



**Loch Kemp
Storage**
A STATERA COMPANY

LOCH KEMP STORAGE - EIA Report

Non Technical Summary

November 2023



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FICHTNER
Consulting Engineers Limited

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1. Introduction and Overview

1.1 Overview

- 1.1.1 This Non-Technical Summary (NTS) forms part of the Environmental Impact Assessment Report ("EIA Report") prepared by ASH design + assessment Limited (ASH) and Statera Energy (UK) Limited (SEL) ("the Developer") on behalf of Loch Kemp Storage Ltd. ("the Applicant").
- 1.1.2 The EIA Report has been prepared to accompany an application for consent under Section 36 of the Electricity Act 1989 ("the 1989 Act"). The application seeks consent to construct and operate a new pumped storage scheme with an installed capacity of up to 600 Megawatts (MW), utilising the existing Loch Kemp as the upper reservoir and Loch Ness as the lower reservoir. The proposals are referred to throughout this document as the "Proposed Development".
- 1.1.3 The construction of the Proposed Development would require Loch Kemp to be raised by approximately 28 metres (m) from its existing 177 m AOD (Above Ordnance Datum) elevation to approximately 205 m AOD. Eight dams would also be constructed around Loch Kemp to create and form the upper reservoir.
- 1.1.4 A new powerhouse would be constructed on the shore of Loch Ness, including an integral tailrace arrangement with fish screens connecting the system to Loch Ness. The scheme would utilise an underground tunnelled waterway system to link between the intake on Loch Kemp and the powerhouse at Loch Ness, with the potential inclusion of two surge shafts (with associated access) on the hilltop between Loch Kemp and Loch Ness.
- 1.1.5 The location of the Proposed Development is shown on **Figure 1: Site Location**, and the site of the upper reservoir, is illustrated in **Plate 1.1: Upper Reservoir and Surrounding Waterbodies**.

Plate 1.1 Upper Reservoir Area and Surrounding Waterbodies

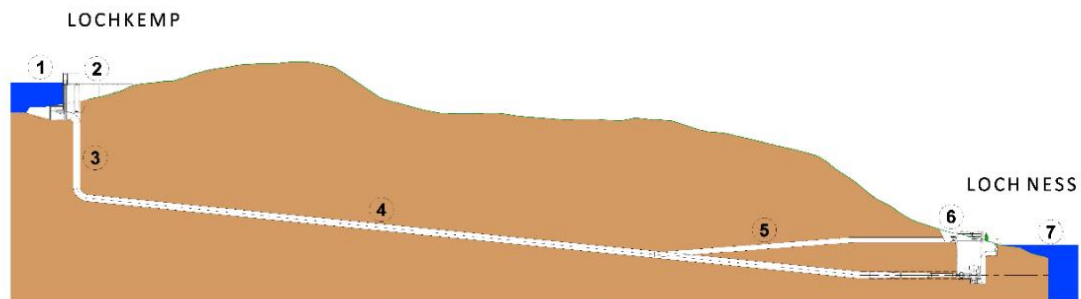


- 1.1.6 The primary function of the Proposed Development would be to extract, store and release energy to or from the electricity transmission system as required to help balance supply and demand for

power at a national scale. The Proposed Development would operate by transferring water between the lower reservoir (Loch Ness) and the upper reservoir (the enlarged Loch Kemp¹) through the tailrace tunnel, powerhouse, high pressure tunnel and headrace tunnel. An overview of how the Proposed Development would operate is shown on **Plate 1.2: Indicative Section through Loch Kemp Storage**.

- 1.1.7 An Environmental Impact Assessment (“EIA”) has been undertaken for the Proposed Development in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to assess the likely significant effects of the Proposed Development. The findings of the EIA are presented in an EIA Report, including the measures which would be taken to prevent, reduce and, where possible, offset predicted likely significant adverse effects. The purpose of this document is to provide a summary of the EIA Report findings in non-technical language.

Plate 1.2 Indicative Section through Loch Kemp Storage.



Key: 1. Loch Kemp with eight new dams around its perimeter to raise the level to a maximum of +205 m AOD; 2. Intake/ outlet structure at Loch Kemp connected to the pressure tunnel; 3. Pressure shaft; 4. Headrace tunnel; 5. Main access tunnel; 6. Powerhouse, containing the turbine/pump units and associated ancillaries and balance of plant; 7. Tailrace structure on Loch Ness (+16 m AOD)

1.2 Project Need

- 1.2.1 The United Kingdom (UK) energy system relies on fossil fuels so that variations in supply and demand can be managed. As we transition to a net zero energy system, renewables and other zero carbon technologies will need to provide all the services required to ensure a secure energy system².
- 1.2.2 Although several energy storage technology categories exist, including battery storage, mechanical storage, thermal storage, and hydrogen, many of these are yet to be developed at large scale, whilst Pumped Storage Hydro (PSH) is a tried and tested technology which is already implemented at grid scale in the UK.
- 1.2.3 PSH is a highly flexible method of electricity storage and generation due to its ability to store large quantities of energy, complimented with the ability to rapidly start and stop without constraint. This role will become more important as intermittent renewable electricity generation increases, fossil fuel generation is phased out, and electrification of the transport and heat sectors occur.

¹ A smaller loch called Loch Cluanie, located to the east of Loch Kemp, would also be inundated once the Proposed Development is operational.

² Draft Energy Strategy and Just Transition Plan (Scottish Government, January 2023)

- 1.2.4 PSH works on a very simple principle - exploiting gravitational potential energy. At times of peak electricity demand, water stored in the upper reservoir is released to the lower reservoir, flowing through a turbine. This converts the gravitational potential energy of the water into useable electrical energy. At times of low electricity demand, the excess energy on the grid can be used to pump water back to the upper reservoir and stored again until times of high demand. Therefore, in simple terms, a PSH project is effectively a big battery, connected to the electricity grid.
- 1.2.5 Scotland has the UK's highest mountains, largest inland lochs and highest rainfall. There is also an abundance of wind power that far exceeds the needs for Scotland, so this excess energy on the grid will need to be managed with PSH and other storage in the future.
- 1.2.6 The installed capacity for the Proposed Development would be up to 600 MW, with an energy storage capacity of up to almost 9 Gigawatt Hours (GWh). This alone could save hundreds of thousands of tonnes of CO₂ emissions a year - a significant proportion of the 2.5 million tonnes of emission reductions needed by Scotland to meet its (net zero) targets.

1.3 EIA Report Structure

- 1.3.1 The EIA Report prepared to accompany the Section 36 application consists of the following volumes:
- **Volume 1: Main Report** describes the project, details how the design has evolved and includes the assessments undertaken under each of the specialist environmental topics identified, provides a description of the proposed mitigation measures relevant to those assessments, and confirmation of the predicted residual effects.
 - **Volume 2: Figures**, contains the figures relating to Volume 1.
 - **Volume 3a: Visualisations to NatureScot Guidelines³**, contains photomontages of the Proposed Development undertaken in line with NatureScot Guidelines.
 - **Volume 3b: Visualisations to The Highland Council Guidelines⁴**, contains photomontages of the Proposed Development undertaken in line with The Highland Council standards.
 - **Volume 4: Technical Appendices**, to support each of the Chapters in the EIA Report where required; and
 - **Non-Technical Summary**, this document.

Supporting Documents

- 1.3.2 A **Planning Statement** is included with the application, considering the acceptability of the Proposed Development in the context of climate change and renewable energy targets, as well as energy and planning policies.
- 1.3.3 Given the Proposed Development is located partly within the Ness Woods Special Areas of Conservation (SAC), a **Shadow Habitats Regulations Appraisal (HRA)** has been undertaken for the Ness Woods SAC and other internationally designated sites in the vicinity of the Proposed

³ Scottish Natural Heritage (SNH), (2017), Visual Representation of Wind Farms (Version 2.2) (SNH, 2017)

⁴ The Highland Council (THC), (2016), Visualisation Standards for Wind Energy Developments (THC, 2016)

Development⁵. The **Shadow HRA** has been included with the application to assist the competent authority's appropriate assessment of the likely significant effects of the Proposed Development on these designated sites.

- 1.3.4 The **Shadow HRA** determines that adverse effects on the integrity of the Ness Woods SAC cannot be ruled out, with residual effects likely to result in undermining conservation objectives for the SAC's two woodland qualifying features. Therefore, a **Derogation Report**, which includes a **Compensatory Measures Package** for the Ness Woods SAC, is included with the application, to assist the competent authority in its decision on whether the Proposed Development can be justified for 'Imperative Reasons of Overriding Public Interest' (IROPI), and whether compensatory measures can be secured. Compensatory measures that the Proposed Development is committed to include the adaptive management of over 230 hectares of the Ness Woods SAC to improve its condition from 'unfavourable' at present to 'favourable' (in due course), and the adaptive management of a further 8 hectares (approximately) of land adjacent to the SAC, with the intention of bringing this area into the SAC over time.

1.4 Notifications

- 1.4.1 The Section 36 application will be advertised in the Scotsman, the Press and Journal and the Inverness Courier. Adverts will also be placed in the Edinburgh Gazette.
- 1.4.2 Hard copies of the EIA Report, NTS and Supporting Documents (including the Shadow HRA, Derogation Report and Planning Statement) will also be available to view at the following locations:
- Fort Augustus Village Hall, Fort Augustus, PH23 4DG;
 - The Wildside Centre, Whitebridge, Stratherrick, IV2 6YP; and
 - The Highland Council Headquarters, Inverness, IV3 5PB.
- 1.4.3 Additional copies of the EIA Report may be obtained from Loch Kemp Storage Ltd. at a charge of £30 on a USB drive or £500 per hard copy. Copies of a short Non-Technical Summary are available free of charge. Enquiries can be made via the project email at: contact@lochkempstorage.co.uk
- 1.4.4 An electronic version is available online at: <https://lochkempstorage.co.uk/>

⁵ The Shadow HRA is prepared in line with the requirements of The Conservation of Habitats and Species Regulations 2017 and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (the 'Habitats Regulations'),

2. Design Evolution and Alternatives

2.1 Introduction and Site Selection

- 2.1.1 The Proposed Development has evolved through an iterative design process, influenced by engineering feasibility design works, economic considerations, environmental survey data and from responses received through the consultation process.
- 2.1.2 One of the main challenges associated with PSH is in the identification of a site comprising suitable topography and water availability. There are very few sites within the UK which could be considered to have potential for the development of a technically, economically, and environmentally feasible pumped storage facility of this size.
- 2.1.3 These challenges are verified by the fact that, despite the increasingly favourable economic landscape over the last 10 years for renewable deployment, no PSH scheme has been built in the UK since 1984 (Dinorwig) and in Scotland since 1969 (Foyers). However, the Loch Kemp Scheme meets these technical and economic requirements.

2.2 Preliminary Design Considerations

- 2.2.1 A key design consideration for this site was minimising the impact of the Proposed Development on the Ness Woods Special Area of Conservation (SAC). The Ness Woods SAC is comprised of three Sites of Special Scientific Interest (SSSI); Easter Ness Forest, Inverfarigaig and Glen Tarff SSIs. The section of the Ness Woods SAC within Dell Estate (and therefore the Site) is part of the Easter Ness Forest SSSI, which is designated for upland oak woodland and upland mixed ash woodlands, extending along the eastern shoreline of Loch Ness as shown on **Figure 3: Environmental Context**.
- 2.2.2 Both qualifying woodland features associated with the Ness Woods SAC and the Easter Ness Woods SSSI have been classified by NatureScot as being in 'unfavourable condition', largely influenced by a combination of being heavily grazed by feral goats and deer, and the dominant presence of dense bracken in the ground flora.
- 2.2.3 Although it is not considered possible to construct the lower reservoir works of the Proposed Development without having a direct impact on Ness Woods SAC, a considerable number of measures have been identified to minimise this impact on the SAC, and extensive consultation has taken place with key stakeholders to discuss these measures, as well as restoration and enhancement opportunities of Ness Woods within Dell Estate. Such measures are described in the Compensatory Measures Package, included in the Derogation Report (refer to paragraph 1.3.4).

2.3 Design Evolution –Upper Reservoir Works

- 2.3.1 Given the complexity of PSH design, there are many elements of the Proposed Development that are necessarily technically and economically driven to achieve a viable project. These include the size and location of the dams, the location of the surge shafts, and the tunnelling. However, within these technical and economic parameters, there remain design and environmental opportunities and constraints which have been factored in, during the iterative design and EIA process.

- 2.3.2 The upper reservoir works comprise all works associated with the upper reservoir including eight dams and the associated increased water level at Loch Kemp. The location and height of the dams is primarily technically driven. However, in selecting the most appropriate type of dam, several factors were considered including technical factors (such as topography, foundation conditions and construction materials), local factors (such as climate, environment, visual impact and availability of expertise) and economic factors (such as buildability, capital cost and maintenance cost).
- 2.3.3 Similarly, the location for the surge shafts is technically driven; the optimum location being on the hillside between Loch Kemp and Loch Ness. However, the access tracks to the surge shafts were carefully aligned to avoid any areas of deep peat and minimise visual impact from receptors across Loch Ness.

2.4 Design Evolution – Lower Reservoir Works

- 2.4.1 The lower reservoir works at Loch Ness comprise all works associated with the lower reservoir, including the surface powerhouse building, quayside and pier, access tunnel portals, and the lower control works.
- 2.4.2 The lower reservoir works need to be situated on the shore of the lower reservoir (Loch Ness), whilst minimising the distance from the upper reservoir (Loch Kemp). The location of the lower reservoir works is highly restricted and largely technically and economically driven.
- 2.4.3 The powerhouse building would be the most visible element of the Proposed Development, located on the shore of Loch Ness, and therefore the design of the building was a key consideration. Minimising any adverse effects on Ness Woods SAC was also a key consideration. Award winning Architects HRI Munro were appointed at an early stage to advise on the design of the powerhouse. The design evolved in conjunction with the project Engineers and Landscape Architects, and in close discussion with The Highland Council (THC), NatureScot, Scottish Environment Protection Agency (SEPA), and the Energy Consents Unit (ECU) of the Scottish Government, at several design workshops.
- 2.4.4 In addition to the powerhouse building, design iterations for the surrounding area, including the powerhouse platform, access tracks and mitigation earth works and planting, were also considered by the design team, to further assist in assimilating the powerhouse building and associated platform, tracks, and rock cuttings, into the landscape.

2.5 Grid Connection

- 2.5.1 To connect the Proposed Development to the National Grid, a grid connection is required. Although the grid connection does not form part of the Proposed Development and would be the responsibility of SSEN Transmission to consent, options to consider the location of the switching station and the initial connection from the powerhouse to the switching station were undertaken during the design development of the Proposed Development. It has been determined that the Proposed Development would include a cable tunnel and vertical shaft to facilitate the grid connection from the powerhouse building to ensure no additional land take is required within the Ness Woods SAC to facilitate the grid connection.

3. Project Description

3.1 Project Overview

- 3.1.1 The Proposed Development comprises two main areas of work: the upper reservoir works (Loch Kemp); and the lower reservoir works (Loch Ness).
- 3.1.2 The principal components of the Proposed Development (all of which would be subject to detailed design), are illustrated on **Figure 2: Proposed Development** and summarised below.

Upper Reservoir Works

Dams and Upper Reservoir

- 3.1.3 Eight new dams would be constructed around Loch Kemp to enable the storage of water by increasing the size of the existing Loch Kemp to form the upper reservoir. The loch would be raised by approximately 28 m from its existing 177 m AOD elevation to approximately 205 m AOD.

Underground Waterway System

- 3.1.4 Screened intakes would supply an underground tunnel system carrying water between the upper reservoir, through to the powerhouse and the lower reservoir. The underground waterway system may require two surge shafts located on a local high point between Loch Kemp and Loch Ness, dependent on results of hydraulic analyses during detailed design.

Access Tunnels

- 3.1.5 Access tunnels would be constructed from the powerhouse platform to facilitate access to the underground waterway system. These tunnels would be accessed from the upper powerhouse platform works.

Cable Tunnel and Vertical Cable Shaft

- 3.1.6 A short cable tunnel would extend from the access tunnel connecting to a vertical cable shaft to facilitate the grid connection from the powerhouse building. The electricity cables (the subject of a separate consenting process), would be housed within this section of tunnel and would resurface outside the Ness Woods SAC, to connect by buried underground cable to a new switching station near Loch Kemp (which is also the subject of a separate consenting process).

Lower Reservoir Works

Powerhouse Building

- 3.1.7 A turbine hall would be located within a powerhouse building. Two underground turbine shafts would sit beneath the turbine hall and each turbine shaft would contain up to two reversible pump turbines and motor generators, together with associated equipment, such as transformers and switchgear. Outside of the turbine hall, the powerhouse building would also contain staff and visitor facilities across a 3-storey administration control and maintenance area, which would include a visitor centre. Also located within the powerhouse building would be a 275 kV gas insulated

switchgear (GIS) substation, firefighting equipment and an emergency diesel generator. See **Plate 3.1** for an indicative cross section through the Powerhouse Building.

Powerhouse Platform Area and Access Tunnels

- 3.1.8 The onshore elements of the tailrace area and the powerhouse building would be located on a large area of hardstanding over two levels, referred to as the powerhouse platform area. The upper and lower level would be connected by an access track to the rear (east) of the powerhouse building.

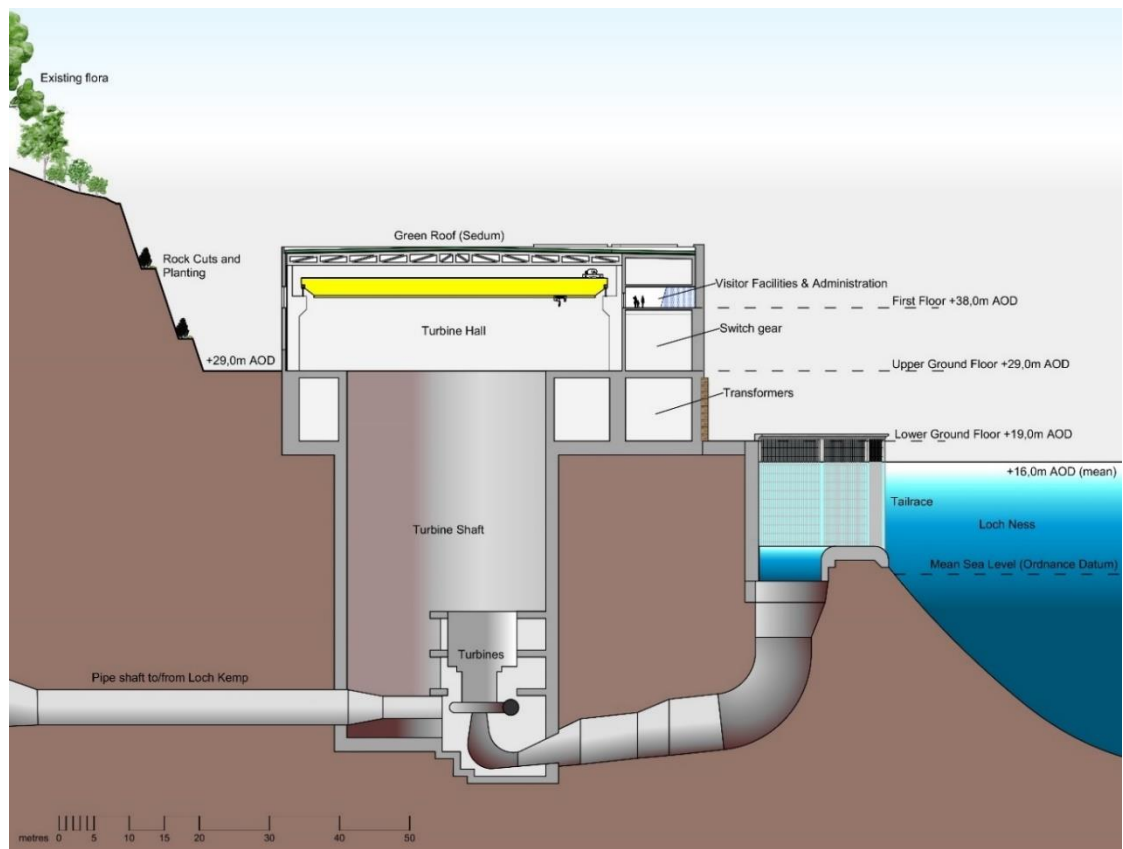
Tailrace Area

- 3.1.9 A tailrace structure would be located on the shore of Loch Ness as an integral part of the powerhouse building.

Quayside and Pier

- 3.1.10 A quayside would also be constructed adjacent to the powerhouse building and outlet area. This would allow the delivery of larger items by boat during construction, such as the electrical and mechanical (E&M) equipment, as well as access to the powerhouse from the loch during the operating phase (including access by members of the public to the visitor centre).

Plate 3.1: Indicative cross section through Surface Powerhouse Building, Turbine Hall and Turbine Shafts



Other Works

Excavated Rock

- 3.1.11 Most of the rock from the excavated tunnels and shafts would be removed via the shafts and tunnel portals near the powerhouse building on the shore of Loch Ness. The excavated rock from the underground works would be reused in the dams, powerhouse platform area, powerhouse building, and localised area of construction works wherever feasible.

Site Establishment

- 3.1.12 There would be a need for temporary site establishment and laydown areas in the vicinity of the upper reservoir and lower reservoir works. Borrow pits are required to provide aggregate to construct suitable access tracks and site establishment areas, in advance of tunnel spoil being available for use and a concrete batching plant would also be required on site.

Advanced Works

- 3.1.13 Advanced Works at the upper reservoir area comprise native woodland natural regeneration areas, which would be fenced-off pre-construction so that the woodland would be well established by the time construction work commenced, to provide screening, as indicated in **Figure 2: Proposed Development**.

3.2 Site Traffic and Access

- 3.2.1 Access during the construction and operation of the Proposed Development would utilise the existing B862 public road and Dell Estate forestry tracks (to be upgraded and extended), where possible and would involve a new access junction onto the B862. The creation of other new access tracks around the site, including a new access track to the lower reservoir works on the shore of Loch Ness would also be required.
- 3.2.2 The Caledonian Canal would be used for the delivery of abnormal load components of Electrical and Mechanical (E&M) equipment associated with the lower reservoir works of the Proposed Development, removing many potential Abnormal Indivisible Load (AIL) movements from the road network. The use of the canal for the delivery of further equipment and materials associated with the construction of the lower reservoir works would also be explored by the appointed Principal Contractor (in consultation with THC and other relevant stakeholders). This method was used for some equipment and materials delivery during the construction of Foyers Pumped Storage scheme, which is also located on the banks of Loch Ness.
- 3.2.3 A Construction Traffic Management Plant (CTMP) would be implemented during the construction phase of the project.

3.3 Associated Works

- 3.3.1 A grid connection, in the form of a 275 kV cable to connect the Proposed Development to the national grid, is required. This would be subject to a separate consenting process.
- 3.3.2 The cable would be routed from the powerhouse building through the access and cable tunnels, surfacing through the vertical cable shaft to the west of Lochan a Choin Uire. The cable would then be undergrounded following the access tracks that would be constructed as part of the Proposed

Development to connect to a 275 kV switching station located to the northeast of Loch Kemp, near Dell Farm (as shown on **Figure 2: Proposed Development**). The switching station and the cable between the powerhouse building and the switching station are considered within the EIA Report as 'Associated Works' to the Proposed Development.

- 3.3.3 Further works to complete the grid connection between the switching station and the point of connection to the National Grid, anticipated to be at the existing Foyers Substation, would also form part of a separate consenting process to be completed by SSEN Transmission.

3.4 Construction Programme

- 3.4.1 It is anticipated that surface works would generally be undertaken between 07.00 and 19.00 hours Monday to Saturday, and 07.00 to 15.00 hours on Sunday. Any underground operations, supporting vehicle movements and continuous pouring of concrete would need to continue 24 hours a day, seven days a week inclusive of bank holidays. In the event of surface work being required outwith these hours, e.g., abnormal load deliveries, commissioning works or emergency mitigation works, the Planning Authority would be notified prior to these works taking place, wherever possible.
- 3.4.2 Any surface blasting on site would only take place between the hours of 09.00 to 17.00 on Monday to Friday inclusive and 10.00 to 12.00 on Saturdays, Sundays and on National Public Holidays, unless otherwise approved in advance in writing by the Planning Authority.
- 3.4.3 It is anticipated that the main civil engineering construction period would last approximately 5 years, subject to the successful contractor's approach.

3.5 Consultations with the Local Community during Construction

- 3.5.1 Ongoing engagement with the local community during the construction of the Proposed Development would be an important consideration for the Applicant and the Principal Contractor. A community liaison group would be set up to provide the local community with information about the timing of key construction activities and a mechanism by which concerns from within the local community could be shared and discussed.

3.6 Environmental Management during Construction

- 3.6.1 The successful Principal Contractor would develop and implement a Construction Environmental Management Plan (CEMP) which would apply to all construction activities required as part of the Proposed Development. This document would detail how the successful 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.
- 3.6.2 An Ecological Clerk of Works and other specialist advisors would be employed during the construction phase to ensure compliance with the CEMP, as well as advising on micro-siting to minimise impacts on sensitive habitats or species. Other measures to manage environmental impact and disturbance during construction would include the development and implementation of a Peat Management Plan, Spoil Management Plan, Waste Management Plan, Noise Management Plan, and a Site Reinstatement Plan.

3.7 Operation and Maintenance

- 3.7.1 The Proposed Development would be manned 24 hours a day, with most operations being controlled from the administration area of the powerhouse building. It is anticipated that the Proposed Development would require approximately 25 staff members to operate the site.
- 3.7.2 Regular maintenance visits would be made to inspect and maintain structures and components of the Proposed Development. Operational maintenance would also be controlled by the Reservoirs (Scotland) Act 2011 and the requirements of the supervising engineer.

3.8 Decommissioning the Proposed Development

- 3.8.1 With proper maintenance it is anticipated that the Proposed Development would remain functional indefinitely.

4. EIA Approach, Scoping and Consultation

- 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. It therefore informs both the project design and the decision-making processes.
- 4.1.2 The approach to the assessment of each specialist topic within the EIA Report is broadly the same. For each topic, the baseline environment is identified and described, prior to an assessment of significance being undertaken to identify and predict the likely significant effects of the Proposed Development. The assessment of significance typically considers the sensitivity of receptors relevant to a particular topic, and the magnitude of impact the Proposed Development would have on such receptors. Cumulative effects with other developments are also considered.
- 4.1.3 Mitigation measures are identified to prevent, reduce or remedy any potentially significant adverse environmental effects identified, beyond that already taken into account as normal good practice (i.e. embedded mitigation for example, the Construction Environment Management Plan (CEMP)). Such measures would be implemented during detailed design, construction and / or operation of the Proposed Development. Any remaining predicted effects after taking into account available mitigation measures are known as 'residual effects'.

4.2 Scoping

- 4.2.1 In general, the EIA Regulations require that an EIA should describe the likely significant effects of a proposed development on the environment. Scoping of potential likely significant effects having regard to the physical impacts of a proposed development provides a basis for ensuring that the assessment of environmental effects is appropriately limited to the 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 input from key consultees being sought, helps greatly to inform decisions about the design and the EIA work for a proposed development.
- 4.2.2 In December 2021, a Scoping Report was submitted to the ECU which identified the potential significant impacts to be addressed in the EIA Report. In October 2022, ECU issued its Scoping Opinion for the Proposed Development. The responses, contained within the Scoping Opinion, were considered in detail during the EIA process and were used to inform the scope of the EIA.

4.3 Pre-Application Consultation

- 4.3.1 The Applicant has undertaken extensive consultation with key stakeholders throughout the pre-application process, in particular with NatureScot, to discuss options to minimise any potential effects of the Proposed Development on the Ness Woods SAC, as well ECU, THC, SEPA and other interested stakeholders through a variety of meetings, workshops, Teams calls and emails.
- 4.3.2 The Applicant has sought to maintain an open dialogue with local communities to keep them informed about the Proposed Development and seek feedback as the design has evolved. Several face-to-face public exhibitions were held locally at Scoping stage, at the following locations:

- Glenmoriston Millennium Hall, Invermoriston, Tuesday 30th November 2021, 1pm – 7.30pm.
- Fort Augustus Village Hall, Fort Augustus, Wednesday 1st December 2021, 1pm – 7.30pm; and
- The Wildside Centre, Whitebridge, Thursday 2nd December 2021, 1pm – 7.30pm.

4.3.3 A virtual public exhibition event, hosted via the project website (www.lochkempstorage.co.uk), was also held on Wednesday 8th December 2021, between 12pm – 2pm, and between 6pm - 8pm.

4.3.4 Further public exhibitions were held in December 2022 at the following locations:

- Glenmoriston Millennium Hall, Invermoriston, Tuesday 6th December 2022, 1pm – 7.30pm.
- The Wildside Centre, Whitebridge, Wednesday 7th December 2021, 1pm – 7.30pm; and
- Fort Augustus Village Hall, Fort Augustus, Thursday 8th December 2021, 1pm – 7.30pm.

5. Planning

- 5.1.1 A review of climate change and renewable energy targets, energy policies and planning policies that are relevant material considerations to the determination of the Proposed Development has been carried out.
- 5.1.2 Both UK and Scottish Government legislation and energy policy have for some considerable time provided a strong commitment to renewable energy and a reduction in greenhouse gas emissions, to seek to tackle climate change. However, there is now growing consensus on the severity of climate change, including the impacts that climate change is already having both here in Scotland, the UK and across the world. Amendments to the Climate Change (Scotland) Act 2009 have been made by the Scottish Government, which recognise the urgent response that is required. These amendments commit Scotland to a new target of net zero emissions of all greenhouse gases by 2045, with interim targets for reductions of at least 56% by 2020, 75% by 2030, and 90% by 2040.
- 5.1.3 Within national energy and planning policy, there is therefore now increased support for significant deployment of renewable energy development and for storage projects that help to maximise renewable energy capabilities through maintaining security of supply and a resilient system.
- 5.1.4 National Planning Framework 4 (NPF4), which represents the national spatial strategy for Scotland and forms part of the statutory development plan, gives support for developments that address the climate emergency and nature crises. It also directs decision makers to give the climate emergency and nature crises significant weight in all decisions.
- 5.1.5 The Highland Council in its Highland Wide Local Development Plan also has policies which strongly support renewable energy development, including pumped hydro storage. This policy support is not unconditional but requires the full assessment of projects against several planning criteria intended to safeguard the local environment and maximise the economic and social benefits of such projects.
- 5.1.6 An assessment of the Proposed Development against these planning criteria is provided in the separate Planning Statement which accompanies the Section 36 application.

6. Water Management

- 6.1.1 The Proposed Development would operate by transferring water between the lower reservoir (Loch Ness) and the upper reservoir (the enlarged Loch Kemp), through the tailrace tunnel, powerhouse, high pressure tunnel and headrace tunnel.
- 6.1.2 The Proposed Development would only operate between agreed minimum and maximum levels of Loch Ness. These shall be within the operating ranges of existing and consented PSH schemes on Loch Ness to avoid additional impact to the extremes of level in Loch Ness. A stop generating level is proposed to protect against adverse impacts in terms of flooding when the Loch Ness level exceeds the estimated 1-in-10 year flood. A stop pumping level is proposed to prevent operation during extreme low loch levels in Loch Ness to safeguard operation of the Caledonian Canal and for other water users.
- 6.1.3 A hydrological model has been prepared to simulate Loch Ness levels according to inflows, outflows and operation of pumped storage schemes, including the Proposed Development. The model shows that operation of the Proposed Development, in combination with other pumped storage schemes, would have only a minor change in loch levels in the context of the annual variation of the loch of over 1 m.

7. Landscape and Visual Impact Assessment

- 7.1.1 A Landscape and Visual Impact Assessment (LVIA) has been undertaken for the Proposed Development within a study area of approximately 10 km. The LVIA has been undertaken in accordance with best practice guidance, the Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment, 2013).⁶
- 7.1.2 The LVIA considers the two separate subjects of landscape and visual amenity as follows:
- The landscape assessment has considered the potential effects of the Proposed Development on landscape character, designated and protected landscapes; and
 - The visual assessment has considered the potential effects of the Proposed Development on the visual amenity of those present within the landscape, including established views from residential areas and routes.
- 7.1.3 Potential effects were considered both during the construction phase of the Proposed Development and also during operation, approximately 10 years following completion, when proposed landscape mitigation and regeneration would be established.
- 7.1.4 Embedded mitigation measures including landform, planting, seeding and the encouragement of vegetation growth at rock cuttings, as well as the sensitive positioning and design of permanent new structures, are all proposed as part of the Proposed Development. The assessment of operational effects has assumed that these measures would be in place as part of the Proposed Development.

Landscape Effects

- 7.1.5 During the construction phase of the Proposed Development, temporary significant effects are predicted within two of the five Landscape Character Types (LCT)s assessed: LCT 224 (Farmed and Wooded Foothills); and LCT 225 (Broad Steep-Sided Glen). These effects would be localised, affecting the landscape around the key areas of the Proposed Development at the lower reservoir works on the shore of Loch Ness (LCT 225) and the upper reservoir works at Loch Kemp (LCT 224). Elsewhere within LCT 224 and LCT 225, effects would be not significant. Potential effects to the remaining three LCTs assessed within the study area: LCT 221 (Rolling Uplands -Inverness), LCT 222 (Rocky Moorland Plateau - Inverness) and LCT 227 (Farmed Strath-Inverness) would not be significant during the construction of the Proposed Development.
- 7.1.6 During the operational phase of the Proposed Development, after 10 years, adverse effects predicted within LCT 224 and LCT 225 would be reduced and would not be significant.
- 7.1.7 In respect of the Loch Ness and Duntelchaig Special Landscape Area (SLA), the assessment has determined that although during the construction of the Proposed Development there would be some temporary localised significant effects on the Loch Ness and Duntelchaig SLA, these effects

⁶ Landscape Institute and Institute of Environmental Management and Assessment. (2013). Guidelines for Landscape and Visual Impact Assessment, Third Edition.

would reduce to a non-significant level during operation, and it is therefore considered that the integrity of the SLA designation would not be affected.

Visual Effects

- 7.1.8 The detailed assessment of effects on visual amenity has considered potential effects on visual receptors (those obtaining views) based in buildings and residential areas, using transport and recreational routes, and taking advantage of the view at defined outdoor locations.
- 7.1.9 Building based receptor locations where significant effects are predicted to occur during the construction phase, are all located where an open view, albeit narrow or oblique in some locations, is afforded to either the lower reservoir works, or upper reservoir works. However, once the intensity of activities associated with the construction phase has ceased and when mitigation planting and vegetation re-growth associated with the Proposed Development begins to establish, the effects would be further reduced. The Applicant has also implemented a scheme of woodland regeneration around Loch Kemp above the new inundation level as Advanced Works to the Proposed Development (see paragraph 3.1.13). Therefore, it is considered that during the operational phase, none of the identified building-based receptors would have a significant effect.
- 7.1.10 Localised significant effects are predicted for route based receptors, using Loch Ness during the construction phase, where elements of the Proposed Development sited on the loch shore as well as associated tracks, would be noticeable additions into the landscape setting and prominent locally. The increased movement of traffic on the loch itself, by barge or boat, as well as views of cranes and other associated construction activity, would lead to temporary locally significant effects. In the longer term during the operational phase, it is predicted that the effects would be reduced to a non significant level, as the powerhouse building would become a feature of architectural and recreational interest on Loch Ness, located within a mature landscape setting. Temporary localised significant effects are also predicted during the construction of the scheme for route based receptors using a popular recreational route to the east of Proposed Development. However, following completion of construction, when mitigation earthworks and planting has established, it is predicted that all effects would be reduced to a not significant level.
- 7.1.11 No significant effects are predicted for any visual receptors during the operation of the Proposed Development.

Cumulative Landscape and Visual Effects

- 7.1.12 Cumulative landscape and visual effects may occur where the effects of more than one development combine to form a greater level of effect on a landscape area or within a view.
- 7.1.13 The cumulative landscape and visual assessment has identified that there would be no significant cumulative landscape or visual effects, arising from the addition of the Proposed Development when considered in addition to proposed Associated Works, including the cable and switching station, as well as other major hydro and wind farm development within the study area.

8. Land Use and Recreation

- 8.1.1 An assessment of potential effects on land use and recreation has been undertaken for the Proposed Development. The assessment considers existing land uses which may be physically or indirectly affected by construction and operation of the Proposed Development. It also considers the potential to which recreational activities which currently take place, may be affected.
- 8.1.2 The assessment has concluded that the Proposed Development would result in some temporary significant adverse effects during construction for users of estate tracks through the Proposed Development Site around Loch Kemp and within Whitebridge Plantation due to the diversion of some routes and the presence of construction traffic using tracks in proximity. In the long-term, the existing track that circulates Loch Kemp would be inundated, but would be replaced by a new permanent track above the new top water level. The temporary effects are anticipated to be locally adverse significant, during construction, reducing to non-significant levels during the operation of the Proposed Development. There would also be some temporary localised adverse significant effects during construction for users of the B862. Mitigation in the form of an Outdoor Access Management Plan (OAMP), would be developed in agreement with key stakeholders and implemented to minimise the temporary effects as far as practicable.
- 8.1.3 The loss of woodland (excluding forestry, which is considered under Section 18), as a resource within the Site, is considered to result in a locally significant adverse effect during construction. However, the mitigation proposed, which would include extensive woodland habitat creation, would reduce effects to non-significant levels in the longer term.
- 8.1.4 All other effects, including cumulative effects, are anticipated to be not significant, and no long-term significant effects to land use and recreation are predicted.

9. Terrestrial Ecology

- 9.1.1 The potential effects of the Proposed Development on designated sites (selected for non-avian terrestrial ecology features), terrestrial habitats, and non-avian terrestrial species, during construction and operation have been assessed.
- 9.1.2 Baseline surveys were undertaken in summer 2021 and summer 2023 comprising vegetation and tree tagging surveys, surveys for lichens, bryophytes, and a range of protected mammals. All surveys were undertaken in accordance with relevant good practice guidelines.
- 9.1.3 Part of the Site lies within Ness Woods SAC / Easter Ness Forest SSS). A detailed assessment of effects on the SAC has been carried out in a separate **Shadow HRA** included in the EIA Report. Once embedded and good practice mitigation measures have been applied, a significant residual adverse effect has been identified upon the western acidic oak woodland, and mixed woodland on base-rich soils associated with rocky slopes qualifying features, with respect to habitat loss and fragmentation, and resilience and viability of old growth lichens. A **Compensatory Measures Package**, details of which are provided in a separate **Derogation Report** to support the section 36 application, has been developed in consultation with NatureScot, to ensure coherence of the national site network. This includes management to restore woodland within and adjacent to Ness Woods SAC (within a total management area of c. 243 ha), which would extend woodland extent and promote conditions for old growth lichen and bryophyte establishment.
- 9.1.4 Urquhart Bay SAC / SSSI lies on the shore of Loch Ness. An eco-hydrological assessment has concluded that changes in Loch Ness water level fluctuations because of the operation of the Proposed Development, operating alongside other existing and consented pumped storage schemes, would not adversely affect the integrity of Urquhart Bay SAC / SSSI. No further potential for significant effects upon any other designated sites (selected for non-avian terrestrial ecology features) has been identified.
- 9.1.5 Outwith Ness Woods SAC, with the application of embedded and best practice mitigation to minimise impacts where possible and adhere to relevant legislation, significant adverse residual effects of habitat loss have been identified during construction for: blanket bog (at the regional level); wet modified bog, dwarf shrub heath, native broad-leaved woodland (outwith the Ness Woods SAC) and long-established woodland of plantation origin (at the local level). However, these effects would be compensated for by a significant positive effect through implementation of a Habitat Management Plan (HMP), which includes extensive bog restoration, heathland restoration and management, and native woodland creation proposals.
- 9.1.6 Significant adverse residual effects in the short-term have been identified at the local level upon invertebrates, reptiles, pine marten, red squirrel and bats due to habitat loss during construction. However, no residual significant effects are predicted upon these faunal groups in the medium to long-term, once new planting matures and habitat condition improves, via delivery of the Ness Woods SAC Compensation Package, and HMP, which also includes numerous species-specific habitat features. A significant adverse effect is predicted upon the nationally important rocky shore and surrounding moorland lichen communities of Loch Kemp, which would be lost due to inundation. Lichen translocation would partially offset the effects upon the rocky shore lichens, although a residual significant effect is predicted (at a national level). There is a greater likelihood that lichen translocation and heathland restoration and management would offset the loss of moorland lichens.

- 9.1.7 Additional to the compensation proposed, heathland management, native woodland creation and the provision of bat and red squirrel boxes would provide a significant enhancement.
- 9.1.8 With the implementation of continued good practice measures and the implementation of the proposed Ness Woods SAC **Compensatory Measures Package** and HMP, no significant negative effects are predicted during the operational phase.
- 9.1.9 No potentially significant cumulative effects were identified.

10. Ornithology

- 10.1.1 A desk study and field study were undertaken during the summers of 2021 and 2022 to establish baseline bird populations in the area. Two ornithologically-designated sites are located within 5 km of the Proposed Development (Loch Knockie and Nearby Lochs Special Protection Area (SPA) and Knockie Lochs SSSI), and of the species recorded during the survey period, 21 are of local value, with a further four being considered as Valued Ornithological receptors (VORs).
- 10.1.2 There were three potential impacts on the bird life of the area identified during the construction phase of the Proposed Development (habitat loss, disturbance, and displacement), with disturbance and displacement also being assessed as potential impacts during the operational phase.
- 10.1.3 The assessment of the 21 species considered to have local value determined that all species would be subjected to minor displacement and disturbance throughout the construction period. However, due to the low numbers of the birds nesting on the Site, 17 of these ornithological receptors would only suffer negligible impacts from the Proposed Development. Four of the receptors (meadow pipit, skylark, tree pipit and willow warbler) were determined to suffer low impacts from the Proposed Development. The effects of the Proposed Development on all 21 species are not significant.
- 10.1.4 Once standard mitigation measures (provision of an Ecological Clerk of Works (ECoW), preconstruction monitoring of nesting birds, creating no-go zones around any sensitive nesting areas, etc.) are successfully implemented, there will be no residual effect from the construction or operational activity of the Proposed Development on ornithological receptors within the area.
- 10.1.5 Once the appropriate mitigation and compensation measures have been undertaken on the VORs, the potential impacts on these species are negligible and the residual effects considered to be not significant.
- 10.1.6 The EIA Report also contained an assessment of other VOR's and included the results within a confidential annex. The findings of this assessment also concluded that once the appropriate mitigation and compensation measures have been undertaken on the VORs, the potential impacts on these species are negligible and the residual effects considered to be not significant.

11. Aquatic Ecology

- 11.1.1 A baseline assessment detailing existing information relating to protected and notable aquatic species and habitats, and designated nature conservation sites has been undertaken.
- 11.1.2 Baseline field surveys were undertaken in summer - autumn 2022. Surveys undertaken included riverine macroinvertebrate surveys, loch macroinvertebrate surveys and freshwater lichen surveys. All surveys were undertaken in accordance with relevant good practice guidelines.
- 11.1.3 No designated sites with relevance for aquatic ecology are contained within the site boundary, however there are hydrological links with the River Moriston SAC, which is located approximately 2 km northwest of the site boundary on the opposite side of Loch Ness. Potential impacts of the Proposed Development on the qualifying features of the River Moriston SAC (including freshwater pearl mussel *Margaritifera margaritifera*) are assessed as part of a **Shadow HRA**, which is included as a standalone document to the section 36 application.
- 11.1.4 Potential effects were identified on important aquatic ecological features during the construction and operational phases of the Proposed Development (including cumulative impacts with other projects) following the implementation of embedded mitigation. However, none of these were deemed to be significant adverse effects and therefore it is not anticipated that any additional mitigation to reduce the significance of these would be required.
- 11.1.5 Embedded mitigation measures to be employed during the construction and operational phase include implementation of a CEMP, Pollution Prevention Plan (PPP) and Water Quality Monitoring Programme by the Principal Contractor and overseen by an Aquatic Ecologist / Aquatic Clerk of Works (ACoW). This would include Biosecurity measures which would protect against the spread of Invasive Non-native Species (INNS) during the construction phase. Monitoring would include the Allt a'Chinn Mhonaich and Loch Kemp where aquatic lichen *Spongilla lacustris* was present. Annual monitoring of macroinvertebrates in the rivers and lochs within the site boundary and within Loch Ness in the immediate vicinity of the site boundary would be undertaken to monitor water quality and the spread of invasive species during the construction and operational phase.
- 11.1.6 Enhancement measures including the installation of Coarse woody debris (CWD) submerged around loch shoreline areas would create new habitats for loch macroinvertebrates. Areas for CWD submersion would be confirmed in the final HMP and would comprise lochs/lochans which are not subject to rapid water level changes, such as Lochan a Choin Uire, Loch Paiteag, Lochan a Mhonaich, Lochan nan Nighean and Lochan Scristan.

12. Fish

- 12.1.1 A baseline assessment detailing existing information relating to protected and notable species and habitats, and designated nature conservation sites, has been undertaken. This included a review of NatureScot Sitelink website for statutory designated sites up to 2 km from the Proposed Development, Scotland's environment web for data on obstacles to fish migration, SEPA river and loch classifications and other pre-existing biological data relevant to the Proposed Development were also searched for.
- 12.1.2 Baseline field surveys were undertaken in summer - autumn 2022. Surveys undertaken included: riverine fish habitat assessment (including salmonid spawning suitability), loch fish habitat assessment (including salmonid spawning suitability) and electrofishing surveys (fish population assessment). All surveys were undertaken in accordance with relevant good practice guidelines.
- 12.1.3 No designated sites with relevance for fish are contained within the site boundary, however there are hydrological links with the River Moriston SAC which is located approximately 2 km northwest of the site boundary on the opposite side of Loch Ness. Potential impacts of the Proposed Development on the qualifying features of the River Moriston SAC are assessed as part of a **Shadow HRA**, which is included as a standalone document to the Section 36 application.
- 12.1.4 Potential significant adverse effects were identified on several of the important ecological features during the construction and operational phases including Arctic charr, Atlantic salmon, European eel, ferox brown trout, river / sea lamprey and sea trout. Potential significant cumulative adverse effects have also been identified during the operational phase on Atlantic salmon and sea trout.
- 12.1.5 Identified impacts, potentially causing adverse significant effects include: noise and vibration during cofferdam construction (Loch Ness), attraction of adult salmon and lamprey to outlet during generation (Loch Ness), attraction of (downstream migrating) salmon and sea trout smolts to the intake during abstraction (Loch Ness), attraction of (upstream migrating) elvers to outlet during generation (Loch Ness), impingement / entrainment / loss of (upstream migrating) elvers to intake during abstraction (Loch Ness), attraction of (downstream migrating) silver eels to the intake during abstraction (Loch Ness), attraction of lamprey to the intake during abstraction (Loch Ness).
- 12.1.6 Identified cumulative impacts, potentially causing adverse significant cumulative effects include: downstream migrating salmon and sea trout smolts becoming attracted to multiple sources of water abstraction (Caledonian Canal, Red John PSH (consented), the Proposed Development (in planning) and Foyers (operational)); and upstream migrating adult salmon becoming attracted to multiple sources of water generation (Red John PSH (consented) and the Proposed Development (in planning) and Foyers (operational)).
- 12.1.7 Where potential likely adverse significant effects were predicted, mitigation has been proposed. Mitigation measures to be employed during the construction phase include: a 'soft start' approach to piling operations to allow fish in the immediate vicinity of the works to disperse; a temporary bubble curtain deployed around any blasting works to attenuate noise effects and deter fish from the area; implementation of a CEMP, Pollution Prevention Plan (PPP), and Water Quality Monitoring Plan (WQMP) implemented by the Principal Contractor and overseen by an ACoW, floodlighting used during construction directed away from loch edges and watercourses; and a fish rescue and relocation where instream works (piling, dewatering, culvert installation) would take place.

- 12.1.8 Mitigation measures to be employed during the operational phase include operational limits agreed for pumping and generating phases as part of a CAR licence; an appropriately designed fish deterrent system installed at the inlet / outlet preventing delays to migration and reducing predation impacts; CCTV in operation at the outlet to deter and monitor instances of poaching; and a Fish Monitoring Plan (FMP) implemented to monitor the impacts of the operational scheme on fish.
- 12.1.9 Following the implementation of mitigation measures, there are no predicted residual adverse significant effects on fish during the construction or operational phases.

13. Geology, Soils and Water

- 13.1.1 Information for the study area was compiled using baseline information from a desk study which was verified by an extensive programme of field work, which included peat depth probing, peat characterisation by augering, a water interests and private water supply survey and preparing a schedule of permanent watercourse crossings. The assessment was undertaken considering the sensitivity of receptors identified during the baseline study and considering mitigation measures incorporated in the development design. It has also considered potential future changes to baseline conditions.
- 13.1.2 The assessment considered designated sites where these are water dependent and have a potential hydrological connection to the Proposed Development.
- 13.1.3 The assessment includes information on recorded peat depths, and these have been used to prepare a site-specific Peat Management Plan (PMP) and Peat Landslide Hazard Risk Assessment (PLHRA) which are provided as Technical Appendices in the EIA Report. The PMP considers in detail the condition of peat and carbon rich soils recorded at site and how these would be safeguarded as required by NPF4. A schedule of proposed permanent watercourse crossings associated with the Proposed Development is also provided as a Technical Appendix in the EIA Report. The field work included investigation of private and public water supply sources to determine those of which might be hydrologically connected to and at risk from the Proposed Development. Measures required to protect these sources have been confirmed.
- 13.1.4 Subject to the adoption of best practice construction techniques and a project specific CEMP, no significant adverse effects on the soils, geology and the water environment have been identified. The CEMP will include provision for controls to limit erosion and sedimentation, and a commitment to provide a drainage management plan which will be agreed with statutory consultees, including SEPA, Scottish Canals and NatureScot and which will be used to safeguard water resources and manage flood risk. A commitment to deploy Sustainable Drainage Systems (SuDS) in these plans has been made. The CEMP will also include provision of a Pollution Prevention Plan which will also be agreed with statutory consultees including SEPA and Scottish Canals prior to any construction works being undertaken.
- 13.1.5 In respect of the potential cumulative or potential in-combination effects it has been shown that the Proposed Development would not result in any significant effects on soils, geology or water environment.
- 13.1.6 Notwithstanding these safeguards, a programme of baseline and construction phase water quality monitoring is proposed which would be used to confirm that the Proposed Development does not have a significant effect on the water environment. The monitoring programme would also be used to ensure private water supplies, Drinking Water Protected Areas, and water dependent designated sites are safeguarded. It is proposed that the monitoring programme is agreed with statutory consultees and would be secured by a pre-development planning condition.

14. Cultural Heritage

- 14.1.1 A desk-based assessment and walkover field survey has been carried out to assess the effects on archaeology and cultural heritage interests associated with the construction and operation of the Proposed Development.
- 14.1.2 Three non-designated assets were identified within a 100 m buffer of the Proposed Development, one of local (Allt Leachd Gowrie, enclosure) and two of regional value (Lochan a'Choin Uire, group of buildings and Easter Drummond, township). Direct Impacts from inundation are predicted for the site of local value during operation, and potential direct impacts are predicted through widening or construction of access roads on minor features associated with one site of regional value (Lochan a'Choin Uire) during construction. The potential for unidentified archaeological remains is considered to be low to insignificant at the site. Mitigation to protect the archaeological record is recommended for one non-designated asset during the construction phase, as well as the implementation of general good practice measures. There are no predicted impacts on the second site of regional value (Easter Drummond). With the implementation of mitigation measures, no significant effects are predicted on any site directly impacted by the Proposed Development.
- 14.1.3 Within a 3 km outer study area a total of thirteen designated assets were identified, consisting of one scheduled monument and twelve listed buildings. A brief appraisal of a further thirty-nine designated sites, consisting of four scheduled monuments and thirty-five listed buildings at up to 10 km from the Proposed Development was also undertaken. Of the designated assets within the 3 km study area, the scheduled monument (Dell Farm, Burial Mound) and one Category B listed building (Dell Lodge and Rear Service Cottages) are considered vulnerable to an adverse alteration to their setting, however their predicted impacts are considered not significant when existing screening and the implementation of proposed landscape earthworks and planting at Dam 3 is considered.
- 14.1.4 All of the designated assets within the 10 km study area have been eliminated from further consideration, as for the majority of these assets there is no visibility of any elements of the Proposed Development. Minor, distant visibility affects only a very few of these assets, at a distance of 10 km, and to such a small degree that there would be no significant impact on these assets or their settings. One Scheduled Monument and three listed buildings at Fort Augustus are considered to have the potential for there to be visibility of some elements of the Proposed Development, however, these are located approximately 10 km away. At this distance, potential impacts would be to such a small degree that there would be no significant effects on these assets or their settings.

15. Traffic, Access and Transport

- 15.1.1 Access during the construction and operation of the Proposed Development would utilise the existing B862 public road and Dell Estate forestry tracks which are to be upgraded and extended, as well as the creation of a new access track to the powerhouse site on the eastern shore of Loch Ness.
- 15.1.2 It is proposed that access would be taken from a new access junction from the existing B862 public road, approximately 700 m southwest of the Whitebridge Hotel. The access junction would be designed to accommodate all predicted loads and traffic to be delivered by road for both the construction and operational phases of the Proposed Development.
- 15.1.3 The Caledonian Canal would be used for the delivery of abnormal load components of Electrical and Mechanical (E&M) equipment associated with the lower reservoir works of the Proposed Development, removing many potential Abnormal Indivisible Load (AIL) movements from the road network. The use of the canal for the delivery of further equipment and materials associated with the construction of the lower reservoir works would also be explored by the appointed Principal Contractor (in consultation with THC and other relevant stakeholders) but is not considered as part of this assessment, which considers a reasonable worst-case scenario where most deliveries reach the Site by road.
- 15.1.4 The Proposed Development would lead to a temporary increase in traffic volumes on the study area road network during the construction phase. Traffic volumes would fall considerably outside the peak period of construction.
- 15.1.5 The maximum traffic impact associated with construction is predicted to occur in Month 16 of the indicative 5-year construction programme. The greatest impact would occur along the B851 and the B862.
- 15.1.6 The Proposed Development traffic, at the peak of construction, would result in 68 Heavy Good Vehicle (HGV) movements per day (34 inbound and 34 outbound) and 316 Cars & Light Good Vehicles (LGVs) (158 inbound and 158 outbound).
- 15.1.7 No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development as background traffic movements are low and appropriate mitigation is proposed.
- 15.1.8 The assessment of significance suggests that drivers along the B862 and B851 as well as residents in Dores, Errogie and Gorthleck would experience significant effects, prior to the application of mitigation measures.
- 15.1.9 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or insignificant but as they will occur during the construction phase only, they are temporary and reversible.
- 15.1.10 Mitigation would include the development of a Construction Traffic Management Plan (CTMP) during the construction phase, to be agreed with THC.
- 15.1.11 It is predicted that during the operation of the Site there would be up to three vehicle movements per day for maintenance purposes as well as approximately 25 staff working at the Site. Also, there is potential for very occasional abnormal load movements to deliver replacement components.

16. Noise and Vibration

- 16.1.1 A noise impact assessment has been completed for the purpose of describing the potential noise impacts and likely effects on environmental receptors associated with the Proposed Development. For this purpose, the closest residential properties to the Proposed Development have been identified as noise sensitive receptors (NSR) and an ambient noise survey has been completed to establish the baseline ambient noise at these key receptor positions.
- 16.1.2 The potential noise impacts have been identified as noise from temporary construction works together with operational noise.
- 16.1.3 To estimate the noise levels resulting from temporary construction works a quantitative assessment has been completed, using predictive noise modelling, in line with guidance provided in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.
- 16.1.4 Predictions have been based on sound emission data applicable to the construction plant and equipment forecast for use on the main construction activities, including site establishment works, lower control works (inlet/outlet structures) and works associated with upgrade, or construction, of new access roads/tracks.
- 16.1.5 Noise during operation of the plant has also been predicted and is assessed in accordance with BS 4142:2014. Sound emission data for operating equipment including pump/turbines, motor/generators, transformers, and ancillary plant are obtained from data acquired on similar installations.
- 16.1.6 The following key mitigating measures have been identified for the purpose of controlling noise levels produced by the construction and operation of the Proposed Development:
- Construction noise and vibration would primarily be managed through a Construction Noise & Vibration Management Plan (CNVMP), which would be formally agreed with THC as the Planning Authority, prior to construction work commencing.
 - The Caledonian Canal System would be used as far as practicable in the delivery of various larger pieces of electrical & mechanical (E&M) equipment and materials, thereby reducing heavy vehicle road use for this process. Furthermore, the use of a track to connect the lower reservoir works area to the upper reservoir and dams, provides an opportunity to supplement rock quarried within the upper reservoir, with suitable tunnel spoil from the underground works, for dam construction.
 - A temporary 2 m high timber acoustic barrier, 500 m long, would be installed to reduce noise to Braeholm (NSR 4) and other properties in Easter Drummond, from vehicle movements along the site access road.
- 16.1.7 The residual effects of impacts associated with the Proposed Development, with the mitigation measures included in the scheme, are summarised as follows:
- The increased noise from construction traffic associated with the development, travelling on the public road network will be <1 dB and would have a negligible magnitude of impact. The significance of effect is predicted to be slight (not significant).

- For the short-term construction of access tracks passing NSRs, the noise at the closest receptors, NSR 3 (Dell House) and NSR 4 (Braeholm) would be a medium magnitude of impact and a moderate significance of effect. Because of the very short duration of the noise (a few days only) this is considered not to be a significant effect.
- For the long-term construction phases during the daytime, the noise impacts would be low or very low and the vibration impacts also low. The significance of effect is predicted to be slight (not significant).
- Where construction continues overnight (tunnelling works) the noise impacts would be very low and the vibration impacts would also be low. The significance of effects is predicted to be slight in each instance (not significant).
- Once into operation, the Proposed Development residual noise and vibration impacts would be low and the significance of effect is predicted to be slight (not significant).

16.1.8 The residual cumulative effects of the Proposed Development and other consented developments, can be summarised as follows:

- The cumulative assessment of road traffic noise during construction of the Proposed Development and other consented developments, at one road segment B852 (Bailebeag loc 3) is predicted to be moderate significance of effect (significant). This level of effect is wholly due to construction vehicles including HGVs associated with the Red John PSH project. It should be noted that no HGVs associated with the Proposed Development at Loch Kemp would be using this road, only cars and other LGVs.
- The cumulative assessment of construction work from sources located on the site and from other consented developments concludes that the noise and vibration impacts would be low and the significance of effects is predicted to be slight (not significant).
- During operation of the Proposed Development, accounting for the additional effect of other already consented developments, the cumulative noise and vibration impacts would be low and the significance of effect is predicted to be slight (not significant).

17. Air Quality

- 17.1.1 An Air Quality Assessment has been undertaken which has considered the baseline environment within the Site and the surrounding area, the potential impact on air quality arising from the construction of the Proposed Development, and recommendation of mitigation measures considered to be required within the Proposed Development design to mitigate any predicted significant air quality effects.
- 17.1.2 Construction phase air quality impacts are likely to include the generation of dust during site works and the generation of emissions by off-site transportation. Mitigation measures are recommended, where relevant, in order to reduce impacts at sensitive receptors including the implementation of a CEMP by the Principal Contractor, in agreement with THC. Upon implementation of relevant mitigation measures, the residual dust effects are predicted to be '*not significant*', and the residual effects from off-site vehicle emissions and on-site plant are also predicted to be '*not significant*'.
- 17.1.3 Given the sensitivity of the ecological receptors the deposition of dust on the Ness Woods SAC / Easter Ness Forest SSSI, it is recommended that a monitoring scheme be designed and implemented as part of a Dust Management Plan. There is not considered to be a potential for cumulative effects in relation to construction phase dust or vehicles emissions.
- 17.1.4 Activities associated with the operational phase would be negligible in comparison to those associated with the construction phase; the effects associated with the operational and maintenance activities have been scoped out of the assessment.
- 17.1.5 The effects associated with the construction phase have been considered to be representative of worst-case decommissioning effects, therefore no separate assessment of decommissioning scenarios have been undertaken.
- 17.1.6 As such, subject to the implementation of the recommended mitigation measures for dust and on-site plant emissions, it is not considered that air quality represents a material constraint to the development proposals, which conform to the principles of NPF4 and the Highland-wide Local Development Plan.

18. Forestry

- 18.1.1 An assessment of the woodland in the Whitebridge Plantation on Dell Estate at Whitebridge has been undertaken which has assessed the potential effects on trees and woodland in relation to the Proposed Development and recommended appropriate mitigation where adverse effects are predicted.
- 18.1.2 The assessment has identified that, prior to the implementation of mitigation measures, a significant adverse effect on woodland is predicted from the permanent felling of 50 hectares of commercial woodland within the Whitebridge Plantation and on Torr Cluanie at the northern end of Dam 3 (including areas that have been felled and are awaiting restocking) to accommodate the construction of the Proposed Development. Loss of non-commercial woodland, including woodland within the Ness Woods Special Area of Conservation (SAC), is assessed as part of the terrestrial ecology assessment, but any permanent loss of these woodland areas is included in this assessment for completeness, increasing the total woodland loss to 60.19 hectares. Most of the permanent woodland loss would be due to the inundation and raised levels of Loch Kemp. Other woodland loss would be a result of clearance to facilitate access tracks for construction and operation of the Proposed Development, as well as proposals for 5.76 hectares of the permanent woodland removal within the Whitebridge Plantation to undergo forest to bog restoration.
- 18.1.3 Mitigation to offset the permanent loss of woodland is proposed in the form of compensatory planting. Of the 60.19 hectares of permanent woodland removal identified, 52.86 hectares would require compensatory planting to be carried out under the Scottish Government's Control of Woodland Removal Policy (CoWRP). The compensatory planting plan proposes the creation of 63.11 hectares of new native woodland close to the study area resulting in a net increase in woodland cover locally of approximately 14.50 hectares, contributing to Scottish Forestry Strategy 2019 – 2029⁷ targets to increase Scotland's woodland cover to 21% by 2032. The proposed new woodlands are located within the Highland Native Woodland Target Area and an area identified as suitable for new woodland that delivers biodiversity, landscape and/or amenity objectives in the *Highland Council Forest and Woodland Strategy (2018)*⁸.
- 18.1.4 The implementation of the compensatory planting plan would result in a net increase of the total woodland and associated open ground within the plan area from 237 hectares to 257.62 hectares. Following the implementation of the mitigation measures set out in this Chapter, no significant adverse residual effects on commercial woodlands are predicted to arise from the construction and operation of the Proposed Development.

⁷ Scottish Forestry Strategy 2019 – 2029. Available at [Scotland's Forestry Strategy 2019-2029 \(www.gov.scot\)](https://www.gov.scot/publications/scottish-forestry-strategy-2019-2029/pages/12.aspx) [Last accessed: 06 November 2023].

⁸ Highland Council (2018). *Highland Forestry and Woodland Strategy*. [Online]. Available at: https://www.highland.gov.uk/download/downloads/id/891/highland_forest_and_woodland_strategy.pdf. [Last accessed: 06 November 2023].

19. Socio-economics and Tourism

- 19.1.1 An assessment of the potential and likely predicted effects, including cumulative effects, of the Proposed Development on socio-economics and tourism during construction and operation has been carried out within the context of NPF4, which promotes pumped storage hydro as one of the six national developments, stating:

“This national development supports pumped hydro storage capacity within the electricity network through significant new or expanded sites. This supports the transition to a net zero economy through the ability of pumped hydro storage schemes to optimise electricity generated from renewables by storing and releasing it when it is required.”

- 19.1.2 NPF4 is founded on sustainable economic growth principles and is governed by the National Strategy for Economic Transformation⁹ which confirms that the planning system should proactively support development that contributes to sustainable economic growth and to creating sustainable places.
- 19.1.3 The Proposed Development directly supports this vision through new investment and employment which supports the vision of moving Scotland's economy towards net zero. Importantly, it directly addresses the national development priority to develop pumped hydro storage, as one of six national priorities.
- 19.1.4 The socio-economic impact during construction and operation of the Proposed Development was assessed as having beneficial effects for the regional economy. It would create new temporary jobs through the construction programme with an average of around 356 people on-site during the construction phase, and a total of 1,716 construction related years of employment. This is predicted to be a Moderate Beneficial, and significant effect at the regional and national levels.
- 19.1.5 The Proposed Development would create approximately 25 new full-time jobs once fully operational. Construction and operational effects would bring notable Gross Value Added (GVA) impacts, as well as wider additional impacts, including supporting policy ambitions, perception benefits, salary benefits, exchequer benefits, local supply chain opportunities and pre-development impacts.
- 19.1.6 Surveys of the public and business attitudes to green energy developments provide no clear evidence that the presence of an investment in an area has a negative impact on local tourism.

⁹ Scottish Government (2022), National Strategy for Economic Transformation

20. Summary

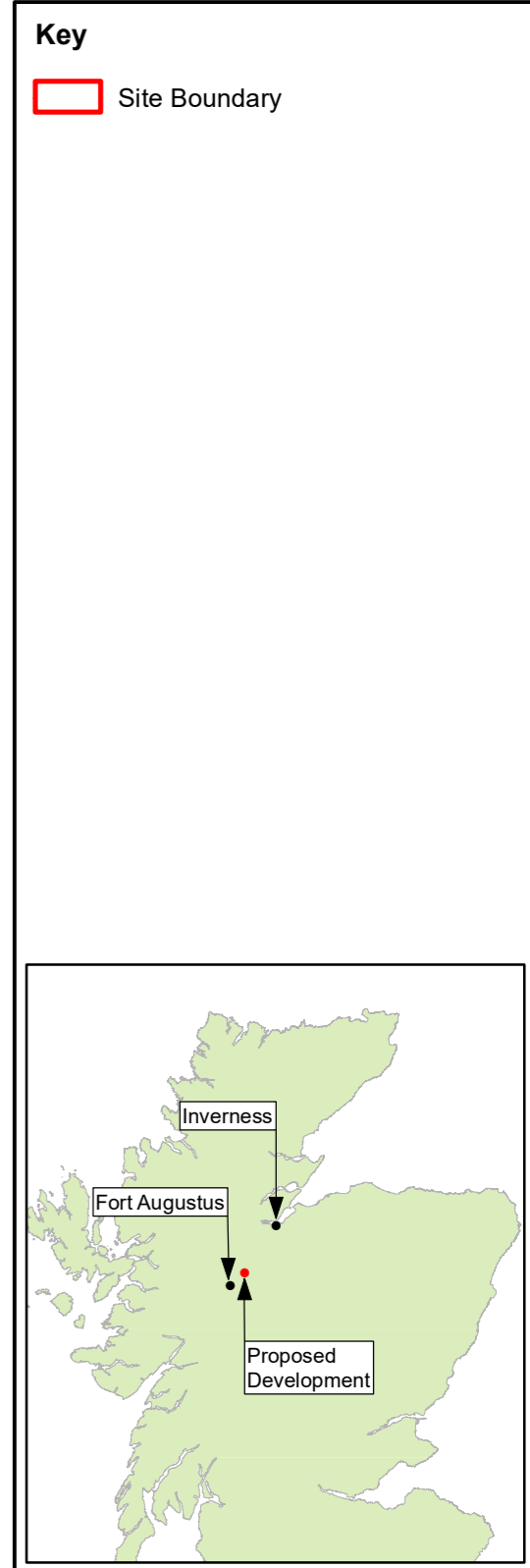
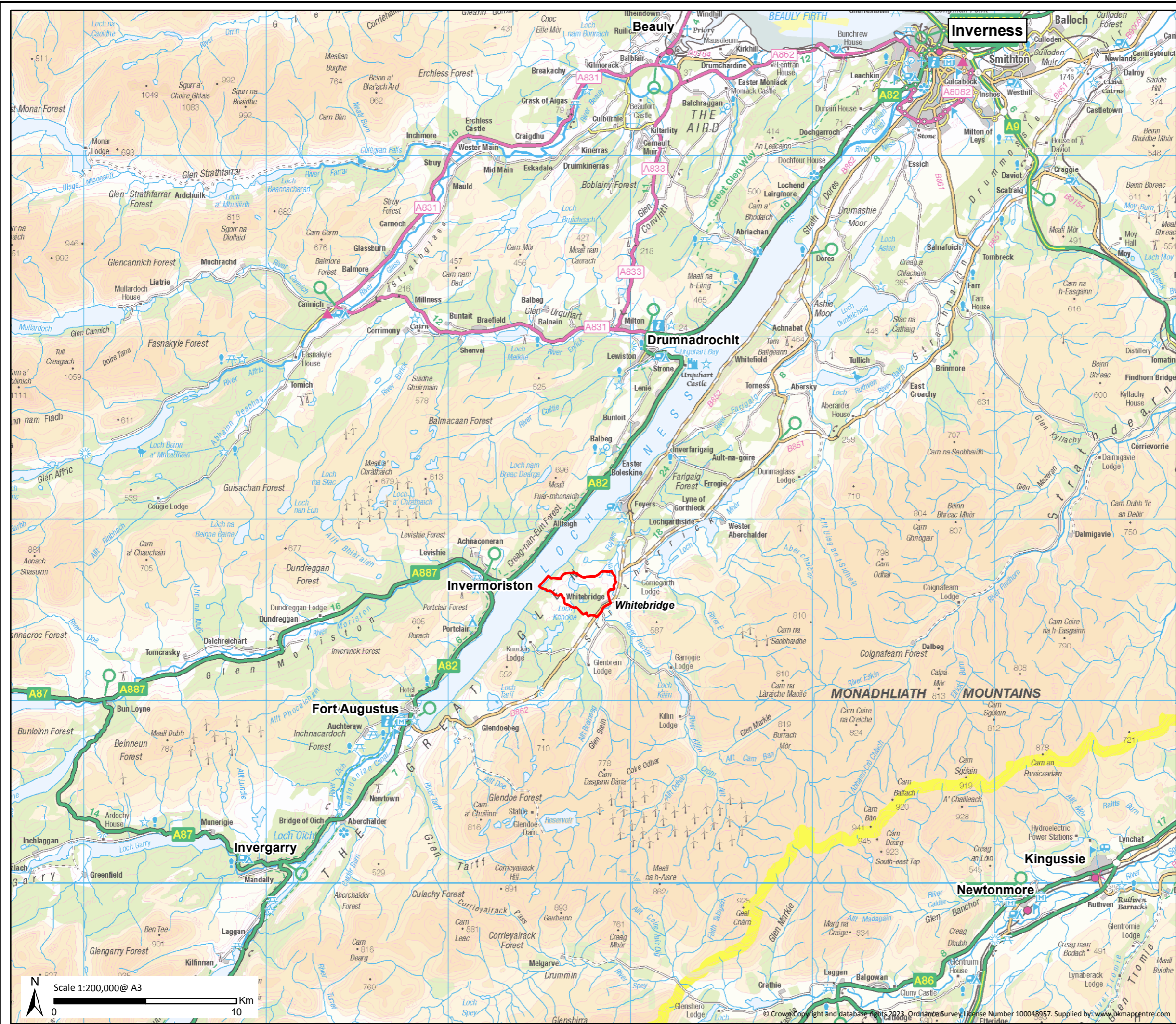
20.1.1 This Non-Technical Summary provides a summary of the EIA Report for the Loch Kemp PSH scheme. The main findings of the environmental impact assessment are summarised for the Proposed Development, concluding that likely significant residual effects (i.e., after mitigation) are predicted for:

- Temporary significant effects are predicted for two landscape character types during the construction phase. LCT 224 (Farmed and Wooded Foothills); and LCT 225 (Broad Steep-Sided Glen). These effects would be localised, affecting the landscape around the key areas of the Proposed Development at the lower reservoir works on the shore of Loch Ness (LCT 225) and the upper reservoir works at Loch Kemp (LCT 224). During the operational phase of the Proposed Development, after 10 years, adverse effects predicted within LCT 224 and LCT 225 would be reduced and would not be significant.
- Temporary and localised significant visual effects are predicted during the construction phase at four building based and two route receptors. No significant effects are predicted for any visual receptors during the operation of the Proposed Development.
- In terms of land use and recreation, temporary significant adverse effects during construction for users of estate tracks through the Proposed Development Site around Loch Kemp and within Whitebridge Plantation are predicted, due to the diversion of some routes and the presence of construction traffic using tracks in proximity, as well as for users of the B862. The loss of woodland as a resource is also predicted to be significant during construction but would be mitigated in the long term through habitat creation. No long-term significant effects to land use and recreation are predicted.
- Significant residual adverse effect on western acidic oak woodland, and mixed woodland on base-rich soils associated with rocky slopes, both qualifying features of the Ness Woods SAC. A **Compensatory Measures Package**, details of which are provided in a separate **Derogation Report**, has been developed in consultation with NatureScot, to ensure coherence of the national site network. This includes management to restore woodland within and adjacent to Ness Woods SAC (within a total management area of c. 243 hectares), which would extend woodland extent and promote conditions for old growth lichen and bryophyte establishment.
- Significant adverse residual effects of habitat loss have been identified during construction for: blanket bog (at the regional level); wet modified bog, dwarf shrub heath, native broad-leaved woodland (outwith Ness Woods SAC) and long-established woodland of plantation origin (at the local level). However, these effects would be compensated for by a significant positive effect through implementation of a Habitat Management Plan (HMP), which includes extensive bog restoration, heathland restoration and management, and native woodland creation proposals.
- Significant adverse residual effects in the short-term have been identified at the local level upon invertebrates, reptiles, pine marten, red squirrel and bats due to habitat loss during construction. However, no residual significant effects are predicted upon these faunal groups in the medium to long-term, once new planting matures and habitat condition improves, via delivery of the Ness Woods SAC **Compensatory Measures Package**, and HMP, which also includes numerous species-specific habitat features.
- A significant adverse effect is predicted on the nationally important rocky shore and surrounding moorland lichen communities of Loch Kemp, which would be lost due to

inundation. Lichen translocation would partially offset the effects upon the rocky shore lichens, although a residual significant effect is predicted (at a national level). There is a greater likelihood that lichen translocation and heathland restoration and management would offset the loss of moorland lichens.

- The cumulative assessment of road traffic noise during construction of the Proposed Development and other consented developments, at one road segment B852 (Bailebeag loc 3) is predicted to be moderate adverse significance of effect (significant). However, this level of effect is wholly due to construction vehicles including HGVs associated with the Red John PSH project. It should be noted that no HGVs associated with the Proposed Development at Loch Kemp would be using this road, only cars and other LGVs.
- The socio-economic impact during construction and operation of the Proposed Development was assessed as having beneficial effects for the regional economy. It would create new temporary jobs through the construction programme with an average of around 356 people on-site during the construction phase, and a total of 1,716 construction related years of employment. This is predicted to be a Moderate Beneficial, and significant effect at the regional and national levels.

Figures



Key
 Site Boundary

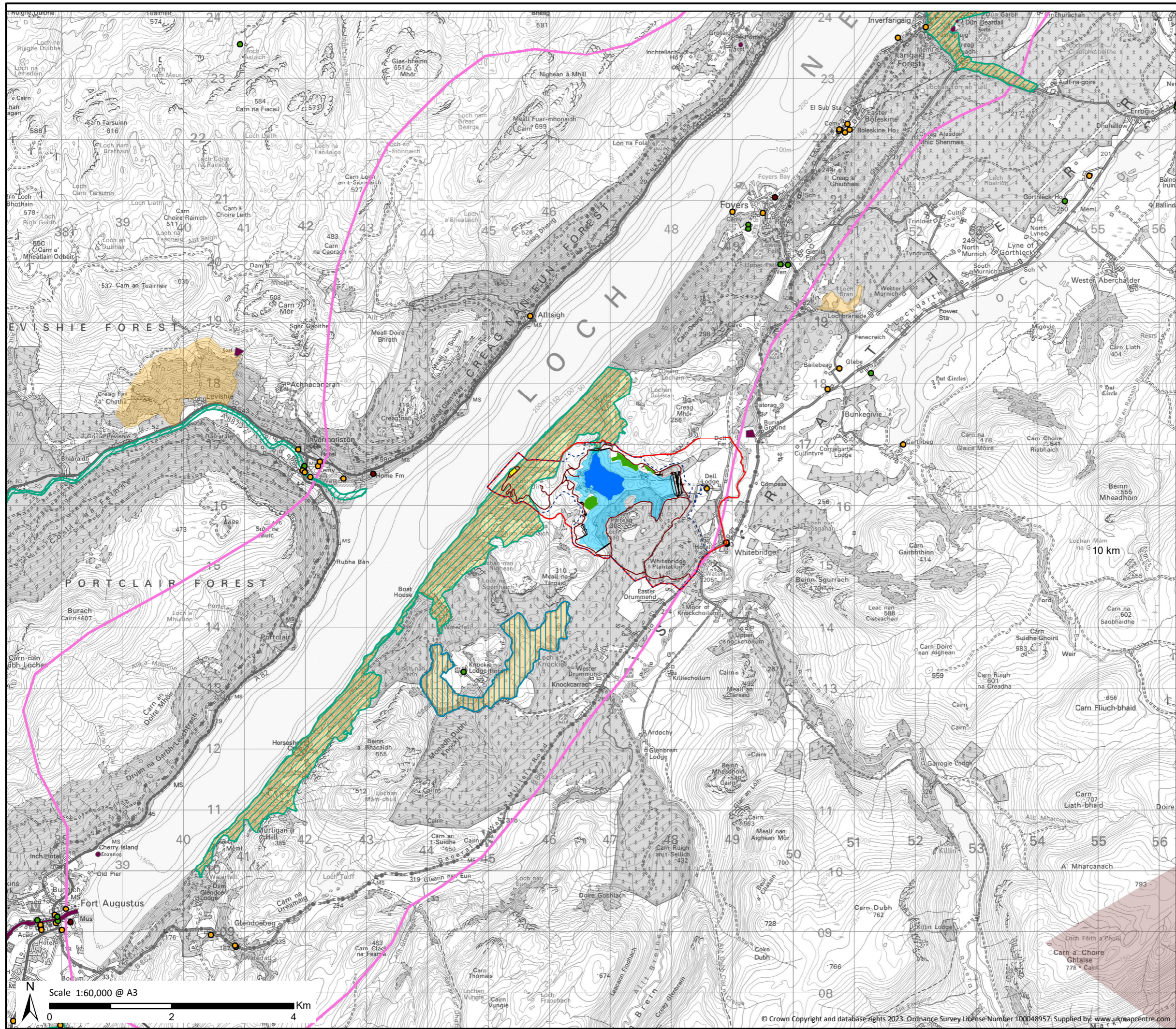
**Loch Kemp Storage
Non Technical Summary**

**Figure 1
Site Location**

Drawn by: SK Date: 15/11/2023
 Drawing: 120019-D-NTS-1-1.0.0

**Loch Kemp
Storage**
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Scale 1:200,000@ A3
 0 10 Km



- Key**
- Development Area
 - Site Boundary
 - Powerhouse Building
 - Loch Kemp Surface Area (Existing)
 - Maximum Inundation Area
 - Dam
 - Construction and Operational Access Track
- Advanced Works**
- Fenced Native Woodland Natural Regeneration Areas (Pre-Construction)
- Environmental Designations and Protected Areas**
- Special Area of Conservation
 - Special Protection Area (SPA)
 - Site of Special Scientific Interest (SSSI)
 - Wild Land Area (WLA)
 - Special Landscape Area (SLA)
- Cultural Heritage Constraints**
- Scheduled Monuments
 - Listed Building Category A
 - Listed Building Category B
 - Listed Building Category C

**Loch Kemp Storage
Non Technical Summary**

**Figure 3
Environmental Context**

Drawn by: SK Date: 16/11/2023
 Drawing: 120019-D-NTS-3-1.0.0



**Loch Kemp
Storage**
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