15 CUMULATIVE ASSESSMENT

15.1 Introduction

15.1.1 This chapter considers the potential cumulative environmental effects as a result of the Proposed Development in accordance with Schedule 4, paragraph 5(e) of the Environmental Impact Assessment (EIA) Regulations. The purpose of the assessment is to assess whether the combination of multiple effects upon a common receptor would result in an effect of greater significance than the individual effects alone (as reported in **Chapter 6-14, EIAR Volume 2**).

15.1.2 As set out in **Chapter 5: Methodology (EIAR Volume 2)**, there are two aspects to the cumulative assessment which have been considered in this EIA report, in-combination effects, and effect interactions.

15.2 In-Combination Effects

Other Developments

15.2.1 In-combination effects are the combined effect of the Proposed Development together with other reasonably foreseeable developments ('other developments'), taking into consideration effects at the Site including site preparation and earthworks, construction and operational phases.

15.2.2 A search for other developments was undertaken in April 2022. This considered developments recorded as consented (under construction or not yet constructed), those in planning, those within the public domain and those deemed reasonably foreseeable, within 15 km of the Proposed Development. In addition to this, **Chapter 9: Ornithology** (**EIAR Volume 2)** considers any other relevant (as above) developments within Natural Heritage Zone 14 "Argyll West and Islands".

15.2.3 Statutory consultees including the Energy Consents Unit (ECU), Argyll and Bute Council (ABC), and NatureScot were consulted on the proposed list of other developments. The consultees advised that two schemes at Scoping stage should be included in the assessment as the area is considered a development "hotspot" with clusters of development at various stages in close proximity to the Proposed Development. The two scoping stage schemes are Ladyfield Wind Farm and An Càrr Dubh Wind Farm.

15.2.4 The list of cumulative developments considered in the EIA Report is provided in **Table 15-1**. The location of the other developments (in relation to the Proposed Development) is shown, indicatively, in **Figure 15.1: Cumulative Developments, EIAR Volume 3a**.

Table 15-1 Cumulative Developments Considered in the 'In-Combination' Assessment

Name of Development	Planning Application / ECU Reference	Description	Status
Wind Farms			
Blarghour Wind Farm	EC00005267	Wind Farm comprising 17 turbines at a maximum tip height of 180 m and a generation capacity of >50 MW	Scoping
An Càrr Dubh Wind Farm	ECU00003254	Proposed Wind Farm comprising 21 turbines with a maximum tip height of 200 m	Scoping

Name of Development	Planning Application / ECU Reference	Description	Status
		and a generation capacity >50 MW	
An Suidhe Wind Farm	ECU00003312	Wind Farm comprising 23 turbines at a maximum tip height of 80 m and a generating capacity of 19.3 MW	Operational
Clachan Flats Wind Farm	00/01209/DET	Wind Farm comprising 9 turbines with a generation capacity of 15 MW	Operational
Carraig Gheal Wind Farm	EC00003152	Wind Farm comprising 20 turbines with an installed capacity of 46 MW	Operational
Beinn Ghlas Wind Farm		Wind Farm comprising 14 turbines with a generation capacity of 8.4 MW	Operational
Ladyfield Wind Farm	ECU00003291	Proposed Wind Farm comprising approximately 18 turbines up to a maximum tip height of 200 m and a generating capacity between 50 and 100 MW	Scoping
Transmission			
An Suidhe Substation		Part of the Argyll and Kintyre 275 kV strategy	Reasonably Foreseeable
Blarghour OHL Connection		Part of the Argyll and Kintyre 275 kV strategy	Reasonably Foreseeable
Creag Dhubh Substation		Forming associated works for the proposed Creag Dhubh to Dalmally 275 kV connection	Reasonably Foreseeable
Creag Dhubh to Dalmally 275 kV OHL Connection	ECU00002199	Part of the Argyll and Kintyre 275 kV strategy	Reasonably Foreseeable
ITE/ITW Connection to Creag Dhubh Substation from existing 132 kV Taynuilt to Inveraray OHL		Part of the Argyll and Kintyre 275 kV Strategy, forming associated works for the proposed Creag Dhubh to Dalmally 275 kV OHL Connection	Reasonably Foreseeable
Inveraray - Crossaig 275 kV Circuit		Reinforcement of the existing transmission network between Inveraray - Crossaig	Recently Constructed
Other Development			
Ladyfield Forest Meteorological Mast	20/02178/PP	Erection of met meteorological mast up to 100 m high	Consented

Name of Development	Planning Application / ECU Reference	Description	Status
Creagan and Cabrach Long Term Forest Plan		A 20 year strategic management plan that brings together the management objectives, the environmental, economic, and social functions and the silvicultural prescriptions into a comprehensive plan to deliver long term benefits through sustainable forest management.	Consented
River Aray Hydropower Scheme	18/00061/PP	New Hydro Connection at Maltlands, Inveraray, Argyll	Consented
Proposed Agricultural Shed	21/01627/PP	Erection of multi-purpose agricultural shed (including storage of feed, machinery and use for animal husbandry and housing)	Consented
Formation of access and engineering operations to re-contour the adjacent landscape (retrospective).	19/02145/PP	A819 Land Opposite Kilchurn Castle Viewpoint Dalmally Argyll and Bute	Consented
Formation of forest access track.	17/00302/PNFOR	Kenachreachan Forest	Constructed
Telecommunications equipment	19/02207/PP	Erection of telecommunications equipment compound with 25 m high lattice tower and associated works East of Keeper's Cottage	Consented
Telecommunications Masts at Tom Breac & Glen Aray	22/00157/TELNOT & 21/02283/TELNOT	New antennas on existing support pole / tower. No increase to height of structure	Consented

Assessment of In-combination Effects

15.2.5 In-combination effects have been assessed within each of the Technical Assessments (**Chapters 6-14, EIAR Volume 2**) and have therefore not been presented within this chapter. However, by way of a summary, given the nature of and location of the cumulative schemes, significant in-combination effects are likely to arise in respect of the following:

- Potential loss of Ancient Woodland, BRP trees, peatland and groundwater dependent terrestrial ecosystems (GWDTE) as an irreplaceable resource, in-combination with the Blarghour Wind Farm Connection and Inveraray to Crossaig 275 kV OHL Reinforcement.
- Two heritage assets, former military road (HA4) and the route of a former drove road (HA3) may be directly impacted by ground disturbance works relating to both the Creag Dhubh to Inveraray 275 kV OHL connection and the proposed Creag Dhubh Substation, which would utilise the same

access track alignment which follows an existing forestry track that overlies the former military (drove) road route.

- The setting of heritage assets in the Outer Study Area along with the Inveraray Castle GDL may be affected in-combination with Blarghour Wind Farm, Car Dubh Wind Farm, Ladyfield Wind Farm and the Creag Dhubh to Dalmally 275 kV connection, ITE/ITW connection to the proposed Creag Dhubh Substation and Blarghour Wind Farm Connection.
- In-addition effects (attributable specifically to the Proposed Development when considered in conjunction with other energy developments) at four Landscape Character Areas (LCAs) and North Argyll APQ and in-combination effects (the total effect of the Proposed Development and other energy developments, taken together) to three LCAs and localised effects around Loch Awe.
- Potential impacts during the construction stage, such as those relating to hydrology and hydrogeology, peat, ecology and ornithology, transport and noise, would be managed through the implementation of the CEMP and associated management plans (e.g., CTMP, PMP & HMP). Furthermore, given SSEN Transmission is the Applicant for a number of the cumulative schemes as part of the wider Argyll and Kintyre 275 kV Strategy (Creag Dhubh Substation, Creag Dhubh to Inveraray 275 kV OHL and ITE/ITW Connection), these potential impacts would be managed collectively by the Applicant via the implementation of the CEMPs and management plans.

15.3 Effect Interactions (Intra-cumulative)

15.3.1 Intra-cumulative effect interactions 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.

15.3.2 The approach to the assessment of the effect interactions considers the changes in baseline conditions at common sensitive receptors (i.e., those receptors that have been assessed by more than one technical topic) due to the Proposed Development. The assessment is based upon residual effects only (considered to be effects of minor or greater significance i.e., excluding negligible effects).

15.3.3 An overall assessment of the intra-cumulative effects on identified common sensitive receptors has been made using technical information provided in **Chapters 6-14 (EIAR Volume 2).**

15.3.4 The residual effect and level of significant impact on sensitive receptors for each technical discipline has been defined using the methodology and professional judgement of the authors as set out in each of the technical chapters **(Chapters 6-14, EIAR Volume 2).** For the purposes of this intra-cumulative assessment, the level of significant impact defined in each of the technical chapters has been colour coded (red to yellow) according to **Table 15-2** below for use in **Tables 15-3** and **15-4**. The grey “Potential Intra-Cumulative Effects” identify where two topics both predict potential impacts on one sensitive receptor.

Table 15-2 Colour Coding used to Define Significance Level

	Significant adverse residual impact
	Locally significant adverse residual impact
	No significant (minor residual effect)
	Potential Intra-Cumulative Effects

15.3.5 Only residual effects with the potential for effect interactions are considered, i.e., where there are common sensitive receptors with other distinctly different topics. Ornithology has therefore been excluded from **Table 15-3** and **Table 15-4**.

Assessment of Effect Interactions – Construction

15.3.6 Potential effect interactions during the construction phase of the Proposed Development are illustrated in **Table 15-3** and are likely to arise at the following receptors / receptor groups:

- Groundwater Dependent Terrestrial Ecosystems (GWDTEs) – whilst there is potential for effect interactions between Ecology and the Water Environment, the technical assessment presented within **Chapter 8: Ecology (EIAR Volume 2)** has already considered hydrological and hydrogeological effects to GWDTEs. Accordingly, no further effect interactions are predicted above what is stated in **Chapter 8: Ecology (EIAR Volume 2)**.
- Peatland – intra-cumulative effects between between Ecology and Geology and Soils have been identified. However, both **Chapter 10: Geology and Soils** and **Chapter 8: Ecology (EIAR Volume 2)** concluded there would be no residual significant impacts to peatland soil following implementation of mitigation.
- Ancient woodland – intra-cumulative effects have been identified for Ancient Woodland between Ecology and Forestry. However, the impact being assessed is the same, i.e., the loss of Ancient Woodland, and therefore there is no residual effect above what is reported in **Chapter 8: Ecology** and **Chapter 14: Forestry (EIAR Volume 2)**.
- Residential properties - whilst there is potential for effect interactions between Landscape and Visual and Noise impacts, both chapters conclude the effects to the sensitive receptors would be not significant and the combination of non-significant effects is not anticipated to combine to create a significant effect on residential amenity.
- Transport routes – there is the potential for intra-cumulative effects on road users as a result of visual impacts and increased accident risk. As set out in **Chapter 6: SLVIA (EIAR Volume 2),** visual impacts from roads would generally be experienced for a short period of time and views to the Proposed Development would be restricted therefore no significant impacts were concluded. Traffic impacts including the potential for road delays and accidents and safety would be managed through the implementation of the Construction Traffic Management Plan (CTMP) to minimise impacts as far as practicable, and were deemed not significant in **Chapter 12: Traffic and Transport**.
- Recreational receptors – **Chapter 6: SLVIA (EIAR Volume 2)** concluded there would be significant visual impacts on users of core paths. However, potential pedestrian amenity effects would be managed through the CTMP.

Table 15-3 Cumulative Effect Interactions: Residual Effects on Common Receptors- Construction

Likely Residual Effects		Receptor and Receptor Groups												
		GWDTEs	Sensitive Habitats (excluding GWDTEs, including peatland)	Protected Species	Surface Water and Groundwater	Private Water Supplies	Landscape Fabric	Designated Landscapes	Transport Routes	Cultural Heritage Asset	Residential Properties	Recreational Receptors	Ancient woodland	Commercial Forest
SLVIA (Chapter 6)	Visual impacts to landscape fabric, designated landscapes and visual amenity													
Cultural Heritage and Archaeology (Chapter 7)	Where there may be a direct physical effect on a heritage asset.													
Ecology (Chapter 8)	Disturbance and loss of habitats, effects on protected species													
Geology and Soils (Chapter 10)														
Water Environment (Chapter 11)	Impacts to water quality and indirect effects on aquatic habitats and species from accidental chemical pollution, sediment mobilisation, and watercourse crossings													
	Alteration to surface water flows and runoff													
Traffic and Transport (Chapter 12)	Accident risk from increase in traffic													

Likely Residual Effects		Receptor and Receptor Groups												
		GWDTEs	Sensitive Habitats (excluding GWDTEs, including peatland)	Protected Species	Surface Water and Groundwater	Private Water Supplies	Landscape Fabric	Designated Landscapes	Transport Routes	Cultural Heritage Asset	Residential Properties	Recreational Receptors	Ancient woodland	Commercial Forest
Noise (Chapter 13)	Impact of construction noise													
Forestry (Chapter 14)	Woodland Removal													
	Impacts to commercial forestry from loss of forest edge increasing potential risk of windthrow.													
Potential for Intra- Cumulative Effects		**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**No**

Assessment of Effect Interactions – Operation

15.3.7 Potential effect interactions during the operational phase of the Proposed Development are illustrated in **Table 15-4** and are likely to arise at the following receptors / receptor groups:

- Residential properties; and
- Transport routes.

15.3.8 Residential Properties - potential for intra-cumulative effects to residential receptors from visual and noise impacts. Both the SLVIA and noise assessments considered impacts to residential receptors within 1 km of the Proposed Development. Landscape impacts are predicted at Inveraray and Lochawe. In both locations views of the Proposed Development would be partially restricted resulting in Negligible impacts. Operational noise results show that all receptors along the OHL would receive a rating of 'no observable reaction' for dry and wet conditions, with an impact magnitude of Negligible for dry conditions and Minor for wet conditions.

15.3.9 Transport Routes – there is the potential for intra-cumulative effects from LVIA and transport effects. Operational effects to views from the A815, A85 and B845 were assessed to be not significant in **Chapter 6: LVIA (EIAR Volume 2)**. No residual operational effects associated with the Proposed Development were identified in the transport assessment.

Table 15-4 Cumulative Effect Interactions: Residual Effects on Common Receptors – Operational Period

Likely Residual Effects		Receptor and Receptor Groups								
			Seascape and Landscape Character Type	Landscape Designations	Cultural Heritage Assets	Residential Properties	Transport Routes	Recreational Receptors	Surface water and groundwater flows	Commercial Forestry
SLVIA (Chapter 6)	Visual impacts to landscape fabric, designated landscapes and visual amenity									
Cultural Heritage and Archaeology (Chapter 7)	Impacts to setting of heritage assets									
Water Environment (Chapter 11)	Alteration to surface water flows and runoff									
Traffic and Transport (Chapter 12)	Impacts upon transport routes									
Noise (Chapter 13)	Impact of operational noise									
Forestry (Chapter 14)	Impacts on forest land-use management and access									
Potential for Intra-Cumulative Effects			**No**	**No**	**No**	**Yes**	**Yes**	**No**	**No**	**No**