

Loch Kemp Storage - EIA Report (Additional Information)

AI Appendix 10.1: Update to Terrestrial Ecology Assessment

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ash



**Loch Kemp
Storage**
A STATERA COMPANY



ash design + assessment
Suite 2/3, Queens House
19 St Vincent Place
Glasgow, G1 2DT

Tel: 0141 227 3388
Fax: 0141 227 3399

Email: info@ashglasgow.com
Web:
www.ashdesignassessment.com

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Additional Information – Updates to Terrestrial Ecology

1.1 Reductions in Habitat Loss – Outwith Ness Woods SAC

- 1.1.1 The following site layout changes are proposed to the Loch Kemp Storage Scheme (the Proposed Development), outwith Ness Woods SAC:
- i. Reduction in the size of the main welfare compound within Whitebridge Plantation (SC1), to avoid an area of deep peat;
 - ii. Relocation of temporary site compound SC2 to inside the inundation area, and reduction in the working corridor accordingly, to reduce impacts upon deep peat; and
 - iii. Reduction in borrow pit land-take. Borrow pit BP1 (within Whitebridge Plantation, referred to as ‘Proposed Borrow Pit’ in the updated figures) would still be used, however all other borrow pits (referred to as ‘Potential Borrow Pits’ in the updated figures) would only be required if the material from the tunnel spoil is not suitable for dam construction. The location of potential borrow pit BP4 has been moved to lie predominantly inside the inundation area, and the working corridor reduced accordingly, to reduce the overall habitat loss.
- 1.1.2 The layout changes to the Proposed Development (referred to as the Revised Development) are shown in updated **Figures 10.3, 10.4, 10.7 and 10.8** and **Confidential Figure 10.10**.
- 1.1.3 Habitat loss has been re-calculated to reflect the site layout changes, using the same methodology as described in paragraphs 10.8.77 – 10.8.79 of **Volume 1, Chapter 10: Terrestrial Ecology**. Habitat loss, for habitats of local value or greater in which there has been a change in the loss, is detailed in **Table 1** (changes from the previous habitat loss calculations are highlighted in red). A precautionary calculation has been used, which assumes that all ‘potential borrow pits’ could be used.
- 1.1.4 This habitat loss calculation supersedes the habitat loss figures detailed in **Table 10-12** and **Table 10-15** of **Volume 1, Chapter 10: Terrestrial Ecology** and **Table 3-1** in **Volume 4, Technical Appendix 10.7: Outline Habitat Management Plan (non-SAC)** for these habitat types; the figures provided for all other habitat types outwith Ness Woods SAC remain unchanged. Changes to the previous habitat loss calculations relate to a reduction in temporary loss from the working corridor only; there are no changes in the calculations of habitat loss from permanent infrastructure for habitats of local or greater value.

Table 1: Changes in Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC)

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Change in Total Loss (ha)
Blanket bog	M1, M2, M3, M17, M17a	6.50	Inundation area, dam, surge shaft	0.24	6.74	-0.14
Dry dwarf shrub heath (including with scattered bracken)	H10, H10a, H16. H10/U20	22.37	Inundation area, access track, surge shaft, dam, fishing lodge, kiosk	18.50	40.87	-0.65
Wet dwarf shrub heath	M15* (incl. M15/U20, M15/U4), M15a*, M15b*	6.04	Inundation area, access track, dam, kiosk	2.08	8.12	-0.66

Communities marked with * are potential GWDTE communities

Changes in habitat loss from previous calculations are highlighted in red

- 1.1.5 In summary, following the site layout changes there has been a 1.45 ha reduction in the total loss of habitats outwith Ness Woods SAC which are assessed as being of local value or greater. In addition to this, there has also been a reduction in the total loss of 2.32 ha of habitats assessed as having less than local value (i.e. bracken and coniferous woodland plantation – not shown in **Table 1** above).
- 1.1.6 Although there has been a slight reduction in the overall loss of blanket bog, dry dwarf shrub heath and wet dwarf shrub heath, this does not change the assessment of the significance of the habitat loss effects, as detailed within **Table 10-12 of Volume 1, Chapter 10: Terrestrial Ecology**, or the residual significance as detailed in **Table 10-15 of Volume 1, Chapter 10: Terrestrial Ecology**. The permanent loss of 6.74 ha of regionally important blanket bog habitat (representing 35.8 % of the total habitat in the survey area) is still considered **significant at a regional level**. The permanent and temporary loss of 40.87 ha of locally important dry dwarf shrub heath (representing 34.6 % of the total habitat in the survey area) is still considered **significant at the local level**; and the permanent and temporary loss of 8.12 ha of locally important wet dwarf shrub heath (representing 27.7 % of the total habitat in the survey area) is still considered **significant at the local level**.
- 1.1.7 The reduction in habitat loss has a neutral or slight positive effect on a number of protected species, in terms of habitat loss, although any positive effects are relatively small and the significance of effects upon all species assessed is unchanged from the assessment presented in **Volume 1, Chapter 10: Terrestrial Ecology** (paragraphs 10.8.81 – 10.8.116, and summarised in **Table 10-15**).
- 1.1.8 There is no change to the assessment of effects upon invertebrates, as the reduction in habitat loss represents temporary loss only, which is not considered in the invertebrate assessment, as it is anticipated that areas subject to temporary damage would still be used by a range of invertebrates. This is also the case with reptiles, as it is anticipated that areas subject to temporary damage would still be used by reptiles for activities such as basking and potentially foraging (following habitat reinstatement). As such, the assessment of effects upon reptiles remains unchanged. The

assessment of effects upon otter (*Lutra lutra*) outwith Ness Woods SAC also remains unchanged, as the habitat loss reductions outwith Ness Woods SAC relate to habitats that do not constitute otter habitat.

- 1.1.9 There would be a slight reduction (of 1.67 ha) in the amount of potentially suitable coniferous plantation habitat for pine marten (*Martes martes*), red squirrel (*Sciurus vulgaris*) and bat foraging being temporarily lost within Whitebridge Plantation (including existing clear-fell), however this is temporary only and accounted for within plantation re-stocking. The overall assessment of effects upon these species/species groups is therefore unchanged.
- 1.1.10 There is no change in the effects upon protected species resting places (such as otter resting sites, badger (*Meles meles*) setts, or trees with bat roosting potential), or important bryophyte and lichen species, as no such features were identified within the areas where a reduction of habitat loss outwith Ness Woods SAC is proposed.
- 1.1.11 The reduction in habitat loss outwith Ness Woods SAC has a slight effect on the ratio of the habitat compensation measures proposed to habitat loss, as detailed within **Volume 4, Technical Appendix 10.7: Outline Habitat Management Plan (non-SAC)**. Specifically, the ratio of proposed bog habitat lost (19.01 ha) to bog habitat restored (c. 119.3 ha) has increased slightly, from 1:6.2 to 1:6.3. The area of upland heathland (dry dwarf shrub heath and wet dwarf shrub heath) subject to temporary loss would be re-instated. The area of upland heathland proposed to be created, restored or enhanced comprises an area approximately ten times the area of heathland permanently lost; this ratio is unchanged.

1.2 Reductions in Habitat Loss – Ness Woods SAC

- 1.2.1 A reduction in the proposed working corridor to the north of the powerhouse on the Loch Ness shoreline is proposed within Ness Woods SAC. The reduced working corridor is proposed to further minimise qualifying woodland habitat loss within Ness Woods SAC, and in particular the loss of ‘*Tillio-Acerion Forests of Slopes, Scree and Ravines*’ qualifying habitat. The reduction to the working corridor in this area is now considered feasible due to the design process being further advanced, and the area has been workshopped in both the design fix pre-FEED design and the current DJV FEED design. The area was previously reserved for potential construction cofferdam relocation due to intake location optimisation. However, detailed design optimisation and geotechnical reports indicate that the revised working corridor is sufficient to meet the cofferdam requirements for construction of the intake structures.
- 1.2.2 The new reduced working corridor is shown in updated **Figures 10.3 – 10.9** and **Confidential Figure 10.10**.
- 1.2.3 Habitat loss within Ness Woods SAC has been re-calculated to reflect the reduction in the working corridor, using the same methodology as described in paragraph 10.8.7 of **Volume 1, Chapter 10: Terrestrial Ecology**. Habitat loss is detailed in **Table 2** (changes from the previous habitat loss calculations are highlighted in red). This habitat loss calculation supersedes the habitat loss figures detailed in **Table 10-6** and **Table 10-15** of **Volume 1, Chapter 10: Terrestrial Ecology** and **Table 5-2** of the **Shadow Habitats Regulations Appraisal Report**. Changes to the previous habitat loss calculations relate to a reduction in loss from the working corridor only; there are no changes in the calculations of habitat loss from permanent infrastructure.

Table 2: Change in Habitat Loss within Ness Woods SAC¹

Habitat Type	Habitat Loss from Permanent Infrastructure (ha)			Habitat Loss from Working Corridor (including 70% of 3 m buffer along access track) ² (ha)	Total Loss (ha) ³	Loss as % of total qualifying interest habitat in SAC	Total Habitat Loss Change
	Access Track Running Width	Inundation Area and Dam	Powerhouse Infrastructure				
Qualifying Interest Habitat							
Tilio-Acerion forests of slopes, screes and ravines	0.04	-	0.28	0.15 – 0.19	0.47 – 0.51	1.88 – 2.04%	-0.09
Old sessile oak woods with Ilex and Blechnum in the British Isles	0.71	0.44	1.84	1.87 – 1.97	4.86 – 4.96	0.90 – 0.92%	-0.01
TOTAL (Qualifying Habitat)	0.75	0.44	2.12	2.00 – 2.10	5.32 – 5.42	N/A	-0.10
Non-Qualifying Interest Habitat							
Acid Grassland (U4)	-	-	-	0.01 – 0.02	0.01 – 0.02	N/A	0
Bare Ground (Existing access track)	0.09	-	-	0.08 – 0.12	0.17 – 0.21	N/A	0

¹ The mapped boundary of Ness Woods SAC overlaps with a slither of the open water of Loch Ness, due to a mapping discrepancy relating to the precise location of Loch Ness shoreline. The SAC boundary follows the shoreline from Ordnance Survey (OS) mapping, whereas the habitat loss calculations follow more detailed and accurate mapping of the shoreline undertaken by project engineers.

² Loss per habitat type has been presented as a range (representing the maximum and minimum per habitat type), due to uncertainty in which areas of the 3 m working corridor buffer along the access track would be lost.

³ Some of the figures in the total loss column differ from the sum of the previous four columns by 0.01 ha; this is due to the figures presented being rounded to two decimal places.

Habitat Type	Habitat Loss from Permanent Infrastructure (ha)			Habitat Loss from Working Corridor (including 70% of 3 m buffer along access track) ² (ha)	Total Loss (ha) ³	Loss as % of total qualifying interest habitat in SAC	Total Habitat Loss Change
	Access Track Running Width	Inundation Area and Dam	Powerhouse Infrastructure				
Dry dwarf shrub heath	-	-	-	0.01 – 0.02	0.01 – 0.02	N/A	0
TOTAL (all habitats)	0.84	0.44	2.12	2.19	5.58	N/A	-0.10

1.2.4 The number of trees lost or potentially affected has also been re-calculated, using the same methodology as described in paragraphs 10.8.31 – 10.8.33 of **Volume 1, Chapter 10: Terrestrial Ecology**. Trees lost or potentially affected are detailed in **Table 3** (changes from the previous calculations are highlighted in red). This table supersedes **Table 10-7** of **Volume 1, Chapter 10: Terrestrial Ecology** and **Table 5-3** of the **Shadow Habitats Regulations Appraisal Report**.

Table 3: Change in individual tree loss, and trees at risk of root damage, within Ness Woods SAC

Tree Species	Number of trees to be lost (loss from permanent infrastructure and working corridor)	Change in number of trees to be lost (loss from permanent infrastructure and working corridor)	Number of trees (per species) within 4 m of working corridor, at risk of root damage	Change in number of trees (per species) within 4 m of working corridor, at risk of root damage	Number of trees at risk of root damage, assuming 70% of trees within 4 m access track buffer are affected
Birch	707	-4	95	+1	
Hazel	90	0	19	-1	
Alder	8	-12	3	-4	
Ash	2	-3	1	-2	
Oak	1	0	3	0	
Rowan	13	0	2	-1	
Standing deadwood	4	0	0	0	
Unidentified / Cherry	6	0	2	0	
TOTAL	831	-19	125	-7	107

1.2.5 In summary, following the reduction in the working corridor, there would be a 0.09 ha reduction in the total loss of 'Tilio-Acerion Forests of Slopes, Scree and Ravines' qualifying habitat, and a 0.01 ha

reduction in the total loss of 'Old Sessile Oak Woods with Ilex and Blechnum in the British Isles' qualifying habitat. The area of habitat that would be affected from fragmentation effects remains unchanged (see **Table 10-8 of Volume 1, Chapter 10: Terrestrial Ecology**), because the areas that may be affected by fragmentation are not in close proximity to the proposed changes to the working corridor. In total, **up to 0.62 ha** of 'Tilio-Acerion Forests of Slopes, Scree and Ravines' and **up to 6.00 ha** of 'Old Sessile Oak Woods with Ilex and Blechnum in the British Isles' would be subject to habitat loss or habitat change from fragmentation effects. In addition, there would be a reduction in tree loss of 19 individual trees, and a reduction of seven individual trees at risk of root damage following the reduction in the working corridor.

- 1.2.6 The reduction in the working corridor would result in one less tree with a lichen of medium conservation value (species poor, poorly developed *Lobarion*) being at risk of loss due to root damage. There would be no further change to effects upon lichens of conservation interest. The reduction in the working corridor would also result in five fewer ash *Fraxinus excelsior* trees being lost or at risk of root damage, which have some bryophyte interest; specifically, ash trees within this area are assessed as being rich with bryophyte flora, although no rare bryophyte species were identified, but *Frullania dilatata* and *Orthotrichum striatum* are both present.
- 1.2.7 The reduction in the loss of qualifying woodland habitats and its associated bryophyte and lichen interest, and the reduction in the number of trees being lost or at risk of root damage, does not change the assessment of the significance of the habitat loss effects, as detailed within paragraphs 10.8.28 – 10.8.29 of **Volume 1, Chapter 10: Terrestrial Ecology**, or the residual significance as detailed in **Table 10-15 of Volume 1, Chapter 10: Terrestrial Ecology**. The loss of both qualifying woodland habitats, and their associated tree, bryophyte and lichen interest, is still considered **significant at an international level**. The habitat loss reduction also does not change the assessment in Section 6.2.1 of the **Shadow Habitats Regulations Appraisal Report**. The loss is still considered to undermine Ness Woods SAC Conservation Objectives 1, 2, 2a, 2b and 2c for both qualifying woodland habitats. However, the compensation requirements are slightly reduced.
- 1.2.8 As a result of the reduction in the working corridor there would be a slight positive effect upon otter (a qualifying feature of Ness Woods SAC), in terms of habitat loss, although the positive effect is small and the significance of effects is unchanged from the assessment in **Volume 1, Chapter 10: Terrestrial Ecology** (paragraphs 10.8.59 – 10.8.74, and summarised in **Table 10-15**), and Section 5.4.1 and 6.2.1 of the **Shadow Habitats Regulations Appraisal Report**. There would be no change to effects upon otter resting sites, or any other effects upon otter.
- 1.2.9 The reduction in habitat loss resulting from the reduction in the working corridor has a neutral or slight positive effect on a number of other protected species, in terms of habitat loss, although the positive effects are small and the significance of effects upon all species assessed is unchanged from the assessment presented in **Volume 1, Chapter 10: Terrestrial Ecology** (paragraphs 10.8.81 – 10.8.116, and summarised in **Table 10-15**). There would be a slight reduction (of 0.10 ha) in the loss of suitable habitat for invertebrates, pine marten, red squirrel and bat foraging. There is no change in the effects upon protected species resting places (such as badger setts, or trees with bat roosting potential), as no such features were identified within the areas where a reduction of habitat loss is proposed.

1.3 Amended Fish Deterrent System – Potential Effects upon Otter

- 1.3.1 As part of the Additional Information (AI) for the Loch Kemp Storage Scheme, a barrier net is being proposed a suitable deterrent system for Atlantic Salmon (*Salmo salar*) smolt within Loch Ness by

- Aztec Management Consultants (Aztec), as described in **AI Appendix 13.1: Updates to Mitigation Measures Proposed for Fish in the Loch Kemp Storage EIA Report, and the Shadow Habitats Regulations Appraisal Report**. The deterrent scheme would involve the use of a buoyed barrier net with 12.5 mm mesh spacing, installed at least 27 m from the inlet screens during the salmon smolt season (March – June). The barrier net which would tie into the shoreline around the proposed powerhouse location.
- 1.3.2 The specific details of the barrier net would be determined at detailed design by the appointed Principal Contractor in liaison with the appointed net manufacturer. However, at this stage it is assumed that the net would be suspended on a boom. Buoys would be used to keep the net floating at the surface, regardless of the water level. The bottom of the net would be held down by weights to keep it taut, regardless of fluctuations in water level. The barrier net would extend to a depth of 10 m from the surface of Loch Ness (or to the loch substrate where the loch depth is <10 m). An indicative drawing of a barrier net is provided in **Figure 1, of AI Appendix 13.1: Updates to Mitigation Measures Proposed for Fish in the Loch Kemp Storage EIA Report, and the Shadow Habitats Regulations Appraisal Report**.
- 1.3.3 Whilst no scientific literature has been identified which specifically assesses the effects of barrier nets upon otter, the below assessment of possible effects is based on the known ecology of otter, survey data indicating the nature of otters' usage of the site and professional judgement.
- 1.3.4 If taken forward as the preferred deterrent system for smolt, the proposed barrier net is not expected to have a significant adverse effect upon otter. Otters are not expected to get tangled in the net, as the 12.5 mm mesh is too fine for them to get stuck in, and the net would be kept taut by weights, preventing entanglement.
- 1.3.5 Otter would not become trapped on the inside of the barrier net, and net is not expected to cause a barrier to movement, as it is anticipated that they would freely be able to climb over the top of the net, swim underneath the net, or move around the net at the shoreline. To ensure that otter, including pups, would be able to climb over the top of the net at the water's surface, gaps between buoys wide enough for otter to pass through shall be installed at a minimum of 30 m intervals along the length of the top of the net. A floating tube or similar would be fitted to the top of the net in these gaps, to ensure that the gaps stay open, and to provide pups with some purchase to get over.
- 1.3.6 Otter would be able to continue to have un-impinged access to the shoreline either side of the points where the net ties into the shore, therefore preventing a barrier effect. Otter would be able to move along the shore side of the powerhouse infrastructure, either side of the barrier net tie-in points, along the quayside. The quayside will tie in with the surrounding land with a gradual gradient (with no steep drops or steep gradients). Any fencing installed around the powerhouse infrastructure would be permeable to otter, such that otter can move between woodland habitat either side of the powerhouse infrastructure via the quayside on the shore. Otter would also be able to access the water inside of the barrier net from the shoreline, via the slipway.
- 1.3.7 Although there would be a temporary loss of shoreline fish hunting habitat for otter (of approximately 300 m) whilst the barrier net was in place for four months of the year, the barrier net is not expected to significantly adversely affect otter prey species, as the net would not be expected to reduce the abundance of fish prey availability overall. Rather, it would simply result in a small-scale temporary shift in their distribution (i.e. fish would be temporarily excluded from the interior of the barrier net). The area within the barrier net represents a very small proportion of the overall area of Loch Ness (~86 km of shoreline), and a very small proportion of an otter territory (males living in watercourses can have a linear home range size of around 40 km and females around

- 20 km). It is considered that the effects upon otter foraging habitat are minor and not significant and would not undermine any of the Ness Woods SAC Conservation Objectives for otter.
- 1.3.8 Setting out and taking in the barrier net twice per year, via a boat, has the potential to cause some disturbance which is above the baseline levels. However, this would be an infrequent occurrence, with very minimal disturbance anticipated. The works would occur in daylight hours, when otters are less active. Therefore, given the minimal, localised and infrequent nature of the potential disturbance, disturbance effects of installing and taking in the barrier nets is considered to be minor and not significant, and would not undermine any of the Ness Woods SAC Conservation Objectives for otter.
- 1.3.9 As such, no significant effect is predicted upon otter as a result of the proposed smolt season barrier net, and the conclusions relating to otter within the **Shadow Habitats Regulations Appraisal** and **Volume 1, Chapter 10: Terrestrial Ecology** remain unchanged.