

March 2025

Glen Earrach Pumped Storage Hydro

Environmental Impact Assessment Report

Volume 5: Appendices

Appendix 17.2: In-combination Climate Change Impact Assessment

Glen Earrach Energy Ltd

Quality information

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Issue History

Issue	Issue date	Details	Authorized	Name	Position
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Appendix 17-2: In-combination Climate Change Impact (ICCI) Assessment

Discipline/ Receptor	Climate Hazard	Likelihood of Climate Hazard Occurring	Likely ICCIs Identified	Description of ICCI considering embedded environment measures/good practice	Likelihood of ICCI occurring	Consequence of ICCI	Significance e.g. negligible, low, moderate, high
Noise & vibration				No ICCIs identified			
Landscape character & visual amenity	Increased temperature variations and less rainfall in summer months	Likely (2030 – 2059) Possible (2040 – 2069)	Adverse impacts on proposed vegetation establishment in the study area	During the operational phase of the proposed Development, increased temperature variations and less rainfall in summer months may cause issues relating to the establishment of proposed vegetation and the existing vegetation cover within the study area which would alter the localised landscape character. This could cause potential issues around visual amenity where views of the proposed Development are available that were previously screened. This consequence would be minimised as far as reasonably practicable, through the measures set out within the LEMP including appropriate management of the new planting.	Negligible	Moderate	Low (not significant)
GIS				No ICCIs identified			
Aquatic ecology	Reduced summer and winter precipitation	Likely (2070 – 2099)	Disruption of migratory pathways of species including Atlantic salmon in Loch Ness due to fluctuating water levels in Loch Ness and at Dochfour Weir	During the operational phase, extended dry spells may cause a reduction in water levels in Loch Ness and at Dochfour Weir. This consequence would be minimised as far as reasonably practicable through having a minimum operational level and ensuring that the design of fish passage over Dochfour Weir includes modelling of Climate Change scenarios.	Low	Moderate	Low (not significant)
Aquatic ecology	Increase in mean annual air temperature	Very likely (2070 – 2099)	Increases in air temperature will increase water temperatures, which may have a detrimental impact on aquatic species through reduction in dissolved oxygen levels.	During the operational phase increases in air temperature may trigger an increase in water temperatures. As the Proposed Development itself is not expected to significantly increase water temperatures there are not expected to be any in- combination effects. However, there may be cascading effects in the event that the Proposed Development reduces water levels, which could indirectly increase the impact of increased air temperature on water temperatures, making the aquatic environment more susceptible to variations in external air temperatures.	Low	Negligible	Low (not significant)
Terrestrial Ecology	Increased mean temperature /	Possible	Drier conditions could exacerbate the impacts of wind blow from construction activities and wet periods particularly on	No suitable mitigation except monitoring. Habitat restoration or enhancement measures will increase the resilience of some habitats.	Low	Negligible	Low (not significant)

Discipline/ Receptor	Climate Hazard	Likelihood of Climate Hazard Occurring	Likely ICCIs Identified	Description of ICCI considering embedded environment measures/good practice	Likelihood of ICCI occurring	Consequence of ICCI	Significance e.g. negligible, low, moderate, high
	hotter summers / drier summers		peatland habitats, leading to increased release of particulate / dissolved carbon during wet periods and causing decreased water quality, degradation and reduced habitat stability.				
	Increased mean temperature / hotter summers / drier summers / wetter winters / more frequent storm events	Possible	Changes in climatic conditions and habitats resulting in changes to species distribution. For example, drying of the habitats on the site may result in decreased suitability for water vole, a species which will already be negatively impacted by the Proposed Development. Climatic changes / habitat changes may be locally beneficial to some native species. Such changes may also result in increased colonisation of invasive non-native species.	No suitable mitigation except monitoring. Habitat restoration or enhancement measures will increase the resilience of some habitats allowing them to be suitable for certain species for longer/in a greater range of conditions. Other mitigation could include implementation of other conservation techniques (habitat creation, removal of invasive species etc).	Low	Negligible	Low (not significant)
Water Quality	Increased rainfall	Possible	Exacerbate pollution from construction activities due to increased runoff from surrounding area.	Potential pollutants stored correctly and out with a 50 m buffer zone during construction. Few pollutants in use during operational phase of Proposed Development.	Negligible	Moderate	Low (not significant)
Groundwater	Episodes of drought	Possible	Reduced water available to replenish groundwater during periods of discharge.	No suitable mitigation other than monitoring water levels.	Negligible	Low	Low (not significant)
Hydro morphology	Increased rainfall	Possible	Higher flow rates increasing erosion of sediments.	No suitable mitigation other than monitoring water levels/flows and resilient design.	Low	Low	Low (not significant)
Private Water Supplies	Increased number of hot dry days and episodes of drought	Possible	Reduced quantity of water available to replenish groundwater and springs, impacting the quantity for the PWS. Climate and recharge fluctuations will likely have more of an impact on ground water levels than retained water due to the hard rock environment of the Headpond.	No suitable mitigation other than monitoring quantity, particularly in the dry summer months.	Low	Low	Low (not significant)
	Increased rainfall	Possible	Reduced quality in water from pollution and sediment from construction and operation activities due to increased runoff from surrounding area.	No suitable mitigation other than monitoring quantity, particularly in the dry summer months.	Negligible	Moderate	Low (not significant)

Discipline/ Receptor	Climate Hazard	Likelihood of Climate Hazard Occurring	Likely ICCIs Identified	Description of ICCI considering embedded environment measures/good practice	Likelihood of ICCI occurring	Consequence of ICCI	Significance e.g. negligible, low, moderate, high
Geology & Ground Conditions				No ICCIs identified			
Socioeconomics, Tourism, and Recreation				No ICCIs identified			
Access, Traffic, and Transport				No ICCIs identified			
Forestry				No ICCIs identified			
Cultural Heritage				No ICCIs identified			
Flood risk and water environment	The Flood Risk Assessment undertaken as part of the s36 application includes consideration of climate change impacts combined with the effect of the Proposed Development on flood risk. Please refer to Chapter 11: Flood Risk & Water Resources (Volume 2: Main Report) .						

