out, and vibration from blasting can be controlled via planning conditions.

Table 11.4: Issues Scoped Out of the EIA

Feature/Effect	Justification
Operational vibration issues	No known vibration associated with the operation of the Proposed Development at any NSRs.
Airborne vibration	Airborne vibration is predicted to be negligible compared to groundborne vibration. Vibration is significantly more likely to be transmitted through the ground.
Noise from operational maintenance	Operational maintenance works required will be short-term and intermittent and are not expected to give rise to significant effects relating to noise and vibration. Therefore, noise from operational maintenance is not expected to adversely impact NSRs and has not been assessed further.

11.4. Assessment of Likely Effects

11.4.1 Potential significant effects that may result from the construction and operational phases (including cumulative) of the Proposed Development include:

- effects of construction noise on the surrounding area and on NSRs, including effects of blasting, static and quasi-static construction noise from construction plant, such as excavators, dump trucks and cranes;
- effects of construction vibration on the surrounding area and on NSRs, including traffic of heavy goods vehicles passing by NSRs and vibration due to blasting for the foundations works; and
- operational effects of noise from the Proposed Development on NSRs, including noise from cooling equipment and ventilation and transformer noise on NSRs.

Mitigation by Design

11.4.2 The highest noise producing equipment, such as transformers and reactors, are housed within buildings or specifically designed acoustic enclosures. It is assumed that the building properties have a satisfactory acoustic absorption, and sound reduction index (particularly at low frequencies and fundamentally 100 Hz) in the facades and roofs. The specific material used and its properties are defined in **Technical Appendix 11.6 Source Noise Levels**.

11.4.3 Where noise sources cannot be housed inside (such as valve coolers), the design has made use of natural screening of the converter station buildings to reduce the direct propagation of sound between source and receiver.

Potential Construction Effects

11.4.4 There is the potential for construction noise impacts from static, quasi static, and mobile plant items including;

- crushing of rock;
- possible rotary piling during the construction of foundations;
- excavators, delivery of materials with lorries/dumper trucks, delivery and pumping of concrete;
- installation of electrical infrastructure equipment; and
- possible blasting for land levelling.

Noise

Static and Quasi-Static

11.4.5 Construction is not expected to take place on Sundays, however, it may occur on Saturdays after 1 pm (subject to agreement with CnES). Therefore, the Evening and Weekends limit of 55 dB has been adopted in this case to ensure a conservative assessment takes place. Noise levels over the 55 dB limit criteria will result in medium impact magnitude. Excess of over 5 dB above the 55 dB limit will result in high impact magnitude. Where noise exceeds the 55 dB limit by up to 10 dB, the relevant activity will be recommended to take place in the Daytime and Saturdays timeframe.

11.4.6 At the time of writing, a list of the construction equipment is estimated. The expected construction equipment has been used from a similar HVDC Hub project.

11.4.7 To calculate the potential construction noise levels from the Proposed Development, information about the proposed construction activities is needed. The Principal Contractor will be responsible for developing the detailed construction methodology and associated plant requirements following contract award, however, **Technical Appendix 11.8 Construction Activities** shows plant activities, plant items, their quantities, their utilisation, and associated noise levels at a distance of 10 m, based on worst-case construction activities at a similar construction site. Noise due to vehicle movements is also considered in this calculation. The access route will be opposite the Lochside Arena, approximately 300 m southwest of Macaulay Farm, moving east towards the AC Substation. Separately, the noise due to peat works (which takes place during the earthworks phase) is estimated at NSRs 9 and 10. By combining the items' noise levels (LA,eq at 10 m from the plant (dB)) with the amount of time each will be running (utilisation) and their quantity, the total equivalent noise can be calculated for each activity. These are then logarithmically summed to give a total value for the construction noise at 10 m from the noise source, which can then be used to find the noise at any distance. To ensure a worst-case assessment, it has been assumed that all works within the phases will take place simultaneously.

11.4.8 The total equivalent noise level at 10 m from the plant source for each activity can be used in a propagation calculation to find the specific noise at each receptor.

11.4.9 This attenuation has been calculated over mixed hard and soft ground to the F.2.3.2 method in BS 5228. Given the dominance of soft ground in the area surrounding the Proposed Development, this is slightly conservative. The effects of barriers or topographical screening have not been considered.

11.4.10 The proposed construction route reported in Chapter 12: Traffic and Transport have been used as the basis for the assessment of haul routes. It is stated that a maximum movement of 439,600 HGV over a 4-year period, which is estimated to be 300 daily or over an 18-hour delivery window, the traffic data is described as 'peak' traffic and therefore is conservative. Construction traffic noise calculations have followed guidance from BS 5228-1 Annex F.2.5 'Method for mobile plant using a regular well-defined route (e.g. haul roads)' and noise levels incorporated into overall construction noise assessment.

11.4.11 The Construction Noise Assessment (**Technical Appendix 11.9 Construction Noise Assessment**) predicts that construction noise has the potential to exceed the 55 dB noise limit during the platform creation, civils and transformer installation works. A maximum of 72 dB(A) is predicted at NSR 2 – Macaulay Farm, and therefore the impact is assessed as High.

11.4.12 With High sensitivity and High impact, the worst-case construction noise during the first three stages is assessed as Major and is therefore significant at all NSRs. All other work stages are below the 55 dB limit and therefore result in Low impact which is Minor/Moderate, considering the assessment uses peak activity levels, this is determined Minor and not significant. A detailed construction schedule must be developed by the Principal Contractor when further specific information is available and an updated noise assessment should be conducted through detailed design.

Blasting

11.4.13 Blasting is a construction activity known to cause high noise impacts. Blasting plans are largely unknown at time of writing, however, conservative assumptions can be made, which would be detailed further by the Principal Contractor. At this stage, recommendations can be made on blasting management. As per the Scoping Opinion, blasting must be controlled through planning conditions. The magnitude of impacts and significance of effects due to blasting are detailed in **Table 1.5** of **Technical Appendix 11.5 Method of Assessment.**

11.4.14 Air overpressure caused by blasting activities can be compared to an equivalent wind speed as shown in **Table 11.5**.

Table 11.5: Comparison Between Wind Speed and Air Overpressure Equivalents

Wind Speed	Equivalent air Overpressure
Constant wind of 5 m/s, Beaufort Scale 3, Gentle Breeze	120 dB
Constant wind of 8 m/s, Beaufort Scale 4, Moderate Breeze	130 dB
Constant wind of 20 m/s, Beaufort Scale 8, Gale	140 dB

Vibration

Blasting

11.4.15 Blasting activities have the potential to cause vibration-induced impacts. As blasting plans are largely unknown at time of writing, the blasting engineers must adhere to the maximum allowable vibration limits detailed in **Table 1.5** of **Technical Appendix 11.5 Method of Assessment**. Excess over 1 mm.s^{-1} at sensitive receptors will result in a Medium impact magnitude and will likely cause complaints, however, it can be tolerated if prior warning and explanation is given to residents. Peak vibration of 5 mm.s-1 is the limit above which damage to buildings and surrounding structures may occur.

11.4.16 Groundborne vibration as a result of the operations shall not exceed a peak particle velocity of 6 mm/sec in 95% of all blasts measured over any period of 6 months and no individual blast shall exceed a peak particle velocity of 12 mm/sec as measured at vibration sensitive buildings. The result will be the maximum of three measurements taken in a perpendicular direction to the ground surface.

Construction Traffic

11.4.17 Vibration due to traffic on access routes has been assessed. Groundborne vibration arises primarily from the interaction of vehicle tires with irregularities in the road surface, such as potholes, cracks, or bumps. In this case, the road defect is a 5 mm depression, which could amplify groundborne vibrations. However, it is important to consider the condition of the road surface, ground conditions, and vehicle characteristics when evaluating the magnitude of impact.

11.4.18 In this case, with a HGV traveling at an assumed maximum 64 km/h over a 5 mm road defect, at a distance of 10 metres from an NSR, it is expected that the resultant PPV at the NSR is 0.4 mm.s^{-1}. This PPV falls within the **Low** impact range. This would likely result in a **Minor/Moderate** effect**.** Vibration might be just perceptible in residential environments, however, would not form any structural damage to the property. The assessment has assumed worst-case information, requiring a road defect to be directly outside of the property, therefore this effect is determined as **Minor** and therefore **Not Significant**.

Potential Operational Effects

11.4.19 With respect to operational noise, the most significant sources of environmental noise in HVDC converter stations and substations are air handling units (AHUs), valve coolers, reactors, transformers and associated cooling equipment.

11.4.20 Transformers and other electrical equipment associated with substation developments emit noise at frequencies of twice the normal operating current frequency due to magnetostriction of the transformer core. In the UK the supply current frequency is 50 Hertz (Hz), which results in 100 Hz and harmonics thereof being produced by the transformer. The nature of the noise generation mechanism results in tonal noise being emitted. The noise is continuous and consistent depending on the electrical load of the equipment, and therefore is not expected to have any impulsive characteristics. Transformers for the Proposed Development are expected to be housed internally in buildings.

11.4.21 Noise level predictions have been carried out to establish the specific noise levels at the nearest NSR to the Proposed Development. The levels predicted by the model relate to the outdoor ground floor façade of the NSR considered. A contour map of the Proposed Development is presented in **Technical Appendix 11.10 Noise Contour Map**.

11.4.22 The predicted noise levels of the Proposed Development received at the NSRs are detailed in **Table 11.6.**

Table 11.6: Proposed Development Modelled Noise Levels at NSRs

Receptors	Total Specific Noise (dB(A))
NSR 1 – Creed Lodge	15.4
NSR 2 – Macaulay Farm	24.8
NSR 3 – Lochside Arena	21.7
NSR 4 – Creed Recycling Centre	17.9
NSR 5 – Castle Grounds South Path	17.9
NSR 6 – Castle Grounds North of River	17.9
NSR 7 – Castle Grounds Cnoc na Croiuch	17.0

Receptors	Total Specific Noise (dB(A))
NSR 8 – Castle Grounds West Path	19.8

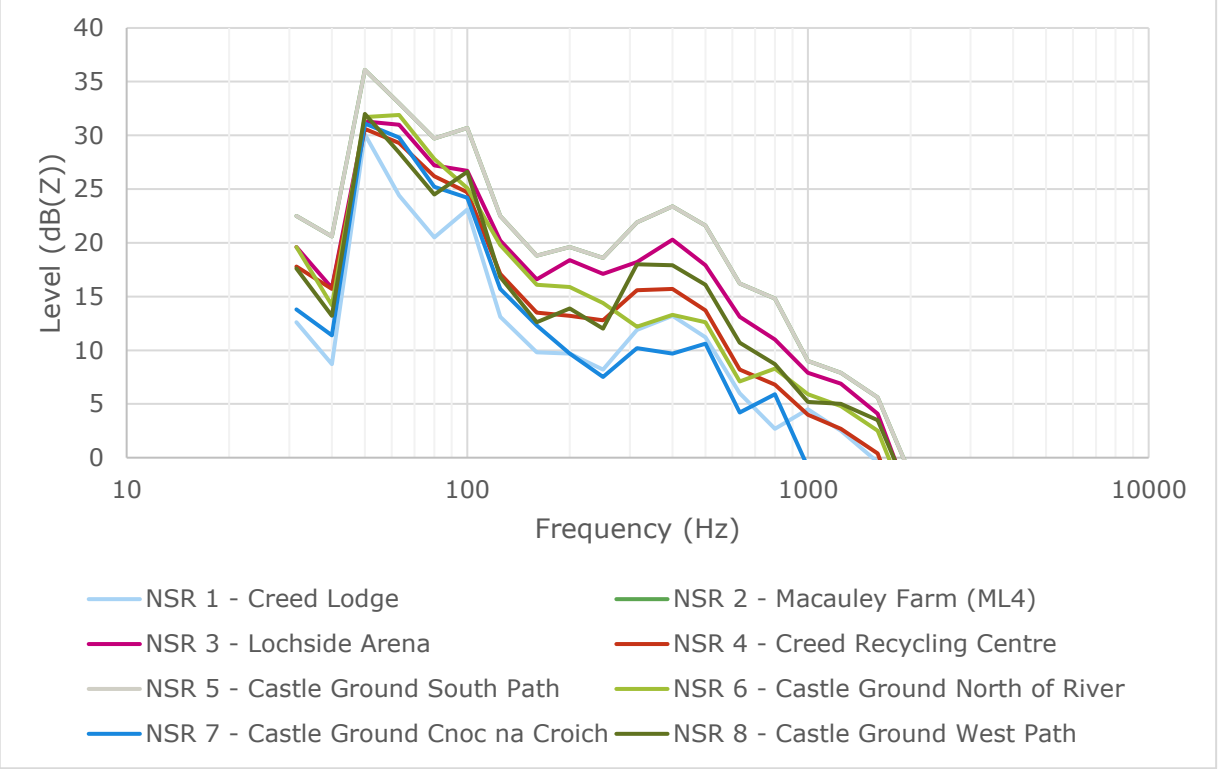
11.4.23 The highest contributing source equipment from the Proposed Development at nearby receptors are the external valve cooler banks, transformer coolers, and the air handling units. Any lack of screening between the outdoor converter stations sources and NSRs have the potential for impact.

11.4.24 Equipment housed indoors has been sufficiently attenuated by the buildings. This is achieved by mitigation assumed in the design by internalising the air handling units, transformers, and reactors and specifying acoustically treated chimneys and louvres on the buildings with noise-producing equipment. This is necessary to ensure minimal noise impact.

11.4.25 The highest specific noise level is predicted at NSR 2 – Macaulay Farn. The total noise at this NSR is dominant from the valve cooler banks of the HVDC Converter Station.

11.4.26 The predicted operational levels at NSRs due to the Proposed Development have been compared with background noise levels in a BS 4142:2014 assessment.

11.4.27 The assessments conducted are based on modelled results of the Proposed Development operating under standard yet conservative conditions. The conservative assumptions are that all cooling systems are active and at 100% load, whereas this would be dependent on environmental conditions and the requirement for cooling. BS 4142 requires that, when assessing the impact of noise with a tonal component, the noise emitted from the specific sound source is subject to a rating level penalty. The received 1/3 octave spectra at NSRs are presented in **Graph 11.1**.



Graph 11.1: Received Third Octave Noise Levels

11.4.28 The received 1/3 octave spectra at NSRs indicate that there is not a major tonal component according to Annex C of BS 4142. This is due to the dominant noise sources being the outdoor cooling equipment, which is mostly broadband in nature. The major tonal equipment such as transformers and reactors are housed indoors and have minimal contribution to overall received. Based on this analysis the full tonal penalty of 6 dB has not been applied, however, a 4 dB penalty has been applied for all receptors representing a 'clearly perceptible tone' as a conservative assessment approach due to the potential tonal nature of electrical infrastructure sites. This potential tonal penalty is based on the subjective method described in Section 9.2 of BS 4142.

11.4.29 The excess noise above background at the NSRs will determine the significance of impact of the Proposed Development.

11.4.30 BS 4142 assessment has been performed for the Proposed Development, and the results are detailed in **Table 11.7**. The NSRs have assumed the background noise level measured at Macaulay Farm (BGN 4).

Table 11.7: BS 4142 Assessment – Proposed Development Under Standard Conditions

Receptors	Specific Noise from Proposed Equipment	Rating Level (including +4 dB tonal penalty)	Nighttime Background Noise Level, La90(dB)	Night-time Excess above Background Noise	Daytime Background Noise Level, La90(dB)	Daytime Excess above Background Noise
NSR 1 – Creed Lodge	15.4	19	25	-6	38	-19
NSR 2 – Macaulay Farm	24.8	29	25	4	38	-9
NSR 3 – Lochside Arena	21.7	26	25	1	38	-12
NSR 4 – Creed Recycling Centre	17.9	22	25	-3	38	-16
NSR 5 – Castle Grounds Walking Path	17.9	22	25	-3	38	-16
NSR 6 – Castle Grounds North of River	17.9	22	25	-3	38	-16
NSR 7 – Castle Grounds Cnoc na Croiuch	17.0	21	25	-4	38	-17
NSR 8 – Castle Grounds West Path	19.8	24	25	-1	38	-14

11.4.31 The results show that during night-time conditions, the Proposed Development would operate at a noise emission level close to, or above background noise including a conservative 4 dB tonal penalty.

11.4.32 The BS 4142 assessment predicts (in the absence of further mitigation) an excess at NSR 2. The excess at NSR 2 is less than 5 dB, indicating Low impact magnitude. With a receptor sensitivity of High, this would result in Minor significance of effect at NSR 2. Due to the conservative nature of the assessment, this is determined as Minor and is therefore **not significant** for operational noise during nighttime conditions.

11.4.33 The results during daytime conditions predict no excess above background at any receptor from both the specific noise and rating level (including conservative 4 dB tonal penalty). The assessment shows Negligible impact magnitude, and with High sensitivity receptors indicates Minor effect which is **not significant**.

11.4.34 The preliminary conservative BS 4142 assessment does not exceed the target noise levels proposed by CnES aiming for excess to be no more than 5 dB above the background noise level. Additional noise studies will be conducted during detailed design upon receipt of specific manufacturer design information.

Potential Cumulative Construction Effects

Table 11.8: Cumulative Construction Effects

Development	Status	Cumulative Assessment
Stornoway WF	Consented	If construction schedules overlap with the Proposed Development, there may be possible for cumulative construction noise impacts. No information is known on the construction schedules of third-party developments at this stage. Any possible significant impacts could be mitigated with communication with the respective developers and a combined CNMP during potential high noise activities.
Harris-Stornoway Overhead Line (OHL)	Under construction	If the construction of the Harris to Stornoway OHL is to coincide with the construction of the Lewis Hub, the Principal Contractor must update the CNMP to address the working times, activities and schedule. The OHL works are likely to be short term in comparison, however, the limit may be breached while the OHL works are ongoing. If construction phases coincide, it is possible for cumulative construction noise to result in **major** effect which is **significant**. With the appropriate CNMP and coordinated approach, the residual effects are likely to be **minor** and **not significant**.
Arnish Road Upgrade	In planning	If construction schedules overlap with any the Proposed Development, there may be possible for cumulative construction noise impacts. No information is known on the construction schedules of third-party developments at this stage. Any possible significant impacts could be mitigated with communication with the respective developers and a combined CNMP during potential high noise activities.
Creed Quarry Extension	Consented	If construction schedules overlap with any the Proposed Development, there may be possible for cumulative construction noise impacts. No information is known on the construction schedules of third-party developments at this stage. Any possible significant impacts could be mitigated with communication with the respective developers and a combined CNMP during potential high noise activities.
Stornoway Deep Water South Project	Scoping Stage	If construction schedules overlap with any the Proposed Development, there may be possible for cumulative construction noise impacts. No information is known on the construction schedules of third-party developments at this stage. Any possible significant impacts could be mitigated with communication with the respective developers and a combined CNMP during potential high noise activities.

Potential Cumulative Operational Effects

Table 11.9: Cumulative Operational Effects

Development	Status	Cumulative Assessment
Stornoway WF	Consented	The operational noise impacts of windfarms are assessed in different conditions to substation noise. Windfarm noise is increased in high winds, where the background noise also increases. This reduces the impact of the operational noise of the Lewis Hub to a negligible level, due to the increase in background noise when windfarm noise may be significant. Therefore, **no significant** cumulative effects are predicted from the Stornoway Windfarm. Cumulative operational noise effects due to the Stornoway Wind Farm Grid Connection substation are considered **not significant**. The substation is located approximately 1.2 km from NSR 1 - Creed Lodge, where the magnitude of impact is likely to be low.
Harris-Stornoway OHL	Under construction	The operational noise of the OHL is likely to be very low given it is rated at 132 kV. However, the worst-case noise effects would arise in wet conditions, where the impact of Lewis Hub would be **negligible**. Therefore, cumulative

Development	Status	Cumulative Assessment
		operational noise with the Harris to Stornoway OHL is predicted to result in **negligible** effect and is **not significant**.
Arnish Road Upgrade	In planning	Operational noise effects are considered **not significant** as the worst-case noise scenario for the Lewis Hub considers a background noise level at night when the Arnish Road will have a low noise contribution.
Creed Quarry Extension	Consented	Cumulative operational noise effects are predicted to be **not significant** if the equipment is used during daytime hours.
Stornoway Deep Water South Project	Scoping Stage	Cumulative operational noise effects are predicted to be **not significant** if the equipment is used during daytime hours.

11.5. Mitigation

Mitigation during Construction

Specific Mitigation Measures during Construction

11.5.1 Specific activities such as crushing or grading contribute to the highest noise levels during the enabling phase. These noisiest activities must be prioritised during the daytime weekday hours, so they can be assessed to a 65 dB limit. NSRs are most sensitive to the crushing of rock, therefore this activity must take place at least 200 m from any NSR. Any other noisy activity in other phases, including peat borrowing and transfer to the site at Creed North, should be prioritised to take place in daytime hours and avoid Saturdays after 13:00 and any time on a Sunday.

General Mitigation during Construction Measures

Potential significant impacts have been determined during the Enabling Works, HVDC and AC Building Works and HVDC and AC Equipment Fit Out. It is best practice that construction noise should continue to be controlled by a Construction Noise Management Plan (CNMP), in accordance with the guidance and procedures outlined in BS 5228-1. The CNMP is expected to be embedded within the Construction Environmental Management Plan (CEMP) described in **Technical Appendix 2.1: Outline Construction Environmental Management Plan, EIAR Volume 4**). Procedures can potentially include:

- minimising the noise as much as is reasonably practicable at source;
- attenuation of noise propagation;
- carrying out identified high noise level activities at a time when they are least likely to cause a nuisance to residents; and
- providing advance notice of unavoidable periods of high noise levels to residents

11.5.2 In order to maintain low impact on the noise environment, consideration will be given to attenuation of construction noise at source by means of the following:

- giving due consideration to the effect of noise, in selection of construction methods;
- avoidance of vehicles waiting or queuing, particularly on public highways or in residential areas with their engines running;
- scheduling of deliveries to arrive during daytime hours only. Care should be taken to minimise noise while unloading delivery vehicles. Delivery vehicles should follow routes that minimise use of residential roads;
- ensure plant and equipment are regularly and properly maintained. All plant should be situated to sufficiently minimise noise impact at nearby properties;
- fit and maintain silencers to plant, machinery, and vehicles where appropriate and necessary;
- operate plant and equipment in modes of operation that minimise noise, and power down plant when not in use;
- use electrically powered plant rather than diesel or petrol driven, where this is practicable; and
- work typically not to take place outside of hours defined in the construction schedule.

11.5.3 Consideration will be given to the attenuation of construction noise in the transmission path by means of the following:

- locate plant and equipment liable to create noise as far from noise sensitive receptors as is reasonably practicable or use natural land topography to reduce line of sight noise transmission;
- noise screens, hoardings and barriers should be erected where appropriate and necessary to shield high-noise level activities; and
- provide lined acoustic enclosures for equipment such as static generators and when applicable portable generators, compressors and pumps.

11.5.4 If blasting is to occur, good public relations have been shown to reassure the public of the fact that normal production blasting has not been found to damage property, and that even the most cosmetic of plaster cracking is extremely unlikely. In addition, contacting owners of sensitive properties to advise of imminent blasting can further help promote harmony with the public. It is good practice to publicise times when blasting will occur and to avoid blasting at other times whenever possible. Air overpressure from blasting comprises transient airborne pressure waves which can be heard and felt. Air overpressure can be influenced by meteorological conditions over which operators have no control. Although air overpressure can be affected by the total quantity of explosives deployed in a blast, there is a balance to be struck between a smaller number of large blasts and a larger number of small blasts. Public relations have an important role to play in determining the optimum balance between size and frequency of blasting.

11.5.5 Practical measures, including good blast design, that have been found to reduce air overpressure and/or vibration are:

- taking particular care with the development of faces and with trial blasts as anomalous vibration levels might be produced when there is no free face to relieve the energy produced;
- ensuring appropriate burden to avoid over or under confinement of the charge;
- accurate setting out and drilling;
- appropriate charging
- appropriate stemming with appropriate material such as sized gravel or stone chippings;
- using delay detonation to ensure smaller maximum instantaneous charges (MICs);
- using decked charges and in-hole delays
- blast monitoring to enable adjustment of subsequent charges;
- designing each blast to maximise its efficiency and reduce the transmission of vibration; and
- avoiding the use of exposed detonating cord on the surface in order to minimise air overpressure - if detonating cord is to be used in those cases where down-the-hole initiation techniques are not possible, it should be covered with a reasonable thickness of selected overburden.

Mitigation during Operation

11.5.6 A Minor and therefore not significant impact is predicted in a BS 4142 assessment during night-time conditions. No mitigation is required as there are no significant effects as a result of operation of the Proposed Development.

11.5.7 An updated noise impact assessment is required during the detailed design of the Proposed Development, when specific manufacturer equipment specifications are provided.

11.6. Residual Effects

Residual Construction Effects

11.6.1 It is essential that the construction schedule is defined in detail by the Principal Contractor and a robust CNMP and best practice mitigation is implemented. Where necessary, work will be limited to daytime hours. Subject to these mitigations, the residual construction effects will fall below the construction noise limits of 65 dB during daytime conditions and 55 dB during evening and weekend conditions. No night-time working is scheduled, and any requirements for night-time working would be discussed with the Local Planning Authority (LPA) and local community before commencing.

11.6.2 Meeting these limits would result in Low impact magnitude, with a receptor sensitivity of High which would have Minor effect which is not significant on all NSRs.

Residual Operational Effects

11.6.3 An updated noise impact assessment should be conducted during detailed design, following further refinement of the assessment data and the implementation of mitigation, and it is expected that noise levels at NSR would be in line with the limits proposed by the LPA.

11.6.4 No significant residual effects are predicted and residual effects would be the same as the predicted effects .

Residual Cumulative Construction Effects

11.6.5 As above, if a CNMP is created to consider 3rd party developments and to adjust the construction schedule, then no significant residual effects are predicted.

Residual Cumulative Operational Effects

11.6.6 With additional acoustic optimisation developed in detailed design which considers potential effects from 3rd party developments, no significant residual effects are predicted.

11.7. Monitoring

11.7.1 Noise compliance measurements are recommended during the earthworks phase to ensure that noise emissions levels do not exceed limits in the noisiest activities. Compliance noise measurements are required on completion and operation of the HVDC Hub. When operational, long-term noise monitoring kit should be deployed at the closest NSRs to survey noise continuously over a 2-week period. The measured LA90 levels at the NSRs will be compared to levels modelled in the operational noise assessment of this Chapter. This is done to ensure that noise emissions from the HVDC Hub do not exceed predicted noise levels.

11.8. Summary and Conclusion

11.8.1 This Chapter has considered the potential noise effects that could arise due to the Proposed Development during the construction and operational phases at the closest NSRs. The assessment has taken account of applicable planning policy and current guidance.

11.8.2 Construction noise is assessed initially as **Major** significance. The implementation of a robust construction noise management plan, prioritising particularly noisy work (such as platform works) during daytime defined hours with a higher 65 dB limit, and careful consideration of the location of blasting activities will ensure the construction noise of the Proposed Development will have **Minor** (**not significant**) impact on nearby NSRs.

11.8.3 Information on the construction schedule is assumed and is subject to change depending on the Principal Contractor. Any updates to the construction schedule and plant will need to be revisited and assessed, to inform a more detailed management plan.

11.8.4 The results of the operational noise assessment predict **minor** (**not significant**) effect with excess of no more than 5 dB above background noise during both daytime and nighttime conditions at all NSRs. This assessment is relatively conservative, while using inputs available for a non-acoustically optimised site and is assuming the cooling is fully active during the day. Detailed design will require mitigation for the equipment producing the highest noise.

11.8.5 An updated noise impact assessment should be conducted during detailed design, following further refinement of the assessment data. With the Applicant committed to meeting the noise limits, **no significant** operational residual effects are predicted.

11.8.6 Cumulative noise has been considered. In the absence of mitigation, there is the potential for **major** impact and therefore **significant** effect from Stornoway Windfarm during the construction and operational phases. Road upgrades, quarry extensions, overhead line and windfarm cumulative projects are required to be controlled through an updated assessment by the Principal Contractor and a CNMP. Any possible significant cumulative construction impacts could be mitigated with

communication with the respective developers and a combined CNMP during potential high noise activities. With the appropriate mitigation, residual effects are likely to be **minor** and **not significant**.

11.8.7 Operational noise has the potential for cumulative significant effects with the Stornoway Wind Farm electrical infrastructure, which may be geographically close to all NSRs. A noise assessment must be conducted for this development and the cumulative effects evaluated when information is made available.

11.8.8 The assessment concludes that nearby NSRs have the potential for **major** effects from construction, which is **significant**, therefore, appropriate mitigation is recommended. Avoiding high noise construction work during the weekends and evenings in the vicinity of the potentially impacted NSRs for the platform works and civils work phases will ensure this phase meets the 55 dB limit. In addition, the construction noise assessment must be revisited by the Principal Contractor when a full construction schedule is known, and a detailed CNMP is to be developed. The CNMP must also include cumulative 3rd Party Developments. With these appropriate measures, potential residual construction effects are deemed **not significant**. Operational noise effects are expected to be reduced further with appropriate engineering design or mitigation during detailed design. It is expected that operational noise can be reduced further where **minor** effects are maintained and therefore residual operational effects are deemed **not significant**.

Table 11.10: Summary of Potential Significant Effects of the Proposed Varied Development

Likely Significant Effects	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
Major	CNMP	CEMP	Minor
Operation			
Minor	None	N/A	Minor
Cumulative Construction			
Major	CNMP	CEMP	Minor
Cumulative Operation			
Minor	None	N/A	Minor

12. TRAFFIC AND TRANSPORT

12.1 Introduction

12.1.1 This chapter assesses the potential effects on Traffic and Transport associated with the construction, operation and decommissioning of 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 (**Chapters 1-4, EIAR Volume 2**).

12.1.2 The assessment has been carried out by SYSTRA Ltd (SYSTRA), who have extensive experience in the preparation of Traffic and Transport EIA Report Chapters. SYSTRA's EIA team has produced Traffic and Transport EIA Report Chapters and Abnormal Loads Assessment reports for numerous energy developments across Scotland including several within Comhairle nan Eilean Siar Council (CnES) administrative area.

12.1.3 This chapter has been reviewed by Alan DeVenny BEng, PhD, CEng, MICE who is a Projects Director with SYSTRA. Alan has 25 years' experience working in traffic and transport consultancy and over 17 years' experience of working on energy projects. Alan has advised on over 200 energy developments delivering EIA chapters, access assessments, abnormal load assessments, infrastructure design and traffic management plans.

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

- Figures (EIAR Volume 3a):
  - Figure 12.1: Study Area; and
  - Figure 12.2: Traffic Counter Locations.
- Technical Appendices (EIAR Volume 4):
  - Technical Appendix 12.1: Outline Construction Traffic Management Plan (CTMP); and
  - Technical Appendix 12.2: Outline Construction Phasing Programme.

12.2 Methodology and Approach

Legislation, Plannning Policy and Guidance

12.2.1 This Chapter has been prepared taking cognisance of the EIA Regulations as well as the following additional policy documents, data sources and guidelines:

- National Planning Framework 4 (NPF4, Scottish Government 2023);
- Planning Advice Notice (PAN) 75 – 'Planning for Transport'(Scottish Government 2005);
- Guidelines for Traffic Impact Assessment, (Chartered Institution of Highways & Transport CIHT 1998);
- Institute of Environmental Management and Assessment (IEMA) publication - "Environmental Assessment of Traffic and Movement", 2023 ("the IEMA Guidelines"); and
- Department for Transport (DfT) publication "Design Manual for Roads and Bridges" (DMRB, DfT 2013).

Consultation

12.2.2 The scope of the assessment has been informed by consultation responses detailed in **Technical Appendix 4.3: Consultation Register (EIAR Volume 4).**

Scope of Assessment

12.2.3 The assessment is based on the Proposed Development as described in **Chapter 2: Project Description (EIAR Volume 2)**. The most identifiable Traffic and Transport characteristic of an energy development is the need to transport components and general construction materials to site, in addition to traffic movements generated by staff, resulting in a temporary intensification of traffic on the surrounding road network during the construction stage. This chapter identifies the trip

generation potential of the Proposed Development and assesses the potential environmental effects associated with the increase in traffic.

12.2.4 The potential for cumulative impacts in respect of the traffic and transport effects has been considered for other developments within the surrounding area that would potentially utilise the same road network as the Proposed Development during the construction period. The potential cumulative impacts have been identified and assessed.

12.2.5 It is recognised that the construction period represents the greatest intensification in traffic although it is important to note that this intensification is temporary in nature. The parameters and assumptions used to inform this chapter have been designed to represent a robust and worst-case scenario.

Potential Effects Scoped Out

12.2.6 On the basis of detailed desktop study, the professional judgement of the EIA team and as agreed during the EIA scoping process (see **Technical Appendix 4.3, EIAR Volume 4**), the following characteristics have been scoped out of this Traffic and Transport Chapter:

Operational Stage

12.2.7 Once the Proposed Development is operational, it is anticipated that there would be a small number of operational staff during normal operations. . At this stage it is anticipated the station would require maintenance and inspection at regular intervals to ensure sustained safe long-term operation. Inspection would take place fortnightly and maintenance on each circuit would take place on a planned basis at a frequency of between one and six years.

12.2.8 Therefore, the effect of vehicle movements during the operational phase will be negligible. In respect of transport, the operational phase of the Proposed Development is therefore not assessed further.

Decommissioning Stage

12.2.9 Planning permission for the Proposed Development is sought for a 40-year period, after which time the Proposed Development would be decommissioned unless a further application is submitted for an operational extension. Traffic associated with the decommissioning stage is anticipated to be significantly less than that generated during construction.

12.2.10 Given the timescales involved and the likelihood for changes to the baseline situation during this period, the transport and access effects of decommissioning are not assessed further.

Peak Hour Congestion

12.2.11 The effect of construction related vehicles on the road network is considered unlikely to be significant in terms of peak hour congestion as deliveries will be spread out across the day. Therefore, detailed junction capacity assessments have not been undertaken.

Impacts Beyond the Study Area

12.2.12 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 outwith the study area (see below for definition of the study area) as the effects of traffic are diluted with increasing distance from the point of origin.

Site Access

12.2.1 The Site is split into two distinct land parcels; the area to the west of the A859 named ‘Creed North’ is intended as an area for peat restoration while the area to the east of the A859 named ‘Arnish Moor’ is where the Proposed Development would be constructed.

12.2.2 Two permanent operational access roads are proposed, providing separate accesses to the eastern and western portions of the Arnish Moor area of the Site. The western access would be taken directly from the A859 opposite the Lochside Arena access and the eastern access would be taken from Arnish Road, approximately 900 m east of the A859.

12.2.3 Access to the Creed North area of the Site would be via an existing junction and private access road located approximately 290 m south of the Marybank Quarry entrance on the A859. Temporary access tracks would be built within the Site where required and the land restored following completion. Traffic movements to the Creed North area of the Site would comprise mainly vehicles relocating peat from the Arnish Moor area of the Site.

Extent of the Study Area

12.2.4 The Study Area has been predicated on the Proposed Development access points and the potential routes from the external public road network to these access points. The Proposed Development lies east and west of the A859 so the majority ofconstruction traffic would require to use the A859 corridor in order to access the Proposed Development, with the exception of any deliveries made to Arnish Port or the new Deep Water Terminal (DWT), which would travel to site directly via Arnish Road. Construction traffic and staff may route to the A859 and the Site via the A858 from the west or from Stornoway via the A857.

12.2.5 The Study Area can therefore be defined as:

- Arnish Road;
- A859 between Stornoway and Tarbert;
- A858 between the A859 and Garynahine; and
- A857 between Stornoway and Barvas.

12.2.6 The Study Area road links are all considered suitable routes to Site. The A857, A858 and A859 are good quality 'A' roads which are suitable for HGV traffic. Arnish Road currently serves the industrial/commercial port area of Arnish Point and is therefore currently used by HGV traffic, and the consented improvements to increase this to a two lane carriageway will increase its current capacity.

Desk Study

12.2.7 Accident data for all road links within the Study Area has been obtained from the Crashmap website[1], with data extracted for the most recent five year period (2019-2023).

Field Survey

12.2.8 In order to obtain accurate and up to date baseline traffic flow data, Automatic Traffic Count (ATC) surveys were undertaken on the week of the 16th to 22nd of January 2025, at the following locations, also indicated on **Figure 12.2**.

- Arnish Road approx. 220 m east of the A859;
- A859 approx. 140 m north of Arnish Road; and
- A857 in Stornoway approx. 170 m south of the A857/Matheson Road roundabout.

12.2.9 Existing traffic count data was obtained from the Department for Transport (DfT) database for the A858 west of Garynahine which forms the fourth counter point in this assessment. The 2017 DfT data was factored to represent a 2025 baseline year using the National Roads Traffic Forecast 'low growth' rate.

12.3 Method of Assessment

Assessment of Effects

12.3.1 Guidance for the assessment of the environmental effects of generated traffic is provided in the IEMA document, "Environmental Assessment of Traffic and Movement"[2]. The document is the only guidance document currently available

[1] https://www.crashmap.co.uk/Search

[2] Institute of Environmental Management and Assessment (IEMA) (2023) *Guidelines: Environmental Assessment of Traffic and Movement*, available at https://www.iema.net/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/, accessed 11.02.2025

that sets out a methodology for assessing potentially significant environmental impacts where a Proposed Development is likely to give rise to changes in traffic flows.

12.3.2 This assessment is structured around the consideration of potential environmental effects relating to traffic and transport, as identified by the IEMA Guidelines and including the following:

- Severance of communities;
- Road vehicle driver and passenger delay;
- Non-motorised user delay and amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous and large loads.

12.3.3 The guidance suggests that in order to determine the scale and extent of the assessment and the level of impact the development will have on the surrounding road network, the following two 'rules' should be followed.

- Rule 1 – Include road links where traffic flows are predicted to increase by more than 30%; and
- Rule 2 – Include any other specifically sensitive area where traffic flows are predicted to increase by 10% or more.

12.3.4 These rules are used to identify the road links within the Study Area where a full assessment of environmental effects associated with an intensification in road traffic may be required. It is noted that further consideration should be given to road user and pedestrian safety as well as driver delay effects even if the above thresholds are not exceeded.

12.3.5 The EIA Scoping Opinion notes that concern has been expressed by CnES and North Lochs Community Council (NLCC) over the safety of cyclists on the A859; therefore, the A859 will be considered a sensitive receptor and subject to IEMA 'Rule 2' whereby a 10% increase in total or HGV traffic will trigger the requirement for a detailed assessment. The remaining road links within the study area will be subject to IEMA Rule 1, whereby a 30% increase in HGV levels or total traffic will trigger the requirement for a detailed assessment of the potential environmental effects.

Assessment of Significance

12.3.6 The following section sets out the methodology used to assess the significance of effects at locations along the proposed public road routes within the study area where total traffic levels or the level of HGV traffic exceed the screening thresholds set out by IEMA.

Evaluation of Sensitivity

12.3.7 The sensitivity to change in traffic levels of any given road segment and the receptors located along that road segment are generally assessed by considering the residual capacity of the network under existing conditions.

12.3.8 Where there is a high degree of residual capacity, the network may readily accept and absorb an increase in traffic and therefore the sensitivity may be said to be low. Conversely, where the existing traffic levels are high compared to the road capacity, there is little spare capacity, and the sensitivity to change in traffic levels will be considered to be high.

12.3.9 Consideration has been given to the composition of the traffic on the road network, under both existing and proposed conditions. For example, LGVs have less effect on traffic and the road system than HGVs. Similarly, HGVs can have less effect than abnormal load vehicles, depending on the frequency of the abnormal loads.

12.3.10 The criteria that has been used to make judgements on the sensitivity of the receptor(s) and the magnitude of change are presented in Table 12.1.

Table 12.1: Receptor Sensitivity

Sensitivity	Criteria
High	Receptors of high importance and value on international or national scales. Designated or heritage areas of unique value. Large settlements with a large number of public services and facilities, traffic control measures and regular use by pedestrians and cyclists. Minor and historic roads are not generally suitable for HGV traffic.
Moderate	Receptors of some regional importance. Medium-sized settlements with some public services facilities and infrastructure and some traffic control measures, including some accommodation for pedestrians and cyclists. Capable of supporting regular HGV traffic.
Low	Receptors with low regional importance. Typically small settlements with few facilities and no traffic control measures and with nearby trunk or A-class roads that are able to accommodate HGV traffic.
Negligible	Users not sensitive to transport effects. Includes very small settlements and roads with no significant settlements including new strategic trunk roads or motorways.

Evaluation of Magnitude

12.3.11 The magnitude of traffic effects is a function of the existing traffic volumes, the percentage increase and change due to the Proposed Development, changes in the type of traffic and the temporal distribution of traffic (day of week, time of day).

12.3.12 The determination of magnitude has been undertaken by reviewing the Proposed Development, establishing the parameters of the receptors that may be affected and quantifying these effects utilising IEMA Guidelines and professional judgement.

12.3.13 Consideration is given to the composition of the traffic on the road network, under both existing and proposed conditions. For example, LGVs have less effect on traffic and the road system than HGVs. Similarly, HGVs can have less effect than abnormal load vehicles, depending on the frequency of the abnormal loads.

12.3.14 The criteria that has been used to make judgement on the magnitude of the effect on the receptor(s) is provided in Table 12.2.

Table 12.2: Thresholds for Determining Magnitude of Effects

Magnitude	Criteria
Major	>90% increase in traffic (or >70% at sensitive receptors)
Moderate	60%-90% increase in traffic (or 40% - 70% at sensitive receptors)
Minor	30%-60% increase in traffic (or 10% - 40% at sensitive receptors)
Negligible	0%-30% increase in traffic (or <10% at sensitive receptors)

Evaluation of Significance

12.3.15 As a guide to inform the assessment, but not as a substitute for professional judgement, criteria for determining the significance of traffic related effects are set out in Table 12.3. This is based on combining the magnitude of the effect with the receptor sensitivity.

Table 12.3: Significance matrix

Sensitivity	Magnitude of Change			
	Major	**Moderate**	**Minor**	**Negligible**
High	Major	Major/Moderate	Moderate	Moderate/Minor
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor
Low	Moderate	Minor	Minor	Minor/Negligible
Negligible	Minor	Negligible	Negligible	Negligible

12.3.16 The effects shown in grey highlighted cells, Moderate and Major, are considered **Significant**. The remaining effects are judged to be of minor or negligible significance and are considered **Not Significant**.

Limitations and Assumptions

12.3.1 The assessment provided in this chapter is based upon average traffic flows obtained from the Department for Transport (DfT) database and project specific 7-day ATC surveys. It is expected that there may be localised peaks and seasonal variation in baseline traffic flows on the road network within the study area, however the assessment presents a robust scenario as higher baseline traffic levels (for example during the summer period) would result in a lower percentage impact of construction traffic.It has been assumed that abnormal load deliveries for potential cumulative developments in the vicinity of the Proposed Development would not be permitted to occur at the same time so there is no scope for a cumulative effect of abnormal load movements. Therefore, a cumulative abnormal load assessment has not been undertaken.

12.4 Baseline Conditions

12.4.1 The following paragraphs detail the baseline conditions of the road links identified as being within the study area.

Arnish Road

12.4.2 The existing Arnish Road is a single-track private road approximately 3.4 km in length which runs between the A859 and Arnish Point Industrial Estate. Arnish Road is used by businesses at Arnish Point, as well as for access to the lighthouse and for leisure use by residents and visitors. A new two-lane road link also connects Arnish Road to the new Deep Water Terminal to the north of the industrial estate.

12.4.3 There are consented plans (by other developers) to upgrade the Arnish Road to an adoptable two-lane carriageway so it may become part of the adopted road network. Work is expected to be completed in 2026..

A859

12.4.4 The A859 is the key north-south route on Lewis extending from the settlement and port of Stornoway to the north of the Site and to Harris to the south.

12.4.5 The A859 is a two-way single carriageway road which is approximately 6.5 m-7.0 m in width. The road is rural in nature and sided by open moorland used for grazing and domestic peat cutting. The A859 is subject to a 60 mph speed limit which reduces to 40 mph approximately 600 m south of the existing Stornoway Substation. The 40mph speed limit continues past the Site into Stornoway where it reduces to 30mph just before Memorial Avenue.

A858

12.4.6 The northern extent of the A858 is at Lower Barvas in the north of Lewis where it joins the A857. From here the A858 routes south along the west coast to Garynahine then eastwards to Achadh Mor. At this point the A858 was re-routed in 2005 to follow an upgraded connection directly eastwards to the A859 rather than the original single track road north to Stornoway. The A858 is a two-way single carriageway of approximately 6m in width and is subject to the national speed limit, reducing to 40mph speed limit in some sections such as through Adach Mor and near the junction with the A859.

12.4.7 Within Stornoway, Willowglen Road maintains the A858 designation and is a continuation of the A859 heading north into the town, intersecting with the A857 at a roundabout to the north of the town centre. . For the purposes of this assessment, Willowglen Road has been assessed as part of the A859 and any reference to the A858 in this chapter refers to the direct route from Garynahine to the A859.

12.4.8 It is likely some Site staff may come from origins on this road corridor so a small temporary uplift in traffic levels is anticipated during the construction of the Proposed Development. It is unlikely that many construction HGV trips would travel to Site via this route.

A857

12.4.9 The A857 through Stornoway connects to the A859at a roundabout with Perceval Street South which provides the main intersection between the town and the arterial road link of the A859. All traffic from facilities such as the ferry terminal and airport, plus local residents would utilise this roundabout when entering or leaving the town. .

12.4.10 The A857 is a two-way single carriageway road of approximately 6.5 m-7.0 m in width. Within Stornoway the A857 is subject to a 30 mph speed limit and has footways and street lighting throughout. It is likely that a high proportion of the construction workforce would be drawn from Stornoway. Some material deliveries are expected to arrive via the Stornoway ferry terminal, however it is expected that such deliveries would route north via Matheson Road to avoid the A857 in the centre of Stornoway. For the purpose of this chapter, traffic impacts on the A857 are also considered appropriate to apply to Matheson Road as both road links share similar characteristics, therefore both road links have been assessed together.

Baseline Traffic Flows

12.4.11 Table 12.4 indicates the two-way Average Daily Traffic (ADT) in the study area and the percentage of traffic which is classified as HGVs. The baseline traffic flows were obtained from seven day ATC surveys carried out in January 2025 and publically available DfT traffic data. The locations are indicated in Figure 12.2: Traffic Counter Locations.

Table 12.4: Study Area Baseline Traffic Flows

Counter Location	Data Source	2025 ADT	2025 HGV	Percentage HGV
Arnish Road approx. 220m east of the A859	2025 ATC Survey	296	63	21.4%
A859 approx. 140 north of Arnish Road	2025 ATC Survey	3,803	935	24.6%
A858 approx. 1km north of Garynahine	2017 DfT Data	1,254	11	0.8%
A857 in Stornoway, approx. 170m south of the A857/Matheson Road roundabout	2025 ATC Survey	7,219	788	10.9%

12.5 Road Safety

12.5.1 The Crashmap website has been interrogated to determine the number of accidents that have occurred along the road links within the identified study area (none of which are part of the trunk road network), using the most recent available data

which covers the period 2018 to 2022. The results of this investigation are indicated by Table 11.6 with additional commentary provided on serious and fatal accidents where applicable. The definition of the levels of severity are as follows:

- Slight – minor injury treated at the scene;
- Serious – injury for which the person is detained in hospital; and
- Fatal – the person dies within 30 days of the accident.

Table 12.5: Accident Statistics

Study Area Road Link	Slight	Serious	Fatal	Comment
Arnish Road	-	1	-	-
A859 (Stornoway to Tarbert including Willoglen Road)	10	7	2	Fatal accident just north of Ardhasaig in 2020 involving one vehicle and one casualty. Fatal accident near Balallan in 2023 involving one vehicle and one casualty.
A858 (Garryahine to A859)	1	-	-	-
A857 (Stornoway to Barvas)	2	3	1	Fatal accident in 2021 to the north of Newmarket involving one vehicle and one casualty.

12.5.2 On review, whilst it is noted that a small number of collisions were found to have occurred within the wider study area, there does not appear to be any road safety issues in the immediate vicinity of the Site which would raise concerns in respect to bringing forward the Proposed Development, particularly as the development of this Site would not intensify the use of the public road network once operational.

12.5.3 Three fatal accidents were recorded within the study area in the five year period 2019 to 2023. The three fatal accidents are recorded at locations throughout the study area with one near Tarbert at Ardhsaig, one near Balallan and one north of Newmarket. The fatal accidents recorded are spread out across the road network with no 'hotspots' identifiable. It is therefore considered that there are no particular accident issues that would warrant specific consideration as part of this assessment.

Future Baseline

12.5.4 If the Proposed Development was not implemented then it is likely that there would be no significant change to the traffic and transport situation in the vicinity of the Proposed Development, other than changes to background traffic as a result of general traffic growth and any nearby committed developments.

Summary of Sensitive Receptors

Scoped Out Receptors

- Road links outwith the study area

Scoped In Receptors

- Users of Arnish Road
- Users of the A859
- Users of the A858
- Users of the A857/Matheson Road

12.6 Assessment of Effects

Construction Programme

12.6.1 Subject to securing the necessary consents, it is the intention of the Applicant to commence construction activities in 2026 with the final testing and commissioning of the facility planned for 2030. The high-level construction programme is indicated in Table 12.6 below, with all dates subject to consenting timelines and Contractor programmes.

Table 12.6: High Level Construction Programme

Phase	Description	Start	Duration (months)	End
Phase 1 – Enabling Works / Earthworks	Soil strip, peat removal, processing of site won rock, formation of platforms, drainage, temporary compounds, temporary and permanent access.	Feb 2026	22	Nov 2027
Phase 2 - HVDC and AC Building Works	Construction of HVDC and AC building and equipment foundations, drainage, electrical cable trenches/troughs, HVDC and AC building structures, internal access roads and fencing.	Feb 2027	27	April 2029
Phase 3 - HVDC and AC Equipment Fit Out	Installation of HVDC and AC electrical equipment and building ancillary supplies.	April 2028	25	April 2030
Phase 4 – Landscaping	Final site clearance, reinstatement of temporary compounds, access and drainage. Installation of remaining landscape measures.	Feb 2029	11	Dec 2029
Phase 5 - Testing and Commissioning	Testing and commissioning of facility.	March 2030	8	Oct 2030

HGV Traffic Movements

12.6.2 The construction traffic associated with the Proposed Development would comprise construction workers, HGVs / LGVs carrying construction materials & plant and abnormal loads carrying components. The potential number of traffic movements that would result from the peak traffic generating phases of construction of the Proposed Development are set out in Table 12.7.

Table 12.7: Construction HGV Movements

Phase	AIL	Low Loader	Tipper	Flat Bed	Concrete	Staff	Total
Enabling Works	0	220	13,000	0	0	21,472	34,692
AC & DC Building Works and Electrical Fit Out	18	72	53,000	4,400	6,200	102,500	166,190
Total (inbound deliveries)	18	292	66,000	4,400	6,200	123,972	200,882
Total two-way trips (inbound plus outbound)	**36**	**584**	**132,000**	**8,800**	**12,400**	**247,944**	**401,764**

12.6.3 Construction hours shall be agreed with the relevant contractors and through discussions with CnES which will likely lead to a planning condition which specifies the agreed working hours for the project. At this stage it is anticipated general construction hours shall be 07:00 to 19:00 Monday to Saturday with no working on a Sunday. Construction outwith these times may be required for specific items (such as concrete pours) or to minimise public disturbance and will be agreed with CnES well in advance of such activities being undertaken.

12.6.4 An outline programme indicating the schedule of each phase of development over the four year period is included in **Technical Appendix 12.2, EIAR Volume 4**. From the information contained within Technical Appendix 12.2 and Tables 12.6 and 12.7, it can be assumed that the peak traffic generating months are likely to be months 13 to 22 of the construction programme when there is overlap between the enabling works and HVDC and AC building works. With construction proposed to begin in 2026, it has been assumed for the purpose of this assessment that the peak traffic generating months of the construction programme would occur in the year 2027, however this is subject to consenting timelines.

12.6.5 Table 12.8 indicates the distribution of HGV traffic movements across the peak traffic generating months of the construction programme. In order to provide a monthly calculation of vehicle trip generation, the total number of HGV trips specified in Table 12.7 was evenly distributed across the appropriate number of months as per the outline construction programme. Table 12.8 indicates the number of anticipated HGV trips during the peak traffic generating months. Staff trips and abnormal loads deliveries are not included in this table but are discussed and assessed later in this chapter.

Table 12.8: Estimated Construction HGV Movements per Month

Month	13	14	15	16	17	18	19	20	21	22
Phase										
Enabling Works	601	601	601	601	601	601	601	601	601	601
AC & DC Building Works & Elect Fit Out	1,633	1,633	1,633	1,633	1,633	1,633	1,633	1,633	1,633	1,633
Total	2,234	2,234	2,234	2,234	2,234	2,234	2,234	2,234	2,234	2,234
Total monthly two-way trips (inbound plus outbound)	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**	**4,468**
Total daily two-way trips (inbound plus outbound)	**186**	**186**	**186**	**186**	**186**	**186**	**186**	**186**	**186**	**186**

12.6.6 As Table 12.8 indicates, the predicted peak of HGV movements to and from the Site would be during months 13 to 22 of the delivery programme, with a total of 4,468 monthly two-way HGV movements (inbound and outbound).

12.6.7 If an average four-week month is considered, this would equate to 1,117 two-way weekly HGV movements. If a six day working week is considered, this would equate to a total of 186 two-way daily HGV movements during this ten month period of the delivery programme.

Staff Vehicle Movements

12.6.8 With regards to staff movements, it is estimated that there would be a maximum of 150staff members on site on an average day during months 13 to 22 of the construction phase . Measures will be put in place to minimise the number of vehicle trips to the Site by staff, for example through use of contractors work bus or vans / mini-buses. In order to provide a robust assessment, an occupancy level of 1.5 staff per vehicle has been assumed. This would result in an average daily movement of 200 cars/LGVs (100 trips in, and 100 trips out) in addition to the daily average HGV movements provided in Table 12.8. It should be noted the staff numbers stated above apply to months 13 to 22 of the construction programme. Peak staff numbers during other phases of the construction period may be higher or lower.

Construction Traffic Distribution

12.6.9 It is anticipated that the majority of smaller material supplies will come via the local construction suppliers in Stornoway and/or direct from the regular service ferry at Stornoway port. These would generally travel via Matheson Road to the A857 then continue to the Site via the A859, and either enter the Site via the A859 access for equipment to the AC substation or

via the Arnish Road for equipment for the HVDC Converter station. It has been assumed that the majority of the workforce would be travelling to Site daily from the Stornoway area.

12.6.10 It is anticipated that larger material supplies, such as steel reinforcement, building steel work, building cladding, cabling, electrical equipment, etc, would arrive at either Arnish Port or to the new Deep Water Port. From here, the material would be delivered via the Arnish Road and the site access on Arnish Road, avoiding the A859.

12.6.11 Similarly, it is anticipated all abnormal loads would arrive at either Arnish Port or the new Deep Water Port and access the Site via Arnish Road...

12.6.12 A small number of staff trips may route to Site from the west of Lewis via the A858, then continue to Site via the A859. It is unlikely that construction HGV traffic would utilise this route however a 10% distribution has been applied in order to assess a robust scenario.

12.6.13 Traffic movements to the Creed North area of the Site to the west of the A859 would mainly be vehicles relocating excavated peat from the Arnish Moor area of the Site, therefore vehicles would only travel on a short secition of the A859 between the two portions of the Site. Any imported aggregate required would likely be sourced from Marybank Quarry located on the A859 approximately 1.1km north of the Arnish Road junction, therefore construction vehicles associated with this task would again only travel on a short section of the A859.

12.6.14 Based on these assumptions and in order to assess a robust scenario, 100% of construction traffic and staff trips has been applied to Arnish Road andthe A859. 10% of HGV traffic and 20% of staff trips have been applied to the A858 and a total of 20% of construction traffic and 100% of staff trips has been applied to the A857.It is important to note that this represents a worst-case scenario for each road link in isolation and this impact would not occur in reality as the total traffic distribution between all links could not exceed 100%.

12.6.15 Table 12.9 indicates the daily percentage increases on the road links within the study area for the peak traffic generating months of the construction period (months 13 to 22) in the assumed peak year of construction (2027).

Table 12.9: Daily Construction Traffic Effect on Routes within the Study Area

Scenario	1.Arnish Road	2.A859	3.A858	4.A857/Matheson Road
2027 ADT	299	3841	1267	7293
2027 HGV	64	944	11	796
Daily Construction HGV (inbound plus outbound)	186	186	19	37
Daily Staff Trips (inbound plus outbound)	200	200	40	200
2027 ADT + Construction HGV and Staff (Total Daily Trips)	685	4228	1326	7530
Percentage Increase in Total Traffic due to Construction	129%	10%	5%	3%
Percentage Increase in HGV traffic due to Construction	291%	20%	175%	5%

Detailed Assessment of Effects

12.6.16 As stated previously, this assessment is structured around the consideration of potential environmental effects relating to traffic and transport, as identified by the IEMA Guidelines and including the following:

- Severance of communities;
- Road vehicle driver and passenger delay;
- Non-motorised user delay and amenity;
- Fear and intimidation on and by road users;

- Road user and pedestrian safety; and
- Hazardous and large loads.

12.6.17 IEMA Guidelines Rules 1 and 2 are used as thresholds to determine the requirement for a full assessment of effects in relation to an increase in traffic flows associated with the construction of the Proposed Development:

- Rule 1 – Include road links where traffic flows are predicted to increase by more than 30%; and
- Rule 2 – Include any other specifically sensitive area where traffic flows are predicted to increase by 10% or more.

12.6.18 Table 12.9 indicates that at Count Location 1, Arnish Road, temporary total traffic levels are expected to increase by 129%, and HGV levels by 291% during the worst-case months of the construction period. As this exceeds the 'Rule 1' threshold of 30% increase in traffic volume, a full assessment of effects is required to be undertaken for this road link.

12.6.19 At Count Location 2, A859, , temporary total traffic levels are expected to increase by 10%, and HGV levels by 20% during the worst-case months of the construction period. As mentioned previously, due to concerns over the safety of cyclists on the A859 this road link is considered as a sensitive receptor and will be assessed under the 10% increase threshold of Rule 2.

12.6.20 At Count Location 3, A858, temporary total traffic levels are expected to increase by 5%, and HGV levels by 175% during the worst-case months of the construction period. This high percentage increase in HGV levels in due to the very low baseline level of HGV traffic on this road link (11 per day) rather than a significant increase in HGV's due to construction traffic. Nevertheless this exceeds the Rule 1 threshold of 30% increase and a full assessment of effects has been carried out.

12.6.21 At Count Location 4, A857/Matarnish

12.6.22 heson Road, temporary total traffic levels are expected to increase by 3%, and HGV levels by 5% during the worst-case months of the construction period. This level of increase does not exceed the 10% threshold of Rule 2, considering Stornoway as a sensitive receptor and therefore as per IEMA guidance, a full assessment of effects is not required for these road links.

12.6.23 Again it is important to note that this represents a worst-case scenario for each road link in isolation and this impact would not occur in reality as the total traffic distribution between all links could not exceed 100%.

Severance of Communities

12.6.24 The IEMA Guidelines advise that "Severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure".

12.6.25 The potential for traffic associated with the Proposed Development to cause severance is assessed on a case by case basis using professional judgement where non-negligible traffic increases are predicted on roads through residential settlements.

12.6.26 Increased severance can result in the isolation of areas of a settlement or individual properties. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by infrastructure. Severance effects could equally be applied to residents, motorists or pedestrians.

12.6.27 With reference to Table 12.2, the magnitude of the change in HGV levels along all four study area road links is considered to be major (>90%, or >70% at sensitive receptors) Table 12.10 provides an assessment of the effect of construction traffic on severance of communities for each road link.

Table 12.10: Assessment of Severance of Communities

Road Link	Magnitude of Change	Sensitivity	Justification	Significance
Arnish Road	291% increase in HGV traffic Major (>90%)	Negligible	Arnish Road serves solely as a route to the Deep Water Terminal and Arnish Industrial Estate. There are no properties accessed from the route, and no facilities which would generate pedestrian movements therefore no receptors which would be susceptible to an increased severance effect.	Minor – **Not Significant**
A859	20% increase in HGV traffic Minor (10-40% at Sensitive Receptors)	Medium	The A859 is a main arterial route through Lewis and does not travel through any major settlements in the vicinity of the Proposed Development, however, on Willowglen Road the effect of severance is likely to be high. This area is generally residential and industrial which is likely to generate pedestrian movements and bus stops are located on both sides of the road requiring pedestrians to cross.	Moderate/Minor – **Not Significant**
A858	175% increase in HGV traffic Major (> 90%)	Negligible	The effect of severance is likely to be negligible on the A858. The section of the A858 within the study area features isolated dwellings and the small settlement of Achmore, which has several facilities such as bus stops which may generate pedestrian movements however the high percentage increase in HGV trips indicated is due to the very low baseline level of HGVs on this road link and the worst case scenario is an increase of 19HGVs per day.	Minor – **Not Significant**

Road Vehicle Driver and Passenger Delay

12.6.28 Some driver delay may be experienced when construction traffic is accessing the Site. The IEMA Guidelines advise "delays are only likely to be significant when the traffic on the network surrounding the Site is already at, or close to, the capacity of the system".

12.6.29 Traffic delay to non-development traffic may occur at several points on the network surrounding the Site including:

- At the Site access points where there will be additional turning movements;
- At intersections along the local road network which might be affected by increased traffic; and
- At side roads where the ability to find gaps in traffic may be reduced, thereby lengthening delays.

12.6.30 It is noted that there are no significant areas of congestion within the Study Area at this point in time. Table 12.11 provides an assessment of the effect of construction traffic on road vehicle driver and passenger delay for each road link.

Table 12.11: Assessment of Road Vehicle Driver and Passenger Delay

Road Link	Magnitude of Change	Sensitivity	Justification	Significance
Arnish Road	291% increase in HGV traffic Major (>90%)	Medium	One of the two Site access points is located on Arnish Road. In addition, some construction traffic plus all abnormal load deliveries would arrive at either the Deep Water Terminal or Arnish Port. The consented improvements to Arnish Road are expected to be completed by late 2026 and this will help mitigate delay along Arnish Road however delays are likelyat the junction with the A859	Major/Moderate – **Significant**
A859	20% increase in HGV traffic Minor (10-40% at Sensitive Receptors)	Medium	Delay to non-development traffic is likely to be increased in the vicinity of the Site due to the increased number of heavy goods vehicles on the route, in particular at the proposed access opposite Lochside Arena, and at the Arnish Road junction.	Moderate/Minor – **Not Significant**
A858	175% increase in HGV traffic Major (> 90%)	Negligible	Baseline traffic levels on this route are low meaning the road has residual capacity to cope with an increase in traffic without significant impact.	Minor – **Not Significant**

Non Motorised User Delay and Amenity

12.6.31 The IEMA Guidelines advise that "The assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads".

12.6.32 Traffic volumes, traffic composition, traffic speed, the existence of pedestrian footways and the existence of pedestrian crossings all contribute to the level of general pleasantness experienced by pedestrians and other vulnerable road users.

12.6.33 Table 12.12 provides an assessment of the effect of construction traffic on non motorised user delay and amenity for each road link.

Table 12.12: Assessment of Non Motorised User Delay and Amenity

Road Link	Magnitude of Change	Sensitivity	Justification	Significance
Arnish Road	291% increase in HGV traffic Major (>90%)	Low	Arnish Road serves solely as a route to the Deep Water Terminal and Arnish Industrial Estate. There are no properties accessed from the route, and no facilities which would generate pedestrian movements however the route may be used by recreational users such as cyclists who would experience a loss of amenity due to increased HGV traffic.	Moderate – **Significant**
A859	20% increase in HGV traffic Minor (10-40% at Sensitive Receptors)	High	The A859 is well used by cyclists. Concerns have been raised by CnES and North Lochs Community Council regarding cycle safety in the vicinity of the Proposed Development with frequent overtaking on the double lined section with an adjacent blind summit and concealed entrance at Macaulay Farm.. Current cycle infrastructure in the vicinity of the Proposed Development comprises a cycle	Moderate - **Significant**

Road Link	Magnitude of Change	Sensitivity	Justification	Significance
			lane extending south from the Creed Recycling facility for approximately 1.1 km.	
A858	175% increase in HGV traffic Major (> 90%)	Negligible	On the A858, the effect of increased construction traffic on non-motorised user delay and amenity is likely to be negligible. Pedestrian movements are likely to be low and centred around the settlement of Achmore, however tthe route forms part of the Hebridean Cycle Way and therefore is well used by cyclists. The increase in HGV traffic on the A858 associated with the construction phase is likely to be low with the worst case scenario indicating an additional 19 HGV trips per day over the peak months of construction.	Minor– **Not Significant**

Fear and Intimidation on and by Road Users

12.6.34 IEMA guidelines state that "a further environmental impact that affects people is the fear and intimidation created by all moving objects", with the extent of fear and intimidation dependent upon:

- The total volume of traffic;
- The heavy vehicle composition;
- The speed these vehicles are passing; and
- The proximity of traffic to people.

12.6.35 The 2023 IEMA guidelines provide a weighting system to help quantify the likelihood and level of pedestrian fear and intimidation, which is based on average traffic flows and vehicle speeds. Table 12.13 provides a summary of the assessment of the effect of fear and intimidation on and by road users for each road link.

Table 12.13: Assessment of Fear and Intimidation on and by Road Users

Road Link	Magnitude of Change	Level of Fear and Intimidation	Justification	Significance
Arnish Road	291% increase in HGV traffic Major (>90%)	Negligible	Arnish Road serves solely as a route to the Deep Water Terminal and Arnish Industrial Estate. Unlikely to be many receptors such as pedestrians or recreational road users who would be sensitive to an increased fear and intimidation effect.	Minor – **Not Significant**
A859	20% increase in HGV traffic Minor (10-40% at Sensitive Receptors)	High	The main receptor likely to be sensitive to increased fear and intimidation effects would be cyclists. Fear and intimidation levels are likely to increase due to a higher proportion of HGVs using the route,	Moderate - **Significant**
A858	175% increase in HGV traffic Major (> 90%)	Negligible	The main receptor likely to be sensitive to increased fear and intimidation effects on the A858 would be cyclists due to this road being part of the Hebridean Way cycle route, however the increase in HGV traffic associated with the worst case months of the construction period is estimated to	Minor – **Not Significant**

Road Link	Magnitude of Change	Level of Fear and Intimidation	Justification	Significance
			be (as a worst case scenario) 19 additional HGVs per day over a 12 hour period which equates to less than two per hour.	

Road User and Pedestrian Safety

12.6.36 The most recently available accident data for the road links within the Study Area has been summarised in Table 12.5. The data from 2019 to 2023 indicates that there does not appear to be any road safety issues in the immediate vicinity of the Site which would raise concerns in respect to bringing forward this development.

12.6.37 An approximate calculation has been undertaken to quantify the level of accident risk that could be expected due to an increase in traffic associated with the Proposed Development. The likelihood of an accident occurring is commonly expressed in accidents per million vehicle-km. Accidents that are appraised in relation to transport are predominantly those in which personal injury is sustained by those involved (personal injury accidents (PIAs).

12.6.38 For the purpose of this calculation, it has been assumed that the length of road is 4.8 km for Arnish Road, 56.5 km for the A859 (including Willowglen Road) and 12.8 km for the A858making a total of approximately 74.1 km, which can be generally classified as 'rural typical single carriageway' in accordance with the criteria set out within DMRB. However, traffic from the Proposed Development will only travel on a proportion of the network for any one trip so the distance travelled will be much less than the total study area network. For assessment purposes, we have assumed that each trip will cover 40% of the network distance which equates to a distance of 29.1 km.

12.6.39 Accident rates from the DMRB for this standard of road are:

- Rural typical single carriageway: 0.381 Personal Injury Accidents (PIA) per million vehicle-km.

12.6.40 Assuming a two-way trip on the 29.1 km route for each of the 200,882 vehicles during the enabling works, AC & DC building works and electrical fit out phases of the construction period (as set out in Table 12.7), a total distance of 14,913,480 km is obtained. Based on the rate above; this suggests 4.5371 accidents during the construction period associated with the additional traffic. This is considered to be an overestimate give that a high proportion of trips would be to and from Stornaway which is just less than 5 km from the Site access points.

12.6.41 It is considered that the magnitude of this effect is major and receptor sensitivity to this effect is always considered as high. When combined, the effect can be classified as major and **Significant** and mitigation is required as per IEMA guidance.

Hazardous and Large Loads

12.6.42 .The import of explosives would be required for blasting purposes. The movement of hazardous loads would be controlled by appropriate regulations and managed accordingly, and as a result the risks posed by the transport of hazardous loads are considered minor and **Not Significant**.

12.6.43 IEMA guidelines state that "The movement of large (abnormal) loads is regulated by National Highways and will be subject to separate agreement with the relevant highway authorities and police". Abnormal load deliveries for the Proposed Development will arrive at Arnish Port or the new Deep Water Terminal and travel to Site via Arnish Road. There are 18 abnormal load deliveries associated with the Proposed Development as detailed in Table 12.7. If, as a worst case scenario the abnormal load deliveries were concentrated over the peak traffic generating months 13 to 22, this would equate to less than two abnormal load deliveries per month.. This impact is considered to be negligible and **Not Significant**.

12.7 Cumulative Effects and Interaction of Effects

Potential Cumulative Construction Effects

12.7.1 Cumulative effects have been considered for other developments in the vicinity of the Proposed Development that are consented or at planning application stage and may share construction traffic routes with the Proposed Development.

Developments that are currently under construction or operational have been excluded as it can be assumed that there will be a very minimal number of trips or no overlap in vehicle trip generation with the Proposed Development. The potential for cumulative effects has been assessed by reviewing data available from the Traffic and Transport Chapters within the respective EIA Reports for the relevant developments where applicable, the effect of the combined increase in construction traffic generated by the other development(s) and the Proposed Development added to the baseline flows is considered.

12.7.2 Whilst the developments identified may share a similar route for abnormal load vehicles, abnormal load deliveries would not be permitted to occur at the same time so there is no scope for a cumulative effect of abnormal load movements. Therefore, a cumulative abnormal load assessment has not been undertaken.

Stornoway Wind Farm - Consented

12.7.3 The Stornoway Wind Farm site is located to the northwest of the Proposed Development, on the western side of the A859. Two access points are located on the A859 and two on Pentland Road.

12.7.4 Information contained in the Traffic and Transport EIA chapter for the windfarm development indicated that both construction HGV traffic and abnormal loads deliveries will route to site via Arnish Road (from Arnish Point Dock). The document indicates that during the proposed 30 month construction period, the worst case month (assuming importation of aggregate rather than the use of on-site borrow pits) would be month 4 with 210 two way HGV movements per day (105 inbound and 105 outbound).

12.7.5 The windfarm development is likely to begin construction in 2027. If the peak traffic generating months were to coincide with the Proposed Development it is unlikely that the local capacity for concrete and stone production could supply several developments at once, therefore traffic from these activities would likely be staggered. If the predicted trips from the worst case month construction of the Stornoway Wind Farm were combined with the predicted trips for the Proposed Development for the A859 , the results of the assessment carried out in section 12.7 would still apply (i.e. major change in HGV traffic volume) and scheduling through the use of CTMP's for both developments would aim to mitigate the effects as far as practicable.

Stornoway Deep Water South – Scoping stage

12.7.6 The Stornoway Deep Water Terminal (DWT) became operational in 2024. Stornoway Port Authority (SPA) are proposing further development of facilities in Glumaig Harbour to augment the DWT. This will take the form of a land reclamation area and quayside. The new proposal, Deep Water South (DWS), will provide additional laydown space with heavy lift capabilities and deep-water berthing to facilitate requirements of the offshore wind sector.

12.7.7 Information from the scoping report for the development indicates that the bulk of materials for the DWS development would come from sources local to the site. There would also be the ability for materials and equipment to be delivered by sea to Arnish Port or the Deep Water Terminal where practicable.

12.7.8 Construction of DWS is expected to result in less construction traffic than the DWT. An assessment previously undertaken for the DWT identified that onshore deliveries would equate to a maximum of 100 two-way HGV movements per day and this can be considered to represent a worst-case indication of increased HGV movements on the road network associated with the DWS construction.

12.7.9 As the DWS development is currently at scoping stage the proposed year of construction is currently unknown; however, if it were to coincide with the peak traffic generating year of construction for the Proposed Development the results of the assessment carried out in section 12.7 would still apply and scheduling through the use of CTMP's for both developments would aim to mitigate the effects as far as practicable. If the Arnish Road improvements are completed before the DWS development the impact would be reduced as traffic capacity on the Arnish Road link will be increased.

Harris to Stornoway Overhead Line

12.7.10 The Harris to Stornoway Overhead Line (OHL) comprises construction of a replacement 132kV overhead line between the Harris Grid Supply Point and Stornoway Grid Supply Point, replacing the existing single pole trident design with a 'H' pole trident line. The preference for the new route is to follow that of the existing OHL and the project received Section 37

Planning Consent in February 2024. The OHL is currently under construction therefore cumulative effects with the Proposed Development are unlikely.

Arnish Road Upgrade

12.7.11 Stornoway Port Authority (SPA) plans a major infrastructure upgrade to the Arnish Road. The existing single track road which is nearly two miles long, was originally constructed in the 1970s. Improvements includes widening the road to a 6.6 m carriageway, resurfacing with durable asphalt, modernising drainage systems, and accommodating essential utilities. Construction is expected to commence in spring 2025 with completion expected by September 2026. Construction of the Proposed Development is expected to commence in early 2026 (subject to consent) therefore there is potential for overlap of timescales for a period of time, however the Arnish Road upgrades should be complete before the peak traffic generating months of the Proposed Development (months 13-22). Discussions would be undertaken with SPA in order to mitigate any effects during any overlap between construction of the two developments..

Cumulative Effects Summary

12.7.12 In summary, it is highly unlikely that the peak construction period associated with another development in the area would overlap with the peak construction period of the Proposed Development as the applications are at different stages in the planning process and each development has varying lengths of construction period. The high traffic generating activities, such as the importation of stone and concrete, only occur over a few months of the whole construction period for each development. It is unlikely that the local capacity for concrete and stone production could supply several developments at once; therefore, high traffic generating activities would naturally be staggered.

12.7.13 Notwithstanding this, the construction stages of each development would be programmed to ensure that the peak traffic generating months do not coincide (through the implementation of CTMPs for each development), and the worst-case scenario considered in this chapter would remain the basis for a robust assessment of potential impacts on the road links within the study area.As a result, cumulative effects are considered to be minor and **Not Significant**.

12.8 Mitigation During Construction

12.8.1 The assessment predicts that, prior to mitigation measures, the following effects would be Significant along road links within the Study Area**:**

- Road vehicle driver and passenger delay;
- Non-motorised user delay and amenity;
- Road user and pedestrian safety; and
- Fear and intimidation .

12.8.2 Therefore, in accordance with the EIA Regulations mitigation is required to address these potential effects. It is therefore proposed to prepare and implement a comprehensive Construction Traffic Management (CTMP) which is intended to mitigate the identified effects by ensuring that they are minimised as far as possible within the Study Area to a level which is considered to be not significant. An Outline CTMP is included in **Technical Appendix 12.1, EIAR Volume 4**.

12.8.3 The final CTMP would identify measures to reduce the number of construction vehicles as well as identifying measures to mitigate the impact of vehicles. The CTMP would identify the programme of works, the agreed routes to Site and details of a Site Liaison Officer (SLO) who would have responsibilities for managing traffic and transport impacts and effects. The CTMP would also identify measures to reduce and manage construction staff travel by private car, particularly single occupancy trips. The CTMP would include the following measures as a minimum:

- Immediately upon commencement, all deliveries, operatives, and visitors to the Site will report to the security gate. This will be communicated to all early works contractors at their pre-start meeting.
- The main contractor will develop a logistics plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security, and material handling that would be enforced following full Site establishment.

- Approved haul routes will be identified to the Site and protocols put in place to ensure that HGVs adhere to these routes and do not pass through areas to be avoided.
- All contractors will be provided with a Site induction pack containing information on delivery routes and any restrictions on routes.
- Temporary construction Site signage would be erected along the identified construction traffic routes to warn people of construction activities and associated construction vehicles.
- A construction traffic speed limit (for example, 20mph) where considered appropriate.
- The construction material 'lay down' areas will allow for a staggered delivery schedule throughout the day, avoiding peak and unsociable hours (i.e. before 06:00 and after 22:00).
- An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors will be required to give details of proposed timing of material deliveries to the Site. At this stage they would be given a specific area for delivery.
- The CTMP and compliance monitoring therein will be included within all trade contractor tender enquiries to ensure early understanding and acceptance/compliance with the rules that would be enforced on this project.
- Under no circumstances will HGVs be allowed to lay-up in surrounding roads. All personnel in the team will be in contact with each other and with Site management, who in turn will have mobile and telephone contact with the subcontractors.
- Roads will be maintained in a clean and safe condition.
- Road safety briefinings will be delivered to on-site personnel and to HGV drivers serving the development so that there is awareness raising around any accident blackspots on the local road network and any locations which are sensitive. This should help to prevent accidents on the local road network.
- Delivery vehicles associated with the development (such as HGVs carrying stone and concrete on a campaign basis) will be made identifiable with specific markings (signs or stickers with construction site and vehicle number) so that it is clear that they are serviving the Proposed Development. This will allow any instances of speeding or poor driver discipline to be reported to the site Liaison Officer with a view to ensuring the safety of other road users.
- A wheel washing facility would be installed on-site during the construction period in order to reduce mud and debris being deposited onto the local road network.

.Residual Effects

12.8.4 The assessment has been carried out considering the peak in construction traffic and any high percentage increase in HGV traffic is reflective of the low baseline HGV volumes on the roads within the Study Area. Furthermore, it is important to recognise that all effects associated with increased construction traffic would be temporary and local in nature, and that this assessment has considered the worst-case possible impact at each location.

12.8.5 The residual effects after implementation of the CTMP are stated below:

- Road vehicle driver and passenger delay – Minor: **Not Significant**
- Non-motorised user delay and amenity – Minor: **Not Significant**
- Road user and pedestrian safety – Minor: **Not Significant**
- Fear and intimidation – Minor: **Not Significant**

12.9 Summary

12.9.1 This assessment has considered the effects on the local road network of HGV traffic associated with the construction phase of the Proposed Development.

12.9.2 The peak traffic generating months of the four year construction programme are anticipated to cover a 10 month period from months 13 to 22, during which 22,335 HGVs would access the Site equating to 186 daily total HGV trips (93 inbound plus 93 outbound) during the busiest construction months (months 13 to 22). The 18 abnormal loads deliveries are not

anticipated to exceed 5 trips per month and will route to Site directly from the new Deep Water Terminal or Arnish Port via Arnish road therefore travelling only a short distance on the road network.

12.9.3 A robust assessment was undertaken based on a conservative approach for the total construction traffic movements and the worst-case scenario for each link. The following traffic distribution assumptions were applied:

- Arnish Road – 100% of HGV and staff trips;
- A859 – 100% of HGV and staff trips;
- A858 – 10% of HGV trips and 20% of staff trips; and
- A857 – 20% of HGV trips and 100% of staff trips.

12.9.4 It is important to note that this represents a worst-case scenario for each road link in isolation and this impact would not occur in reality as the total traffic distribution between all links could not exceed 100%. The impact of construction traffic could increase **total** traffic flows along the road links within the Study Area by the following:

- 129% on Arnish Road;
- 10% on the A859;
- 5% on the A858; and
- 3% on the A857.

12.9.5 The percentage increase in HGVs associated with the worst-case month of the construction programme for the Proposed Development could increase HGV traffic levels by the following:

- 291% on Arnish Road;
- 20% on the A859;
- 175% on the A858; and
- 5% on the A857.

12.9.6 The large percentage increase in total and HGV traffic on Arnish Road and the A858 is amplified due to very low baseline levels of total and HGV traffic using the road links.

12.9.7 The significance of the predicted effects of the Proposed Development on the traffic and transport resource during the construction phase has been discussed in this chapter and is summarised in Table 12.14. No significant residual effects from construction traffic are predicted to arise either as a result of the Proposed Development in isolation or cumulatively when other developments are considered following implementation of the CTMP.

Table 12.14: Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction			
Road Vehicle Driver and Passenger Delay	CTMP	CTMP via a planning condition	Not Significant
Non Motorised User Delay and Amenity	CTMP	CTMP via a planning condition	Not Significant
Road User and Pedestrian Safety	CTMP	CTMP via a planning condition	Not Significant
Fear and Intimidation	CTMP	CTMP via a planning condition	Not Significant
Operation			
	Not Required	Not Required	Not Significant
Cumulative Construction			

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	Not Required	Not Required	Not Significant
Cumuative Operation			
	Not Required	Not Required	Not Significant

13. SUMMARY OF EFFECTS

13.1 Introduction

13.1.1 The findings of the environmental impact assessment (EIA) for the Proposed Development are presented within the technical assessments contained within Volume 2 of this EIA Report. The significance of these effects has been assessed using criteria defined in the topic chapters. Unless stated otherwise in the technical assessments, the significance has been categorised as **Major, Moderate, Minor** or **Negligible**, with effects assessed as being of **Major** or **Moderate** considered to be significant effects in the context of the EIA Regulations.

13.1.2 Mitigation measures have been identified to prevent, reduce or remedy any potentially significant adverse environmental effects identified where practical, beyond that already taken into account as normal good practice (i.e. embedded mitigation). Such measures will be implemented during detailed design, construction and/or operation of the Proposed Development. Each technical chapter of this EIA Report details the measures recommended to mitigate any identified significant effect, and a summary of the recommended mitigation measures is provided in **Chapter 14: Schedule of Environmental Mitigation (EIAR Volume 2).** Any remaining effects following implementation of the available mitigation measures are known as 'residual effects'.

13.1.3 The purpose of this chapter is to provide a summary of the predicted likely significant environmental effects identified within **EIAR Volume 2.**

13.2 Summary of Likely Significant Effects

13.2.1 **Table 13.1** summarises the predicted likely significant effects of the Proposed Development. Note that the table only includes receptors where likely significant effects are predicted pre-additional mitigation; where the assessment has identified that there would be no likely significant effects to receptors pertaining to a particular environmental topic during construction or operation, this technical topic has not been included in the table. Note that the table does describe the mitigation incorporated into the design ('embedded mitigation') for topics where potential significant effects are identified, for example, landscape screening bunds.

Table 13.1: Likely Significant Effects			
Receptor	Potential Effects (without Mitigation)	Mitigation Proposed	Residual Effects and Significance
Construction			
Landscape and Visual			
Landscape Character Type	LCT 322 Boggy Moorland Outer Hebrides is predicted to experience direct effects, which would be **minor** and **not-significant** overall, with **locally major** and **significant** effects in the parts of the LCT within the Site boundary.	Mitigation measures include best practice construction and restoration techniques, careful landform reinstatement, re-use of excavated materials for vegetation restoration, earthworks to achieve screen bunding to the east and west of the Proposed Development, construction of a stone retaining wall at the western boundary to screen views from people travelling on the A859, and native tree and shrub planting to visually reinforce and extend existing woodland and minimize visual impacts. **Chapter 2: Project Description** and **Chapter 13: Schedule of Mitigation (EIAR Volume 2)** provide details all of the embedded landscape and visual mitigation during Construction.	**No Change**
Lews Castle and Lady Lever Park Garden and Designated Landscape	Indirect effects are predicted to be **moderate** and **significant** during construction.		**No Change**
Building Based Visual Receptors	**Significant** effects are predicted at two building-based visual receptors: • B3 Lower Sandwick (**moderate**); and • B4 Olivers Brae/Sandwick Cemetery Entrance (**moderate**).		**No Change**
Recreation Based Visual Receptors	**Significant** effects are predicted at four recreation-based receptor locations during construction: • Rec 4 Below Cnoc na Croic (**major**) • Rec 7 Marybank picnic benches (**major**). • Rec 1 Lewis War Memorial (**moderate**); and • Rec 2 Iolaire Memorial Car Park (**moderate**).		**No Change**
Route Based Visual Receptors	**Significant** effects during construction are predicted at one receptor location - R3 A859 (**major northbound**, **moderate southbound**).		**No Change**
Cultural Heritage			
Shieling Mound	Direct impacts are predicted on a probable shieling mound of low sensitivity during construction of the Proposed Development, which would comprise a high magnitude adverse impact. The resulting effect would be **moderate/minor** and **significant**.	Archaeological investigations - the possible sheiling mound would be investigated and excavated to a strategy and standard acceptable to the CnES Archaeologist. This may require full excavation of the mound.	**Minor adverse (Not Significant)**

Table 13.1: Likely Significant Effects			
Lewis Chemical Works	Construction of the Proposed Development has the potential to directly impact on the former Lewis Chemical Works (buildings, trackway, the inscribed marker stone and a small area of the historic peat cutting). The result would be a moderate magnitude adverse impact and the resulting effect would be **moderate** and **significant**.	Archaeological investigations - the Lewis Chemical Works would be investigated and recorded to a strategy and standard acceptable to the CnES Archaeologist. The inscribed stone would be repositioned at an appropriate location within the Lewis Chemical Works area not affected by the Proposed Development.	**Minor adverse (Not Significant)**
Arnish sheilings	There is potential for accidental damage to this low sensitivity asset from construction traffic. This would be a high magnitude adverse impact. The resulting effect would be **moderate/minor** and **significant**.	Preservation in-situ - the Arnish Shielings would be marked out for avoidance during the construction phase.	**None (Not significant)**
Undiscovered Archaeological Features	Potential adverse direct effects on buried archaeological remains are predicted to be **moderate** and **significant**.	Targeted archaeological evaluation trenches and peat coring.	**Minor adverse (Not Significant)**
Ornithology			
Hen Harrier	Construction of the Proposed Development could have a direct, adverse effect on hen harriers and their nesting success if works are carried out during breeding season, including abandonment of nests and established territories. Hen harrier territories were recorded within the recommended distance from the Proposed Development; therefore, without appropriate mitigation measures, the Proposed Development could have a direct, adverse, medium magnitude effect on a feature of regional importance. This has potential to result in a **significant** impact.	Pre-construction surveys to identify territory locations, an ECoW to enforce protection measures and adherence to a Bird SPP.	**Minor adverse (Not Significant)**
Geology and Soils			
Peat	Potential impacts to peat are predicted, arising from the excavation and disturbance of peat from construction activities. The resulting effects are predicted to be **major** and **significant**.	Mitigation has been embedded into the design, in the form of siting the Proposed Development to avoid areas of deep peat (where practicable). An **Outline Peat Management Plan (Technical Appendix 10.2, EIAR Volume 4))** and **PLHRA**	**Negligible (Not Significant)**

Table 13.1: Likely Significant Effects			
		(Technical Appendix 10.3: Peat Landslide Hazard Risk Assessment (EIAR Volume 5) have been prepared which document outline measures to mitigate potential impacts on peat and carbon rich soils through the construction phase, including monitoring requirements. The majority of the Site is considered to be low risk with regards to peat slide, but some areas of medium risk will need to be managed using site specific good practice measures.	
Noise			
All Noise sensitive receptors: • Creed Lodge; • Macauley Farm; • Lochside Arena; • Creed Recycling Centre; • Castle Grounds South Path; • Castle Grounds North of River; • Castle Grounds Cnoc an Croich; • Castle Grounds Path West; • 19B Moor Cottages; and • Riverside.	The Construction Noise Assessment predicts that construction noise has the potential to exceed the 55 dB noise limit during the platform creation, civils and transformer installation works, at all noise sensitive receptors with a maximum of 72 dB(A) predicted at Macaulay Farm; therefore, the impact is assessed as Major and Significant.	Implementation of a Construction Noise Management Plan (CNMP)	Minor (Not Significant)
Traffic			
Local road network (Arnish Road, A859, A858)	• Road vehicle driver and passenger delay • Non-motorised user delay and amenity • Fear and intimidation on and by road users • Change to road user and pedestrian safety	Implementation of a Construction Traffic Management Plan (CTMP)	Minor (Not Significant)
Operation			
Landscape and Visual			

Table 13.1: Likely Significant Effects			
Landscape Character Types	LCT 322 Boggy Moorland Outer Hebrides is predicted to experience direct effects, which would be **minor** and **not significant** overall, with **locally major** and **significant** effects in the parts of the LCT within the Site boundary.	**Chapter 2: Project Description** and **Chapter 13: Schedule of Mitigation (EIAR Volume 2)** provide details all of the embedded landscape and visual mitigation during Construction. Mitigation measures include best practice construction and restoration techniques, careful landform reinstatement, re-use of excavated material for vegetation restoration, earthworks with screen bunding and construction of a stone retaining wall at the western boundary to screen views from people travelling on the A859, and native tree and shrub planting to blend the Proposed Development into the landscape and minimize visual impacts.	No Change
Lews Castle and Lady Lever Park Gardens and Designated Landscapes	Indirect effects are predicted to be **moderate** and **significant** during operation.		No Change
Building Based Visual Receptors	Significant effects are predicted at two building-based visual receptors: • B3 Lower Sandwick (**moderate-major**); and • B4 Olivers Brae/Cemetery Entrance (**moderate**).		No Change
Recreation-based visual receptors	**Significant** effects are predicted at three recreation-based receptor locations during operation: • Rec 4 Below Cnoc na Croic (**major**) • Rec 7 Marybank picnic benches **(major);** and • Rec 2 Iolaire Memorial Car Park (**moderate**).		No Change
Route-based visual receptors	**Significant** effects during operation are predicted at one receptor location - R3 A859 (**moderate - major northbound, moderate southbound**).		No Change

13.3 Summary of Cumulative Effects

13.3.1 In accordance with the EIA Regulations, the assessment has considered two types of cumulative effects:

- In-combination effects – with other reasonably foreseeable Cumulative Developments that have the potential to result in significant effects in combination with the Proposed Development. This type of cumulative effect has been considered in the individual topic technical Chapters 5 to 12 (EIAR Volume 2), and predicted effects are summarised below.
- Effect interactions – the combined or synergistic effects caused by the combination of a number of effects from the Proposed Development alone on a particular receptor, taking into consideration effects during construction (including the enabling works, site clearance, demolition and earthworks), and operational phases, which may collectively cause a more significant effect than individually. A theoretical example is the cumulative 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. An assessment of potential effect interaction cumulative effects is provided in this chapter.

In-combination Effects

13.3.2 As described the Chapter 4 (EIAR Volume 4), the following cumulative developments were identified and assessed within the individual technical assessments (Chapter 5-12, EIAR Volume 2):

- Harris-Stornoway 132kV OHL Replacement;
- Stornoway Wind Farm;
- Arnish Road Upgrade;
- Stornoway Deep Water South project; and
- Marybank Quarry extension.

13.3.3 Significant in-combination effects are likely to occur in the following cases – note that the list below applies only where significant residual effects have been identified:

- Cumulative significant effects on visual receptors as a result of the Proposed Development and other surrounding cumulative developments, these are as follows:
  - One landscape receptor would accrue significant cumulative effects over a wider area due to the addition of the Proposed Development alongside Stornoway Wind Farm :
    - LCT 323 Rocky Moorland (moderate – major).
  - Two building-based receptors would accrue significant cumulative effects due to the addition of the Proposed Development alongside Stornoway Wind Farm :
    - B3 Lower Sandwick (major); and
    - B5 Newton Street (moderate – major to major).
  - Two recreation-based receptors would accrue significant cumulative effects due to the addition of the Proposed Development alongside Stornoway Wind Farm Although these effects would be no greater than those arising from the Proposed Development or Stornoway Wind Farm in isolation.
    - Rec4 Below Cnoc na Croic; (major); and
    - Rec 7 Marybank picnic benches (major);

  For all other landscape and visual receptors, significant cumulative effects arising from the addition of the Proposed Development to Stornoway Wind Farm would be no greater than those arising from Stornoway Wind Farm in isolation (one building based receptor and one recreation-based receptor would experience not significant effects).
- Potential loss of peatlands (primarily blanket bog and upland heathland) has been identified from the Proposed Development in combination with Stornoway Wind Farm. Given the predicted significant effects on blanket bog for Stornoway Wind Farm, the loss of blanket bog and upland heathland could be a significant cumulative effect, even though the effect of habitat loss for the Proposed Development is considered not significant. However, implementation of the proposed mitigation measures, including peatland restoration, would reduce potential impacts and compensate for the loss of habitat by providing better quality blanket bog in the medium- to long-term.

- Potential for disturbance to hen harrier has been identified from the Proposed Development in combination with Stornoway Wind Farm, Creed Quarry Extension and the Arnish Road upgrade. The location of these developments means that each has potential to impact a different hen harrier territory. These impacts would be short-term, reversible, adverse impacts on features of regional importance, with the potential to result in a **significant** impact.

13.3.4 Two further cumulative developments, the proposed onshore substation relating to the proposed Spiorad na Mara offshore wind farm project and the proposed Grimshader onhore wind farm, have been identified as being proposed within the 3 km study area used to identify cumulative developments. However, there is insufficient design detail available for these proposed projects for them to be considered within the cumulative assessment; therefore, only a high-level indication of potential additional significant effects is given below.

Table 13.2: Scoping Stage Cumulative Developments

Development Name	Application Status	Description and distance/direction to the Lewis Hub	Potential additional significant effects
Onshore substation relating to proposed Spiorad na Mara offshore wind farm	Scoping	A proposed onshore substation located south of the proposed Lewis Hub AC and HVDC platform. The area of search for locating the substation lies within the Site boundary and includes Borrow Area 6.	• Landscape and visual amenity receptors • Ecology (peatland habitat)
Proposed Grimshader wind farm	Scoping	A proposed onshore wind farm located approximately 2.5 km south of the proposed Lewis Hub site, at its closest point.	• Landscape and visual amenity receptors • Ecology (peatland habitat)

Effect Interactions

13.3.5 Intra-cumulative effects are 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.

13.3.6 The approach to the assessment of the intra-cumulative effects 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 significance i.e., excluding negligible effects).

13.3.7 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 5-12 (EIAR Volume 2**).

Construction Stage

13.3.8 Only residual effects with the potential for intra-cumulative effects are considered, i.e., where there are common sensitive receptors in two of more distinctly different topics. On this basis, only the following sensitive receptors have been included:

- Sensitive habitats, including peatland and GWDTE;
- Recreational receptors; and
- Residents in surrounding area.

13.3.1 The residual effects of the individual topics on common sensitive receptors during construction are assessed in **Table 13.3**

Operation Stage

13.3.2 Topics are excluded from the operational stage assessment where it is considered that there is no potential for significant effects to occur during operation.

13.3.3 On this basis, all topics have been excluded aside from Landscape and Visual Amenity; therefore, no operational stage effect interactions are predicted.

Table 13.3: Intra-Cumulative Effects Assessment of Combined Effects Interactions - Construction					
Receptor	Chapter/Topic	Residual Effects	Residual Significance in chapter	Combined Effects Assessment Significance	Overall Effect
Sensitive habitats, including peatland and GWDTE	Chapter 8: Ecology	Temporary and permanent habitat loss would occur to blanket bog and heathland from construction of the Proposed Development and this effect is considered to be low magnitude as it would still leave functioning habitat, with the majority being temporary loss that would be short-term and reversible.	Not significant	Peatland and potential GWDTE habitats would experience low magnitude impacts in terms of habitat loss and may experience temporary changes to the hydrological regime. However, this would be managed via implementation of the CEMP and impacts are predicted to be negligible.	The overall combined effect is predicted to be temporary **Minor Adverse (not significant)**
	Chapter 9: Hydrology	While ecological NVC surveying identified areas of High and Moderate potential for GWDTE on the Site, further hydrological and hydrogeological assessment **(TA 9.2, EIAR Volume 4)**, demonstrates that these habitats are supported by direct rainfall and surface water runoff rather than ground water supplies. Based on this assessment, GWDTE within the Site is considered as having low sensitivity with a large magnitude of impact due to removal and infilling of peat. Potential effects on GWDTE are considered Minor.	Not significant		
Recreational Receptors	Chapter 5: LVIA	Significant residual impacts to visual amenity are predicted although these have been minimised via embedded mitigation including design of screen bunding to reduce the visibility and prominence of the Proposed Development from key sensitive receptor locations.	Significant	Recreational receptors would experience temporary high magnitude impacts to visual amenity and temporary impacts associated with increased noise levels during specific parts of the construction phase of the Proposed Development, as well as increased traffic flows, which would be managed by implementation of the CNMP and CTMP. Impacts are therefore predicted to be minor.	The overall combined effect is predicted to be temporary **Minor Adverse (not significant)**
	Chapter 11: Noise	The construction noise assessment predicts that construction noise has the potential to exceed the construction noise limits; however, a robust CNMP would be implemented, ensuring that best practice mitigation is implemented including limiting work to daytime hours where necessary. Subject to mitigation, the residual construction effects would fall below the construction noise limits of 65 dB during daytime conditions and 55 dB during evening and weekend conditions, which would result in a Minor effect at all NSRs.	Not significant		
	Chapter 12: Traffic and Transport	Potential impacts from increased traffic flows (driver delay, pedestrian delay and amenity, fear and intimidation, accidents and safety) on Arnish Road and the A859 and A858 roads are predicted; however, mitigation is proposed in the form of a CTMP.	Not significant		

Table 13.3: Intra-Cumulative Effects Assessment of Combined Effects Interactions - Construction					
Residents and settlements	Chapter 5: LVIA	Significant residual impacts to visual amenity are predicted although these have been minimised via embedded mitigation including design of screen bunding to reduce the visibility and prominence of the Proposed Development from key sensitive receptor locations.	Significant	Residential receptors would experience temporary low magnitude impacts to visual amenity and temporary impacts associated with increased traffic flows during the construction phase of the Proposed Development, which would be managed by implementation of the CTMP. Impacts are therefore predicted to be minor.	The overall combined effect is predicted to be temporary **Minor Adverse (not significant)**
	Chapter 12: Traffic and Transport	Potential impacts from increased traffic flows (driver delay, pedestrian delay and amenity, fear and intimidation, accidents and safety) on the A859 and A858 roads are predicted; however, potential impacts would be managed via the CTMP.	Not significant		

14. SCHEDULE OF ENVIRONMENTAL MITIGATION

14.1 Introduction

14.1.1 The purpose of this chapter is to summarise the mitigation measures proposed in each of the technical chapters to avoid, minimise, restore or offset impacts which could otherwise give rise to significant residual environmental effects. In addition, good practice environmental management measures and commitments have been proposed to further reduce environmental effects which are not considered to give rise to likely significant effects with or without mitigation.

14.1.2 The main aim of the design process was to 'design out' the potential for significant environmental effects as far as possible. Embedded mitigation in the form of design solutions is presented in Chapter 2: Project description (EIAR Volume 2), as such, these measures have not been replicated here.

14.1.3 Most of the pre-construction and construction phase mitigation would be delivered through a Construction Environmental Management Plan (CEMP). Some mitigation measures contained in technical chapters of this EIAR would be included and secured in the CEMP.

14.1.4 Throughout the EIAR, technical disciplines have considered the likely significant effects of the Proposed Development with consideration of embedded mitigation and commitments. Where significant effects have been identified, additional mitigation is proposed to minimise these effects where possible. A summary of these measures is provided in Table 14.1 below, organised by topic and phase. It is anticipated that the mitigation measures outlined in this table would be secured through appropriately worded conditions of consent.

14.1.5 Measures are listed below from the following EIAR Chapters:

- Chapter 2: Project Description (EIAR Volume 2);
- Chapter 6: Cultural Heritage (EIAR Volume 2);
- Chapter 7: Ecology (EIAR Volume 2);
- Chapter 8: Ornithology (EIAR Volume 2);
- Chapter 9: Hydrology (EIAR Volume 2);
- Chapter 10: Geology and Soils (EIAR Volume 2);
- Chapter 11: Noise (EIAR Volume 2); and
- Chapter 12: Traffic and Transport (EIAR Volume 2).

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
Topic	**Timing of Mitigation Measure**	**Description**	**Purpose of Mitigation Measure**	**Consultation or Approval Requirement**
General Mitigation	Pre-Construction and Construction	**CEMP** The Principal Contractor to construct the Proposed Development will prepare detailed method statements which will be incorporated into the final CEMP. The CEMP will provide: • a schedule of all construction stage mitigation measures required to address likely significant effects identified in the EIAR; • a schedule of all construction stage good practice management measures included as part of the proposed construction work, in line with industry good practice guidance; • a schedule of roles and responsibilities for delivering the requirements of the CEMP, including a statement of responsibility to 'stop the job/ activity' if in potential breach of a mitigation or legislation occurs; • a method statement for monitoring, auditing, and templates for reporting and communication of environmental management performance on-site and with the Applicant, planning authority and other relevant parties; and • construction stage environmental management measures, based on both compliance with relevant regulations and relevant good practice. An appropriately qualified Environmental Clerk of Works (EnvCoW) would be employed to input into the CEMP and would oversee the implementation of ecological mitigation measures during construction.	The CEMP will describe the environmental management and construction methods to be employed during the construction of the Proposed Development, in accordance with the environmental mitigation measures identified in the EIAR.	CEMP to be submitted to Comhairle nan Eilean Siar (CnES) for approval, in consultation with relevant statutory bodies and regulatory authorities.
Cultural Heritage	Pre-Construction and Construction	**Archaeological Clerk of Works** 1+ professionally qualified Archaeological Contractors would be appointed to act as Archaeological Clerk of Works (ACoW) for the duration of the construction phase. The ACoW would provide advice to the Principal Contractor regarding the micro-siting of development components, where there is a possibility of intersecting with identified heritage assets, and to undertake archaeological monitoring of topsoil stripping operations in areas designated and approved by the CnES County Archaeologist.	To ensure the appropriate implementation of cultural heritage mitigation measures.	The activities of the ACoW would be approved by CnES County Archaeologist in advance of development works commencing and would be set out in the Written Scheme of Investigation (WSI). The WSI will be submitted to CnES for written approval.

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
	Pre-Construction	**Peat Coring** Given the paleoenvironmental potential of the peat and as requested in the County Archaeologist's consultation advice (Team Call 7/10/2024) and Scoping Response 16/10/2024 as detailed in **Technical Appendix 4.1: Consultation Register (EIAR Volume 4))** a peat coring strategy will be put in place and carried out according to the scope of work and terms specified under the WSI.	To mitigate potential direct construction impacts on previously undiscovered subsurface archaeological features.	Peat coring strategy to be submitted to CnES County Archaeologist for written approval in advance of development and would be set out in the WSI.
		Archaeological Investigations The possible sheiling mound would be investigated and excavated to a strategy and standard acceptable to the CnES County Archaeologist. This may require excavation of the mound. The Lewis Chemical Works would be investigated and recorded to a strategy and standard acceptable to the CnES County Archaeologist. The inscribed stone would be repositioned at an appropriate location within the Lewis Chemical Works area not affected by the Proposed Development. Investigations and recording of these features would result in the acquisition of archaeological knowledge and result in preservation by record, thereby offsetting the predicted effects and reducing the significance of the predicted adverse impacts. Archaeological investigation of the site, prior to development will likely be required by the CnES County Archaeologist to cover the possibility that archaeological remains may be present within the site. This investigation would be carried out by a professional archaeological organisation, in accordance with the relevant Chartered Institute for Archaeologist (CIfA) guidelines, under the terms of any condition attached to planning consent. Such works are likely to include a programme of archaeological evaluation trenches within the areas which will be subject to ground disturbance from construction works. The scope of the works required will be detailed in a WSI developed in consultation with the CnES County Archaeologist. The WSI would make provision for appropriate post-excavation analysis and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records.	To cover the possibility that archaeological remains may be present within the site.	Archaeological investigation strategy to be submitted to CnES County Archaeologist for written approval in advance of development works commencing and would be set out in the WSI.
	Construction	**Preservation in Situ** Caunters Original Chemical Works building would be marked out for avoidance during the construction phase. Any required micro-siting of the peat restoration works would be managed to avoid the visible remains and the demarcated areas. The markers would	To mitigate potential direct construction impact on assets to be	To be submitted to CnES County Archaeologist for written approval in advance

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		be left in place for the duration of the construction phase and removed on completion of the Proposed Development. The Arnish Shielings would also be marked out for avoidance during the construction phase. Any vehicle movements through the Site would be managed to avoid the visible remains and the demarcated areas. The markers would be left in place for the duration of the construction phase and removed on completion of the Proposed Development.	preserved in Situ during the construction phase.	of development and would be set out in the WSI.
		Construction Guidelines Written guidelines would be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known heritage assets. The guidelines would set out arrangements for calling upon retained professional support if buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts, etc.) should be discovered during any construction activities. The guidelines would make clear the legal responsibilities placed upon those who disturb artefacts or human remains.	To ensure appropriate procedures are followed with regard to heritage assets and archaeological remains.	To be approved by CnES County Archaeologist.
Ecology	Construction	**Habitat Reinstatement – Blanket Bog and Upland Heathland** Areas of temporary infrastructure, such as floating tracks, would be reinstated as soon as possible after construction has been completed. Details on the proposed approach to habitat reinstatement would be set out in the CEMP and the Principal Contractor would be required to provide a habitat reinstatement plan prior to the start of the reinstatement works. The methodology for peatland reinstatement is also detailed in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4).**	To allow the recolonisation of natural habitats, particularly in areas of blanket bog.	Habitat reinstatement plan and CEMP to be submitted to CnES for written approval in consultation with SEPA.
	Pre-Construction and Construction	**Habitat Restoration – Blanket Bog** Active restoration of peatland habitats would be carried out in line with **Technical Appendix 7.4: Outline Habitat Management Plan (EIAR Volume 4)** and would be secured by planning condition. Active restoration is defined here as the process of actively encouraging the regeneration of degraded peatland habitats and verges through specific management interventions. Degraded peatland habitats are those that are reduced in quality. The excavated peat on-site would be re-used within the Site boundary for example to dress verges and reinstate areas of degraded bog that no longer contain a significant proportion of peat-forming vegetation. In line with NFP4 requirements, developments must make every effort to restore a significant area of blanket bog habitat compared with that lost, with a 1:10 lost to	In order to account for the loss of blanket bog and wet heath habitats	PMP and HMP to be submitted to CnES for written approval in consultation with SEPA

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		restored/enhanced ratio required. The Proposed Development would result in the permanent loss of 2.44 ha of blanket bog. Therefore, the requirement would be to restore 24.4 ha of blanket bog, at least. The mechanisms for doing this are set out in the **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4), Technical Appendix 7.4: Outline Habitat Management Plan (EIAR Volume 4).** These documents set out the areas where blanket bog restoration/enhancement are proposed and how this will be achieved.		
		Construction Environmental Management Plan A CEMP would be prepared by the Principal Contractor and include an outline of the proposed approach to construction methods and environmental protection during all aspects of the construction phase, with reference and adherence to **Technical Appendix 2.2: SSEN General Environmental Management Plan and Technical Appendix 2.3: SSEN Species Protection Plan (EIAR Volume 4),** as appropriate. A suitably qualified and experienced Ecological Clerk of Works (ECoW) would be employed to input into the CEMP and would oversee the implementation of ecological mitigation measures during construction.	To ensure the appropriate implementation of ecological mitigation measures.	CEMP to be submitted to CnES for written approval.
		Outline Habitat Management Plan An OHMP **(Technical Appendix 7.4, EIAR Volume 4)** sets out criteria for identifying and delivering the compensatory peatland habitat restoration which would compensate for the area of blanket bog and wet heath that would be permanently lost due to the Proposed Development, which is further detailed in **Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4).**	To ensure appropriate procedures are followed regarding peatland habitat restoration.	HMP to be submitted to CnES for written approval in consultation with SEPA.
	Construction	**Species Protection Plan (SPP)** SPPs (**Technical Appendix 2.3: SSEN Species Protection Plan (EIAR Volume 4))** would be followed during construction of the Proposed Development. In implementing the SPPs, a pre-construction protected species survey would be undertaken as close to the construction period as possible, and no more than three months before the start of the works. The protected species surveys undertaken to inform the EIAR can be used to inform the pre-construction surveys. Although no field signs of protected species were found during initial surveys, suitable otter habitat is present within the Site boundary and are further known to be present within the wider area. A suitably qualified ecologist would be appointed to undertake this survey.	To ensure the safeguarding of protected species known or likely to be in the area.	SPP to be submitted to CnES for written approval.

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		Maintaining Hydrological Connectivity/Characteristics As presented in **Technical Appendix 2.2: SSEN Transmission GEMPs (EIAR Volume 4),** suitable drainage and surface water measures would include measures such as diverting drainage around working areas and maintaining hydrological connectivity in tracks where upgrades are required, by using small diameter pipes in the sub-base while a floating track construction would be used through peatlands where low-ground-pressure vehicles cannot be used alone. The track design would adhere to the key principles set out in NS and FLS joint guide to floating roads on peat[1]. Greenfield run-off would be kept separate from potentially contaminated water from construction area. Where appropriate, interceptor ditches and other drainage diversion measures would be installed immediately in advance of any excavation works in order to collect and divert greenfield run-off around areas disturbed by construction activities. All surface water within disturbed areas would be managed in accordance with sustainable drainage system techniques, using a multi-tiered approach to provide both flow attenuation and treatment through infiltration, where possible, and physical filtration prior to discharge so as not to alter the hydrological connectivity of peatland habitats, as well as River Creed and its tributaries. Ditches would follow the natural flow of the ground with a generally constant depth to ditch invert. They would have shallow longitudinal gradients, where possible. Regular check-dams would be used where necessary to control the rate of run-off. The ditches would be designed to intercept any stormwater run-off and to allow clean water flows to be transferred independently through the works without mixing with construction drainage. The regular interception and diversion of clean run-off around infrastructure would prevent significant disruption to shallow groundwater flow and peatland. This would also reduce the flow of water onto any exposed areas of rock and soil, thereby reducing the potential volume of silt-laden run-off requiring treatment. Greenfield run-off would be discharged into an area of vegetation for dispersion or infiltration, mimicking natural flows, so as not to alter downstream hydrology or soil moisture characteristics.	To maintain hydrological connectivity in peatland habitats, particularly blanket bog and wet heath.	None Required
Ornithology	Pre-Construction and Construction	**Hen Harriers - Disturbance** VP surveys are proposed to continue until the start of the construction period, to collect data on rare and vulnerable raptors and how they are using the site. The surveys should	To mitigate potential direct construction impacts on vulnerable	Hen Harrier disturbance mitigation measures to submitted to CnES for

[1] Scottish Natural Heritage and Forestry and Land Scotland (2010). *Floating Roads on Peat*. https://www.roadex.org/wp-content/uploads/2014/01/FCE-SNH-Floating-Roads-on-Peat-report.pdf. [25/10/2024].

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		focus on confirmed or probable territories, identified in the survey work already undertaken and should be expanded to include other areas of potentially suitable habitat. The surveys should seek to locate any new nest sites and advise the Applicant and their Principal Contractor of required mitigation measures in line with the Bird SPP (**Technical Appendix 2.3: SSEN Species Protection Plan (EIAR Volume 4)).** Surveys should be co-ordinated by the ECoW. In the event that any confirmed, or suspected active nests are identified within range of potential disturbance, a works exclusion zone will be established around the nest site as stated in the Bird SPP and advised by the ECoW. Works will not be permitted to commence within the exclusion zone until nesting has been completed and the young have fledged, or the ECoW deems, through monitoring each stage of the breeding attempt, that the extent of the exclusion zone may be reduced. Pre-construction surveys would be required to check for Schedule 1 species nesting close to the Proposed Development. The successful implementation of these Bird SPP is considered sufficient to mitigate the likely disturbance effects on the hen harrier and merlin territories identified. As the hen harrier territory is closer to the Proposed Development, and there is potential for additional territories or roosts at the southern end of the Proposed Development, the following additional mitigation is required. Hen harrier nests are located within disturbance distance from the Site. Nest searches for hen harrier within the known breeding territory (shown on **Figure 8.3: Desk Study Results (CONFIDENTIAL) (EIAR Volume 3)** would be required. If nests are confirmed, works within 750 m during the breeding season would require a watching brief from an ornithologist. Disturbance distances for each species are recommended by NatureScot's review of disturbance distances for selected bird species.	breeding raptors and ensure appropriate procedures are followed in the event of confirmed or suspected active nests identified.	written approval within the Bird SPP.
		Nesting Birds (Non-Schedule 1) – Nest Destruction Pre-construction bird surveys would seek to identify the locations of any active nests within, or immediately adjacent to the working areas within the Application Boundary. All pre-construction bird surveys should extend a sufficient distance out from the Proposed Development to identify any nest sites which may be within the disturbance range of the species in question. For example, pre-construction checks for general nesting birds do not need to extend more 50 m beyond the development footprint, while surveys for rare and vulnerable raptors should extend out to between 500 m and 750 m. These buffers will be defined in the Bird SPP.	To avoid destroying or disturbing nests during construction activities such as vegetation clearing, peat excavation, and other groundworks.	Nesting Birds-) Non-Schedule 1) nest destruction mitigation measures will be submitted to CnES for written approval within the Bird SPP.

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		Where areas of vegetation are cleared, and prior to any construction activities, it is recommended that dissuasion techniques are employed to prevent birds from nesting on cleared ground. This would include having site personnel walking the areas to cause disturbance or the deployment of bird scarers/frightening devices. These measures are also detailed in the Bird SPP.		
Hydrology, Hydrogeology, and Geology	Operation	**Site Maintenance** A site maintenance programme with regard to site plant and infrastructure would be implemented by the successful contractor. A maintenance schedule would be developed for all SuDS and drainage assets installed at construction stage to ensure that the function and benefit provided by the asset remains for the lifetime of the Proposed Development.	To mitigate potential effects on water quality during operation.	Site maintenance programme and a maintenance schedule to be submitted to CnES for approval
Geology and Soils	Pre-Construction and Construction	**Peat Management Plan** A detailed CEMP and PMP would be prepared by the Principal Contractor prior to commencement of construction. The CEMP would include construction methods and environmental protection measures applying best practice guidance as set out in applicable SEPA Pollution Prevention Guidelines (PPGs) and applicable SSEN Transmission GEMPS, as presented in **Technical Appendix 2.2: SSEN Transmission GEMPs (EIAR Volume 4)**. The mitigation approach for the Proposed Development uses a combination of reuse and restoration which has formed the peat management strategy (as described in OPMP **(Technical Appendix 10.2: Outline Peat Management Plan, EIAR Volume 4).** Specific measures are listed below. **Excavation and handling** • A minimum thickness of 250 mm of acrotelmic peat or turved organic soil should be excavated where sufficient soil is present; where less than 250 mm is present, the full depth of soil and surface vegetation should be excavated; • Excavation and transport of peat/soil shall be undertaken to avoid cross-contamination between soil horizons (e.g. organic soil and underlying mineral soil / substrate);	Implementation of these measures during all aspects of the construction phase would ensure construction activity would not cause adverse effects to sensitive receptors.	Peat Management Plan and CEMP to be submitted to CnES for written approval

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		• Where possible, cross-tracking of plant over undisturbed vegetation should be minimised, and excavated materials transported to their storage locations along constructed track; • If working is required away from constructed roads / tracks, the use of long reach excavators should be encouraged in order to minimise cross-tracking; • If landscaping of road / track margins is required for temporary works, it is preferable for vegetated organic soils to be used for this purpose rather than acrotelmic peat (which should be stored); and • Wherever possible, double handling of peat should be minimised (in particular for catotelmic peat) by direct transport of materials to their point of storage. **Storage** • Eliminate storage where possible by single handling from the point of excavation to a location of reuse; • If storage cannot be avoided, minimise storage time by taking a holistic approach to excavation and restoration such that catotelmic peat (in particular) is used as soon as possible after excavation; • Store excavated acrotelmic and catotelmic peat separately during excavation works, which will be undertaken by an experienced contractor specialising in peat groundworks and restoration; • Acrotelmic peat and turved soil blocks should be stored turf side up to prevent damage to vegetation; • Storing in areas of minimal gradient where 'runoff' or drainage away from the point of storage is minimised (these areas will also satisfy to avoid areas of lower stability); • Fewer, larger stores will be preferable to a greater number of small stores, since the total potential area of drying surface will be less; • Where storage is required in the medium term, preparing the peat to minimise the surface exposed to drying (e.g. through blading off of catotelmic peat and use of appropriate cover to minimise moisture loss); • The ECoW should work with **an appointed Geotechnical Engineer (GE)** (site based) to review the placement and condition of stored peat;		

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		• Storage areas should be outside any area identified in the PLHRA as of 'Moderate' or greater likelihood and, where possible, should be more than 50 m away from watercourses, away from sensitive habitats and away from the edge of excavations; • Peat and soil stores should be appropriately bunded to prevent risks from material instability and prevent runoff of sediment and water from the stockpiles; • The condition of the excavated peat, in particular its moisture content, should be regularly monitored and local water utilised to periodically 'refresh' stored peat and prevent desiccation; and • A Sustainable Drainage System (SuDS) should be implemented to control water and sediment loss during storage. **Reinstatement and Restoration** • Where possible, turves and underlying catotelmic peat should be reinstated at the locations from which they were removed; • Any bare peat exposed at the surface of a reinstated area should be seeded with a seed mix or translocated vegetation appropriate to the locality; • Where insufficient turves are available to full cover reinstated soils, a checkerboard pattern of turf blocks should be used, with turf squares no less than 1 m^2 to act as seed points interspersed amongst the bare areas; • Reinstated ground levels should tie in with the surrounds, and any bulking up should be avoided by tamping down soils and turves; and • If appropriate, temporary fencing may be required to enable vegetation to establish following reinstatement works and prevent damage by livestock, deer or rabbits. **Monitoring** During construction, monitoring should be undertaken in any areas where peat is stored, as follows: • Regular visual inspection of the outer peat surface of any stored peat to identify any evidence for drying, cracking (both from desiccation and slippage) and displacement; • Regular coring of stored peat to log the moisture content of stored peat (using the von Post scale to monitor changes in moisture content for peat on the outside and within the peat mound);		

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		• Clear specification of an action plan in response to these observations, including modifications to coverings, implementation of watering, or construction of temporary berms to retain water in the storage footprint; and • Acceleration of re-use for vulnerable stores if so identified. Key to the success of the strategy for peat management will be careful monitoring of the post-construction works and any restoration activities. A monitoring programme should be initiated once restoration and peat reinstatement works have been completed, and should include: • Review of % vegetation cover and vegetation composition in areas of bare peat that have been reinstated or in any areas that have been seeded (due to a lack of available turved material); • Review of stability of deposits in their new locations; and • Fixed point photography in order to aid review over a series of monitoring intervals. If required, mitigation recommendations should follow from the monitoring and include: • Specification of seeding appropriate to the target vegetation or stabilisation with geotextile if revegetation is not occurring naturally (which will assist re-wetting and retention of moisture contents). • Construction of wood dams (or equivalent) if any creep of peat soils is evident at any restored location. Monitoring should be carried out for a minimum of five years after construction and reinstatement works have concluded.		
		Peat Reuse and Restoration The primary reuse strategy for peat at the Proposed Development is to reinstate temporary construction locations and to reinstate borrow areas for stone that are required for construction of the Proposed Development and ancillary works. In some cases, because these rock areas must be reduced to ground level to win stone, over-deepening has been specified in order to provide accommodation space for peat excavated to access the stone and also for peat that cannot be accommodated elsewhere. The Creed North area, an area of extensive peat cuttings, was identified for peat restoration. The cuttings cover an extensive area, 49.5 ha, and are typically 5-10 m in	The implementation of these measures ensures the effective restoration of damaged peat, addressing areas impacted by the proposed development as well as those degraded by previous site activities or natural processes.	To be submitted to CnES for approval.

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		width and tens to hundreds of metres in length. It has been estimated that approximately 210,000 m^3 of peat has been excavated from the cuttings to date. In order to access and restore these areas, which still contain a considerable depth of peat, construction of road infrastructure would be required to enable passage of large tipper trucks (to carry translocated materials) and excavators (to redistribute material once transported). The network of roads, which must be of cut and fill construction due to the cutting-induced undulating topography of the peat, mean that further peat must be excavated to enable peat reuse in this way. Given the limited capacity available at Creed North and the significant amount of infrastructure that would need to be constructed to translocate peat to it, this option was scaled back to achieve a balance between limiting the construction of new infrastructure (to facilitate transfer of peat) and causing new impacts in one location just to reduce impacts in another. At this stage it is estimated that the Proposed Development would result in the excavation of approximately 421,386 m^3 of peat. Potential reuse opportunities, comprising temporary infrastructure reinstatement, borrow area reinstatement and restoration to the Creed North cuttings is estimated to be 472,605 m^3. This demonstrates that there is a potential surplus in capacity based on conservative estimates.		
Noise	Construction	**Noise Sensitive Receptor Measures** Specific activities such as crushing or grading contribute to the highest noise levels during the enabling phase. These noisiest activities must be prioritised during the daytime weekday hours, so they can be assessed to a 65 dB limit. NSRs are most sensitive to the crushing of rock, therefore this activity must take place at least 200 m from any NSR. Any other noisy activity in other phases should be prioritised to take place in daytime hours and avoid Saturdays after 13:00. No Sunday working is proposed. The dynamic compaction is to occur the raised tamper energy must be reduced from worst-case assumptions. Additionally, the worst-case nominal hammer energy of the percussive piling activity must be controlled. The mitigation required to lower the impact to Low at NSR 2 for this activity is shown in **Table 11.11** in **Chapter 11: Noise (EIAR Volume 2)**.	To minimise the constructional noise effects on noise sensitive receptors.	None required.
		General Mitigation Measures It is best practice that construction noise should continue to be controlled by a Construction Noise Management Plan (CNMP), in accordance with the guidance and procedures outlined in BS 5228-1. The CNMP is expected to be embedded within the		General mitigation measures to be submitted to CnES for written approval within the CEMP.

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		Construction Environmental Management Plan (CEMP) described in Technical Appendix 2.1: Outline Construction Environmental Management Plan, EIAR Volume 4). Procedures can potentially include: • minimising the noise as much as is reasonably practicable at source; • attenuation of noise propagation; • carrying out identified high noise level activities at a time when they are least likely to cause a nuisance to residents; and • providing advance notice of unavoidable periods of high noise levels to residents.		
		Attenuation of Construction Noise at Source • Giving due consideration to the effect of noise, in selection of construction methods; • Avoidance of vehicles waiting or queuing, particularly on public highways or in residential areas with their engines running; • Scheduling of deliveries to arrive during daytime hours only. Care should be taken to minimise noise while unloading delivery vehicles. Delivery vehicles should follow routes that minimise use of residential roads; • Ensure plant and equipment are regularly and properly maintained. All plant should be situated to sufficiently minimise noise impact at nearby properties; • Fit and maintain silencers to plant, machinery, and vehicles where appropriate and necessary; • Operate plant and equipment in modes of operation that minimise noise, and power down plant when not in use; • Use electrically powered plant rather than diesel or petrol driven, where this is practicable; and • Work typically not to take place outside of hours defined in the construction schedule.		None Required
		Attenuation of Construction Noise in the Transmission Path • Locate plant and equipment liable to create noise as far from noise sensitive receptors as is reasonably practicable or use natural land topography to reduce line of sight noise transmission;		None Required

Table 14.1: Schedule of Mitigation and Environmental Management Measures				
		• Noise screens, hoardings and barriers should be erected where appropriate and necessary to shield high-noise level activities; and • Provide lined acoustic enclosures for equipment such as static generators and when applicable portable generators, compressors and pumps.		
Traffic	Construction	**Construction Traffic Management Plan (CTMP)** The final Construction Traffic Management Plan (CTMP) will outline measures to reduce and mitigate the impact of construction vehicles, and to manage staff travel. It will detail the programme of works, agreed routes, and **assign a Site Liaison Officer** for traffic and transport management. Key measures include: • Reporting requirements for all site deliveries and visitors. • A logistics plan covering access points, loading bays, and other logistics. • Adherence to approved haul routes. • Site inductions for all contractors. • Temporary signage along construction traffic routes. • Construction traffic speed limits. • Staggered delivery schedules to avoid peak hours. • Delivery schedules shared during progress meetings. • Inclusion of CTMP compliance in contractor tenders. • Prohibiting HGV layovers on surrounding roads. • Maintaining clean, safe roads. • Road safety briefings for on-site personnel and HGV drivers. • Identification markings for delivery vehicles serving the site. • Installation of a wheel washing facility. A draft CTMP is available in **Technical Appendix 12.1 (EIAR Volume 4**).	Intended to mitigate identified effects by ensuring they are minimised as far as possible within the Study Area to a level which is considered to be not significant.	CTMP to be submitted to CnES for written approval.