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Red John Pumped Storage Hydro Scheme

Volume 2, Chapter 17: Summary of Assessment

ILI (Highlands PSH) Ltd.

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Quality information

Prepared by	Checked by	Verified by	Approved by
Sarah Young	Catherine Anderson	Catherine Anderson	Catherine Anderson
Graduate EIA Consultant	Associate Director	Associate Director	Associate Director

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Distribution List

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Table of Contents

Tables

17 Summary of Assessment

17.1 Introduction

17.1.1 This chapter provides a summary of the residual effects following the implementation of the embedded and any additional mitigation measures as required. Full details can be found in the respective topic chapters of this EIA Report.

17.2 Summary of Mitigation Measures

17.2.1 Schedule 4, part 7 of the EIA Regulations requires an EIA Report to include "*A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment* and, *where appropriate, of any proposed monitoring arrangements*".

17.2.2 The mitigation, monitoring and enhancement measures included in this EIA Report fall into one of the following categories:

- Embedded mitigation incorporated into the design, such as the inclusion of the Landscape Embankment;
- Embedded mitigation in methods of construction as included within the Outline CEMP (Appendix 3.1); and
- Additional mitigation measures identified as a result of the EIA, such as topic specific management plans.

17.2.3 The Mitigation Register appended to this chapter (Appendix 17.1, EIA Report Volume 5) lists each item of mitigation relied on or identified in the EIA Report and shows how it is secured, either through the Section 36 Application or through other mechanisms.

17.3 Residual Effects

17.3.1 The residual effects of the Development following implementation of the mitigation measures have been assessed.

17.3.2 Each technical chapter contains a detailed account of residual effects and Table 17.1 summarises the main residual effects. The criteria for assigning the significance of effects are set out in Chapter 4: Approach to Environmental Impact Assessment of this EIA Report and within relevant technical chapters where a different, topic-specific approach is followed.

17.3.3 Note, as set out in Chapter 4, Negligible effects are not considered to be residual and have therefore not been included in Table 17.1 below. Minor effects are not considered significant, and Moderate and Major Effects are considered significant.

17.3.4 The Development will result in the following beneficial residual effects:

- The expansion of juniper in the area through the planting of 4.3 ha of juniper scrub on Ashie Moor, compared to the loss of up 20 bushes as a result of the construction of the Headpond will have a **permanent moderate beneficial**, which is **Significant**;
- The creation of mixed native woodland as part of the Forest Plan for the Development will have a **permanent moderate beneficial** effect on the habitats on the Development Site for bat species, which is **Significant**;
- Provision of 25 bat boxes, including types designed for breeding and hibernating purposes will have a **permanent minor beneficial** effect on bats, which is **Not Significant**;

- The control of herbivores, including the non-native sika deer, will reduce browsing pressure within the ancient semi-natural broadleaved woodland and help to improve plant diversity, providing a **permanent minor beneficial** effect, which is **Not Significant**.
- There is likely to be a **permanent minor beneficial** effect on Red-listed passerines from the replanting of mixed native species, the expansion of juniper woodland on Ashie Moor and the provision of nest boxes. This effect is **Not Significant**.
- An artificial raft will be installed prior to the commencement of construction in Loch nan Geadas, approximately 1.5 km to the south-south-west of Loch na Curra. The raft will be retained post-construction of the Development. The provision of an alternate nesting location is a **permanent minor beneficial** effect on red throated diver, which is **Not Significant.**
- An artificial raft suitable for black-throated diver nesting will be provided in Lochan an Eoin Ruadha on completion of the construction of the Development, which is anticipated to provide a **permanent moderate beneficial** effect, which is **Not Significant**.
- The planting of new woodland will provided abundant food supply for black grouse. The relatively open stand structure and the creation of a varied forest edge is likely to result in a **permanent minor beneficial** habitat improvement for this species. This effect is **Not Significant**.
- An artificial osprey nest will be erected either in a suitable tree or on a pole in a suitable location, which will have a **permanent moderate beneficial** effect, which is **Not Significant**.
- During operation there will be a **minor beneficial** effect on the local path network from the retention of construction route diversions and the creation of two new paths. This effect is **Not Significant.**
- There will be a **minor beneficial** effect on the local job market as a result of the potential for local job creation through all phases of the Development. This effect is **Not Significant**.
- There will be a **minor beneficial** effect on the local economy as a result of increased local expenditure during pre-construction, construction and decommissioning of the Development. This effect is **Not Significant**.
- There will be a community benefit payment provided by the Applicant during the operation of the Development that will have a **minor beneficial** effect on the local economy, which is **Not Significant**.

Table 17.1 List of Adverse Residual Effects

Discipline	EIA Ref	Residual Effect	Significance
Geology and Ground Conditions	Table 5.6	Construction Excavation activities for the construction of the Development will result in a **minor adverse** loss of peat.	Not Significant
	Section 5.5	Operation No residual effects were identified for the operation phase of the Development.	-
	Section 5.5	Decommissioning No residual effects were identified for the decommissioning phase of the Development.	-
Terrestrial Ecology	Table 6.12	Construction Construction will involve the loss of approximately 8.7 ha of semi-natural ancient woodland. This represents approximately 7.25% of the total 120 ha within the surrounding area. With mitigation, this is assessed to be a **permanent moderate adverse** effect.	Significant
		The main effect is the loss of small patches of flush and wet birch / willow woodland, and larger patches of fairly dry wet heath in the Headpond area. Slight loss elsewhere to access track / spillway construction which will result in **permanent minor adverse** effect.	Not Significant
		Approximately 110.2 ha of the long-established conifer plantation within the boundary of the Site will be felled to accommodate the Headpond and compounds. With the implementation of the Forest Plan, this is assessed to be a **Permanent Minor Adverse** effect.	Not Significant
		Construction of the Headpond area (and to a much lesser degree, construction of Compound 1) will result in the **permanent minor adverse** loss of blanket bog.	Not Significant
		Construction of the Development will result in **permanent minor adverse** loss of basic flush and flushed wet heath.	Not Significant
		Trees 56 and 107, which were found to support single roosting bats are situated in close proximity to works areas and may be disturbed by construction activities, which would result in a **temporary minor adverse** effect on bats.	Not Significant
		The temporary loss of approximately 11.4 ha of optimal foraging habitat due to the construction of Compounds 2 and 3 will result in a **temporary minor adverse** effect on badgers	Not Significant
		Loss of woodland habitat for foraging and commuting pine marten, potentially resulting in a **temporary minor adverse** effect.	Not Significant

Discipline	EIA Ref	Residual Effect	Significance
Terrestrial Ecology (continued)		The loss of woodland habitat, nine red squirrel dreys and the potential for disturbance of two additional dreys will result in a **minor adverse** effect on red squirrel after mitigation.	Not Significant
		The loss of a small population of small pearl-bordered fritillary at the southern end of the Headpond location will be a **temporary minor adverse** effect after mitigation.	Not Significant
	Table 6.13	<u>Operation</u> No residual effects were identified for the operation phase of the Development.	-
	Table 6.14	<u>Decommissioning</u> No residual effects were identified for the decommissioning phase of the Development.	-
Aquatic Ecology	Table 7.5	<u>Construction</u> The construction of watercourse crossings for temporary access tracks and culverting of watercourses will have a **permanent minor adverse** effect on flowing watercourses after mitigation.	Not Significant
		Construction, piling and de-watering activities in Loch Ness are assessed to have a **temporary moderate adverse** effect on Atlantic salmon, lamprey species and other fish species after mitigation.	Significant
		<u>Operation</u> The operation of watercourse crossings and culverts for the permanent Compounds and Access Track will have a **permanent minor adverse** effect on flowing watercourses.	Not Significant
		<u>Decommissioning</u> Watercourses are likely to receive surface water runoff during decommissioning, including contamination with sediment and pollution the effect of which is assessed to be **minor adverse** after mitigation.	Not Significant
Ornithology	Table 8.9	<u>Construction</u> Disturbance from construction activities will have a **temporary minor adverse** effect on Loch Ashie SPA and SSSI.	Not Significant
		Run-off generated from construction activities and tree felling has the potential to have a **temporary minor adverse** effect on Loch Ashie SPA and SSSI after mitigation.	Not Significant
		Tree felling in Dirr Wood and the construction of the Headpond may result in the **temporary minor adverse** disturbance of black grouse foraging within this area.	Not Significant
	Table 8.10	<u>Operation</u> No residual effects were identified for the operation phase of the Development.	-

Discipline	EIA Ref	Residual Effect	Significance
Ornithology (cont.)	Table 8.11	Decommissioning No residual effects were identified for the decommissioning phase of the Development.	-
Flood Risk and Water Resources	Table 17.2	Construction No residual effects were identified for the construction phase of the Development.	-
		Operation The operation of the Development could result in reduction in water levels in Loch Ness during low flows; this is assessed to be a **minor adverse** effect after mitigation.	Not Significant
		Decommissioning No residual effects were identified for the decommissioning phase of the Development.	-
Water Environment	Table 10.6	Construction The diversion and culverting of the final 50 m of Allt a' Chruineachd will have a **medium adverse** effect.	Significant
		The construction site run-off including suspended fine sediments and chemical spillages will result in short-term and temporary residual effects at Loch Ness, which will have a **moderate adverse** effect.	Significant
		The construction site run-off including suspended fine sediments and chemical spillages will result in short-term and temporary residual effects at Big Burn, Allt a' Chruineachd and Allt a' Mhinisteir, which will be a **minor adverse** effect.	
		Operation Potential ingress of groundwater into, Tunnels and Power Caverns will have a **minor adverse** effect on PWS and Inverness Groundwater Body after mitigation.	Not Significant
		The operation of Headpond and potential impact on water resources and water quality will have a **minor adverse** effect.	Not Significant
		The destabilisation of summer thermal stratification from water discharges at the outlet will have a **minor adverse** effect on Loch Ness.	Not Significant
		Water temperature changes from water discharges at the Outlet will have a **minor adverse** effect on Loch Ness.	Not Significant
		Concrete residues from Headpond construction, short term & temporary will have a **moderate adverse** effect on Loch Ness**.**	Not Significant
		Algal blooms from thermal stratification disruption, organic sediments discharge from the Headpond, long term, permanent but episodic will result in a **minor adverse effect** on Loch Ness**.**	Not Significant

Discipline	EIA Ref	Residual Effect	Significance
Water Environment (cont)		The loss of loch bed due to construction of new structures in the littoral zone, long-term and permanent, will be a **moderate adverse** effect on Loch Ness.	Significant
		Hydromorphological changes which result in the permanent loss of catchment area results in a **minor adverse** effect on Allt a' Mhinisteir and Big Burn.	Not Significant
Landscape and Visual	Table 11.3	<u>Construction</u> Effect on landscape character will be **minor adverse** for the following landscape character types within the study area: Farmed and Wooded Foothills, Rocky Moorland Plateau and Rocky Moorland Plateau with Woodland.	Not Significant
		Effects on landscape character will be **moderate adverse** for the following landscape character types: Broad Steep-Sided Glen and Flat Moorland Plateau with Woodland.	Significant
		Effects on visual amenity will be **moderate** or **major adverse** at all 11 viewpoints (as listed in Table 11.2 of Chapter 11: Landscape and Visual and can be viewed on Figure 11.6: Representative Viewpoints, EIA Report Volume 3).	Significant
	Table 11.4	<u>Operation Year 1</u> Effect on landscape character will be **minor adverse** for the following landscape character types: Farmed and Wooded Foothills, Rocky Moorland Plateau and Rocky Moorland Plateau with Woodland.	Not Significant
		Effects on landscape character will be **moderate adverse** for the following landscape character types: Broad Steep-Sided Glen and Flat Moorland Plateau with Woodland.	Significant
		Effects on visual amenity will be no more than **minor adverse** at viewpoints 3, 6, 7, 8 and 9.	Not Significant
		Effects on visual amenity will be **moderate** or **major adverse** at viewpoints 1, 2, 4, 5, 10 and 11.	Significant
	Table 11.5	<u>Operation Year 15</u> Effects on landscape character will be no more than **minor adverse** for all landscape character types within the study area.	Not Significant
		Effects on visual amenity will be no more than **minor adverse** at viewpoints 2, 3, 4, 5, 6, 7, 8, 9, and 10	Not Significant
		Effects on visual amenity will be **moderate adverse** at viewpoints 1 and 11.	Significant
	Section 11.5	<u>Decommissioning</u> No residual effects were identified for the decommissioning phase of the Development.	-

Discipline	EIA Ref	Residual Effect	Significance
Forestry	Section 12.8	As a result of the construction of the Development, there would be a net loss of woodland area. The area of stocked woodland in the study area would decrease by 12.1 ha. In order to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy, off-site compensation planting would be required. The Applicant is committed to providing appropriate compensation planting.	-
Archaeology and Cultural Heritage		Construction A total of ten assets, or groups of assets, fall within the Limits of Deviation, and as a result could be impacted by the Development during the construction phase.	
		With mitigation in place, effects will be **moderate adverse** on four assets / groups of assets. These are remains identified in Dirr Wood (asset numbers as listed in Appendix 13.1, EIA Report Volume 5 and Figure 13.1, EIA Report Volume 3: 22, 98, 101, 122, 125, 126, 140, 146, 151 and 153), Loch Ashie Cairnfield (56), Loch Ashie field system (63), and Wester Drumashie Farm (172).	Significant
		Effects will be no more than **minor adverse** on the other six assets / groups of assets after mitigation. These are the Military Roads (17 and 18), Ashiemorr Cairnfield (73), a possible road stone quarry (151-161, 165, 167, 168 and 170), a possible road marker with bench mark (161), and Merchants Stone (171).	Not Significant
		Operation No residual effects were identified for the operation phase of the Development.	-
		Decommissioning No residual effects were identified for the decommissioning phase of the Development.	-
Socio-economic and Tourism	Table 14.11	Pre-Construction Access will not be permitted in certain parts of the Development Site during pre-construction, which is assessed as a **minor adverse** effect.	Not Significant
		Pre-construction activities could produce a disturbance and impact amenity of the Ach-Na-Sidhe B&B, which may deter visitors. The effect is assessed to be **minor adverse** after mitigation.	Not Significant
		There may be a **minor adverse** loss of amenity on recreation routes near pre-construction works.	Not Significant
		Construction There will be a **moderate adverse** effect on access during construction as movement across certain parts of the Development Site will be restricted.	Significant
		Construction activities could produce a disturbance and impact amenity of the Ach-Na-Sidhe B&B which may deter visitors and have a **minor adverse** effect after mitigation.	Significant

Discipline	EIA Ref	Residual Effect	Significance
Socio-economic (cont.)		In water works at the Tailpond may disturb fish at the fish farm which could have **minor adverse** effects on the business after mitigation.	Significant
		No direct impacts to communities are predicted. Views of construction will not change day to day activities. Indirect effects are anticipated to be **minor adverse** after mitigation.	Not Significant
		Minor adverse effect anticipated on the local community from potential on-site accommodation.	Not Significant
		Views of construction from visitor attractions could have a **minor adverse** effect on amenity and deter visitors.	Not Significant
		The increase of personnel working in the area could reduce the accommodation available to tourists resulting in a **moderate adverse** effect on tourism services.	Not Significant
		A small portion of Loch Ness will be unavailable for recreational activities resulting in a **minor adverse** effect during construction.	Not Significant
		Effects on recreational routes during construction from path closures and diversions are anticipated to be no more than **minor adverse** with the adoption of the Outline Access Management Plan (Appendix 14.3, EIA Report Volume 5) and other embedded mitigation.	Not significant
		Races and other outdoor events that use local recreation routes could experience up to **minor adverse** effects from construction activities.	Not Significant
		<u>Operation</u> There will be a **minor adverse** effect on access during operation as movement across certain parts of the Development Site will be restricted.	Not Significant
		Effects on recreational routes during operation from path closures and diversions are anticipated to be no more that **minor adverse** with the adoption of the Outline Access Management Plan (Appendix 14.3) and other embedded mitigation.	Not significant
		<u>Decommissioning</u> There will be a **minor adverse** effect on access during decommissioning as movement across certain parts of the Development Site will be restricted.	Not Significant
		Decommissioning activities could produce a disturbance and impact amenity of the Ach-Na-Sidhe B&B which may deter visitors and have a **minor adverse** effect after mitigation.	Not Significant
		Effects on recreational routes during decommissioning from path closures and diversions are anticipated to be no more than **minor adverse** with the adoption of the Outline Access Management Plan (Appendix 14.3) and other embedded mitigation.	Not Significant

Discipline	EIA Ref	Residual Effect	Significance
Traffic and Transport	Table 15.15	Construction There will be a **temporary minor adverse** effect on non-construction traffic after mitigation with increased journey times due to increased volumes of slow moving HGV traffic and abnormal load delivery.	Not Significant
		There will be a **temporary minor adverse** pedestrian intimidation effect after mitigation from increased volumes of traffic causing pedestrian delay and increasing perception of danger.	Not Significant
	Section 15.5	Operation No residual effects were identified for the operation phase of the Development.	-
	Section 15.5	Decommissioning No residual effects were identified for the decommissioning phase of the Development.	-
Noise and Vibration		Construction Construction works noise and vibration from surface plant, piling, tunnelling and blasting will have no more than **localised, temporary, minor adverse** effects on occupants of residential dwellings and underground services.	Not Significant
		Operation Airborne noise and groundborne noise and vibration from the operation of the Development will have no more than **localised, temporary, minor adverse** effects on occupants of residential dwellings.	Not Significant

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