

Kemp Pumped Storage Scheme

Environmental Scoping Report

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Glossary and List of Abbreviations

Glossary

| Term | Meaning |
|--------------------------------|---|
| Access Tunnels | Tunnels built to create passage from the surface to areas of underground development |
| Annex I Species | Any habitat listed on Annex I of the Birds Directive or the Habitats Directive |
| Baseline Conditions | Existing conditions prior to any modifications through the Proposed Development |
| CAR Regulations | The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (As Amended) |
| Cut-off Dam | A modest barrier / dam structure designed to raise the ground level locally and contain water at the edge of a reservoir |
| dB / decibel | A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value and the scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10 ⁻⁵ Pa). |
| dB(A) | A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e., 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies. |
| LAeq,T | LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period. |
| Mitigation Measures | Measures including any process, activity or design process to avoid, reduce, remedy or compensate for adverse impacts of a development. |
| Non-native invasive species | Species introduced into areas outside their natural range that pose a threat to native wildlife |
| Outlet Area | An area on the shoreline of the lower reservoir, comprising a tailrace structure, powerhouse, jetty and administration building. For pumped storage, this doubles as a lower intake screen during pumping mode |
| Phase 1 Habitat Classification | Standardised system for classifying habitats in the UK |
| Potential Impacts | An effect that has potential to change a species or species population. |
| Reservoir | A large natural or artificial body of water stored for utility purposes |
| Saddle Dam | A barrier built in a topographic depression designed to create storage of water within a reservoir |

| | |
|------------------------------------|---|
| Schedule 1 Species | Species listed in Schedule 1 of the Wildlife and Countryside Act 1981 |
| Shaft Type Powerhouse / Powerhouse | A surface building containing the main pump / turbine equipment plus ancillaries, which includes one or more deep excavation shafts or pits for equipment and water passages. |
| Statutory Designated Site | Site of nature conservation with legal protection |
| Tailrace | A downstream channel that allows the water to enter / exit the lower reservoir after passing through the turbines |
| The Applicant | Loch Kemp Storage Ltd |
| The Developer | Statera Energy (UK) Limited |
| The EIA Regulations | The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 |
| The Proposed Development | The 300 Megawatt Loch Kemp Pumped Storage scheme and associated infrastructure. |
| UK BAP Species | Species identified as being most threatened and requiring conservation action under the UK Biodiversity Action Plan. |
| Underground Waterway System | A series of tunnels and surge shaft plus other structures below the ground, connecting upper and lower reservoirs, via the hydro pump / turbine shaft powerhouse. |

List of Abbreviations

| Abbreviation | Meaning |
|--------------|--|
| ASH | ASH design+assessment Ltd |
| ATC | Automatic Traffic Count |
| AQMA | Air Quality Management Area |
| BAP | Biodiversity Action Plan |
| BGS | British Geological Survey |
| BS | British Standard |
| CEMP | Construction Environmental Management Plan |
| CLVIA | Cumulative Landscape and Visual Assessment |
| CNMP | Construction Noise Management Plan |
| dB | decibel |
| DfT | Department for Transport |

| | |
|------------|--|
| DMRB | Design Manual for Roads and Bridges |
| EC | European Commission |
| ECU | Energy Consents Unit |
| EHO | Environmental Health Officer |
| EIA | Environmental Impact Assessment |
| EIA Report | Environmental Impact Assessment Report |
| FCS | Forestry Commission Scotland |
| FLS | Forestry and Land Scotland |
| GW | Gigawatt |
| GWDE | Groundwater Dependent Terrestrial Ecosystems |
| GWh | Gigawatt Hours |
| ha | Hectares |
| HES | Historic Environment Scotland |
| HSE | Nuclear Safety Directorate |
| HwLDP | The Highland Wide Local Development Plan |
| IEA | Institute of Environmental Assessment |
| IMFLDP | The Inner Moray Firth Local Development Plan |
| IMFLDP2 | The Inner Moray Firth Local Development Plan 2 |
| INNS | Invasive / non-native species |
| ISO | International Organization for Standardization |
| JNCC | Joint Nature Conservation Committee |
| km | kilometre |
| LAQM | Local Air Quality Management |
| LB | Listed Building |
| LCT | Landscape Character Types |
| LI | Landscape Institute |
| LVIA | Landscape and Visual Impact Assessment |
| m | Meters |

| | |
|-----------------|---|
| MIR | Main Issue Report |
| MW | Megawatt |
| NATS | National Air Traffic Services |
| NO ₂ | Nitrogen Dioxide |
| NPF | National Planning Framework |
| NPF3 | The 4 th National Planning Framework |
| NPF4 | The 3 rd National Planning Framework |
| NPPG | National Planning Policy Guidelines |
| NRTF | National Road Traffic Forecast |
| NVC | National Vegetation Classification |
| PM | Particulate Matter |
| PWS | Private Water Supply |
| SAC | Special Area of Conservation |
| SEPA | Scottish Environment Protection Agency |
| SM | Scheduled Monument |
| SNH | Scottish Natural Heritage (now Nature Scot) |
| SPA | Special Protection Area |
| SPP | Scottish Planning Policy |
| SSSI | Site of Special Scientific Interest |
| SuDS | Sustainable Urban Drainage System |
| THC | The Highland Council |
| UK | United Kingdom |
| ZTV | Zone of Theoretical Visibility |

Executive Summary

Loch Kemp Storage Ltd. (“the Applicant”), is proposing to construct the 300 Megawatt (MW) Loch Kemp Pumped Storage scheme (hereafter referred to as “the Proposed Development”), located within the Dell Estate, approximately 13 kilometres (km) to the north-east of Fort Augustus. The Proposed Development will require submission of a Section 36 application under the Electricity Act 1989.

The proposal is to build and operate a new 300 MW pumped storage scheme utilising the existing Loch Kemp as the upper storage reservoir and Loch Ness as the lower reservoir. In order to allow drawdown for storage, Loch Kemp would be raised by approximately 28 m from its existing 177 m AOD elevation to approximately 205 m AOD. Four new saddle dams between 15 – 30 m high and four minor cut off dams would be constructed around Loch Kemp to form the upper reservoir.

A new shaft type powerhouse would be constructed on the shore of Loch Ness, with 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 a surge shaft (with associated access) on the hilltop between Loch Kemp and Loch Ness.

A technical feasibility study will be carried out, in parallel with an Environmental Impact Assessment (EIA), to determine the technological requirements of the Proposed Development.

It is proposed that EIA surveys will be carried out to inform the Environmental Impact Assessment Report (EIA Report).

Statera Energy (UK) Limited (SEL) (“the Developer”) is preparing the application on behalf the Applicant, which will be determined by Scottish Ministers under Section 36 of the Electricity Act 1989, including an application for deemed planning permission for the same development under Section 57(2) of the Town and Country Planning (Scotland) Act 1997. SEL is a developer and operator of flexible generation assets; dispatchable gas and commercial scale batteries in the UK. SEL is backed by a major infrastructure fund, InfraRed Capital Partners and wishes to lead the industry on the provision of flexible generation to support the UK’s ambition to decarbonise. To this end it currently operates 300 MW of dispatchable gas and battery assets and by the end of 2022 will have constructed a further 450 MW of battery storage and 100 MW of dispatchable gas. It has a pipeline of 1.3 GW that should receive planning consent by March 2022.

This Scoping Report forms part of the EIA process. The aim of the document is to inform stakeholders about the Proposed Development and provide information on the approach to the EIA. For each environmental feature, the potential effects of the Proposed Development that require further investigation are identified and the proposed scope of assessment in terms of studies and surveys to be undertaken is discussed. The detailed assessment methodologies for the various environmental features will be further informed by responses to this Scoping Report and ongoing consultation with relevant statutory consultees.

1. Introduction

1.1 Background Information

- 1.1.1 Loch Kemp Storage Ltd. (hereafter referred to as “the Applicant”) is proposing to construct the 300 Megawatt (MW) Loch Kemp Pumped Storage scheme, located within the Dell Estate as shown on **Figure 1**, approximately 13 kilometres (km) to the north-east of Fort Augustus. The proposals for which consent under Section 36 of the Electricity Act 1989¹ will be sought by the Applicant are referred to in this report as ‘the Proposed Development’ and are described below. The application for Section 36 consent is being prepared by Statera Energy (UK) Limited, (hereafter referred to as “the Developer”) on behalf of the Applicant.
- 1.1.2 To maximise the energy yield of the site, in addition to contributing to The Scottish Government’s commitment to pumped storage hydro, as set out in the Scottish Energy Strategy², the generating capacity of the project will be 300 MW, with approximately 30 hours of generation.
- 1.1.3 An Environmental Impact Assessment (EIA) will be required to accompany the Section 36 Application under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017³ (hereafter referred to as “the EIA Regulations”) as the Proposed Development comprises an electricity generating station with a generation capacity of greater than 50 MW. It is therefore considered to fall within the definition of Schedule 2 development contained in regulation 2(1) of the EIA Regulations. The Developer has voluntarily agreed to prepare an EIA Report in accordance with the EIA Regulations, rather than requesting a Screening Opinion. In terms of the application for Section 36 consent, deemed planning permission under Section 57 (2) of the Town and Country Planning (Scotland) Act 1997⁴, as amended, will also be sought.

1.2 The Proposed Development

- 1.2.1 The proposal is to build and operate a new 300 MW pumped storage scheme utilising the existing Loch Kemp as the upper storage reservoir and Loch Ness as the lower reservoir. To allow drawdown for storage, Loch Kemp would be raised by approximately 28 m from its existing 177 m AOD elevation to approximately 205 m AOD. Four new saddle dams between 15 – 30 m high and four minor cut off dams would be constructed around Loch Kemp to form the upper reservoir.

¹ *The Electricity Act 1989*. Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents> [Last Accessed 01/10/2021].

² Scottish Government, 2017. *The Scottish Energy Strategy*. Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> [Last Accessed 01/10/2021]. The Scottish Energy Strategy recognises that pumped storage hydro will play an important role in achieving a balanced energy portfolio.

³ *The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended)*. Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made?regulation=4-5> [Last Accessed 01/10/2021].

⁴ *Town and Country Planning (Scotland) Act 1997 (as amended)* Available at: <https://www.legislation.gov.uk/ukpga/1997/8/contents> [Last Accessed 01/10/2021].

- 1.2.2 A new shaft type powerhouse would be constructed on the shore of Loch Ness, with integral tailrace arrangement with fish screens connecting the system to Loch Ness.
- 1.2.3 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 a surge shaft (with associated access) on the hilltop between Loch Kemp and Loch Ness.
- 1.2.4 It is proposed that EIA surveys will be carried out to inform an EIA Report.

1.3 Purpose of this Report

- 1.3.1 This report is submitted as the basis of a request for Scottish Ministers to provide a formal EIA Scoping Opinion for the Proposed Development under Regulation 7 of the EIA Regulations³.
- 1.3.2 The scoping process allows statutory consultees and others to comment on the Proposed Development, the scope of the EIA and the proposed assessment methodology. It also provides an opportunity for consultees to raise any issues that they consider to be relevant to the EIA process.
- 1.3.3 The aims of this document are to:
- set out the overall approach to the EIA;
 - summarise key baseline information;
 - describe the proposed assessment methodology;
 - identify key potential effects at all stages of development;
 - identify topics not requiring further assessment that can be scoped out; and
 - describe the proposed content and structure of the EIA Report.
- 1.3.4 The document is divided into 21 sections:
- Section 1: introduces the Proposed Development and provides a context for the Scoping Report;
 - Section 2: summarises the consultation process;
 - Section 3: describes the Proposed Development;
 - Section 4: outlines the planning policy context;
 - Section 5: provides information on the structure of the EIA Report;
 - Sections 6-19: details the environmental features to be assessed as part of the EIA;
 - Section 20: recommends the environmental features which do not need to be assessed as part of the EIA and can be scoped out of the EIA Report; and
 - Section 21: details how responses to the Scoping Report should be provided.
- 1.3.5 The EIA process enables the potential likely significant effects of the Proposed Development on the environment to be fully understood and taken into account during consideration of the application. The process is also used to develop mitigation measures to avoid, reduce or offset any adverse effects of the Proposed Development.

- 1.3.6 The Developer has appointed a team of independent specialists, as described in Section 1.5 below, to advise on the environmental issues associated with the Proposed Development. These specialists will work with The Developer during the design process, carry out environmental impact assessment work, and will prepare chapters for inclusion in the EIA Report.
- 1.3.7 The Scoping Opinion received from Scottish Ministers will be used to inform the EIA. The list of organisations to be consulted during the scoping exercise has been provided by Scottish Government Energy Consents Unit (ECU) and is presented in Section 2 of this report. Details are also provided regarding proposed consultation during the EIA process.

1.4 Technical Team

1.4.1 The Developer recognises that the Proposed Development may give rise to some environmental effects. Specialist consultants have therefore been appointed by the Developer to provide expert knowledge on the environmental topics scoped into the EIA, as follows:

- Water Management: Gilkes Energy Ltd;
- Landscape and Visual: ASH design+assessment Ltd;
- Land Use and Recreation: ASH design+assessment Ltd;
- Terrestrial Ecology: Blairbeg Ecology Ltd;
- Bryophytes and Lichens: Nick Hodgetts⁵;
- Ornithology: Blairbeg Ecology Ltd;
- Aquatic Ecology: EnviroCentre Limited;
- Fish: EnviroCentre (with input from Waterside Ecology and Dell Estate);
- Geology, Soils and Water: SLR Consulting Ltd;
- Cultural Heritage: Catherine Dagg;
- Traffic, Access and Transport: Pell Frischmann Ltd;
- Noise and Vibration: Spectrum Acoustic Consultants Ltd;
- Air Quality: SLR Consulting Ltd;
- Forestry: Crosscut Forestry Ltd; and
- Socioeconomics and Tourism: MKA Economics Ltd.

1.4.2 Other inputs relating to the construction and future maintenance of the Proposed Development have been provided by Gilkes Energy Ltd and the Applicant. The assessment of potential environmental effects and preparation of the EIA has been co-ordinated by environmental and landscape consultants ASH design+assessment Ltd (ASH), on behalf of the Applicant.

⁵ Bryophytes and Lichens will be considered as part of the Terrestrial Ecology Chapter of the EIA Report

1.5 Local Supply Chain

- 1.5.1 The Applicant is committed to proactively engaging with the local supply chain to ensure that local companies are aware of and know how to tender for contracts related to the Proposed Development. As part of its commitment to developing these relationships, the Applicant would engage with local suppliers as part of the development and procurement process.

2. Consultations

2.1 Consultation to Date

2.1.1 Pre-scoping, preliminary contact has been made to the following organisations:

- Scottish Canals
- The Highland Council (THC);
- Scottish Environment Protection Agency (SEPA);
- NatureScot; and
- Scottish Government, Energy Consents Unit (ECU)

2.1.2 The Proposed Development will be the subject of rigorous consultation with THC, all statutory bodies and the local community during the design development and consenting process.

2.2 Scoping Stage Consultation

2.2.1 The Scoping Report will be issued to the statutory consultees listed below:

- THC;
- SEPA;
- NatureScot; and
- Historic Environment Scotland (HES).

2.3 EIA Consultation

2.3.1 In addition to the statutory consultees above, this Scoping Report will be issued to the following consultees:

- British Telecom;
- Civil Aviation Authority (Airspace);
- Defence Infrastructure Organisation (DIO);
- Fisheries Management Scotland;
- Highlands and Islands Airports;
- John Muir Trust ;
- Joint Radio Company;
- Marine Scotland;
- Mountaineering Council of Scotland;

- National Air Traffic Services (NATS) Safeguarding;
- Ness and Beaully Fisheries Trust;
- Ness District Salmon Fishery Board;
- RSPB Scotland;
- Scottish Canals;
- Scottish Canoe Association;
- Scottish Rights of Way and Access Society (ScotWays);
- Scottish Forestry;
- Scottish Water;
- Scottish Wild Land Group (SWLG)
- Scottish Wildlife Trust;
- The Crown Estate Scotland;
- Transport Scotland; and
- Visit Scotland.

2.3.2 The Scoping Report will also be issued to the following Community Councils:

- Stratherrick and Foyers Community Council; and
- Fort Augustus and Glenmoriston Community Council.

2.3.3 The Developer's project liaison manager will contact local Councillors to offer copies of the Scoping Report if required.

2.3.4 It is proposed that the Developer and their appointed specialist consultants (where required) will take part in the Highland Council Major Pre-application Service at a time when it can best add value, likely to be after all the scoping advice has been received and some baseline assessment has been carried out, in order to demonstrate how the project is moving forwards. The Highland Council will be consulted on this, in liaison with NatureScot and SEPA.

2.4 Public Exhibitions and Consultation

2.4.1 A series of in person public exhibitions have been held locally at Scoping stage, at the following locations:

- Glenmoriston Millennium Hall, Invermoriston, Tuesday 30 November 2021, 1pm – 7.30pm;
- Fort Augustus Village Hall, Fort Augustus, Wednesday 1 December 2021, 1pm – 7.30pm; and
- The Wildside Centre, Whitebridge, Thursday 2 December, 1pm – 7.30pm; and
- A virtual public exhibition event was also held on Wednesday 8th December 2021, between 12pm – 2pm, and between 6pm - 8pm.

2.4.2 Further public exhibitions will be held at the pre-application stage.

- 2.4.3 The purpose of the public exhibitions is to seek views from local residents and other interested parties about the Proposed Development. The exhibitions provide information about the Developer, the need for new pumped storage, and specific details about the Proposed Development. The exhibitions also provide an opportunity for members of the public to ask questions about the Proposed Development. Representatives from the development team will be present at all the public exhibition events to answer any questions.
- 2.4.4 To promote the public exhibitions and engagement the Developer:
- Contacted the following community councils to invite them to the public exhibitions:
 - Stratherrick and Foyers Community Council;
 - Fort Augustus and Glenmoriston Community Council;
 - Dores and Essich Community Council; and
 - Strathdearn Community Council; and
 - Strathnairn Community Council.
 - Issued 419 leaflets to addresses within a 10 km buffer of the Site on the 11th Nov 2021;
 - Displayed posters at the Public Exhibition venues, community notice boards and, where possible, at local amenities; and
 - Placed adverts in the public notice section of the Inverness Courier on the 12th and 19th November 2021 with details of the exhibitions.
- 2.4.5 A project website has been created for the Proposed Development (www.lochkempstorage.co.uk) where details of consultation will be regularly updated.

3. The Proposed Development

3.1 Introduction

- 3.1.1 This chapter describes the Proposed Development and provides information on its location, physical characteristics, proposed components and design. An overview of the Proposed Development is provided in **Figure 1**.
- 3.1.2 The primary function of the Proposed Development would be to 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 Loch Ness and the enlarged Loch Kemp through the tailrace tunnel, powerhouse, high pressure tunnel and headrace tunnel.
- 3.1.3 The Proposed Development would either be operated in the ‘generating’ mode, when electricity would be generated by releasing water from the upper reservoir at Loch Kemp through the reversible pump turbines and into Loch Ness, or in the ‘pumping’ mode, when electricity is used to drive water through the reversible pump turbines in the other direction from Loch Ness to the upper reservoir. The generating capacity of the project will be 300 MW, with approximately 30 hours of generation. The powerhouse turbine arrangement may allow for the operation of a hydraulic short circuit where water is circulated within pipes between pumps rather than using the upper reservoir. The Proposed Development would also be capable of maintaining a ‘stand-by’ state of not generating or pumping (i.e., no significant water transfer is taking place through the powerhouse).
- 3.1.4 The principal components of the Proposed Development would comprise:
- **Dams and Upper Reservoir** – Four new saddle dams between 15 – 30 m high and four, minor cut-off 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** – Screened intakes would feed an underground tunnel carrying water between the upper and lower reservoirs, through the powerhouse.
 - **Shaft Type Powerhouse**– A series of powerhouse shafts with a surface building located on the shore of Loch Ness would contain reversible pump turbines and motor generators together with associated equipment such as transformers and switchgear.
 - **Outlet Area** - A tailrace structure would be located on the shore of Loch Ness integral with the Powerhouse. A jetty and administration building would also be located adjacent to the powerhouse.
 - **Access Tunnels** - Tunnels would be provided for accessing the underground waterway system.
 - **Access Roads** - Access roads would be provided for the construction of the Proposed Development and for operational and emergency access; and
 - **Rock Disposal** - Most of the rock from the excavated tunnels and shafts would be removed via the shafts and tunnel portals near the powerhouse on the shore at Loch Ness. The

excavated rock from the underground works would be reused in a positive manner in the dams and localised area of construction works wherever feasible.

- 3.1.5 In addition to the above, there would be a need for site establishment and lay down areas, as well as a workers' camp. **Figure 1** shows the indicative location of the proposed main site establishment area/site accommodation area, at Whitebridge plantation.

3.2 Site Selection

- 3.2.1 Consideration of alternatives relating to the Proposed Development involved screening and review of several different possible pumped storage locations, with suitable upper and lower reservoir sites and necessary topography. The Loch Kemp site was chosen as it was considered to have a promising combination of a natural upper reservoir and suitable elevation for pumped storage within the natural topography, with minimal visual impact from the new dam structures and associated upper reservoir.
- 3.2.2 In terms of longer term energy storage, the Proposed Development at Loch Kemp compares favourably with existing and proposed pumped storage schemes with its ability to run for up to 30 hours.
- 3.2.3 It also compares favourably with other potential schemes when considering its relatively small overall footprint and the associated civils and earthworks involved.

3.3 Site Description

- 3.3.1 The Proposed Development is situated within the Dell Estate to the south of Loch Ness, approximately 13 km to the north-east of Fort Augustus. The upper reservoir works, including construction of the four new saddle dams and the four new minor cut-off dams, would be accessed off the B862 at Whitebridge utilising existing estate and forestry tracks (to be upgraded and extended) and the creation of a new access track to the powerhouse site on the shore of Loch Ness.
- 3.3.2 The site is a combination of often steeply sloping native woodland on the lower slopes of Loch Ness, with moorland interspersed with copses of native trees as well as plantations of commercial forestry on the higher flatter elevations. The estate is used for several commercial Highland sports, including game shooting, clay pigeon shooting and fishing. There are also several self-catering holiday properties within the estate.
- 3.3.3 The principal water bodies and watercourses within the vicinity of the site include Loch Ness and Loch Kemp whose outfall flows towards Loch Ness along the Allt an t Sluichd. Loch Kemp has a relatively small catchment with only minor burn tributaries feeding it. The River Fechlin passes through Whitebridge to the east of the site and becomes the River Foyers, falling towards the Ness at Foyers.

3.4 Grid Connection

- 3.4.1 The Developer has accepted a Grid Connection Offer from National Grid. A buried connection has been requested but the route is yet to be confirmed. The grid connection would be a separate application and therefore consideration of the environmental effects associated with the grid connection will not be considered in the Section 36 Application and supporting EIA Report.

3.5 Site Access

- 3.5.1 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) and the creation of a new access track to the powerhouse site on the shore of Loch Ness. **Figure 2** illustrates the indicative layout against a more detailed base map, in order to provide a preliminary understanding of the location of existing infrastructure (such as tracks), in relation to the proposed layout.
- 3.5.2 Details of the proposed access routes to facilitate construction of the scheme are provided below and are illustrated on **Figure 1**:
- Use of a new access junction from the existing B862 public road approx. 700 m south-west of the Whitebridge Hotel;
 - Use of existing Dell Estate forestry track through Dell Plantation, to be upgraded and extended to facilitate use by construction vehicles, along with site establishment and site accommodation within the plantation;
 - Combination of widening existing tracks around Loch Kemp to connect the Plantation access with existing estate tracks described above to allow access to the dam sites and other working areas; and
 - Creation of new track from the edge of Loch Kemp to the surge shaft and down to the powerhouse site on the shore of Loch Ness.
- 3.5.3 The use of the Caledonian Canal system will be explored through the EIA process for the delivery of various equipment and materials for the project.
- 3.5.4 Where access roads form part of a public road or interface with public roads (i.e., at access points) the road standards would be agreed with Transport Scotland and THC.

3.6 Rock Spoil Management

- 3.6.1 Most of the rock generated from the excavated tunnels and shafts would be removed via the shafts and tunnel portals near the shore at Loch Ness. The excavated rock from the underground works would be reused in a positive manner in the dams and localised area of construction works, as well as in reinstatement works wherever feasible. A spoil management strategy will be developed, providing information on spoil volumes, and how tunnel spoil will be stored and managed on site and elsewhere. A specific Technical Appendix or Chapter will be included as part of the in the EIA Report covering spoil management.

3.7 Site Establishment

Construction Compounds

- 3.7.1 It is anticipated that a main site establishment area / compound / camp, would be required at Whitebridge plantation. There would be a need for other compounds and lay down areas in the vicinity

of the upper reservoir and the powerhouse and outlet area works. The location of these areas would be identified and assessed during the EIA process.

Borrow Pits

- 3.7.2 It is envisaged that borrow pits would be required to provide stone to improve and extend existing tracks, to construct new tracks and for concrete operations. It is anticipated that any borrow pits required for stone, would be located within the vicinity of the proposed works, and mainly within the area of proposed reservoir inundation. The exact location of borrow pits would be dependent upon site surveys with respect to availability of suitable material and proximity to where it is required.

3.8 Project Construction

- 3.8.1 It is anticipated that the main civil engineering construction period would last approximately three to four years and the workforce would average 200-300 people on-site throughout the construction phase, although the number of construction workers on-site would inevitably vary throughout the construction period depending on the stage of the works.
- 3.8.2 All statutory legislation would be fully complied with during construction and other best practice guidance (e.g., SEPA Pollution Prevention Guidelines) would be adhered to.
- 3.8.3 Construction mitigation and environmental protection measures would be implemented via a Construction Environmental Management Plan (CEMP). Further information on the CEMP is provided in Section 5.5.

3.9 Project Operation and Maintenance

- 3.9.1 The Proposed Development would be manned, with most operations being controlled from the control and administration building within the powerhouse. Regular visits would be made to inspect and maintain structures along the following lines:
- Daily visits to the powerhouse shafts, intake and tailrace screens for routine operational and maintenance purposes;
 - Weekly visits to the dams, for routine operational and maintenance purposes;
 - Non routine and scheduled major maintenance tasks would be carried out at longer intervals as required. These tasks could potentially extend to several weeks/months;
 - Periodic inspection of the underground tunnel works and dam structures; and
 - As required maintenance of the access tracks and other infrastructure as noted during routine visits to the site.

3.10 Project Decommissioning

- 3.10.1 With proper maintenance, the Proposed Development should remain functional indefinitely and as such, it is not anticipated that an assessment of decommissioning effects will be required as part of the

EIA Report. If the Proposed Development ceases operation, decommissioning would take place and the site would be restored as follows:

- 'Moveable infrastructure would be removed;
- Underground tunnels would be sealed;
- Generation plant would be removed;
- Where removal of infrastructure, for example the earth-fill dams, would result in more damage than leaving in place, they would be left in-situ; and
- Disturbed ground would be reinstated.

3.10.2 Full details of the decommissioning plan would be agreed with the appropriate authorities and landowners prior to any decommissioning works commencing.

4. Planning Policy Context

4.1 Introduction

- 4.1.1 Hydroelectric power is a very flexible method of electricity generation due to its ability to rapidly start and stop without constraint. Pumped storage hydro plants add to this the ability to consume and store large quantities of energy, making them one of the most flexible of all electricity generation technologies. The role which pumped storage hydro has traditionally played in power network management is primarily in managing relatively short-term differences between electricity supply (generation) and demand (consumption). As the proportion of electricity generated from inflexible renewable sources such as wind rises, this role will become increasingly important and may begin to include the management of longer-term imbalances due, for example, to frontal weather systems or prolonged periods of high-pressure low wind events. The Applicant believes that highly flexible large scale and particularly long duration energy storage schemes will become essential to complement the proposed significant increase in deployment of non-flexible and intermittent wind and solar generation. This view is supported by The Scottish Government who recognise the important role pumped storage hydro can play in balancing the Scotland's energy portfolio.
- 4.1.2 Due to unavoidable inefficiencies in the energy conversion processes, all energy storage systems use more energy than they generate. Pumped storage hydro is the only mature energy storage technology which can be deployed on such a large scale and has one of the highest cycle efficiencies of any energy storage process. The installed capacity for the Proposed Development would be up to 300 MW, with an energy storage capacity of up to 10 Gigawatt Hours (GWh), giving about 30 hours of generation at full capacity. The Proposed Development would therefore significantly enhance the current energy storage capacity of the other existing pumped storage schemes in the United Kingdom (Dinorwig, Ffestiniog, Cruachan and Foyers).
- 4.1.3 This section provides an overview of the planning policy context for The Proposed Development. A more detailed discussion and evaluation of relevant policies will be included within the Planning Statement that will be provided as a supporting document with the Section 36 application, as discussed further in Section 5.4 below. An up-to-date list of relevant planning policies will be contained within an appendix to the EIA Report.

4.2 National Planning Framework 3

- 4.2.1 National Planning Framework (NPF) provides a framework for long-term spatial development in Scotland. The third NPF (NPF3)⁶ was laid before the Scottish Parliament and approved in June 2014, and it sets out the Government's development priorities over the next 20-30 years and identifies national developments which support the development strategy. The central vision is set out over four key policy objectives for Scotland to be: a successful, sustainable place; a low carbon place; a natural, resilient place; and a connected place.

⁶ Scottish Government, 2014. *National Planning Framework 3*. Available at: <https://www.gov.scot/publications/national-planning-framework-3/> [Last Accessed 04/10/2021]

- 4.2.2 NPF3 supports pumped storage hydroelectric generation and recognises the need for new sites, as well as maximising existing infrastructure to support security and diversification of our energy supplies, and to reduce carbon emissions.

4.3 National Planning Framework 4: Draft

- 4.3.1 A draft version of fourth NPF ('NPF4')⁷ was published for consultation in November 2021. The consultation period on Draft NPF4 will close on 31 March 2022. Once approved by the Scottish Parliament and adopted by the Scottish Ministers (expected Summer 2022), this plan will become part of the statutory development plan and will directly influence planning decisions. It confirms the necessary shift required to achieve net zero-emissions by 2045 and states that significant progress towards this target must be made by 2030.
- 4.3.2 In relation to Pumped Hydro Storage, the NPF4 draft states that this national development '*will play a significant role in balancing and optimising electricity generation and maintaining the operability of the electricity system as part of our transition to net zero. This is necessary as we continue to move towards a decarbonised system with much more renewable generation, the output from which is defined by weather conditions*'. The draft also states that NPF4 '*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*'.

4.4 Climate Change Plan 2018-2032

- 4.4.1 The 2018 Climate Change Plan (and 2020 update)⁸ sets out the ambition of Scottish Government plans to decarbonise to up to 2032. It confirms that the plan seeks to build on Scotland's success in sectors such as renewable energy to secure further transformational change. The Climate Change Plan sets a target to deliver 50% of all Scotland's energy needs from renewables by 2030, with a target of 100% of electricity to be generated by renewables by 2020. The plan also states that pumped storage has an important role to play, as it can release stored electricity when the demand is high and the system needs it most (e.g. when there is less wind energy available).

⁷ Scottish Government, 2014. *National Planning Framework 4: Policy Statement*. Available at: <https://www.gov.scot/publications/scotlands-fourth-national-planning-framework-position-statement/pages/1/> [Last Accessed 06/10/2021]

⁸ Scottish Government, 2020. *Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update*. Available at: <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/> [Last Accessed 06/10/2021]

4.5 Scottish Planning Policy

- 4.5.1 Scottish Planning Policy⁹ (SPP) was published by the Scottish Government in June 2014 and sets out a national policy framework for land use planning. This consolidated document supersedes previous Scottish Planning Policies (SPPs) and National Planning Policy Guidelines (NPPGs).
- 4.5.2 SPP recognises the role energy storage schemes have in supporting the development of renewable energy and maintaining a stable electricity network.

4.6 Local Planning Policy

- 4.6.1 The site lies entirely within the jurisdiction of THC. The Highland Wide Local Development Plan (HwLDP) 2012¹⁰, provides the local planning framework for the area and provides the general policy context against which the Proposed Development would be assessed.
- 4.6.2 THC have also developed Supplementary Guidance of relevance to the Proposed Development, The Highland Renewable Energy Strategy and Planning Guidelines¹¹, provides guidance on the planning issues to be considered for hydroelectric and pumped storage schemes such as landscape and visual amenity, disruption of existing water flows, ecology and fisheries.
- 4.6.3 The Proposed Development falls within the Inner Moray Firth Local Development Plan (IMFLDP) 2015¹², which was adopted in 2015 and sets out the policies and land allocations to guide development in the Inner Moray Firth area over the next 20 years. New Area Local Development Plans are currently being prepared which, along with the HwLDP and Supplementary Guidance will form “the development plan” that guides future development in the Highlands. The Inner Moray Firth Local Development Plan 2 (IMFLDP2) Main Issue Report (MIR) (THC, 2020)¹³ was published for consultation in 2020 and the consultation period closed on 30 April 2021. All comments¹⁴ are due to be reported to the relevant Council committees by the end of 2021 for decision on the content of IMFLDP2, which will then be re-issued for further public consultation in early 2022.

⁹ Scottish Government, 2014. *Scottish Planning Policy*. Available at: <https://www.gov.scot/publications/scottish-planning-policy/> [Last Accessed 04/10/2021]

¹⁰ The Highland Council, 2012. *Highland Wide Local Development Plan*. Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan [Last Accessed 04/10/2021]

¹¹ The Highland Council, 2012. *The Highland Renewable Energy Strategy and Planning Guidelines*. Available at: https://www.highland.gov.uk/downloads/file/1009/highland_renewable_energy_strategy_may_2006 [Last Accessed 04/10/2021]

¹² The Highland Council, 2015. *The Inner Moray Firth Local Development Plan*. Available at: https://www.highland.gov.uk/downloads/file/15008/adopted_inner_moray_firth_local_development_plan [Last Accessed 04/10/2021]

¹³ The Highland Council, 2020. *The Inner Moray Firth Local Development Plan 2: Main Issues Report*. Available at: https://www.highland.gov.uk/downloads/file/23998/inner_moray_firth_2_ldp_main_issues_report [Last Accessed 04/10/2021]

¹⁴ Comments on the Inner Moray Firth Local Development Plan 2: Main Issue Report can be viewed at: <https://consult.highland.gov.uk/kse/event/35403/peoplesubmissions/section/5445428>

5. Proposed Approach to EIA

5.1 The Overall Approach to the Environmental Impact Assessment (EIA)

- 5.1.1 The EIA process enables the likely significant effects of the Proposed Development on the environment to be fully understood and taken into account during consideration of the application. The process is also used to develop mitigation measures to avoid, reduce or offset any adverse effects of the Proposed Development.
- 5.1.2 The Developer has appointed a team of independent competent experts to advise on the environmental issues associated with the Proposed Development. These specialists will work with the Developer during the design process, carry out environmental impact assessment work, and will prepare chapters for inclusion in the EIA Report. In addition to this, the Developer has appointed a specialist Architect, who will work closely with the project Engineers and project Landscape Architects, to ensure that the visible powerhouse structure and other elements of the outlet design on the banks on Loch Ness, are sensitively designed, to create a positive visual contribution to the Loch Ness.
- 5.1.3 The EIA Report will be based on the Scoping Opinion and prepared in accordance with the EIA Regulations 2017³ (as amended), and the Good Practice Guidance published by the Scottish Government's Energy Consents & Deployment Unit in January 2013. Consideration will also be given to advice contained in Planning Advice Note 1/2013: Environmental Impact Assessment¹⁵ and Planning Circular 1/2017: Environmental Impact Assessment Regulations¹⁶ where relevant.
- 5.1.4 The EIA work will comprise a series of specialist environmental studies which will be targeted to assess the potential significant effects which the Proposed Development is likely to have on the environment. **Figure 3** provides an overview of environmental designations and protected areas in the area surrounding the Proposed Development. Survey work will be undertaken for the Proposed Development. Each topic included within the EIA process will be incorporated as a separate chapter in the main body of the EIA Report or included as an appendix if the assessment of the subject matter requires to be more detailed.
- 5.1.5 Throughout the EIA Report, where an issue raised in the Scoping Opinion is addressed, this will be clearly referenced in the relevant chapter. A scoping matrix will also be included in the EIA Report which will detail all consultation responses received for the purposes of the Scoping Opinion and during the EIA process, with a reference to where these responses have been addressed in the EIA Report. A schedule of mitigation measures will also be included as an appendix and cross-referenced in the relevant assessment work.

¹⁵Scottish Government, 2013. *Planning Circular 1/2013 (Environmental Impact Assessment)*. Available at: <https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/> [Last Accessed 04/10/2021]

¹⁶Scottish Government, 2017. *Planning Circular 1/2017: Environmental Impact Assessment Regulations*. Available at: <https://www.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/> [Last Accessed 06/10/2021]

5.2 Structure of the EIA Report

5.3 It is anticipated that the EIA Report will be produced as four volumes:

- Volume 1: Non-Technical Summary;
- Volume 2: Main Report;
- Volume 3: Figures; and
- Volume 4: Technical Appendices.

5.3.1 Volume 2 will include a set of introductory chapters that describe the background and rationale to the Proposed Development, set out the relevant policy context, and provide information about the construction, operation and decommissioning of the Proposed Development.

5.3.2 For each of the environmental features assessed in Volume 2, the following information will be included in the respective chapters:

- An executive summary;
- an introduction to the environmental feature;
- scoping and consultation responses;
- assessment scope, methodology and study area;
- baseline conditions;
- impact assessment (including cumulative impacts) and proposed mitigation; and
- references.

5.3.3 Section 6-19 of this Scoping Report provide a brief overview of the baseline conditions, the potential effects associated with the Proposed Development and the assessment methodology for each environmental feature to be considered in the EIA Report. Section 20 of this Scoping Report provides recommendation of environmental features that do not need to be considered in the EIA Report.

5.3.4 Volume 2 will be concluded with a Schedule of Mitigation, outlining the main committed mitigation measures and an overall summary of significance in the context of the EIA Regulations³.

5.4 EIA Report Format

5.4.1 The EIA Report will be made available via the ECU's application portal. Hard copies of the EIA Report will be made available at publicly accessible deposit locations, the exact details of which would be agreed with THC and ECU. Where requested, hard copies and Electronic copies will be made available to consultation bodies and consultees. Figures/drawings and detailed specialist reports and figures will be provided in Volumes 3 and 4 respectively.

5.4.2 If necessary, a confidential appendix will be prepared containing sensitive, confidential ecological/ornithological information to be provided to the Scottish Government and NatureScot.

5.5 Supporting Documents

- 5.5.1 A Planning Statement will be prepared in support of the application for consent. The Planning Statement will not be part of the EIA Report. It will discuss the relevant energy and environment policies relating to pumped storage development, Scottish Government's policies on electricity generation and renewable energy development, and the Development Plan context for the Proposed Development. A list of relevant planning policies will be contained within an appendix to the EIA Report.
- 5.5.2 A Design Statement will be prepared setting out the design principles that have influenced and shaped the design of the Proposed Development.
- 5.5.3 An Outline CEMP will be provided as an appendix within the EIA Report and will contain project environmental constraints and committed environmental mitigation measures identified within the EIA Report, along with recognised industry best practice information applicable to the construction phase of the Proposed Development on the following subject-matters:
- Site Induction;
 - Communications and Training;
 - Project Environmental Constraints, including Noise;
 - Pollution Prevention, including air and water;
 - Site Waste Management;
 - Drainage Management;
 - Watercourse Crossings;
 - Water Quality Monitoring;
 - Excavation, Borrow Pits, Materials and Reinstatement;
 - Ecological (Habitats and Species) Protection;
 - Archaeological Protection; and
 - Environmental Incident and Emergency Response

6. Water Management

Introduction

- 6.1.1 The Proposed Development broadly comprises a system to transfer water between Loch Ness (lower reservoir) and a new, upper reservoir created by enlarging the existing Loch Kemp. During times of generation, water would be transferred from the new reservoir to a surface shaft powerhouse on the shore of Loch Ness via a headrace tunnel and from the powerhouse to the adjacent tailrace at Loch Ness via a short tailrace. During low electricity demand, water would be pumped from Loch Ness into the reservoir at Loch Kemp.
- 6.1.2 The maximum and minimum level limits of Loch Ness will remain within the current limits, subject to further discussion with Scottish Canals, SEPA and SSE, and possible adjustment of the levels and operation of the Loch Ness level controlling Dochfour Weir.
- 6.1.3 There would be a small modification in the characteristic of the Allt an t Sluichd downstream of the Proposed Development due to the influence of the storage reservoir, although compensation flows would be provided. Gauging would be carried out to assess existing flows in this small burn and a suitable proportion of the existing flows would be maintained during operation of the upper reservoir. This would be in accordance with a SEPA administered “Controlled Activities Regulations Scotland” impoundment licence.

Baseline Description

- 6.1.4 Loch Ness has a drainage area of approx. 1,800 km² and is approximately 40km long with a surface area of 55 km². Loch Ness is currently utilised by SSE Generation Ltd at its existing pumped storage hydroelectric power station at Foyers. These activities are covered by a licence under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (As Amended) (CAR). Another pumped storage scheme called Red John has planning consent and will also be subject to a CAR licence covering impoundment and abstraction of water from Loch Ness. SEPA’s local operations team and CAR permitting team will be consulted in order that they can provide input as part of the planning process.
- 6.1.5 Loch Ness also forms part of the Caledonian Canal which joins the loch at Dochfour and Fort Augustus locks. The level of Loch Ness and the adjoining canal network is controlled by the Dochfour Weir structure which includes the SSE operated sluice gates which provide river flows downstream when the loch levels are lower than the weir.

Hydrological Modelling

- 6.1.6 It is proposed to carry out detailed hydrological modelling to explore and assess the potential effects of the Proposed Development on water management within the Loch Ness catchment during the operational phase of the Proposed Development. The results of the assessment would inform other aspects of the EIA as required, including the ‘Geology, Soils and Water’ assessment.

Next Steps

6.1.7 A chapter describing the water management of the Proposed Development will be included in the EIA Report. It is anticipated that this chapter would comprise the following sections:

- Overview of Development and Existing Conditions.
- Water Management and Proposed Operation of the Pumped Storage Hydro.
- Compensation Flow in Allt an t Sluichd;
- Proposed Abstraction and Discharge Rates and Volumes.

7. Landscape and Visual

Introduction

- 7.1.1 This part of the Scoping Report discusses the proposed scope of the Landscape and Visual Impact Assessment (LVIA) which would be undertaken for the Proposed Development. The LVIA would be carried out by Chartered Landscape Professionals from ASH design + assessment Ltd (ASH), a registered practice with the Landscape Institute (LI).
- 7.1.2 The LVIA would include the consideration of potential effects to the fabric and character of the landscape resource and the visual amenity of residents, travellers and visitors present within the study area.

Baseline Description

- 7.1.3 The Proposed Development would be located on the shore and the hills east of Loch Ness, approximately 13 km north-east of Fort Augustus, and 5 km south of Foyers. The upper reservoir would utilise and extend the existing waterbody of Loch Kemp, surrounded by a group of low hills. A tailrace structure would be located on the eastern shore of Loch Ness (the lower reservoir), within the Great Glen. This largely undeveloped stretch of shoreline is backed by steep wooded slopes, accessed by an existing estate track.

Designations

- 7.1.4 The Proposed Development site would be located within the Loch Ness and Duntelchaig Special Landscape Area; a non-statutory, regional level designation identified by THC.

Landscape Character

- 7.1.5 SNH (now NatureScot) has undertaken detailed review and classification of the various landscape areas and types of Scotland¹⁷ The Proposed Development would fall within and directly influence three of these Landscape Character Types (LCTs):

- LCT 224 - Farmed and Wooded Foothills,
- LCT 225 - Broad Steep-Sided Glen.
- LCT 227 - Farmed Strath – Inverness.

Visual Amenity

- 7.1.6 Potential visual receptors who may gain views of the Proposed Development include residents, travellers and recreational users who may be present in and around nearby buildings and using roads and recreational resources.

¹⁷SNH, 2019. *Scottish Landscape Character Types Map and Description*. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> [Last Accessed 02/11/2021]

- 7.1.7 A preliminary Zone of Theoretical Visibility (ZTV) has been prepared for the Proposed Development and is presented in **Figure 4**. This indicates that potential visibility of the Proposed Development would be likely to be relatively contained.
- 7.1.8 There are few residential receptors in the vicinity of the Proposed Development, although there may be potential views of the Proposed Development from scattered settlements along the B862 through Stratherrick and from the Great Glen, across Loch Ness.
- 7.1.9 For visual receptors within the Great Glen, potential views of the proposed outlet area (tailrace, powerhouse, tunnel portals, and jetty), and other construction works at the lower reservoir, may be obtained across Loch Ness including from residential properties at Alltsigh and Invermoriston, and from the A82 and Great Glen Way which follow the western side of the Loch Ness. Users of the Caledonian Canal, Great Glen Canoe Trail, and individuals boating and fishing on Loch Ness also have the potential to be visual affected by the Proposed Development. The Proposed Development may also be visible from the popular local summit of Meall Fuar-mhonaidh.
- 7.1.10 Potential visual receptors in Stratherrick include residents of scattered rural properties around Whitebridge and the south-western end of Loch Mhor who may gain views of construction works, access and permanent structures at the upper reservoir. There would also be potential views from the B862 (also National Cycle Network Route 78 as this follows the same route as the road), other minor roads to the east of Loch Ness, and recreational routes, including the South Loch Ness Trail and Loch Ness 360, and the Trail of the Seven Lochs and Monadhliath Trail which are identified by the South Loch Ness Access Group. There are also a number of core paths and Scottish Hill Tracks in the area. The Suidhe Viewpoint on the B862 is a popular tourist spot in this area.

Potential Significant Effects

- 7.1.11 Potential Significant Effects on landscape and visual amenity may include:

Construction

- Temporary physical effects on landscape fabric, including potential tree removal, changes to vegetation cover, introduction of new features or removal of existing features.
- Temporary effects on landscape character, where changes to the landscape fabric may lead to changes in the landscape patterns and intrinsic experiential qualities of the landscape; and
- Temporary effects on views obtained by residents, travellers, and recreational users of the landscape.

Operation

- Long term effects on landscape character, where changes to the landscape fabric may lead to changes in the landscape patterns and intrinsic experiential qualities of the landscape; and
- Long terms effects on views obtained by residents, travellers, and recreational users of the landscape.

Proposed Scope of Assessment

Proposed LVIA Study Area

- 7.1.12 The potential visibility of the Proposed Development, particularly the permanent features, is likely to be limited by tree cover. A study area of 6 km from the Proposed Development boundary is therefore anticipated to encompass all potential significant landscape and visual effects and would include the summit of Meall Fuar-mhonaidh which is an important vantage point within the local area, opposite Foyers Pumped Storage Scheme to the west of Loch Ness.

Scope of LVIA

- 7.1.13 The LVIA will be presented in two parts discussing the anticipated effects on the separate aspects of landscape character and visual amenity during both the construction and operational phases of the Proposed Development. The assessment of operational effects will assume the implementation of any mitigation measures proposed with planting assumed to have been established for around 10 years.
- 7.1.14 The assessment will be supported by various figures as required.
- 7.1.15 The key aspects of the LVIA are set out below:

Zone of Theoretical Visibility

- 7.1.16 The LVIA will be informed by a ZTV. The ZTV is a computer generated diagram which uses a terrain model to indicate areas from which elements of proposed development would theoretically be visible. It is proposed that the ZTV would be produced of the main constructed elements of the proposal to give an idea of where these individual elements may form a feature within views. A preliminary ZTV of the dam structures and powerhouse building, based on the outline design proposal, is included as **Figure 4**.

Landscape Assessment

- 7.1.17 The Landscape Character Assessment will include assessment of the Proposed Development in relation to all the LCTs within the Study Area considering potential for effects on the fabric and character of the landscape. This will include the direct effect of potential physical change to landscape elements, experiential effects on the character of the Proposed Development site and surrounding areas, and potential indirect effects to the broader landscape resource.
- 7.1.18 The assessment of effects on landscape character will also consider the potential for effects to the Loch Ness and Duntelchaig SLA.

Visual Assessment

- 7.1.19 The visual assessment will comprise a receptor-based assessment, considering the potential for effects on visual amenity within the study area. This will take into consideration all visual receptors located at residential properties and workplaces, recreational sites and those using roads and Core Paths and other recreational routes throughout the study area. Consideration will also be given to potential visual effects on boat users in Loch Ness.

Visualisations

- 7.1.20 It is proposed that the LVIA will be supported by inclusion of two visualisations illustrating how the elements of the Proposed Development at the upper and lower reservoirs may appear. Visualisation locations would be identified at locations where members of the public would be most likely to obtain views of the Proposed Development. The exact location for visualisation would be identified following site survey and would be agreed with THC. At this stage, it is proposed that two locations may be selected from the following:
- Layby on A82
 - Core Path IN25.01 near Whitebridge
 - Summit by Suidhe Viewpoint off the B862
 - The Great Glen Way opposite the Proposed Development in the vicinity of Alltsigh
 - Popular local summit: Meall Fuar -mhonaidh
- 7.1.21 It is proposed that the visualisation will be presented in accordance with current THC standards for wind energy developments: Visualisation Standards for Wind Energy Development THC (2016a).
- 7.1.22 Visualisations will be designed to support the LVIA and the understanding of how the Proposed Development and suggested mitigation measures would appear. The locations for visualisations will not comprise viewpoints for a viewpoint-based visual assessment as the visual assessment will consider all likely visual receptors within the study area. The visualisations will show the Proposed Development during its operational phase only, with any proposed mitigation planting assumed to have established after around 10 years.

Cumulative Landscape and Visual Assessment (CLVIA)

- 7.1.23 A cumulative assessment of other existing or proposed similar large scale hydro development around Loch Ness that may lead to cumulative effects will be undertaken. It is anticipated that this may include the Glendoe Hydro Scheme, Foyers Pumped Storage Scheme and Red John Pumped Storage Scheme.

Questions to Consultees

- Do the ECU, THC and NatureScot agree with the proposed scope of the LVIA?
- Do the ECU, THC and NatureScot agree with the suggested range of locations for visualisations from which two locations will be selected?
- Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?

8. Land Use and Recreation

Introduction

- 8.1.1 It is proposed that an assessment is undertaken which will assess the effects of the Proposed Development on the land use and recreational amenity within the study area.

Baseline Description

Land Use

- 8.1.2 Key land use activities which occur within the vicinity of the Proposed Development include:
- Forestry and Woodland – located on lower slopes;
 - Moorland – located on upper slopes;
 - Estate land managed for game birds such as partridge, pheasant, and grouse, on the lower slopes around Loch Kemp;
 - Agricultural areas on flatter land within Stratherrick;
 - Water bodies and water courses including Loch Ness which is a part of the Caledonian Canal, Loch Kemp, Loch Knockie and smaller lochans and watercourses some of which comprise Private Water Supplies;
 - Settlement including Whitebridge, and also Alltsigh and Invermoriston on the eastern shore of Loch Ness;
 - Infrastructure including the main transport routes, the A82 and B862 and a network of smaller roads and existing overhead line infrastructure in the vicinity of Whitebridge and within the Great Glen.

Recreation

- 8.1.3 Recreation within the vicinity of the Proposed Development includes walking and cycling routes within the Great Glen and Stratherrick, including the Great Glen Way, South Loch Ness Trail and Loch Ness 360, and the Monadhliath Trail, the Trail of the Seven Lochs promoted by the South Loch Ness Access Group. There are also a number of core paths and Scottish Hill Tracks. Loch Ness forms part of the Caledonian Canal and Great Glen Canoe Trail and is also utilised for fishing and boating. The land on Dell Estate is managed for hunting and deer stalking, and Loch Kemp and the smaller lochans are used for fishing.

Potential Significant Effects

- 8.1.4 Potential Significant Effects on land use and recreation may include:

Construction

- Temporary loss of publicly used land;

- Temporary severance and impact on the viability of existing activities;
- Re-utilisation of redundant and vacant land; and
- Impacts on land designated for future development.

Operation

- Permanent loss of publicly used land;
- Permanent severance and impact on the viability of existing activities;
- Re-utilisation of redundant and vacant land; and
- Impacts on land designated for future development.

Proposed Scope of Assessment

8.1.5 The land use and recreational assessment will be based on a review of recent local literature and web-based resources and further consultation will be made with local organisations and groups if necessary. The assessment will include consideration of potential disruption or disturbance to existing land use and recreational activities during the construction and operational phases of the development and shall include consideration of:

- The major infrastructural components of the scheme in the area of the dams and upper reservoir and the outfall area around the shore of Loch Ness;
- The temporary construction compounds and laydown areas;
- Temporary and permanent access tracks and use thereof; and
- Temporary impact on water amenities due to use of the canal system during construction of the scheme.

Questions to Consultees

- Do the ECU, THC and NatureScot agree with the proposed scope of the Land Use and Recreation assessment?
- Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU and THC aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

9. Terrestrial Ecology

Introduction

- 9.1.1 The EIA will include an assessment of the potential effects of the Proposed Development on non-avian habitats and species within the proposed development planning boundary and the wider local area. Evaluation of the existing baseline environment will be made through a combination of desk-based study, field surveys and consultation.
- 9.1.2 This section:
- Describes the key ecological issues associated with construction and operation of the Proposed Development;
 - Presents the proposed survey methods that would be used to generate ecological baseline information;
 - Outlines the proposed approach to the ecological impact assessments (as part of the wider EIA); and
 - Includes details of any consultation undertaken to date to inform the scoping.

Baseline Description

Statutory Designations

- 9.1.3 A Special Area of Conservation (SAC) is an internationally designated site under the Habitats Directive. The Proposed Development falls within the Ness Woods SAC, designated for:
- Mixed woodland on base-rich soils, associated with rocky slopes (Unfavourable condition, no change);
 - Western acidic oak woodland (Unfavourable condition, no change); and
 - Common otter (*Lutra lutra*) (Unfavourable condition, declining).
- 9.1.4 Ness Woods SAC is also designated as a Site of Special Scientific Interest (SSSI). Easter Ness Forest SSSI is designated for:
- Upland mixed ash woodland (Unfavourable, no change); and
 - Upland oak woodland (Unfavourable, no change)

Protected Species

- 9.1.5 Protected species surveys have been commenced in 2021. Protected species comprised a suite of walkover surveys, undertaken according to best practice guidance¹⁸ for each species of interest (bats,

¹⁸ JNCC (2004). *Common Standards Monitoring Guidance for Mammals*. ISSN 1743-8160.

badger (*Meles meles*), pine marten (*Martes martes*), red squirrel (*Sciurus vulgaris*), Scottish wildcat (*Felis sylvestris*), otter and water vole (*Arvicola amphibus*).

- 9.1.6 There are numerous waterbodies, watercourses and drainage ditches which provide suitable habitat for common otter and water vole. Otter is a qualifying feature of the Ness Woods SAC.
- 9.1.7 There are several sheds and outbuildings, along with mature trees, within the vicinity of the Proposed Development which provide potential roost locations for bats.
- 9.1.8 Semi-natural and commercial conifer woodland provide suitable habitat for badger, pine marten, Scottish wildcat, and red squirrel.
- 9.1.9 Evidence of badger, pine marten and red squirrel were identified within woodland areas during the course of surveys in 2021. Shelters were also identified for badger and red squirrel.

Habitats

- 9.1.10 Habitat surveys have been commenced in 2021. Habitat surveys comprised a Phase 1 habitat survey, with National Vegetation Classification survey methodology applied to all habitats of conservation interest (Annex 1 habitat type and Groundwater Dependent Terrestrial Ecosystems (GWDTE). Habitat types were mapped according to best practice guidance and assigned NVC community codes, or mosaics thereof, after further survey of habitats of conservation interest.
- 9.1.11 The habitats that surround Loch Kemp comprise a mosaic of heaths, mires, Bracken (*Pteridium aquilinum*), scattered woodland fragments, coniferous plantation woodland and scrub. Sensitive habitats (within Ness Woods SAC, woodlands, peatlands and GWDTE) are mapped on **Figure 5**.
- 9.1.12 Heaths and mires are the most extensive habitats across open ground within the Proposed Development boundary. The banks of Loch Ness are dominated by Birch (*Betula spp.*) dominated broadleaved woodland. Areas to the south and east of the Proposed Development are dominated by mixed coniferous plantation with stands of Scot's pine (*Pinus sylvestris*), Larch sp. (*Larix sp.*) and Sitka spruce (*Picea sitchensis*).
- 9.1.13 Flushes and springs, along with wet heaths and sedge mires are considered to be moderately or highly dependent on groundwater (moderate or high GWDTE).
- 9.1.14 Areas of standing water include Loch Kemp, Loch Cluanie, Lochan a' Choin Uire, Loch Paiteag, Lochan a' Chinn Mohnaich and Loch Ness.
- 9.1.15 Further habitat and botanical interest is anticipated in Ness Woods SAC and the surrounds of Loch Kemp.
- 9.1.16 A specialist survey was carried out in 2021 to identify the presence and status of important bryophyte and lichen species associated with mature broadleaved woodland. Results from the survey are attached in **Appendix 1**. The results of the survey indicate that across the majority of the site bryophyte and lichen interest is low, reflected by many common, widespread species, but in a few key areas further specialist survey may be necessary to establish baseline interest if these are to fall within the development construction footprint.

Potential Significant Effects

- 9.1.17 Permanent or temporary losses, fragmentation, or disturbances to habitats, could result from the installation of the Proposed Development, installation and maintenance of vehicular access, and ancillary operations associated with construction activity.
- 9.1.18 Permanent or temporary losses, fragmentation, or disturbances to habitats, could result from the disruption of hydrological processes associated with certain habitat types (including GWDTE), pollution of surface-water and groundwater pathways and alterations to soil structure and profile in e.g., peatland habitat types.
- 9.1.19 As with any project of this type, there is always the capacity for the importation and transfer invasive / non-native species (INNS) during construction and operational phases, for example through vehicle movements and hydrological pathways.
- 9.1.20 Permanent losses of protected species, their shelters and breeding or feeding habitats could result from the installation of proposed infrastructure, and mortality of individual animals active near works during the construction phase.
- 9.1.21 Permanent or temporary disturbances affecting protected species, or their habitats, could result from construction and operation activities and include potential effects from noise, lighting and vehicular movements.

Proposed Scope of Assessment

- 9.1.22 An Extended Phase 1 and targeted NVC survey of the site has been commenced to identify vegetation communities across the survey area (defined as the Proposed Development infrastructure offset to 250 m either side), following methods as described in JNCC (2010)¹⁹ and Rodwell (2006)²⁰.
- 9.1.23 These surveys in 2021 have also identified the potential for terrestrial invasive / non-native species (INNS) to be found.
- 9.1.24 A preliminary specialist bryophyte and lichen survey has been carried out in summer 2021, and further specialist surveys will be carried out on further development of scheme design.
- 9.1.25 A GWDTE survey of the site has been undertaken in 2021 in accordance with relevant guidance (SEPA, 2017). The assessment of GWDTE will be carried out in association with assessments of impacts on hydrology (see Section 13).
- 9.1.26 A full protected species survey has been commenced in 2021. Surveys comprise walkover surveys for Protected Species (common otter, water vole, badger, bats, pine marten and Scottish wildcat, as appropriate), in accordance with best practice methodologies. Surveys are being undertaken in areas of

¹⁹ JNCC, 2010, *Handbook for Phase 1 Habitat Survey – a technique for environmental audit*. Joint Nature Conservation Committee. Peterborough

²⁰ Rodwell, J.S., 2006, *NVC Users' Handbook*, JNCC, Peterborough, ISBN 978 1 86107 574 1.

suitable habitat as highlighted in Phase 1 Habitat surveys and extend beyond a 100 m offset for species where a greater distance is relevant to their protection from displacement or disturbance. This includes breeding otter (distance 200 m) and Scottish wildcat (200 m).

Questions to consultees

- Part of the Proposed Development falls within the Ness Woods SAC, designated for:
- Mixed woodland on base-rich soils, associated with rocky slopes (Unfavourable condition, no change);
- Western acidic oak woodland (Unfavourable condition, no change); and
- Common otter (*Lutra lutra*) (Unfavourable condition, declining).
- Ness Woods SAC is also designated as a Site of Special Scientific Interest (SSSI). Easter Ness Forest SSSI is designated for:
- Upland mixed ash woodland (Unfavourable, no change); and
- Upland oak woodland (Unfavourable, no change)
- Can NatureScot provide further details on their key interests in the SAC/SSSI are, specifically in relation to the woodland designations and what would be required from the development team to ensure that sufficient surveys are undertaken to cover the designated site and enable an Appropriate Assessment to be prepared for the Proposed Development (if required).
- Do the ECU, THC and NatureScot agree with the proposed scope of the Terrestrial Ecology assessment?
- Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU, THC, and NatureScot aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

10. Ornithology

Introduction

10.1.1 The EIA will include an assessment on the potential effects on ornithological interests resulting from the construction and operation phase of the Proposed Development. This section:

- Describes the key ornithological issues associated with construction and operation of the Proposed Development;
- Presents the proposed survey methods that would be used to generate ornithological baseline information; and
- Includes details of any consultation undertaken to date to inform the scoping.

Baseline Description

Statutory Designations

10.1.2 Knockie Lochs Site of SSSI is located 2 km to the south of the Proposed Development. Knockie Lochs SSSI is designated for the following:

- Breeding Slavonian grebe (*Podiceps auritus*) (Unfavourable, no change).

Ornithological baseline to date

10.1.3 Bird surveys commenced in April 2021, including:

- Breeding Bird Surveys;
- Raptor surveys; and
- Wildfowl surveys.

10.1.4 Breeding Bird Surveys were carried between April and July 2021. A total of 57 species have been recorded within the survey area to date and are listed in Table 1 below along with their conservation status.

Table 1: Breeding Bird Survey Recordings

| Species | Latin name | Conservation status | Breeding status 2021 |
|--------------|---------------------|---------------------|----------------------|
| Barn swallow | | Amber | Probable |
| Blackbird | Turdus merula | | Probable |
| Blackcap | Sylvia atricapilla | | Probable |
| Blue tit | Cyanistes caeruleus | | Probable |
| Bullfinch | Pyrrhula pyrrhulla | Amber | Probable |

| | | | |
|---------------------|-------------------------------|---------------------|-----------|
| Buzzard | <i>Buteo buteo</i> | | Confirmed |
| Chaffinch | <i>Fringilla coelebs</i> | | Probable |
| Chiffchaff | <i>Phylloscopus collybita</i> | | Probable |
| Coal tit | <i>Parus ater</i> | | Probable |
| Common crossbill | <i>Loxia curvirostra</i> | Schedule 1 | Probable |
| Common gull | <i>Larus canus</i> | Amber | Possible |
| Common sandpiper | <i>Actitis hypoleucos</i> | Amber | Confirmed |
| Common snipe | | Amber | Confirmed |
| Cormorant | <i>Phalacrocorax carbo</i> | | Probable |
| Cuckoo | <i>Cuculus canorus</i> | Red | Probable |
| Dipper | <i>Cinclus cinclus</i> | | Probable |
| Duncock | <i>Prunella modularis</i> | Amber | Probable |
| Goldcrest | <i>Regulus regulus</i> | | Probable |
| Golden eagle | <i>Aquila chrysaetos</i> | Annex 1; Schedule 1 | Confirmed |
| Golden plover | <i>Pluvialis apricaria</i> | Amber | Possible |
| Goosander | <i>Mergus merganser</i> | | Probable |
| Grasshopper warbler | <i>Locustella naevia</i> | Red | Probable |
| Great tit | <i>Parus major</i> | | Probable |
| Grey wagtail | <i>Motacilla cinerea</i> | Red | Probable |
| Greylag goose | <i>Anser anser</i> | Amber | Possible |
| Hooded crow | <i>Corvus cornix</i> | | Probable |
| Jay | <i>Garrulus garrulus</i> | | Probable |
| Kestrel | <i>Falco tinnunculus</i> | Amber | Confirmed |
| Lesser redpoll | <i>Acanthis cabaret</i> | Red | Probable |
| Long-tailed tit | <i>Aegithalos caedatus</i> | | Probable |
| Mallard | <i>Anas platyrhynchos</i> | Amber | Confirmed |

| | | | |
|------------------------|-----------------------------------|-------------------|------------|
| Meadow pipit | <i>Anthus pratensis</i> | Amber | Confirmed |
| Mistle thrush | <i>Turdus viscivorus</i> | Red | Probable |
| Osprey | <i>Pandion haliaetus</i> | Amber; Schedule 1 | Possible |
| Pheasant | <i>Phasianus colchicus</i> | | Introduced |
| Pied wagtail | <i>Motacilla alba</i> | | Confirmed |
| Raven | <i>Corvus corax</i> | | Probable |
| Red grouse | <i>Lagopus lagopus</i> | Amber | Probable |
| Red kite | <i>Milvus milvus</i> | Schedule 1 | Probable |
| Red-breasted merganser | <i>Mergus serrator</i> | | Probable |
| Red-legged partridge | <i>Alectoris rufa</i> | | Introduced |
| Reed bunting | <i>Emberiza schoeniclus</i> | Red | Probable |
| Robin | <i>Erithacus rubecula</i> | | Probable |
| Sand martin | <i>Riparia riparia</i> | | Probable |
| Sedge warbler | <i>Acrocephalus schoenobaenus</i> | | Probable |
| Siskin | <i>Carduelis spinus</i> | | Probable |
| Skylark | <i>Alauda arvensis</i> | Red | Confirmed |
| Song thrush | <i>Turdus philomelos</i> | Red | Probable |
| Sparrowhawk | <i>Accipiter nisus</i> | Green | Probable |
| Stonechat | <i>Saxicola rubicola</i> | | Probable |
| Tree pipit | <i>Anthus trivialis</i> | Red | Probable |
| Twite | <i>Linaria flavistrostris</i> | Red | Probable |
| Wheatear | <i>Oenanthe Oenanthe</i> | | Probable |
| Wigeon | <i>Anas Penelope</i> | Amber | Probable |
| Willow warbler | <i>Phylloscopus trochilus</i> | Amber | Probable |
| Woodpigeon | <i>Columba palumbus</i> | | Probable |
| Wren | <i>Troglodytes troglodytes</i> | | Confirmed |
| Yellowhammer | <i>Emberiza citrinella</i> | Red | Probable |

*Schedule 1 = species included on Schedule 1 of the Wildlife and Countryside Act 1981²¹ (As amended in Scotland by the Nature Conservation (Scotland) Act 2004)²²; Annex I = species included on Annex I of the EC Birds Directive²³; Red = UK Birds of Conservation Concern (BoCC) Red-listed species; Amber = BoCC Amber-listed species²⁴

Raptor Surveys

- 10.1.5 Four breeding raptor and owl surveys have been undertaken between April and August 2021. Golden eagle, Kestrel Osprey and Red kite were recorded during the surveys. Buzzard and Sparrowhawk were also recorded within the footprint of the Proposed Development.
- 10.1.6 There are no known breeding Golden eagle sites within the footprint of the development. However, activity was recorded during the Breeding Bird Surveys, where a pair was displaying breeding behaviour. It is therefore noted that a breeding attempt was made by Golden eagle within 2 km of the Proposed Development but the outcome of the breeding attempt was recorded as failure. It is possible that Golden eagle may attempt to breeding in the area again in future.
- 10.1.7 Kestrel were confirmed as breeding on crags to the east of the Proposed Development. Buzzard and Sparrowhawk were also recorded as probable breeders in wooded areas to the north and south-east of the Proposed Development. Osprey and Red kite were recorded overflying the site, with the former using Loch Kemp to hunt for fish, but no breeding activity was observed within the study area.

Wildfowl Surveys

- 10.1.8 Four breeding wildfowl surveys have been undertaken between April and August 2021.
- 10.1.9 No target species of wildfowl (grebes, divers and geese) were recorded across the lochans within and in the vicinity of the Proposed Development.

Potential Significant Effects

- 10.1.10 Potential significant effects include:
- the direct loss and fragmentation of bird habitats due to 'land take' by the Proposed Development, which may reduce the quantity and quality of available breeding, roosting and foraging habitat for bird species including raptors, waders and wildfowl;

²¹ Wildlife and Countryside Act 1981. Available at: <http://www.legislation.gov.uk/ukpga/1981/69> [Last Accessed 08/11/2021]

²² Nature Conservation (Scotland) Act 2004. Available at: <http://www.legislation.gov.uk/asp/2004/6/contents> [Last Accessed 08/11/2021]

²³ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0147:EN:NOT> [Last Accessed 08/11/2021]

²⁴ BTO, 2015. *Birds of Conservation Concern 4: the Red List for Birds*. Available at: <https://www.bto.org/our-science/publications/psob> [Last Accessed 08/11/2021]

- the modification of bird habitat due to hydrological change should construction activities disrupt hydrological pathways and processes. This may have a potential effect on quality of breeding and foraging habitat for waders and wildfowl; and
- the permanent or temporary displacement of birds during construction and operations phase which may result from noise, lighting and vehicular movements. This effect may include affecting breeding, roosting and foraging behaviour of raptors, waders and wildfowl.

Proposed Scope of Assessment

10.1.11 The methodology and scope for bird surveys for the Proposed Development has already been commenced in 2021. The scope of works includes the below:

- Breeding bird surveys. Breeding bird surveys have already been undertaken between April and July 2021 as summarised in Section 10.1 above. Four visits have been undertaken between April and July. All areas of suitable habitat were approached to within around 100 m, following the Brown and Shepherd method for surveying upland waders²⁵. Surveys were undertaken within 250 m of the Proposed Development infrastructure.
- Raptor surveys. Species-specific methods for raptors were adopted and undertaken between April and August 2021. Four visits have been undertaken between April and August. All areas of potential suitable breeding or roosting habitat for raptors were searched, with methods including short vantage point watches for raptor activity.
- Wildfowl surveys. Wildfowl surveys have already been undertaken between April and August 2021. Four visits have been undertaken between April and August. All waterbodies within 500m of the Proposed Development were surveyed, following species specific methods for Ducks, Geese, Swans, Grebes and Divers.

10.1.12 Further surveys will also be undertaken to ascertain the breeding status of Golden eagle in 2022. Additional information on their breeding status will assist with informing appropriate mitigation to minimise potential impacts that may result from disturbance and displacement during construction and operational phases of the Proposed Development.

Questions to Consultees

- Do the ECU, THC and NatureScot agree with the proposed scope of the ornithology assessment?
- Are the ECU, THC, NatureScot and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU, THC, and Statutory Consultees aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

²⁵ Brown, A. F. & Shepherd, K. B. 1993. *A Method for Censusing Upland Breeding Waders*. *Bird Study*, 40; 189-195.

- Does RSPB Scotland hold any recent records of Slovenian Grebe using Loch Kemp, Lochan a' Choin Uire, Loch Cluanie and/or Loch Paiteag?

11. Aquatic Ecology

Introduction

11.1.1 To inform the scoping exercise a desk-based study on aquatic ecology has been undertaken. A preliminary walkover bryophyte and lichen survey has also been undertaken (see Appendix 1). The aim of the desk study was to identify any constraints to the Proposed Development in relation to aquatic ecology, which may influence the design and identify receptors which could be subject to significant effects during its construction and operation.

Baseline Description

Designated Sites

11.1.2 Designated sites relevant to aquatic ecology in the vicinity of the Proposed Development are provided in Table 2, with the Ness Woods SSSI/SAC being directly connected.

Table 2: Designated Sites

| Designated Site | Connection to Site | Reason for Designation |
|---|--|--|
| Ness Woods SSSI/SAC | Part of the Proposed Development (temporary track and permanent tunnel) are within the Ness Woods SSSI/SAC. | Designated for its woodland habitats which comprise the 'western acid oak' and 'mixed woodland on base-rich soils associated with rocky slopes' categories. It also supports a population of otter ²⁶ . |
| River Moriston Special Area of Conservation (SAC) | At its closest point, where it flows into Loch Ness, the River Moriston SAC is approximately 4 km from the Proposed Development. | The River Moriston flows into the northern side of Loch Ness 1km south-east of Invermoriston and is designated for Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) and as a qualifying feature, Atlantic salmon (<i>Salmo salar</i>) ²⁷ . However, it is currently deemed to be in 'unfavourable' status, due to a low/declining number of freshwater pearl mussels. |
| Loch Knockie and nearby Lochs Special Protected | Approximately 2 km south of the Proposed Development. | Comprising of a group of lochs at the south-east end of the Great Glen in the Highland region. The undisturbed aquatic plant communities on the SPA include extensive sedge beds. The lochs are surrounded by mire, heath, mixed woodland and agricultural land. Loch Knockie and Nearby Lochs SPA is designated due to regularly |

²⁶ Sitelink, 2005, *Ness Woods Special Area of Conservation (SAC)*. Available at: <https://sitelink.nature.scot/site/8337> [Last Accessed 19/10/2021]

²⁷ Joint Nature Conservation Committee (JNCC), 2005, *River Moriston Designated Special Area of Conservation (SAC)*. Available at: <https://sac.jncc.gov.uk/site/UK0030259> [Last Accessed 19/10/2021]

| | | |
|--|---|--|
| Area (SPA) | | supporting a population of Slavonian grebe (<i>Podiceps auratus</i>) ²⁸ . |
| Knockie Lochs Special Site of Scientific Interest (SSSI) | Approximately 2 km south of the Proposed Development. | Consisting of two deep lochs of moderate nutrient status; Loch nan Lann (23.5 ha) and Loch Knockie (68.5 ha) and a zone around each shore approximately 30 m wide. Both lochs support extensive beds of bottle and slender sedge and long-stalked pondweed and the site was designated as a SSSI because it supports one of the most successful regular breeding sites in Scotland for Slavonian grebe ²⁹ . |

Loch Ness

- 11.1.3 The Proposed Development lies within the Loch Ness catchment. In the vicinity of the Proposed Development, Loch Ness is 1.4 km wide and reaches a depth of 220 metres, having steeply sloping wooded shorelines on either side of the loch. The presence of aquatic vegetation in the loch is reduced by the depth of the loch, steep shoreline and naturally fluctuating water levels.
- 11.1.4 Loch Ness is classed as an oligotrophic/dystrophic loch. These types of lochs are characterised by being sparsely vegetated lochs on acid, generally impermeable geology with water ranging from acid to neutral pH, low levels of alkalinity and low concentrations of easily available nutrients. A greater range of species may be found in oligotrophic lochs, but overall biomass remains low³⁰.
- 11.1.5 Loch Ness is classified by SEPA (ID:100156) as being at an overall ‘Good’ status³¹, with Biological elements being rated ‘Good’. Within this classification, macroinvertebrates and aquatic plants are rated ‘High’, while alien species are rated ‘Good’.
- 11.1.6 The Proposed Development lies within the ‘Loch Ness and Small Tributaries’ fishery management unit in the Ness Catchment Biosecurity Plan 2021-2030³². This plan details the biosecurity issues of the River Ness catchment along with actions for the prevention, early detection, control and mitigation of the introduction and spread of invasive non-native species.

Loch Kemp, inflows (Loch Cluanie /Paiteag/Allt Loch Paiteag & Allt Leachd Gowerie) and outflow (Allt an t’Sluichd)

- 11.1.7 These waterbody features all lie within the catchment area of the Loch Kemp system draining to Loch Ness and would be subject to alterations to the natural flow regime. These features are too small to be classified by SEPA. There is no available information on the presence of invasive non-native species

²⁸ Sitelink, 2018, *Citation for Special Protection Area (SPA) Loch Knockie and Nearby Lochs (UK9001552)*. Available at: <https://sitelink.nature.scot/site/8529> [Last Accessed 19/10/2021]

²⁹ Sitelink, 2010, *Knockie Lochs Site of Special Scientific Interest Site Management Statement*. Available at: <https://sitelink.nature.scot/site/880> [Last Accessed 19/10/2021]

³⁰ NatureScot, 2018, *Oligotrophic and Dystrophic Lakes (UK BAP Priority Habitat)*. Available at: <https://www.nature.scot/priority-habitat-oligotrophic-and-dystrophic-lakes> [Last Accessed 19/10/2021]

³¹ SEPA Water Classification Hub. Available at <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> [Last Accessed 01/11/21].

³² Ness Catchment Biosecurity Plan 2021-2030. Available at <https://www.invasivespecies.scot/sites/sisi8/files/Ness-Biosecurity-Plan-2020-v1.1-161220.pdf> [Last Accessed 01/11/21].

within these waterbodies and they form part of the same fishery management unit as Loch Ness in terms of biosecurity management.

Outflow from Lochan a' Choin Uire and Allt a'Chinn Mhonaich

- 11.1.8 These small watercourses flow down the steep slopes into Loch Ness and the Proposed Development would have active works within their drainage catchments. Like the Loch Kemp catchment, these watercourses are not classified by SEPA in terms of aquatic ecology and while no information is available on the presence of invasive non-native species, they form part of the same fishery management unit as Loch Ness in terms of biosecurity management.

Lichen and bryophyte survey summary findings

- 11.1.9 The Proposed Development is in an area that is potentially rich in bryophytes (i.e., mosses and liverworts) and lichens and includes part of Ness Woods SSSI/SAC. The Proposed Development lies just beyond the edge of the western Scottish Highlands, which are of global importance for bryophytes.
- 11.1.10 The preliminary bryophyte and lichen survey undertaken for The Proposed Development has targeted the shore of Loch Ness at the proposed powerhouse location, riparian areas and the inundation zone around Loch Kemp (See Appendix 1).
- 11.1.11 The survey revealed that the lochside rocks have a variety of common and widespread species. The proposed inundation zone around Loch Kemp is mainly rather dry and acidic, but there are some low-lying wet areas which are of little interest, and support mainly common calcifuge species, especially widespread species. The outfall from Loch Kemp, near the ford, has nothing of particular significance.

Potential Significant Effects

- 11.1.12 Potential effects on aquatic ecology could include:

Construction

- Temporary displacement and physical effects on aquatic macroinvertebrate populations from fragmentation of habitats;
- Permanent effects on habitat suitability and populations of macroinvertebrates from pollution,
- Temporary and/or permanent effects on bryophyte community from pollution; and
- Temporary and/or permanent effects on bryophyte community from sediment transport and alteration of morphological condition.

Operation

- Temporary and/or permanent effects to macroinvertebrate populations and aquatic ecology due to increased fluctuation in water levels from the Proposed Development

- Temporary and/or permanent effects to native species by spreading non-native species between waterbodies when pumps are operating.

Proposed Scope of Assessment

11.1.13 To confirm the baseline conditions and inform the assessment, the following surveys will be undertaken:

- A detailed bryophyte survey of the lower part of the watercourse draining from Lochan a' Choin Uire, the Allt a' Chinn Mhonaichthe, the outflow from Loch Kemp (the Allt an t-Sluichd) and the inflows to Loch Kemp that will be inundated by the damming of the loch (see Appendix 1); and
- A macroinvertebrate survey of the Loch Kemp inflows and outflows.

11.1.14 A review will be undertaken to assess the range of invasive non-native species that may potentially be present within any water transfers to identify the potential impact and significance. This will then be used to inform and develop appropriate avoidance or mitigation measures to manage these risks.

11.1.15 Advice from NatureScot and SEPA, provided through the responses to the Scoping Report will be used to inform the detail of further assessment works.

Questions to Consultees

- Do the ECU, SEPA, and NatureScot agree with the proposed scope of the aquatic ecology assessment?
- Are the ECU, THC, SEPA and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU, THC and SEPA aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

12. Fish

Introduction

- 12.1.1 To inform the scoping exercise a desk-based study on fish has been undertaken. The aim of the desk study was to identify any constraints to the Proposed Development in relation to fish species and associated habitats, which may influence the design of the scheme, and identify any fish species which could be subject to significant effects during its construction and operation.

Baseline Description

Designated Sites

- 12.1.2 Designated sites relevant to fish in the vicinity of the Proposed Development are provided in Table 3. The most recent site condition monitoring considers the condition of Atlantic salmon interest of the River Moriston SAC to be 'Unfavourable, No Change'.

Table 3: Designated Sites

| Designated Site | Connection to Site | Reason for Designation |
|---|--|---|
| River Moriston Special Area of Conservation (SAC) | At its closest point, where it flows into Loch Ness, the River Moriston SAC is approximately 4 km from The Proposed Development site boundary. | The River Moriston flows into the northern side of Loch Ness 1km south-east of Invermoriston and is designated for Freshwater Pearl Mussel and as a qualifying feature, Atlantic salmon. However, it is currently deemed to be in 'unfavourable' status, due to a low/declining number of freshwater pearl mussels. |

Loch Ness Catchment

- 12.1.3 Loch Ness forms the lower reservoir for the Proposed Development and in the vicinity of the Proposed Development it is 1.4 km wide and reaches a depth of 220 m, bounded by a steeply sloping wooded shoreline. Loch Ness flows out through the River Ness into the Moray Firth at Inverness and this is the main route for migratory fish into the wider Loch Ness catchment.
- 12.1.4 Loch Ness is classified by SEPA as a waterbody (ID:100156) being at an overall 'Good' status³³, with fish rated 'High' and alien species rated 'Good'.
- 12.1.5 The Proposed Development lies within the 'Loch Ness and Small Tributaries' fishery management unit of the most recent Ness District Fisheries Management Plan 2014-2019³⁴. This plan identifies the fish species which are known to be present in Loch Ness as being Atlantic Salmon (*Salmo salar*), brown trout

³³ SEPA Water Classification Hub. Available at <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> [Last Accessed 01/11/21].

³⁴ Ness District Fisheries Management Plan 2014-2019, prepared by the Ness District Salmon Fishery Board and the Ness and Beaully Fisheries Trust, Final Version 1.2 (15/08/14).

(*Salmo trutta*), Arctic charr (*Salvelinus alpinus*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), European eel (*Anguilla anguilla*), Pike (*Esox lucius*), common minnow (*Phoxinus phoxinus*) and three-spined stickleback (*Gasterosteus aculeatus*).

- 12.1.6 Loch Ness is an important migratory route and refuge for Atlantic salmon and sea trout (salmonids) travelling between the marine and freshwater environments. Salmonid spawning grounds are present in the rivers associated with Loch Ness and include Rivers Oich, Garry, Tarff and Moriston, in the upper Ness system, Rivers Enrick, Coiltie, Foyers and Farigaig in the middle Ness system and the River Ness and associated tributaries in the lower Ness system³⁵.
- 12.1.7 The Proposed Development also lies within the 'Loch Ness and Small Tributaries' fishery management unit of the Ness Catchment Biosecurity Plan 2021-2030³⁶. This plan details the biosecurity issues of the River Ness catchment along with actions for the prevention, early detection, control and mitigation of the introduction and spread of invasive non-native species.

Loch Kemp and Allt an t-Sluichd outflow to Loch Ness

- 12.1.8 Loch Kemp is known to host a population of brown trout (*Salmo trutta*) as well as introduced rainbow trout (*Oncorhynchus mykiss*). The loch is up to 15 m deep³⁷ with a small range in natural water level variations.
- 12.1.9 The Allt an t-Sluichd flows from Loch Kemp down into Loch Ness, approximately 1 km downstream of the proposed dam location. The steep, rocky slopes are considered to pose a barrier to salmon and other migratory fish given the lack of salmon in Loch Kemp. No detailed surveys of the watercourses have yet been undertaken, however with a known resident population of brown trout in Loch Kemp, there may be fish present in the upper reaches of the Allt an t-Sluichd as it flows out of Loch Kemp. The lower reaches near Loch Ness may also offer some suitable habitat for fish.

Loch Kemp Inflows - Loch Cluanie, Allt Loch Paiteag and Loch Paiteag (east) and Allt Leachd Gowerie (south)

- 12.1.10 Loch Paiteag flows into Loch Cluanie via Allt Loch Paiteag and continues to Loch Kemp. Loch Cluanie and Loch Kemp are relatively close to each other and at similar levels, while Loch Paiteag is much higher and the steepness of Allt Loch Paiteag may hinder fish movement, although there are some resident fish populations in the watercourse. Both Loch Cluanie and Loch Paiteag are recreationally fished with known stocks of wild brown trout being present and Loch Paiteag is stocked with Rainbow trout.
- 12.1.11 Allt Leachd Gowerie flows into Loch Kemp from the south and some trout are known to be present within the watercourse.

³⁵ Scottish Environmental Protection Agency (SEPA), 2019, *Ness District Salmon Fishery Board Consultee Response to Red John Pumped Hydro Scheme*. Available at: https://www.sepa.org.uk/media/413195/1170682_consultee_-_response_ndsfb.pdf [Last Accessed 19/10/2021]

³⁶ *Ness Catchment Biosecurity Plan 2021-2030*. Available at <https://www.invasivespecies.scot/sites/sisi8/files/Ness-Biosecurity-Plan-2020-v1.1-161220.pdf> [Last Accessed 01/11/21].

³⁷ *Bathymetrical Survey of Fresh-water Lochs of Scotland: Loch Ness Upper Section including Loch nam Breac Dearga, Dubh, Tarff, nan Lann, Knockie, Bran & Kemp*, Surveyed in 1903 and 1904, *The Geographical Journal* 1907. Available at <https://maps.nls.uk/view/74400565> [Last Accessed 01/11/21].

Loch Ness-side Watercourses - Lochan a'Choin Uire and Allt a Chinn Mhonaich

- 12.1.12 The outflow of the tailrace tunnel system associated with the powerhouse on the shore of Loch Ness is located near the unnamed watercourse that flows out from Lochan a'Choin Uire to the west of Loch Kemp. Lochan a'Choin Uire is recreationally fished, however the outflow watercourse follows a very steep course down to Loch Ness and given the gradient, brown trout are expected to be the only fish potentially present other than in the reaches accessible from Loch Ness.
- 12.1.13 Lochan a' Chinn Mhonaich lies out with the Proposed Development extent, although the watercourse Allt a Chinn Mhonaich that flows out from the loch down to Loch Ness will have access tracks related to the Proposed Development within its catchment. Again, due to the steep course down to Loch Ness, and given the gradient, brown trout are expected to be the only fish potentially present other than in the reaches accessible from Loch Ness.

Potential Significant Effects

- 12.1.14 Likely significant effects on fish habitat and populations may include:

Construction

- Temporary and/or permanent effects to fish from habitat loss and fragmentation;
- Temporary effects to fish from underwater noise altering normal fish behaviour; and
- Temporary and/or permanent effects to fish via mortality from changes to water quality via runoff/sedimentation or pollution.

Operation

- Temporary and/or permanent effects on fish habitat due to increased water levels, water level fluctuation range and frequency of occurrence on Loch Kemp and surrounding watercourses;
- Temporary and/or permanent effects on fish habitat in Loch Ness from potential increase in rate of change in water level fluctuations due to pumping;
- Intermittent changes to migratory fish behaviour through Loch Ness during pumping or generation, including delayed or interrupted migration;
- Temporary and/or permanent effects on fish habitats from alteration of sediment transport and morphological conditions;
- Temporary and/or permanent effects to fish via injury or mortality resulting from entrapment during pumping or fish passage;
- Temporary and/or permanent effects to native fish species by spreading native and/or non-native species between waterbodies when pumps operating;
- Temporary and/or permanent effects on fish behaviour due to underwater noise when pumps operating; and
- Permanent effects on accessibility to upstream reaches of Allt Leachd Gowerie due to dams.

Proposed Scope of Assessment

- 12.1.15 Fish surveys will be undertaken to identify habitats and species of significance (expected to include Atlantic salmon, brown trout and Arctic charr) and consider what may be required in terms of avoidance or mitigation. This will include surveys along:
- Allt an t-Sluichd, Allt Leachd Gowerie, Allt Loch Paiteag, outflow from Locahn a'Choin Uire and Allt a Chinn Mhonaich;
 - The shores of Loch Ness in proximity to the natural outflow from Loch Kemp (Allt an t-Sluichd) and the proposed tailrace (outflow from Locahn a'Choin Uire); and
 - The shorelines of Lochs Kemp, Cluanie and Paiteag.
- 12.1.16 A review of the hydrological modelling will be undertaken to establish how the Proposed Development may potentially impact the fish populations and habitats during construction and operation.
- 12.1.17 The Proposed Development will require suitable screening arrangements at the inlets and outlets to prevent fish being drawn into the system. This will require consideration of the type and size of fish likely to be at risk of being impacted.
- 12.1.18 The potential impacts of the Proposed Development on the migratory Atlantic salmon qualifying features of the River Moriston SAC will be assessed. This will involve consideration of conditions for both upstream and downstream fish migration, informed for example by reviewing previous tracking studies in Loch Ness, and consideration of other influences including the presence of natural flows into and out of the loch, and regulated flows from existing and consented pumped storage schemes.
- 12.1.19 A review will be undertaken to assess the range of invasive non-native species that may potentially be present within any water transfers, to identify the potential impact and significance. This will then be used to inform and develop appropriate avoidance or mitigation measures to manage these risks.
- 12.1.20 Advice from Marine Scotland Science, Ness District Salmon Fisheries Board (NDSFB) and Ness and Beaully Fisheries Trust (NBFT), NatureScot and SEPA, provided through the responses to the Scoping Report will be used to inform the detail of further assessment works.

Questions to Consultees

- Do the ECU, THC, NatureScot, SEPA and the Ness District Salmon Fishery Board agree with the proposed scope of the Fish assessment?
- Are the ECU, THC, NatureScot, SEPA, and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU, THC, SEPA, and consultees aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

13. Geology, Soils and Water

Introduction

13.1.1 This chapter sets out the proposed approach to the assessment of potential effects on geology, soils and the water environment (hydrology and hydrogeology) during construction and operation of the Proposed Development. It also includes details regarding the assessment of potential effects on deposits of peat.

Baseline Description

13.1.2 The National Soil map of Scotland (1:250,000 scale)³⁸ indicates that much of the Proposed Development is underlain by peaty gleyed podzols. Humus-iron podzols are noted to the south-east of Loch Paiteag where the site access from the B862 is proposed.

13.1.3 The Proposed Development is shown by British Geological Survey (BGS) mapping³⁹ to be underlain by superficial deposits of peat, lacustrine alluvium (comprising sand and silt), and hummocky glacial deposits (comprising sand and gravel). The bedrock beneath comprises several units of metamorphic rocks and igneous intrusions, including the Foyers Igneous Complex (granodiorite), Loch Laggan Psammite Formation and Gairbeinn Pebbly Psammite Member (psammites). Several faults are shown and are likely to be associated with the Great Glen Fault system.

13.1.4 The Carbon and Peatland 2016 mapping⁴⁰ published by Scottish Natural Heritage (now NatureScot) indicates that the majority of the Proposed Development is not located within an area designated as priority peatland habitat. Discrete or isolated areas of Class 1 priority peatlands, which are described as areas likely to be of high conservation value comprising nationally important carbon-rich soils, deep peat, and priority peatland habitats, are recorded to be present locally.

13.1.5 Given the nature of the superficial deposits little shallow groundwater is expected. The metamorphic and igneous bedrock deposits are classified by BGS as a low productivity aquifer, where small amounts of groundwater can occur in near surface weathered zone and secondary features, such as faults.

13.1.6 The Proposed Development is located within three sub catchments of the larger Loch Ness surface water catchment:

- The majority of the site is located within the sub catchment of the Allt an t'Sluichd, which flow northwards from the northern shore of Loch Kemp to Loch Ness. Loch Kemp has two principal

³⁸Scottish Government, 2021, *The National Soil map of Scotland (1:250,000 scale)*. Available at: https://map.environment.gov.scot/Soil_maps [Last Accessed 08/11/2021].

³⁹British Geological Survey, 2021, *Geology of Britain viewer (Classic)*. Available at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Last Accessed 08/11/2021].

⁴⁰ SNH, 2016, *Carbon and peatland 2016 map: Scotland's soils*. Available at: <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> [Last Accessed 08/11/2021].

inflow tributaries, the Allt Leachd Gowrie and Allt Loch Paiteag, which inflow to the southern and eastern boundary of the loch respectively.

- The western extent of the Proposed Development, near the shoreline of Loch Ness, is located within the sub catchment of the Allt a'Chinn Mhunaich which flows north-westwards before it discharges to Loch Ness.
- The eastern extent of the Proposed Development, including the proposed access from the B862, is located within the River Foyers sub catchment. The River Foyers flows north-eastwards, before discharging to Loch Ness approximately 5 km north-east of the Proposed Development.

13.1.7 Several Private Water Supplies (PWS) and Controlled Activity Regulation (CAR) licences are recorded by THC and the SEPA within 1 km of the Proposed Development.

13.1.8 Review of SEPA flood maps indicates that flood extents are generally confined to the watercourse channels and immediate loch boundaries within and adjacent to the Proposed Development. No potential groundwater flooding is recorded.

Potential Significant Effects

13.1.9 The construction and operation of the Proposed Development has the potential to result in the following effects without appropriate controls or mitigation:

Construction

- excavation, removal and storage of soils, rock and peat, which could degrade the value of these deposits;
- increased flood risk to areas downstream of the site during construction through increased surface water runoff;
- potential adverse change of surface and groundwater flow paths and contribution to areas of peat and Groundwater Dependant Terrestrial Ecosystems (GWDTEs), water dependent habitat and water supplies;
- disturbance of watercourses and loch edges from the construction of dams, access tracks and other infrastructure;
- an adverse effect on surface water or groundwater quality from pollution, fuel, oil, concrete or other hazardous substances; and
- potential pollution impacts and adverse effect to public and private water supplies;

Operation

- adverse changes to surface water flow paths, watercourse discharge rates and volumes, and alteration of watercourse geomorphology;
- as a result of an alteration of groundwater and surface water flow paths, an adverse effect on water abstractions and water dependent habitat;

- an adverse effect on surface water or groundwater quality from pollution, fuel, oil, concrete or other hazardous substances from site traffic associated with maintenance activities; and
- increased flood risk through increased surface water runoff from new impermeable areas.

Proposed Scope of Assessment

13.1.10 An assessment of the potential impacts of the Proposed Development on geology, soils and water would be undertaken with reference to relevant legislation, policies and best practice guidance, including, but not limited to:

Geology, Peat and Soils;

- SEPA Regulatory Position Statement, Developments on Peat, Scottish Environment Protection Agency, 2012;
- Good Practice during Windfarm Construction. A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Historic Environment Scotland and Marine Scotland Science. Version 4, 2019;
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments, Scottish Government, January 2017;
- Developments on Peatland – Guidance on the assessment of peat volumes, re-use of excavated peat and the minimisation of waste, Scottish Renewables, SEPA, 2012;
- Floating Roads on Peat – Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland, Forestry Commission Scotland (FCS), Scottish Natural Heritage (SNH), 2010;
- Managing Geotechnical Risk: Improving Productivity in UK Building and Construction, Institution of Civil Engineers, 2001;
- Ground Engineering Spoil: Good Management Practice, CIRIA Report 179, 1997;
- Scottish Roads Network Landslides Study Summary Report, Scottish Executive, 2005; and
- Guidelines for the Risk Management of Peat Slips on the Construction of Low Volume/Low Cost Roads on Peat, Forestry Commission, 2006.

Water Environment (Hydrology and Hydrogeology)

- EC Water Framework Directive (2000/60/EC);
- Scottish Planning Policy (SPP), Scottish Executive, June 2014;
- Water Environment and Water Services (Scotland) Act 2003;
- Water Environment (Controlled Activities) Regulations 2011;
- Land Use Planning System – SEPA Guidance Note 31 (Guidance on Assessing Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems), Version 3, SEPA, 11/09/2017;
- Good Practice during Windfarm Construction. A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission

Scotland, Historic Environment Scotland, Historic Environment Scotland and Marine Scotland Science. Version 4, 2019;

- Control of Water Pollution from Linear Construction Projects – Technical Guidance, C648, CIRIA, 2006;
- The SuDS Manual C753, CIRIA, 2015; and
- Environmental Good Practice on Site C692, CIRIA, 2010.

13.1.11 A desk-based assessment of the Proposed Development will be undertaken initially and then a field programme of investigation undertaken to verify (or otherwise) the desk study. The desk study and field programme will be used to inform the emerging site design.

13.1.12 The hydrological assessment specialists will liaise closely with the project ecologists and geology/geotechnical specialists to ensure that appropriate information is gathered to allow a comprehensive impact assessment to be completed.

13.1.13 Having regard to the nature of the Proposed Development and key baseline characteristics, at this early stage it is considered that the assessment would include:

- Peat probing to confirm the depth of peat and assessment of peat condition, and if required, the re-use of peat will be assessed so that the existing peat deposits on the site can be safeguarded. If appropriate, a Peat Landslide Hazard and Risk Assessment and Peat management Plan will be prepared.
- Visual assessment of the proposed borrow pit locations to confirm characteristics of the underlying bedrock and suitability for use at the site, the potential volume of rock that can be won from the borrow pits and a comparison to the volume of required on site.
- A hydrological site walkover survey to determine the likely effects of the Proposed Development on the hydrological regime, including water quality, flow and drainage.
- Assessment of potential effects on identified licenced and PWS water sources. A PWS risk assessment will be prepared if required.
- Assessment of potential effects on designated sites, including Ness Woods SAC, Easter Ness Forest SSSI, Loch Knockie and nearby Lochs SPA and Knockie Lochs SSS through hydrological connectivity.
- In consultation with the project ecologists, assessment of potential effects on water (including groundwater) dependent habitats.
- Assessment of potential flood risk and drainage during construction and operation.
- Assessment of potential cumulative or in-combination effects.

13.1.14 Having regard to the nature of the Proposed Development and key baseline characteristics, at this stage it is considered the following can be scoped out of requiring further assessment:

- Detailed Flood Risk and Drainage Impact Assessment. Published mapping confirms that most of the site is not located in an area identified as being at flood risk. It is proposed, therefore, that a simple screening of potential flooding sources (fluvial, coastal, groundwater, infrastructure etc.) is presented in the EIA and measures that would be used to control the rate and quality of runoff will be specified in the CEMP. It is noted that management of the

upper reservoir and full flood risk associated with failure of any of the proposed dams would be covered by the Reservoirs Act, following grant of any planning permission.

- Water quality monitoring. Classification data is available from SEPA for the watercourses at site and there are no known sources of potential water pollution that might give rise for the need for water quality monitoring as part of the EIA. The assessment might conclude that water quality monitoring is required prior to, during and post construction if the project were it to be granted planning permission, and this would be specified in the site CEMP.
- Increased flood risk caused by blockages to flow in watercourses during operation and maintenance of the Proposed Development. Any required watercourse crossings would be subject to maintenance requirements under the CAR, flood risk onsite is low, and the development design would ensure no critical infrastructure is located in an area prone to flood risk.
- Geomorphological Assessment. As part of the proposed baseline surveys photographs and records of existing or baseline water features will be recorded and presented in the EIA. It is not proposed to undertake a geomorphological audit or assess potential compensation flows and effects on geomorphology as it is expected that this will be undertaken in support of a CAR application which will be made and be used to regulate the operation of the dam, should the Proposed Development be granted planning permission.

Questions to Consultees

- Are the ECU, THC, SEPA, and consultees aware of any additional key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU, THC and SEPA, aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?
- Is it agreed that the scope of the flood risk assessment is appropriate and that a drainage impact assessment can be provided as part of the detailed site design and agreed was part of the site CEMP (noting the principles for the control and management of runoff will be presented in the EIA Report)?
- Is it agreed that no water quality monitoring or detailed geomorphological survey is required as part of the EIA Report?
- That it is appropriate to present outline borrow pit designs as part of the EIA Report that will confirm likely maximum extents and material volumes, and that detailed designs are not required as these are normally developed following grant of a planning permission and benefit from intrusive site investigation (e.g., drilling to confirm material rock characteristics).

14. Cultural Heritage

Introduction

- 14.1.1 The EIA Report will include a chapter on the potential effects of the Proposed Development on sites of archaeological and cultural heritage interest. Field studies have already been undertaken in September 2021 for the Proposed Development to identify baseline sites and inform design studies.

Baseline Description

- 14.1.2 Desk and field studies have identified the area of the Proposed Development to have a small number of sites of cultural heritage interest as shown on **Figure 3** and described below.

Statutory Designated Sites

- 14.1.3 There is one Scheduled Monuments within 1 km of the Proposed Development as follows:
- Dell Farm, burial mounds 350 m NE of (SM4536) located north and east of Dell Farm, on the opposite bank of the river with an intervening and screening band of trees along the riverbank.
- 14.1.4 The following three Listed Buildings are located within 1 km of the Proposed Development:
- Dell Lodge and rear service cottages (LB1860);
 - Whitebridge, New Bridge (LB1875); and
 - Whitebridge, Old Bridge Over River Foyers (LB1874).
- 14.1.5 Given the potential for visual impact of elements of the Proposed Development from the north-western side of Loch Ness, the following two Listed Buildings are also noted:
- By Invermoriston, Alltsaigh Cottage (LB15016); and
 - Invermoriston, Home Farm and Former Barn and Rear. (LB15021)

Non-Statutory Cultural Heritage Assets

- 14.1.6 The Highland Historic Environment Record (HER) records two non-designated features of Early Modern date within the vicinity of the Proposed Development. A small number of further sites were also recorded during baseline field survey.
- Loch a' Choin Uire, MHG23342 at NH 4599 1610. Recorded on the HER as a possible township but this is not supported by documentary evidence. These are more likely to be shepherds' cottages and outbuildings dating to the early 19th Century. The main building in the group is visible as stone footings at NH 45945 16174. The other, smaller buildings are no obscured by bracken.

- Easter Drummond township, MHG2643, centred on NH 4749 1460. The features of this township are all located within the open ground south of Whitebridge Plantation, separated from the plantation by a dyke dating to the establishment of the plantation.
 - Allt Leachd Gowerie, Enclosure at NH 46847 15847. Small drystone plantation straddling the watercourse, probably associated with early sheep farming.
- 14.1.7 The archaeological record would suggest that the area of development was not settled in the prehistoric period. Evidence from available documentary material and early maps would also indicate that the area was not settled in the Early Modern period and only gained economic use when commercial sheep farming was introduced. The lands of Easter Drummond, south-west of Loch Kemp, were used as a 'hog fence', that is, grounds where hoggets were kept through the winter months.
- 14.1.8 The detailed Lovat Estate map of 1840 'Stratherrick Plan no.1'⁴¹ leaves the area of development as blank, indicating no buildings or enclosures, which might indicate that the structures at Loch a' Choin Uire have fallen out of use by this date. Subsequent use of the area appears to have been restricted to sport fishing and coniferous plantings, completed for the most part by 1875.

Potential Significant Effects

Construction

- 14.1.9 Potential direct impacts during the construction phase of the Proposed Development are predicted for one non-statutory Cultural Heritage asset. The group of buildings of site Loch a' Choin Uire, identified as a shepherd's cottage and outbuildings. There is the potential for further unrecorded features in the vicinity and the potential for accidental damage during any works associated with construction of the Proposed Development, or during the widening or upgrading of the existing access road.

Operation

- 14.1.10 The likely direct impact of the Proposed Development on Cultural Heritage assets appears to be restricted to the inundation of one non-statutory archaeological feature, the 19th century sheep enclosure on the Allt Leachd Gowerie. This is a minor feature of local significance. The overall impact of the Proposed Development on this Cultural Heritage assets during operation is therefore considered not to be significant.
- 14.1.11 Indirect, visual impacts from elements of the Proposed Development on designated sites are limited to two Listed Buildings on the north-western shore of Loch Ness. However, neither building is particularly sensitive to minor alterations to what is a limited vista over a distance of 1.5 km and 3km. Listed buildings within Stratherrick are screened from the Proposed Development by intervening high ground and forestry. The overall visual impact of the Proposed Development on designated Cultural Heritage assets during operation is therefore considered to be negligible.

⁴¹ McLean and Morison, Surveyors, *Inverness 1840: Stratherrick no.1*. Courtesy of Lovat Highland Estate and the North of Scotland Archaeological Society. Available at <https://maps.nls.uk/estates/rec/6633> [Last Accessed 16/12/2021]

Proposed Scope of Assessment

- 14.1.12 A Cultural Heritage Assessment will be included as part of the EIA Report. The assessment would take account in more detail of potential effects on all Statutory Designated and recorded sites within the vicinity of the Proposed Development where it is considered that there is potential for significant effect to occur, as well as further sites identified during field studies. This would include Statutory Designated features within 3 km of the Proposed Development and non-designated features within 100 m.
- 14.1.13 The scope of assessment would be agreed in advance with THC's Historic Environment Team

Assessment Methodology

- 14.1.14 The assessment will be carried out with reference to the following guidance documents:
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2014);
 - Planning Advice Note (PAN) 2/2011: Planning and Archaeology.
 - Highland Council's Standards for Archaeological Work, 2012
 - Desk and field studies to identify the cultural heritage baseline for the Proposed Development have already been undertaken. The assessment of potential effects would involve the following further steps:
 - Assessment of the heritage importance and sensitivity of each heritage asset;
 - Assessment of the potential impact of proposed or predicted changes on the importance of the asset and resultant significance of effect; and
 - Recommendations for mitigation where appropriate.

Summary

- 14.1.15 There is considered to be low potential for the Proposed Development to affect the cultural heritage assets or designated sites. A cultural heritage assessment carried out in line with best practice guidance would form part of the EIA Report. The assessment would focus on those sites most likely to be affected by the Proposed Development and would identify the potential for any significant effects and recommend mitigation measures where appropriate.

Questions to Consultees

- Do consultees agree with the proposed scope of the cultural heritage assessment?
- Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU and THC aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

15. Traffic, Access and Transport

Introduction

- 15.1.1 The section covers the predicted transport and access issues that may arise from the construction of the Proposed Development. The significance of the construction effects and what suitable mitigation can be put in place to avoid, minimise or offset any adverse impacts will be assessed and reported in the EIA Report. It is assumed that the operational phase of the Proposed Development can be scoped out of the assessment and further details on this are provided in this chapter.
- 15.1.2 The Transport & Access EIA Report Chapter will be supported by a Transport Assessment report, Abnormal Load Route Survey (if required) and technical figures.
- 15.1.3 The key issues for consideration as part of the assessment will be:
- the temporary change in traffic flows and the resultant temporary effects on the study network during the construction phase;
 - the physical mitigation associated with the delivery of abnormal loads;
 - the design of new access infrastructure; and
 - the consideration of appropriate and practical mitigation measures to avoid, minimise or offset any temporary effects.
- 15.1.4 The potential effects of these will be examined in detail.

Baseline Description

- 15.1.5 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) and the creation of a new access track to the powerhouse site on the eastern shore of Loch Ness.
- 15.1.6 Details of the proposed access routes to facilitate construction of the scheme are provided below and are illustrated on **Figure 1**. It is proposed that access will be taken from a new access junction from the existing B862 public road, approximately 700 m south-west of the Whitebridge Hotel.
- 15.1.7 Further access will be taken from the existing Dell Estate forestry track through Dell Plantation. This will be upgraded and extended to facilitate use by construction vehicles, along with site establishment and site accommodation area within the plantation.
- 15.1.8 Access around the site will feature a combination of widening existing tracks around Loch Kemp to connect the plantation access with existing estate tracks to allow access to the dam sites and other working areas. A new track from Loch Kemp to the surge shaft and down to the powerhouse site on the eastern shore of Loch Ness will also be provided. The internal access tracks will be private and not open to general public use.
- 15.1.9 The use of the Caledonian Canal will be considered for the delivery of various equipment and materials for the project. If feasible, details of the proposed barge movements and associated infrastructure and impact would be provided.

- 15.1.10 Locally sourced material will be used where feasible, and traffic will avoid impacting on local communities as far is possible.
- 15.1.11 Given the likely level of traffic generation associated with the delivery of raw materials and the likely sources of materials, the study area is proposed to include the A82 (between Inverness and Fort William), the B862 from Fort Augustus and its junction with the B851, the B851 from its junction with the B862 and the A9 and the A9.
- 15.1.12 Traffic data for use in the assessment will be obtained from UK Government Department for Transport (DfT) traffic count data⁴² and the Traffic Scotland database⁴³ for the trunk road network. Automatic Traffic Count (ATC) surveys will be used on the B862 and B851, with data collected during a neutral period for one week.
- 15.1.13 National Road Traffic Forecast (NRTF) Low Traffic Growth assumptions will be used to provide a common future year baseline to coincide with the expected peak level of construction traffic
- 15.1.14 Traffic accident data will be obtained from Crashmap UK⁴⁴ for the study network to inform the accident review for the B862 over a three-year period.

Potential Significant Effects

- 15.1.15 The following policy and guidance documents will be used to inform the EIA Report Chapter:
- Transport Assessment Guidance (Transport Scotland, 2012);
 - The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993);
 - Scottish Planning Policy (Scottish Government, 2014, updated 2020);
 - National Roads Development Guide (Society of Chief Officers of Transportation in Scotland, 2017); and
 - Transport Assessment Guidelines, (THC, 2014).
- 15.1.16 The main transport impacts will be associated with the movement of general heavy goods vehicles (HGV) traffic travelling to and from the site during the construction phase.
- 15.1.17 The Guidelines for the Environmental Assessment of Road Traffic (IEA 1993) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:
- potential impacts (of changes in traffic flows) on local roads and the users of those roads; and

⁴² Department for Transport, 2021. *Road Traffic Statistics*. Available at: <https://roadtraffic.dft.gov.uk/> [Last Accessed :10/11/2021]

⁴³ Traffic Scotland, 2021. *Traffic Data*. Available at: <https://ts.drakewell.com/multinodemap.asp> [Last Accessed :10/11/2021]

⁴⁴ CrashMap 2020. *CrashMap Data: Great Britain 1999 – 2020 (verified)*. Available at: <https://www.crashmap.co.uk/> [Last Accessed :10/11/2021]

- potential impacts (of changes in traffic flows) on land uses and environmental resources fronting these roads, including the relevant occupiers and users.
- 15.1.18 The following rules taken from the guidance will be used as a screening process to define the scale and extent of the assessment:
- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
- 15.1.19 Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the Proposed Development will therefore be assumed to result in no discernible environmental impact and as such no further consideration will be given to the associated environment effects.
- 15.1.20 The estimated traffic generation of the Proposed Development will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage increase in traffic.
- 15.1.21 Potentially significant environmental effects will then be assessed where the thresholds as defined above are exceeded. Suitable mitigation measures will be proposed, where appropriate.
- 15.1.22 A review of the South Loch Ness Road Improvement proposals will be undertaken and discussions with THC will be held to identify what proposals will assist in mitigating the temporary construction impacts. This will be undertaken in conjunction with the wider impact assessment.
- 15.1.23 Committed development traffic, i.e., those from proposals with planning consent, will be included in baseline traffic flows, where traffic data for these schemes is considered significant and is publicly available. Developments that are proposed or at Scoping will not be included.
- 15.1.24 It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works. A reduced scope Transport Assessment (i.e., therefore proposed).
- 15.1.25 Where Abnormal Indivisible Loads (AIL) are required on site, a Route Survey Report will be provided to outline the access routes and associated mitigation required to physically accommodate movement of these loads. This would be appended to the TA.

Construction

- 15.1.26 Potential impacts that may arise during the construction phase assessment may include the following for users of the road study network and those resident along the delivery routes:
- severance;
 - driver delay;
 - pedestrian delay;
 - pedestrian amenity;

- fear and intimidation; and
- accidents and safety.

15.1.27 Where impacts are noted as being significant, an assessment will be undertaken. That assessment will include standard mitigation measures as detailed below:

- production of a Construction Traffic Management Plan;
- the design of suitable access arrangements with full consideration given to the road safety of all road users; and
- a Staff Sustainable Access Plan.

15.1.28 Additional mitigation will be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.

Operation

15.1.29 The operational phase of the development does not generate significant levels of traffic and would feature access for maintenance and general operational review of the site. This is expected to be approximately 3 car / light goods vehicle trips per day at most.

15.1.30 The predicted level of traffic is minimal and as such, it is proposed that the operational phase is not assessed and can be scoped out of the assessment.

Proposed Scope of Assessment

15.1.31 The assessment will only consider the construction phase of the Proposed Development as this represents the peak of traffic generation associated with the Proposed Development.

15.1.32 Once operational, it is envisaged that the level of traffic associated with the Proposed Development would be minimal. Due to the number of journeys and likely vehicle types involved, it is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the Proposed Development is proposed.

15.1.33 With proper maintenance, the Proposed Development should remain functional indefinitely. If, however the Proposed Development is decommissioned the traffic generation levels associated with the decommissioning phase will be less than those associated with the construction phase, as some elements such as access roads would be left in place on the site. As such, the construction phase is considered the worst-case assessment to review the impact on the study area. An assessment of the decommissioning phase will therefore not be undertaken as part of the EIA Report, although a commitment to reviewing the impact of this phase would be made immediately prior to decommissioning works proceeding.

Questions to Consultees

- Do the ECU, THC, and consultees agree that the proposed methodology is acceptable?
- Do the ECU, THC, and consultees agree that the methods proposed for obtaining traffic flow data are acceptable?

- Do the ECU, THC, and consultees agree that the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?
- What developments (if any) should be included as committed developments within the baseline traffic flows in the assessment, noting that these should have planning consent at the time of Scoping?
- Do the ECU, THC, and consultees have any details of any upgrades or network changes that may be undertaken to the study area network within the next five years?
- What elements of the South Loch Road Improvements should be considered in the transport assessment?

16. Noise and Vibration

Introduction

- 16.1.1 The EIA Report will include an assessment of potential noise and vibration impacts associated with the construction and operation of the Proposed Development.
- 16.1.2 The focus of the assessment will be concentrated on noise levels generated during the approximate 3-4 year construction phase of the Proposed Development and, in particular, to works associated with construction of the temporary main site establishment and the operational and temporary access tracks, identified as the located closest infrastructure to the noise sensitive receptors (NSR's), located to the east of The Proposed Development.
- 16.1.3 In consideration of the large distance between the powerhouse and the closest NSR position (2.2 km), together with the noise-mitigating design feature of installing all main equipment items inside a well-insulated powerhouse building, a qualitative assessment would conclude that sensitive receptors would not be significantly affected by operational sound and vibration.
- 16.1.4 It is therefore proposed that operational sound and vibration are scoped out of detailed quantitative assessment.

Baseline Description

- 16.1.5 The closest NSRs to the west of the Proposed Development are individual properties located close to Alltigh (2.3 km from the proposed powerhouse) and Home Farm (2.2 km from the proposed powerhouse), each located on the west bank of Loch Ness.
- 16.1.6 The closest NSRs to the east of the Proposed Development are groups of properties located along the B862, in Whitebridge and Easter Drummond, including along the minor Dell estate road off the B862, leading to Dell Lodge. Properties located in Easter Drummond are closest to the temporary main site establishment (600 m) with Dell Lodge is the property located closest to the temporary access track to be used during construction operations (170 m).
- 16.1.7 Under the proposal for operational sound to be scoped out of detailed assessment, due to the very large distance between the proposed powerhouse locations and the closest NSR positions, this removes the requirement for completion of an ambient sound survey, to support an assessment to the requirements of BS 4142⁴⁵
- 16.1.8 Furthermore, in accordance with the guidance provided in BS 5228-1⁴⁶, the potential significant effect from construction noise can be assessed by comparing the construction noise level against the lower (absolute) cut-off values of $L_{Aeq,T}$ 65 dB, 55 dB and 45 dB from construction noise alone, for the daytime,

⁴⁵ BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

⁴⁶ BSBS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*

evening and night time periods, respectively. Accordingly, an ambient sound survey is also not required to support the more detailed assessment of construction noise.

- 16.1.9 The proposal to scope out an ambient sound survey would be agreed during consultation with THC Environmental Health Officer (EHO). Should there be a stated preference, or requirement (as justified by the EHO), for completing an ambient sound survey at specific locations, this would be included in the final scope of the assessment.

Potential Significant Effects

Construction Noise

- 16.1.10 The following potential noise impacts, associated with construction of the Proposed Development have been identified for review by quantitative assessment, supported by noise level predictions:

- Works associated with construction of the powerhouse;
- Works completed at the inlet and outlet areas of the tunnels during tunnel construction, including rock drilling and breaking;
- Works associated with construction of the temporary and operational tracks;
- Works associated with construction of the temporary site establishment;
- Additional construction traffic using public roads.

Construction Vibration including Air-Blast Overpressure

- 16.1.11 The following potential vibration impacts, associated with construction of the Proposed Development have been identified for review by qualitative assessment, using supportive statements, based on historic case data and evidence.

- Ground vibration produced by any required piling operations, associated with construction of the Proposed Development;
- Ground vibration and associated air blast overpressure produced by any required blasting operations, associated with construction of the tunnels;

Operation

- 16.1.12 The following potential operational sound and vibration impacts have been identified for review:

- Continuous sound produced during operation of the Proposed Development (qualitative assessment using supporting evidence and statements).
- Continuous vibration produced during operation of the Proposed Development (qualitative assessment using supporting evidence and statements).

Proposed Scope of Assessment

Construction Noise

- 16.1.13 The proposal is for a quantitative assessment of construction noise to be completed as a desk-top study. For the static construction activities, confined to a specific area of works, such as for the powerhouse, a computer prediction model will be set up, based on the sound power data applicable to plant and equipment identified for use on each phase of works and as defined in the equipment noise data included in BS 5228-1.
- 16.1.14 Each predictive noise model will be built up on an individual OS plan, to include the site of the activity, the surrounding community and the identified key receptor positions. The model will take account of screening benefit offered by the terrain, together with any intervening buildings or temporary barriers installed at the perimeter of the works. The computer noise model uses noise propagation corrections as detailed in ISO 9613⁴⁷.
- 16.1.15 For mobile works, such as upgrade or development of access roads and tracks predictions will be completed in accordance with the procedure detailed in Section F.2.4 of BS 5228-1 *Method for mobile plant in a defined area*.
- 16.1.16 For mobile plant, using defined haul roads, predictions will be completed in accordance with the procedure detailed in Section F.2.5 of BS 5228-1 *Method for mobile plant using a regular well-defined route*.
- 16.1.17 The potential effects from construction noise will be assessed in accordance with the guidance provided in Annex E of BS 5228-1, by comparing the construction noise level against the lower (absolute) cut-off values of $L_{Aeq,T}$ 65 dB, 55 dB and 45 dB from construction noise alone, for the daytime, evening and night time periods, respectively.
- 16.1.18 A framework for the Construction Noise Management Plan (CNMP) would be provided in the EIA Report, setting out the procedures and policies that would be adopted for the purpose of demonstrating how noise would be effectively managed for each activity through the duration of the works.
- 16.1.19 A framework for the Construction Noise Management Plan (CNMP) would be provided in the EIA Report, setting out the procedures and policies that would be adopted for the purpose of demonstrating how ground vibration would be effectively managed for each activity through the duration of the works. This would include detail of how vibration and air-overpressure would be monitored and controlled during any blasting operations.

Construction Vibration, including air-blast overpressure

- 16.1.20 Vibration from construction works is difficult to predict, as transfer of vibration through the ground depends on a number of factors including:
- Local ground conditions at the construction site;

⁴⁷ ISO 9613 Part 2 1996. Acoustics – Attenuation of sound during propagation outdoors. General method of calculation.

- Distance between source and receiver;
- The ground geology between the source and receptor (the transmission path); and
- Local ground conditions and foundation at the receptor position.

16.1.21 Whilst good design of the blasting technique can minimise the generation of air overpressure, due to uncertainties with meteorological conditions it is not possible to predict the location of maximum air overpressure from a blast.

16.1.22 Consequently, a qualitative assessment of vibration from constructions works, including blasting operations, is proposed, citing historic case data and evidence guidance provided in BS 5228-2⁴⁸

Construction Traffic Noise (public roads)

16.1.23 For the purpose of assessing any impact resulting from additional construction traffic using local public roads, in particular to properties located along the B862, traffic noise calculations will be completed in accordance with the procedure detailed in the guidance document: '*Calculation of Road Traffic Noise*'⁴⁹

16.1.24 Using information (from the traffic consultant) on both current (baseline) and predicted post-development traffic flows (both light and heavy vehicles), the noise change, in terms of LA10,18hr will be calculated.

16.1.25 The magnitude of traffic noise impact will then be established using the classification table included in advice note *Design Manual for Roads and Bridges (DMRB)* ⁵⁰.

Operational Sound and Vibration

16.1.26 The closest NSR position is located at a very large distance of 2.2 km from the proposed powerhouse. At this propagation distance, the sound level reduction, relative to the source sound power emission, would be 75 dB(A), taking account of distance attenuation alone. Other propagation features, such as atmospheric attenuation, would further increase this figure.

16.1.27 The reversible pump-turbines, motor-generators and other main equipment items would be housed inside a well-insulated surface powerhouse building, reducing noise breakout from the building to the outside environment to low levels.

16.1.28 The mitigating design features, alongside the large receptor distance, would ensure that the specific sound level at the closest receptors would be below 25 dB(A).

16.1.29 A qualitative assessment of operational sound is therefore proposed, using supporting evidence and statements relating to the developing design proposals for equipment and the powerhouse building, to

⁴⁸ BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration

⁴⁹ Department of Transport, Welsh Office: '*Calculation of Road Traffic Noise*' (CRTN) (1988).

⁵⁰ The Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7 – Noise and Vibration, Highways Agency, 01.11.2011

demonstrate that sensitive receptors, located at large distance from the surface powerhouse, would not be significantly affected by operational sound.

16.1.30 Hydro turbines are installed on concrete inertia bases, with turbines that are orientated vertically commonly being housed in the basement of the powerhouse and having the spiral casing of the turbine partially embedded in concrete. These measures are designed to minimise vibration on and local to the equipment, so preventing this entering the ground. Qualitative statements to this effect will be presented, to demonstrate that sensitive receptors located at large distance from the powerhouse, would not be significantly affected by operational vibration.

Questions to Consultees

- Are the ECU, THC and consultees aware of any key NSR's (other than those identified in the Baseline Description Section) that should be given consideration in the noise and vibration assessment.
- Based on the explanations provided, does THC EHO agree to the proposal for scoping out an ambient sound survey.
- Are the ECU and THC aware of any other consultees who could have a particular interest in issues associated with noise and vibration resulting from the Proposed Development.

17. Air Quality

Introduction

- 17.1.1 In relation to air quality, the key issues that require consideration from the Proposed Development are impacts from emissions of fugitive particulate emissions from construction works and pollutant emissions from the additional vehicles generated on the local road network.
- 17.1.2 Aspects of the Proposed Development that require consideration within the air quality assessment would comprise:
- construction of a new access junction from the B862;
 - upgrading and extension of existing tracks;
 - construction of a new tracks;
 - the excavation, transfer and reuse of material;
 - construction of 8 new dams around the enlarged Loch Kemp; and
 - associated vehicle movements on the local road network.

Scope of Works

- 17.1.3 The following items are considered to be required as part of an appropriate Air Quality Assessment:
- Baseline Evaluation – assessment of existing air quality in the area;
 - Construction Phase Dust – identification and assessment of potential dust impacts associated with the construction phase of the Proposed Development;
 - Construction Phase Vehicle Emissions Screening – screening of potential air quality impacts associated with the traffic generated during the construction phase;
 - Operational Phase Vehicle Emissions Screening – screening of potential air quality impacts associated with the traffic generated during the operational phase; and
 - Mitigation measures – identification of mitigation measures, as appropriate
- 17.1.4 The requirements of the following pieces of guidance will be considered and applied, as necessary:
- IAQM Guidance on the assessment of dust from demolition and construction (v1.1 2016);
 - IAQM Guidance on the assessment of mineral dust impacts for planning (v1.1, 2016);
 - EPUK & IAQM (v1.2, 2017) 'Land-use planning and development control – planning for air quality';
 - Cleaner Air for Scotland 2 – 'Towards a Better Place for Everyone' (2021);
 - Scottish Executive Technical Guidance on Air Quality (LAQM.TG (16), 2021); and
 - Highways Agency Design Manual for Roads and Bridges (DMRB), Volume 11: Environmental Assessment (Highways Agency, 2007).

Baseline Description

- 17.1.5 The closest dust sensitive receptors to the east of the Proposed Development are groups of properties located along the B862, in Whitebridge and Easter Drummond, including along the minor Dell estate road off the B862, leading to Dell Lodge. Properties located in Easter Drummond are closest to the temporary main site establishment (600 m) with Dell Lodge located closest to the temporary access track to be used during construction operations (170 m).
- 17.1.6 There are two statutory designated conservation sites adjacent to the north-western boundary of the scheme, namely Easter Ness SSSI and Ness Woods SAC. Given the status of SSSI and SAC, both sites would be included as ecological receptors within the assessment, as required. Further detail of the ecological sites can be found in Chapter 9.
- 17.1.7 Other sites in the locale include 'Knockie Lochs' SSSI and 'Loch Knockie and nearby Lochs' SPA, located approximately 1 km to the south-west of the Proposed Development.
- 17.1.8 The Proposed Development lies within the administrative boundary of THC. As part of the Local Air Quality Management Process, THC have declared one Air Quality Management Area (AQMA); a location known as the "Inverness City Centre AQMA"⁵¹. The AQMA is located approximately 34 km north-east of the site and does not include any of the primary routes that may be used by site traffic. As such, the AQMA does not represent a constraint to the Proposed Development. All other Air Quality Strategy pollutants, including PM₁₀ and PM_{2.5}, were below the relevant air quality standards at locations of relevant public exposure, and as such no further AQMAs have been declared within the Council's administrative area.
- 17.1.9 There is limited air quality monitoring data within the site locale, with the nearest automatic monitors located at Inverness (monitoring NO₂ and PM) and Fort William (monitoring NO₂), at distances of 35 km and 55 km, respectively. THC operate a series of passive diffusion tubes monitoring for NO₂ which are located within the Inverness city centre. Due to the distance between the site and the monitoring locations, similar pollutant concentrations are not anticipated and therefore the monitoring data would not be included within the assessment.
- 17.1.10 Mapped background concentrations of NO₂, PM₁₀ and PM_{2.5} based upon the 2018 base year DEFRA update have been downloaded for the primary grid squares containing the site, as shown in Table 4 below. It is observed that concentrations of PM₁₀, PM_{2.5} and NO₂ in the site locale are 'well below' the respective relevant air quality standards of 18 µg/m³, 12 µg/m³ and 40 µg/m³ respectively.

Table 4: Projected Background Concentrations

| NGR Grid Square (m) | 2021 Mapped Background Concentrations (µg/m ³) | | |
|---------------------|--|--------------------------------|------------------------------|
| | PM ₁₀ ^a | PM _{2.5} ^b | NO ₂ ^a |
| 246500,816500 | 5.02 | 3.13 | 1.26 |

⁵¹ 2019 Air Quality Annual Progress Report (APR) for The Highland Council, Local Air Quality Management (July 2019)

| | | | |
|--|------|------|------|
| 247500,816500 | 5.03 | 3.13 | 1.26 |
| 247500,815500 | 5.03 | 3.13 | 1.25 |
| 246500,815500 | 5.13 | 3.16 | 1.25 |
| 248500,814500 | 5.22 | 3.21 | 1.30 |
| 248500,815500 | 5.17 | 3.17 | 1.28 |
| Table Notes: | | | |
| a) Source: http://www.scottishairquality.scot/data/mapping?view=data | | | |
| b) Source: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 | | | |

Potential Significant Effects

Construction

- 17.1.11 In relation to air quality, the key issues that require consideration are impacts from emissions of fugitive particulate emissions from construction works and pollutant emissions from the additional vehicles generated on the local road network.
- 17.1.12 A number of construction activities associated with the Proposed Development have the potential to generate medium to high source emissions. These include material handling and transfer operations, onsite transportation on temporary tracks and stockpiles of excavated material. Given the number of receptors in the local area and the distance from the works required, the construction phase is unlikely to result in significant effects. The effects would however be determined using an appropriately air quality assessment following IAQM Minerals Dust Guidance⁵². Road traffic emissions on public road networks associated with off-site vehicle movements, particularly HDV movements are more likely during the construction phase of the Proposed Development and have the potential to result in increased concentrations of combustion related pollutants, such as NO₂ and PM₁₀.
- 17.1.13 Given the nature and quantum of the Proposed Development, it is considered likely that the impact of traffic emissions would be screened out of a detailed assessment following the implementation of the IAQM screening criterion; the screening assessment would be presented within the EIA Report chapter.

Operation

- 17.1.14 Road traffic emissions on the public road network during the operational phase are unlikely to be significant on the basis that vehicle trips would be significantly lower than the construction phase; associated with staff movements and routine maintenance of the scheme. Therefore, it is considered likely that the impact of traffic emissions would be screened out of a detailed assessment following the implementation of the IAQM screening criterion, the screening assessment would be presented within the EIA Report chapter.

⁵² Institute of Air Quality Management, 2016, *Guidance on the Assessment of Mineral Dust Impacts for Planning*,

Proposed Scope of Assessment

17.1.15 The baseline assessment would incorporate a review of sensitive receptors, meteorological conditions, local air quality and other pollution sources.

- the findings of THC Local Air Quality Management (LAQM) reporting;
- relevant published air quality monitoring data;
- DEFRA mapped background air quality; and
- local meteorological data.

17.1.16 A desk study of the site and surrounding area would be conducted in order to identify relevant receptors which may be affected by air quality impacts and to assess baseline air quality in the vicinity of the site.

17.1.17 The sources that would be consulted during the desk study are outlined in Table 5 below.

Table 5: Sources Consulted During Desk Study

| Task | Sources Consulted |
|--|--|
| Identifying relevant sensitive receptors | Magic Maps (http://magic.defra.gov.uk/MagicMap.aspx/) |
| | Google Maps (https://www.google.co.uk/maps) |
| | Ordnance Survey (OS) mapping |
| | Google Earth satellite imagery |
| | Google Street View |
| Assessing baseline of study area in terms of air quality | DEFRA & Scottish Air Quality Background Maps THC 2019 LAQM Air Quality Annual Progress Report. |

Construction Phase Dust

17.1.18 It is proposed the assessment would adopt guidance tailored for mineral workings, which is considered the most appropriate guidance applicable to the activities required in the construction phase of the Proposed Development. Factors that have been taken into account when justifying the use of this guidance include the extent of the site, the construction and excavation of material from the underground works and proposed borrow pits; the length of unpaved haulage routes; and the volume of materials being handled on-site and for the duration of the construction phase.

17.1.19 Based on professional judgement, the use of the assessment methodology presented within the IAQM 'Guidance on the Assessment of Mineral Dust Impacts for Planning' is considered most relevant to the proposed activities as opposed to the IAQM 'Assessment of dust from demolition and construction' guidance.

17.1.20 The primary difference between the two guidance documents is the nature of the activities included in the assessment methodology. The IAQM mineral guidance takes into account the potentially significant dust generation of activities that would not typically be present on a construction site; at least not to

the extent that they are proposed within the Proposed Development. This includes the distance and frequency of use of unpaved haulage routes traversed by on-site vehicles, extraction of material and onsite stockpiles of excavated materials.

- 17.1.21 Although the IAQM guidance is aimed at developments in England, it provides an effective methodology in the absence of Scottish guidance for the assessment of sites that encompass activities similar in nature, size and duration to that of mineral sites. Where appropriate, guidance from Annex B of PAN50⁵³ will also be used within the assessment to ensure all relevant guidance has been represented.

Screening Criteria

- 17.1.22 The IAQM uses a distance-based screening criterion for both airborne concentrations and dust soiling. The IAQM guidance states that adverse impacts from sand and gravel sites and hard rock sites are uncommon beyond 250 m and 400 m, respectively, measured from the nearest dust generating activity. Given the hard rock type at the Site, the distance of 400 m as a conservative, worst case approach to the screening methodology has been applied.
- 17.1.23 As such, if there are relevant receptors within 400 m of dust generating activities (i.e., Dell Lodge), a dust impact assessment for both dust deposition and PM₁₀ will be undertaken.

Assessment of Ambient Suspended Particulate Matter (PM)

- 17.1.24 Concentrations of suspended dust particles in the air because of the construction of the Proposed Development have the potential to cause impacts on air quality, if the process contribution is likely to cause an exceedance of the relevant Air Quality Standard. For quarry-related activities, most of this suspended dust is from the coarse sub-fraction (PM_{2.5}-PM₁₀) rather than the fine (PM_{2.5}) fraction. As such, air quality effects because of suspended PM would be assessed in the context of PM₁₀ only.
- 17.1.25 The IAQM guidance presents a screening methodology whereby further assessment is not considered to be a requirement if background PM₁₀ concentrations are below a specific value.

Assessment of Dust Soiling Impacts

- 17.1.26 The IAQM method to assess dust soiling impacts utilises a qualitative risk-based approach established on the source-pathway-receptor conceptual model, i.e. the hypothetical relationship between the source of the pollutant, the pathway by which exposure might occur, and the receptor that could be adversely affected.
- 17.1.27 Following determination of the magnitude of dust effects at each individual receptor location, the overall magnitude of effect from dust deposition on the surrounding area would be determined.
- 17.1.28 In the event that significant impacts are predicted, mitigation measures would be recommended in order to reduce impacts to an acceptable level. The residual effect, following implementation of mitigation measures, is then determined.

⁵³ Planning Advice Note PAN 50 Annex B: The Control of Dust at Surface Mineral Workings (March, 1998)

Construction Phase Vehicular Emissions

- 17.1.29 Road traffic emissions on public road networks associated with off-site vehicle movements, particularly HDV movements, during the construction phase of the Proposed Development have the potential to result in increased concentrations of combustion related pollutants, such as NO₂ and PM₁₀.
- 17.1.30 The DMRB states that further assessment of potential air quality impacts should be undertaken if the following criteria are met on any link affected by a proposed development:
- increase in 24-hour Annual Average Daily Traffic (AADT) flow of more than 1,000-vehicles; and/or
 - increase in 24-hour AADT flow of more than 200-HDV.
- 17.1.31 Further guidance provided by EPUK and IAQM states that a detailed assessment of potential air quality impacts should be undertaken if the following criteria are met on any link affected by a proposed development:
- change in 24-hour LDV flows of:
 - more than 100 AADT within or adjacent to an AQMA; or
 - more than 500 AADT elsewhere.
 - change in 24-hour HDV flows of:
 - more than 25 AADT within or adjacent to an AQMA; or
 - more than 100 AADT elsewhere.
- 17.1.32 Should vehicle movements exceed EPUK guidance criteria as a result of the Proposed Development, further assessment would be required, likely to be in the form of computer modelling (i.e. ADMS Roads). Should further assessment of vehicular emissions be required, further consultation with regards to the scope and assessment methodology with THC would be undertaken.

Operational Phase Vehicular Emissions

- 17.1.33 Operational phase vehicle movements would be assessed utilising the same screening criteria as proposed for the construction phase i.e., the EPUK criteria. Should further assessment of vehicular emissions be required, further consultation with regards to the scope and assessment methodology with THC would be undertaken.

Mitigation

- 17.1.34 The above assessments would identify the nature and significance of potential air quality impacts that may arise as a result of the construction phases of the scheme. If significant adverse air quality effects are predicted, the following steps will be undertaken:
- identify a range of additional mitigation or enhancement of existing proposed mitigation measures, in line with best practice and in accordance with EPUK/IAQM guidance, to ameliorate any adverse effects. Any requirement for modelling to assess potential air quality impacts associated with supplementary mitigation would require additional fees; and

- describe the nature and significance of any residual environmental impacts that might remain following mitigation.

Questions to Consultees

- Do the ECU and THC agree with the proposed scope of the air quality assessment?
- Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account not mentioned in the Scoping?
- Are the ECU, THC, and consultees aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?
- Are THC aware of any historic air quality monitoring, e.g. from other planning applications, that should be used to inform the baseline review and assessment?

18. Forestry

Introduction

- 18.1.1 This chapter sets out the proposed approach to the assessment of the potential effects on trees and woodland during construction and operation of the Proposed Development.
- 18.1.2 The Proposed Development could impact upon trees and woodland with an area of the commercial coniferous Whitebridge Plantation being inundated by the proposed raised surface level of Loch Kemp.
- 18.1.3 There could also be further impacts on woodland arising from the construction of new access routes and upgrading of existing tracks and construction of the outlet area to facilitate the Proposed Development.
- 18.1.4 The effects on trees and woodland and the associated potential mitigation measures arising from the Proposed Development will be assessed and prepared in accordance with current policies, guidance, and best practice, including, but not limited to:
- Highland-wide Local Development Plan, Policy 51 Trees and Development and Policy 52 Principle of Development in Woodland. (2012): Supplementary Guidance, Trees, Woodlands and Development.
 - Forestry Commission Scotland (2009): The Scottish Government's Policy on Control of Woodland Removal, Edinburgh;
 - Forestry Commission (2017): The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh;
 - Forestry Commission Scotland (2013): The Native Woodland Survey of Scotland;
 - The Scottish Government (2019): Scotland's Forestry Strategy 2019 -2029, Edinburgh;
 - Forestry Commission Scotland (2018). The National Forest Inventory Woodland Scotland;
 - SEPA (2013): SEPA Guidance Notes WST-G-027 "Management of Forestry Waste"; and
 - SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land.
- 18.1.5 In the UK there is a strong presumption in favour of protecting woodland. Removal should only be permitted where it would achieve significant and clearly defined additional public benefits.
- 18.1.6 In Scotland, such deforestation is dealt with under the Scottish Government's Control of Woodland Removal Policy (Forestry Commission Scotland, 2009)⁵⁴. The purpose of the policy is to provide direction for decisions on forestry removal in Scotland with implementation guidance being available in the

⁵⁴ Forestry Commission Scotland, 2009, *The Scottish Government's Policy on the Control of Woodland Removal*. Available at <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument> [Last accessed: 05 November 2021].

Scottish Government's document Control; of Woodland Removal Policy: Implementation Guidance (2019).⁵⁵.

- 18.1.7 Policies and Guidance for the Highland Wide Development Plan require applicants seeking planning permission to effectively consider and subsequently manage existing trees and woodlands, as well as identifying opportunities for planting and management of new trees and woodlands.

It will be essential that the Proposed Development satisfies the requirements of the Control of Woodland Removal Policy and the Highland-wide Local Development Plan 1 Policies 51 and 52.

Baseline Description

- 18.1.8 The woodland areas that could be affected by the Proposed Development include parts of the extensive Whitebridge Plantation. Extending to approximately 220 ha, the plantation consists of a mixed crop of commercial conifers including Scots Pine (*Pinus sylvestris*), Sitka Spruce (*Picea sitchensis*), Douglas Fir (*Pseudotsuga menziesii*) and Larch (*Larix*) with a wide range of age classes.
- 18.1.9 There is no formal Long Term Forest Plan in place for the Plantation, but commercial woodlands are dynamic environments that change frequently through regular thinning and rotational felling followed by restocking. There is a current Felling Licence (FLA01500) covering much of the Plantation which expires on 16th December 2021. The Licence includes an obligation to restock 15.3 ha of felled land by 30th June 2023.
- 18.1.10 Out-with the plantation, there are areas of Native Broadleaved Woodland dominated by Birch including woodland within the SSSI and SAC that could be affected by the Proposed Development.
- 18.1.11 The Easter Ness SSSI is an extensive area of native broadleaved woodland covering approximately 475 ha and is designated for its Upland Oak Woodland and Upland Mixed Ash habitats. Both these features were recorded as being in "unfavourable condition" when Site Condition Monitoring was last carried out by NatureScot in 2008.
- 18.1.12 All of the trees and woodland affected by the Proposed Development are located within Dell Estate.

Potential Significant Effects

Construction

- 18.1.13 An initial desk-based assessment of the site and proposals indicates that approximately 30 ha of the Whitebridge Plantation is located within the maximum inundation level of the Proposed Development and could therefore be inundated should the proposed increase in the surface water level of Loch Kemp go ahead. This inundated area includes mature conifer woodland, younger restock sites and most of the

⁵⁵ Forestry Commission Scotland, 2019, *The Scottish Government's Policy on Control of Woodland Removal: Implementation Guidance*. Available at <https://forestry.gov.scot/component/edocman/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance/download?Itemid=0> [Last accessed: 05 November 2021].

area covered by the Felling Licence FLA01500 restocking obligation. This could result in a permanent loss of commercial woodland. Mature timber will be felled prior to inundation.

- 18.1.14 1 ha of the area proposed for inundation in the Whitebridge Plantation is recorded on the Ancient Woodland Inventory (AWI) as Long-Established Woodland of Plantation Origin (LEPO).
- 18.1.15 Approximately 4 ha of native broadleaved woodland is located within the maximum inundation level of the Proposed Development and could be lost due to the increase in the surface level of Loch Kemp, with approximately 10% of this area being included within the Easter Ness SAC/SSSI. The woodlands within these designated sites are recorded on the AWI as Ancient Woodland of semi natural origin.

There could be further losses of woodland, including areas within the Easter Ness SAC/SSSI, arising from the construction of the required site establishment and staff accommodation area and access routes where they pass through woodland. Woodland loss associated with construction tracks and site establishment could be temporary, as restocking could be carried out upon completion of the construction period. Losses associated with operational tracks and within the inundation area will be permanent.

Operation

- 18.1.16 Should the Proposed Development become operational, the impacts arising upon trees and woodland during operation would be minor. The improved access arising from the Proposed Development could be beneficial to the future management of the woodlands.

Proposed Scope of Assessment

- 18.1.17 A qualified Forestry Consultant will be engaged to develop and oversee the implementation of a Woodland Management Plan for the trees and woodland within the Proposed Development area. The principal aims of the plan will be to integrate the Proposed Development into the existing woodland environment to minimise the loss of woodland and to prevent fragmentation of existing woodlands.
- 18.1.18 The following steps will be undertaken and incorporated into the plan:
- Land Survey of the site to identify distinct woodland areas (the study area) likely to be affected by the Proposed Development during construction and operation and therefore to be included in the Management Plan;
 - Assessment of the Status of the woodland likely to be affected by the Proposed Development, within the study area;
 - Survey of woodland likely to be affected by the Proposed Development, within the study area (desk-based using landowner crop databases; the Native Woodland Survey of Scotland (NWSS), the National Forest Inventory (Forestry Commission Scotland, 2018), aerial photography, and Scottish Forestry publicly available databases and field survey);
 - Description of existing woodland structure likely to be affected by the Proposed Development, within the study area;
 - Description of the impact of the proposals on trees and woodland during construction and operation, including woodland removal and changes in forest structure within the study area;

- Assessment of the impacts proposals on trees and woodland in relation to relevant legislation, policy and guidance with particular attention to the Scottish Governments Control of Woodland Removal Policy (2009);
- Develop appropriate mitigation measures including a Compensatory Planting Plan.

Questions to Consultees

- Does the proposed scope and methodology for the forestry assessment satisfy the requirements of the consultees?
- Do the consultees have any information, particularly with reference to new or updated guidance, which should be taken into account?
- Are the consultees aware of any additional consultees who may wish to comment on the scope of this assessment.

19. Socio-economics and Tourism

Introduction

- 19.1.1 This section provides a brief introduction of potential socio economic and tourism effects of the construction and operation of the Proposed Development. This includes a consideration of existing land uses within the site, local tourism activity, employment and Gross Value Added (GVA) generation and any indirect supply chain economic effects from the Proposed Development.
- 19.1.2 The assessment will include a description of the current socio-economic and tourism baseline with the local area. This will include a summary of economic performance data for each study area and a description of the relevant tourism assets that will be covered in the assessment.
- 19.1.3 This document forms the start of the consultation process, further consultation may be undertaken as required during the EIA process.

Baseline Description

- 19.1.4 The baseline environment will cover and compare three study areas:
- Local Area, comprising electoral wards (Aird and Loch Ness) that cover the location of the development and nearest settlements (for instance Invermoriston to the west and Whitebridge to the south);
 - Highland (the local authority); and
 - Scotland.
- 19.1.5 The economic impacts will be quantified and presented for the Highland and Scotland study areas.
- 19.1.6 The baseline study will cover:
- the demographic profile of the local area within the context of the regional and national demographic trends;
 - employment and economic activity in the local area within the context of regional and national economies;
 - the industrial structure of the local area within the context of regional and national economies;
 - the role of the tourism sector in the local and regional economy;
 - an analysis of tourism statistics in Scotland, Highland and the local area (Aird and Loch Ness);
 - identification of local tourism assets, including accommodation providers, visitor attractions and;
 - wage and salary levels within the regional economy compared to the national level; also including educational attainment levels within the regional area and compared to the national level; and

- an assessment of relative deprivation based on a review of the Scottish Index of Multiple Deprivation, over the period from 2004, through to 2020, to show how the local area has changed over time, compared to the national level.
 - Tourist attractions and accommodation will be identified within 5, 10 and 15km of the site boundary. Tourist attractions include permanent fixtures (e.g. museums, attractions, castles and trails) as well as temporary events (e.g. music, sport, cultural or arts festivals).
- 19.1.7 Important attractions attributed to Highland and Loch Ness will also be identified due to their increased sensitivity.
- 19.1.8 It is also important that the socio-economic and tourism assessment takes account of the relevant local and national policy objectives. The most relevant objectives for this are expected to be included in the following strategies:
- Scotland's Economic Strategy 2015;
 - Scottish Planning Policy 2014;
 - Net Economic Benefits and Planning 2016;
 - 2020 Routemap for Renewable Energy in Scotland;
 - An Action Plan for Economic Development in Highland'
 - Inverness and Highland City-Region Deal;
 - Tourism Scotland 2030; and
 - Highland Area Tourism Partnership Plan.
- 19.1.9 These policy documents would also allow for the relevant baseline to be collected.

Potential Significant Effects

- 19.1.10 The issues that will be considered in this assessment will include the potential socio-economic and tourism effects associated with the Proposed Development.
- 19.1.11 An economic impact analysis will be undertaken using the methodology developed by Renewables UK and deployed by MKA Economics, which has been used to assess over 30 renewable developments across Scotland, including the Coire Glas Pumped Storage Scheme near Invermoriston. The potential socio-economic effects that will be considered are:
- temporary effects on the regional and/or national economy due to expenditure during the construction phase;
 - permanent effects on the regional and/or national economy due to expenditure associated with the ongoing operation and maintenance of the Proposed Development;
 - permanent effects as a result of any additional public expenditure that could be supported by the additional tax revenue that would be generated by the Proposed Development during the operational phase;
 - permanent effects on the local economy that could be supported by any community funding and/or shared ownership proposals during the operational phase of the Proposed Development; and

- temporary effects on the regional and/or national economy due to expenditure during the decommissioning phase.
- 19.1.12 The link between renewable developments and the tourism sector is a subject of debate. However, the most recent research has not found a link between tourism employment, visitor numbers and renewable developments. For example, research completed by the Scottish Government found that there is no relationship between the development of renewable developments and tourism employment at the level of the Scottish economy, at the local authority level nor in the areas immediately surrounding developments.
- 19.1.13 Nevertheless, the tourism sector is an important contributor to the Scottish economy and so there is merit in considering whether the Proposed Development will have any effect on the tourism sector. This assessment will consider the potential effects that the Proposed Development could have on tourism attractions, local accommodation, and tourism trails such as:
- National Cycle Network;
 - Loch Ness 360;
 - Affric Kintail Way;
 - Great Glen Canoe Trail;
 - Great Glen Way;
 - Speyside Way; and
 - Local tourism routes and public Rights of Ways.
- 19.1.14 This will consider the implications of any effects identified for the tourism sector in the local area and wider region. The assessment should also be read in conjunction with the 'Recreation and Land Use' Assessment (see Chapter 8), as in many cases the tourism assets are also recreational assets and therefore this assessment will, in part, assess similar receptors when assessing tourism/recreational trails and routes.
- 19.1.15 Other issues, such as the implications for the agricultural and forestry sectors, may emerge during the assessment and will require consideration.
- 19.1.16 Effects will be considered based on the guidance from guidelines for Environmental Impact Assessments and a Handbook for EIA (2004)

Construction

- 19.1.17 For the purposes of the assessment of economic effects, the following construction activities has been assumed at this stage of the assessment:
- Dams and Upper Reservoir
 - Underground Waterway System
 - Shaft Type Powerhouse
 - Outlet Area
 - Access Tunnels

- Access Roads; and
- Rock Disposal

19.1.18 Employment estimates will be based on dialogue with Statera, their technical consultants as well as drawing on the economic consultant's own knowledge from other Pumped Storage schemes. Information from other studies suggests that the types of staff likely to be employed in construction include:

- Project managers;
- Quantity surveyors;
- Site engineers;
- Technicians;
- Crane operators;
- Steel fixers;
- Drillers;
- Welders;
- Drivers / barge operators; and
- Labourers.

19.1.19 In order to calculate the economic effect of new jobs, the GVA per head for civil engineering related projects in the Highlands and Scotland will be utilised. These figures will be sourced from the Scottish Annual Business Statistics. The economic impact assessment will also take displacement and multiplier effects into consideration to provide a net economic impact figure at the regional, national and UK levels.

Operation

19.1.20 The mature operation employment levels will be provided by Statera. The employment impacts associated with the mature operation phase will be presented by occupation type.

19.1.21 Information from other Pumped Storage Schemes suggests that the types of staff likely to be employed once fully operational include:

- Station manager;
- Assistant station manager;
- Civil engineer;
- Electrical engineer;
- Mechanical engineer;
- Electrical/mechanical fitter;
- Administration;
- Cleaner; and

- Security.

19.1.22 There would be a range of activities which would occur during mature operation. Regular visits would be made to inspect and maintain structures along the following lines:

- Daily visits to the underground powerhouse for routine operational and maintenance purposes;
- Weekly visits to the dam, for routine operational and maintenance purposes;
- Non-routine and scheduled major maintenance tasks would be carried out at longer intervals as required. These tasks could potentially extend to several weeks/months in exceptional circumstances.
- Periodic inspection of the underground tunnel works and statutory inspections of the upper dam and ancillary works; and
- As required maintenance of the access tracks and other infrastructure as noted during routine visits to the site.

19.1.23 In order to calculate the economic effect of new jobs, the GVA per head for civil professional, scientific and technical work in the Highlands and Scotland will be utilised. These figures are also drawn from the Scottish Annual Business Statistics and the resultant economic impact will be presented at the at the Highlands and Scotland levels.

19.1.24 As noted in the construction phase, economic impact assessments must also consider the effects of displacement. For The Proposed Development, displacement levels are not expected to be as significant as the construction related activity and it is assumed that displacement would be low during the during operation and maintenance at both the regional and national levels. Multiplier effects will also be built into the economic impact assessment, and these will be sourced from the Type II Output, Income, Employment and GVA Multipliers, produced by the Scottish Government.

19.1.25 In addition to the stated economic opportunities at the construction and operational phases, there is also a variety of wider economic impacts which are excluded from the construction and operational economic impact assessment. The wider impacts which should also be noted as having positive effects on the regional and national economies include:

- Supporting policy objectives;
- Local supply chain opportunities;
- Pre-development costs, such as consultancy fees and legal costs;
- Exchequer impacts;
- Perception benefits, promoting the area as a place to work and invest; and
- Community benefits, linked to the community benefit clauses attached to a successful planning application.

Proposed Scope of Assessment

19.1.26 Socio-economic effects will be considered based on the guidance from Guidelines for Environmental Impact Assessment and a Handbook for EIA (2004). A range of existing surveys and assessments of socio-

economic and visitor profiles, land use and ownership, and public attitudes will be collated to provide background information against which to assess the potential for significant effects.

- 19.1.27 As noted above a desktop socio-economic assessment will consider the potential direct and indirect effects of the Proposed Development, during both construction and operation phases. During the construction of the Proposed Development, local sourcing will be preferred where possible, bringing direct economic benefits from the Proposed Development. Similarly, operational jobs will inherently be taken by people residing close to the Proposed Development, either local people or people relocating to the area for these job opportunities. An estimate of economic benefits will be provided in the EIA Report.
- 19.1.28 An assessment of effects upon tourism receptors will also be undertaken and will take into account published data on visitor numbers and the value of tourism to the economy of the Highlands and Loch Ness. This will also include consultations with local businesses such as accommodation associations and providers, tourism businesses, transport operators and visitor attraction and tourism agencies such as VisitScotland, Visit Inverness Loch Ness and other relevant consultees within the vicinity of the Proposed Development.
- 19.1.29 In respect of recreation and access, these will be assessed in the 'Recreation and Land Use' Chapter (see Chapter 8) and are therefore Scoped Out of the Socio-Economic and Tourism Assessment. A cumulative assessment will also be presented, and this will take into account other similar renewable and infrastructure projects ongoing or planned in the local area. This will assess the cumulative impact of such investments, including the Proposed Development.

Questions to Consultees

- Do consultees agree with the proposed scope of the socioeconomics and tourism assessment?
- Are the ECU, THC and other consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- Are the ECU and THC aware of any particular consultees in the area who may wish to provide comment on the scope of this assessment?

20. Recommended Features to be Scoped out of EIA

20.1 Telecommunications, TV, Radio Links

20.1.1 The Proposed Development is located in a rural area with relatively few nearby sensitive receptors. No significant changes to the reception of radio, digital television or digital radio as a result of this type of development are anticipated. It is therefore proposed that an assessment of interference with radio, digital television or digital radio links is scoped out of the EIA.

20.2 Climate Change

20.2.1 With regard to climate change, in the context of the EIA process climate change is considered both in relation to the contribution of the Proposed Development to increasing or decreasing gaseous emissions with global warming potential (GWP), and in relation to climate change adaptation.

20.2.2 Emissions associated with the Proposed Development would be limited to temporary and short-term emissions of exhaust gases from vehicles and construction plant, and the potential for the release of carbon dioxide as a result of dewatering and exposing peat and peat soils during construction. Neither source is considered likely to be significant in terms of GWP. Air Quality is addressed in Chapter 17 of this Scoping Report and will be further considered as part of the EIA. It is therefore considered that a separate assessment of the contribution of the Proposed Development to increasing or decreasing gaseous emissions with GWP is not required as part of the EIA Report.

20.2.3 A further consideration in relation to climate change is the potential loss of habitats that are important for carbon capture and storage to accommodate the construction of the Proposed Development, such as woodland and peatland habitats. As noted in Section 13.1.13, peat probing will be undertaken to confirm the depth and condition of peat on-site and if required, the re-use of peat will be assessed so that the existing peat deposits on the site can be safeguarded. If appropriate, a Peat Management Plan will also be prepared. Loss of some localised areas of woodland will also be likely to accommodate the Proposed Development, particularly for the proposed powerhouse and associate access track. Compensatory planting would be undertaken so no permanent net loss of tree carbon is anticipated as a result of the Proposed Development. It is not considered likely that loss of habitats that are important for carbon storage would be significant.

20.2.4 In terms of climate adaptation, consideration would be given to the potential implications of climate change on design of the development (e.g., design for increased flood risk and adverse weather); however, no potential for significant impacts have been identified and it is therefore proposed that an assessment of climate change is scoped out of the EIA.

20.3 Population and Human Health

20.3.1 The Proposed Development is located in a rural area with relatively few nearby sensitive receptors. The closest sensitive receptors to the east of The Proposed Development are groups of properties located along the B862, in Whitebridge and Easter Drummond, including along the minor Dell estate road off the B862, leading to Dell Lodge. The closest larger settlement is the village of Fort Augustus, located approximately 13 km south-west of the Proposed Development.

- 20.3.2 Potential effects relating to population and human health could arise from Electric and Magnetic fields (EMF), Electromagnetic Interference (EMI), air quality, water quality, noise and / or vibration effects, light disturbance or residential visual amenity effects.
- 20.3.3 It is not anticipated that there would be any likely significant effects in relation to EMF or EMI as a result of the construction or operation of the Proposed Development. Potential effects on human health as a result of the Proposed Development could relate to noise, vibrations and air quality during construction and water quality and residential visual amenity effects during both construction and operation.
- 20.3.4 The visual assessment described in Section 7.1.19 of this Scoping Report will comprise a receptor-based assessment considering the potential for effects on visual amenity within the study area, including residential properties. Residential visual amenity will therefore be considered further as part of the landscape and visual assessment in the EIA Report.
- 20.3.5 Potential impacts on water quality during construction and operations are addressed in Chapter 13 of this Scoping Report and will be considered further as part of the Geology, Soils and Water assessment in the EIA.
- 20.3.6 Construction noise and vibrations and air quality, including pollutant and dust emissions, are addressed in Chapter 16 and Chapter 17 of this Scoping Report and will also be considered further as part of the noise and vibrations assessment and air quality assessment in the EIA.
- 20.3.7 As potential effects on human health that are relevant to the Proposed Development will be adequately covered in the EIA and a separate assessment be scoped out of the EIA.

20.4 Risk of Major Accidents and / or Disasters

- 20.4.1 Flood risk in the event of a dam failing would be the biggest risk of major accident and/or disaster associated with the Proposed Development. However, management of the upper reservoir and full flood risk associated with failure of any of the proposed dams would be covered by the Reservoirs Act, following grant of any planning permission, rather than form part of the EIA. Other potential flood risk impacts are addressed in Chapter 13 of this Scoping Report and will be further considered as part of the EIA.
- 20.4.2 As noted in Section 13.1.13, peat probing will be undertaken to confirm the depth and condition of peat on-site. If appropriate, a Peat Landslide Hazard and Risk Assessment will be prepared for the Proposed Development as part of the Geology, Soils and Water assessment in the EIA.
- 20.4.3 Given the nature of the Proposed Development, and its remote location, the risk of any other type of major accident and/or disaster is considered being extremely low. Furthermore, the Principal Designer would need to fully assess risks and mitigate as appropriate during the design stage as part of the requirements of the Construction (Design and Management) Regulations (2015). It is therefore proposed that an assessment of the risk of major accidents and / or disasters is scoped out of the EIA.

20.5 Material Assets

- 20.5.1 The Proposed Development would be located entirely on Dell Estate, which is managed for game hunting and deer stalking. Loch Kemp and the smaller lochans and are used for fishing and are largely

stocked with wild rainbow trout and/or wild brown trout. Dell Estate also offers clay pigeon shooting, walking routes and has a number of self-catering properties for let, including Dell Lodge which sleeps up to 18 people. Highland sports, fishing and other recreational activities on the Estate would not be able to take place on or in the vicinity of Loch Kemp during construction of the Proposed Development.

- 20.5.2 Dell Estate also contains areas of commercial forestry. All woodland which would lie within the maximum inundation level of the Proposed Development, including the large area of plantation forestry within the Whitebridge Plantation to the south-west of Loch Kemp, would need to be permanently felled. A further area of commercial forestry within the Whitebridge Plantation near Easter Drummond would need to be temporarily felled to accommodate the main site establishment and staff accommodation area.
- 20.5.3 Most of the impacts on existing material assets would be temporary and limited to the construction phase of the Proposed Development only. There would be some permanent loss in commercial forestry however forestry impacts are addressed in Chapter 18 of this Scoping Report and will be further considered as part of the EIA. It is therefore considered that an assessment of material assets will be adequately covered in the EIA Report and a separate assessment be scoped out of the EIA.

21. Response to the Scoping Report

- 21.1.1 This Scoping Report has been issued to the ECU in support of a request for a Scoping Opinion under Regulation 7 of the EIA Regulations³.
- 21.1.2 The responses to the Scoping Report will inform the detailed methodology for each aspect of the impact assessment and, at each stage, dialogue will be maintained with statutory bodies and key stakeholders to ensure that methods are both appropriate and robust. All comments received will be included in the EIA Report for reference, unless consultees request otherwise.
- 21.1.3 The ECU will seek the views of those consultees listed in Sections 2.2 and 2.3 in forming its Scoping Opinion. All responses should be sent to the following address:

Energy Consents Unit
4th Floor, 5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU
energyconsents@scotland.gsi.gov.uk
FAO Alan Brogan

- 21.1.4 This Scoping Report is also available online at www.lochkempstorage.co.uk.

Appendix 1: Preliminary Walkover Bryophyte & Lichen
Survey of Proposed Pumped Storage Scheme at
Loch Kemp



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Preliminary walkover bryophyte & lichen survey of proposed pumped storage scheme at Loch Kemp

A report for ASH

by

N.G. Hodgetts

September 2021

Preliminary walkover Bryophyte & Lichen Survey of Proposed Pumped Storage Scheme at Loch Kemp

N.G. Hodgetts

Introduction

Loch Kemp, on the south-east side of Loch Ness, is the proposed location for a pumped storage scheme (Figs. 1, 2). This will involve an increase in the water level of Loch Kemp, the construction of a powerhouse and associated access tracks and other infrastructure. The scheme lies in an area that is potentially rich in bryophytes (mosses and liverworts) and lichens, and includes part of Ness Woods SSSI/SAC, so a preliminary walkover survey was commissioned in order to assess whether a full survey might be necessary. The areas targeted for this preliminary survey were the shore of Loch Ness at the proposed powerhouse location, riparian areas and the inundation zone around Loch Kemp.

Sites chosen for hydro schemes are often potentially rich bryophyte and lichen sites. The western Scottish Highlands are of global importance for bryophytes, and the Kemp scheme is just beyond the edge of this area. The temperate, wet climate is ideal for many oceanic species that are globally very rare and restricted climatically to areas with a high rainfall and only moderate temperature fluctuations. Their importance was first recognised by Ratcliffe (1968), who coined the term 'Atlantic bryophytes'. The document *Guidance for applicants on supporting information requirements for hydropower applications* (SEPA 2009) recognises the necessity for a full bryophyte survey of potentially rich hydro sites so that green energy production can go ahead without damaging Scotland's natural heritage. The potential impacts of small hydroelectric schemes on bryophytes and lichens were considered by Demars & Britton (2011).

Averis *et al.* (2012) have produced a scheme for assessing the bryological importance or potential importance of ravines for bryophytes, and making recommendations in relation to small hydroelectric schemes. This uses 29 species of nationally uncommon humidity-demanding bryophytes to classify sites to one of five levels of bryological importance. Unsurveyed or partly surveyed sites are also assessed using maps and aerial photographs. This work assessed 5629 water courses in western Scotland for their bryological interest. The majority of these have not yet been surveyed, but many have potential for high bryophyte interest. At least 136 sites have so far been identified that are of such bryological significance that hydroelectric development could have an impact of national importance.

There is no evidence of this site having been visited previously by other bryologists. According to the NBN Atlas (<https://nbnatlas.org>), only the common aquatic moss *Fontinalis antipyretica* and 'Sphagnum' have been recorded here. However, the same source reveals that a few notable lichens have been recorded, principally on trees, including relatively scarce species such as *Microcalicium ahlneri*, *Lobaria scrobiculata* and *Ochrolechia microstictoides*.

Figure 1. 1:50,000 map showing location of Loch Kemp scheme.

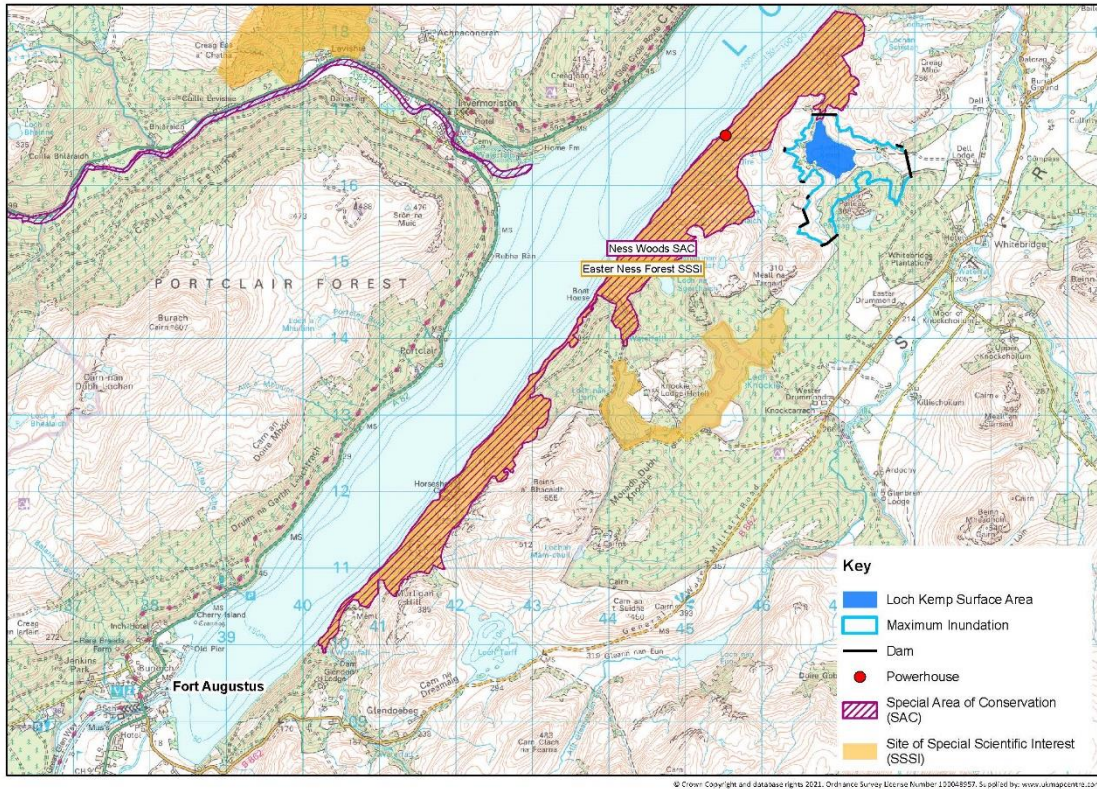
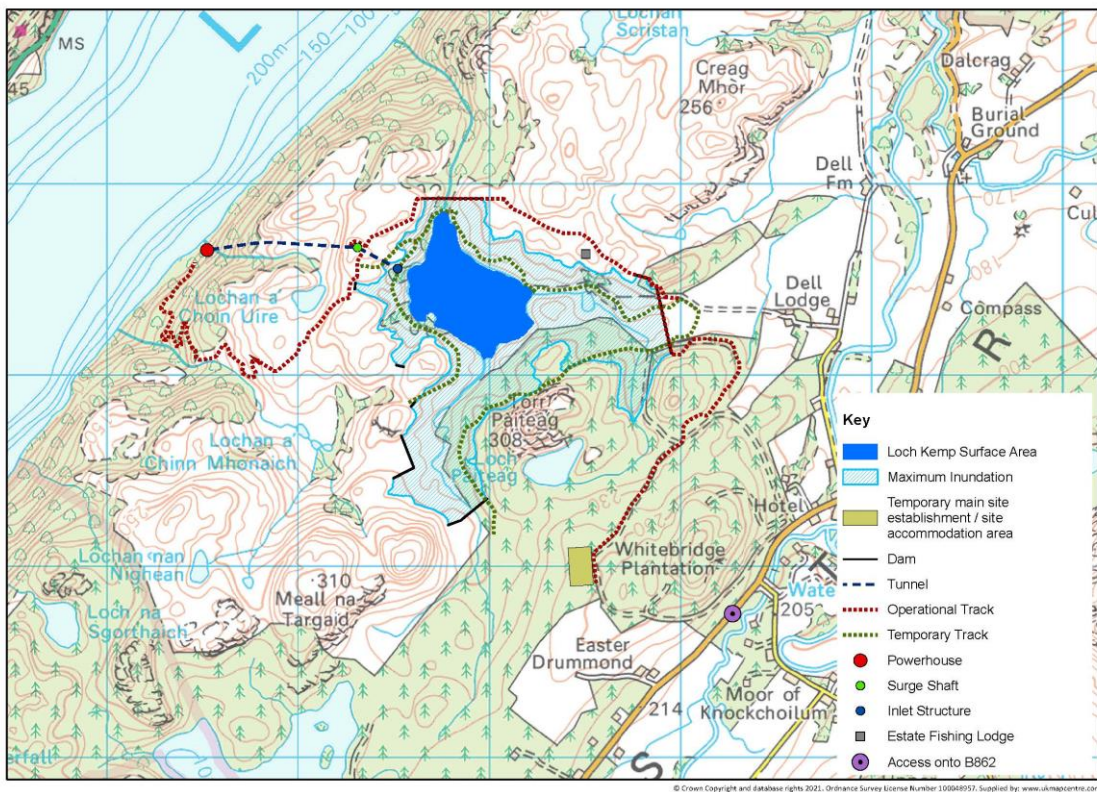


Figure 2. Loch Kemp scheme plan (supplied by employer).



Methods

Fieldwork was carried out on 21 September 2021. Starting at the proposed powerhouse site on the shore of Loch Ness, the site was walked uphill to the cabin on the shore of Loch Kemp, concentrating on the proposed powerhouse site, woodland within the SSSI/SAC, and the inundation area around Loch Kemp. No list was made, as this was a preliminary walkover survey, but notes were made on features of potential interest, and some photographs taken. A few specimens were collected where necessary for later microscopic examination. Bryophyte nomenclature follows the British and Irish bryophyte checklist (Hill *et al.* 2008). Lichen nomenclature follows the taxon dictionary on the British Lichen Society website (<https://britishlichensociety.org.uk>).

Results

The area of the proposed powerhouse on the shore of Loch Ness (Figs. 3-5) is dominated by birch and rowan, with some alder and ash, largely on dry ground with bracken, but a small unnamed burn (dry at the time of survey) runs to the north of the site. Lochside rocks have a variety of common and widespread species, including an abundance of the mosses *Fontinalis antipyretica*, *Hygrohypnum* spp., *Racomitrium* spp. and *Thamnobryum alopecurum*. *Pterogonium gracile* was found on one lochside boulder, and the tiny liverwort *Lejeunea cavifolia* is also present. The trees have abundant common epiphytes, including the bryophytes *Frullania* spp., *Hypnum andoi* and *Ulota crispa* s.l., and the lichens *Parmelia* spp. (in the broad sense), *Platismatia glauca*, *Ramalina* spp., *Usnea* sp. and numerous crusts. Rocks and boulders also have common and widespread species such as the bryophytes *Dicranum scoparium*, *Frullania tamarisci* and *Isothecium myosuroides*. The oceanic liverwort *Plagiochila spinulosa* is also present, and a more detailed survey might reveal more. There are some shaded outcrops that appear to support only common species, but there are some mildly base-rich outcrops with mosses such as *Amphidium mougeotii*, *Anoetangium aestivum* and *Rhytidiadelphus triquetrus*.

The woodland immediately above the proposed powerhouse, along the line of the proposed access track, consists of dry, open birch woodland with bracken below, and is of little interest (Fig. 6). There is also some hazel locally. This part of the SSSI/SAC appears to be of very limited interest for bryophytes and lichens, but the unnamed burn running down from Lochan a' Choin Uire to the north of the powerhouse site has more variety, including some small liverworts.

Above the woodland, the track crosses dry open bracken and heath, clearly intensively managed for game birds, with rearing pens and mown areas (Fig. 7). The occasional rock outcrops in this zone are of very limited interest, with *Andreaea* spp., *Campylopus atrovirens*, *Racomitrium* spp. dominant in the mosses, and *Cladonia* spp. *Cornicularia normoerica*, *Parmelia omphalodes* and other *Parmelia* spp. (in the broad sense) and crustose species dominant in the lichens. The moss *Hedwigia stellata* is occasional. The proposed surge shaft is on a hilltop with dry heath and rock outcrops, with only the same common species present.

The proposed inundation zone around Loch Kemp is mainly rather dry and acidic, but there are some low-lying wet areas. These are also of little interest, and support mainly common calcifuge species, especially widespread species of *Sphagnum* beneath plants such as heather and bog myrtle. There is some mature birch woodland with large trees, especially on steep ground on the south and west sides of the loch (Figs. 8-10), which supports a fairly varied lichen community, including *Mycoblastus sanguinarius*, *Ochrolechia* spp., *Parmelia* spp. (in the broad sense), *Pertusaria* spp., *Sphaerophorus globosus* and *Usnea* spp. There is an area of conifer plantation (partly felled) on the south-east side of the loch that is of no interest for bryophytes or lichens. The outfall from Loch Kemp into the Allt an t-sluichd, near the ford, has nothing of particular significance although there are some fairly mature birch trees with lichen cover.

Figure 3. Powerhouse site, showing dry, open mixed woodland and bracken.



Figure 4. Looking up unnamed (dry) burn from shore of Loch Ness adjacent to the powerhouse site.



Figure 5. Powerhouse site, showing stony loch shore with mixed woodland.



Figure 6. Representative view of Ness Woods SSSI/SAC from access track, showing dry, open birch woodland with bracken.



Figure 7. Representative view of dry heath above SSSI/SAC from access track, showing heather and bracken.



Figure 8. Mature birch woodland on south shore of Loch Kemp, with trees supporting a significant lichen flora.



Figure 9. View of south side of Loch Kemp, showing steep birch woodland in foreground and partly felled conifer plantation in background.



Figure 10. View of Loch Kemp from cabin on east side.



Conclusions

It is considered that most of this site does not require detailed bryophyte and lichen survey, as the ground is rather uniform, consisting of acidic dry heath, dominated by bracken and heather, and intensively managed for game birds. The part of the SSSI/SAC affected by the scheme is predominantly dry, open, and dominated by bracken, and is of no particular interest. However, the powerhouse site and the unnamed burn running down from Lochan a Choin Uire might benefit from a detailed bryophyte survey. Furthermore, it is recommended that Allt an t-sluichd, entering Loch Ness at NH465177 should also receive a bryophyte survey. If it is considered likely that construction will impact on the Allt a' Chinn Mhonaich, to the south–west, then this burn should also receive a bryophyte survey.

The mature birch on the south and west side of Loch Kemp, and perhaps immediately around the ford, should be examined more closely for lichens, especially in view of the previous records from the area. The southernmost part of the inundation zone, to the west of Torr Paiteag appears to be dry and of little interest, but a more detailed look (for bryophytes) may reveal some richer flushes.

To summarise, more detailed survey is recommended for the following:

- Powerhouse site, lower works and access track to the lower works through the woodland (bryophytes)
- Lower part of unnamed burn draining from Lochan a' Choin Uire (bryophytes)
- Allt an t-sluichd (bryophytes)
- Allt a' Chinn Mhonaich (bryophytes, if it is likely to be disturbed)
- Mature birch on shore of Loch Kemp (lichens)
- Open ground west of Torr Paiteag (bryophytes, but low priority)

A few general recommendations relevant to the scheme can be made. Construction activities on the shore of Loch Ness and within the adjacent woodland should be restricted where feasible, to protect the mature trees and associated lichens and bryophytes present. Disturbance to sheltered rotten logs and rock outcrops should be avoided or minimised wherever possible. Mature trees, ash and hazel should be left standing and undisturbed wherever possible. Dry areas of heath and bracken should be disturbed in preference to wet areas.

Acknowledgements

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Figures

List of Figures

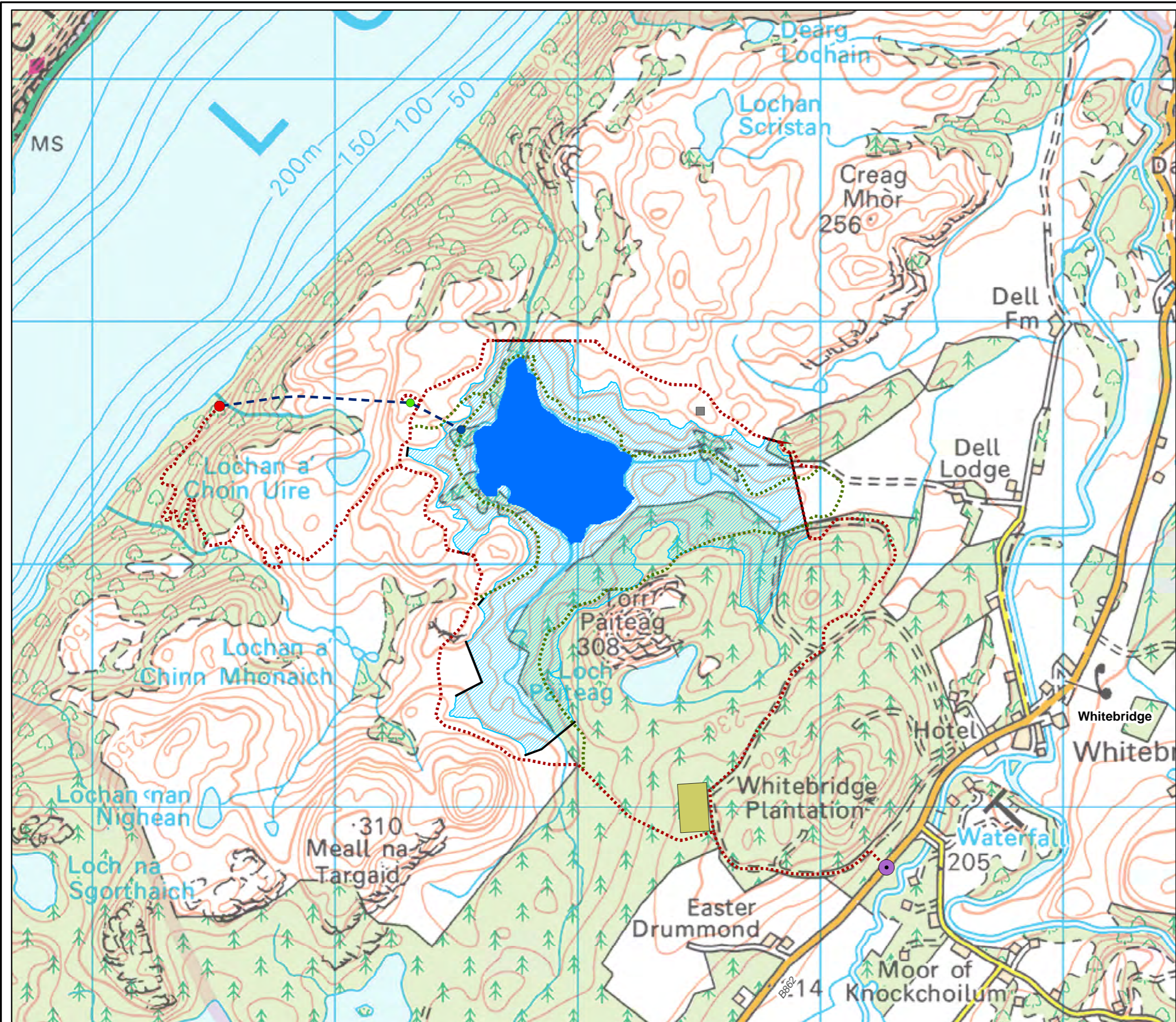
Figure 1 – Scheme Location and Overview

Figure 2 – Scheme Overview and Existing Infrastructure (1:10,000)

Figure 3 – Environmental Context

Figure 4– Zone of Theoretical Visibility (ZTV) and Potential Visual Receptors

Figure 5 – Sensitive Habitats



Key

- Loch Kemp Surface Area
- Maximum Inundation
- Temporary main site establishment / site accommodation area
- Dam
- Tunnel
- Operational Track
- Temporary Track
- Powerhouse
- Surge Shaft
- Inlet Structure
- Estate Fishing Lodge
- Access onto B862

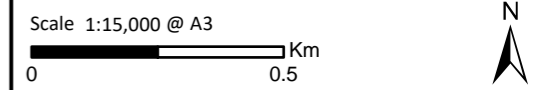
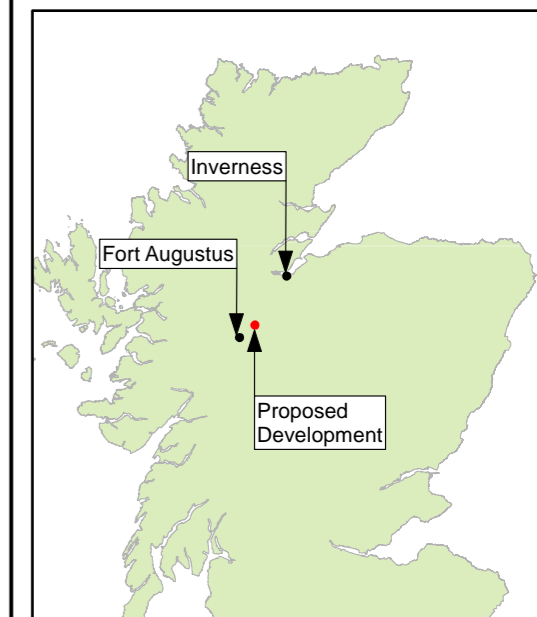
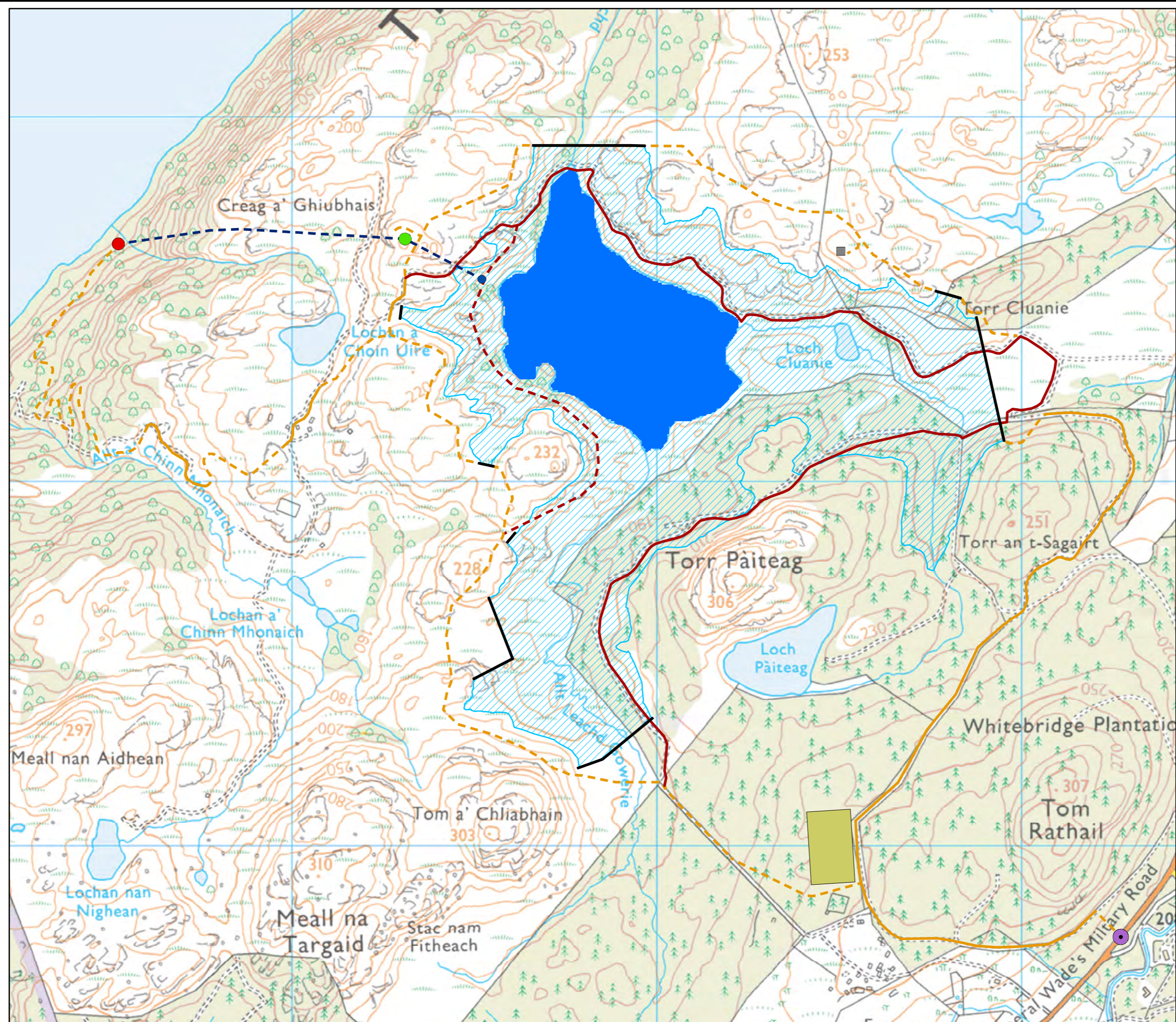


Figure 1
Scheme Location and Overview

Kemp Pumped Storage
Scoping Report



Key

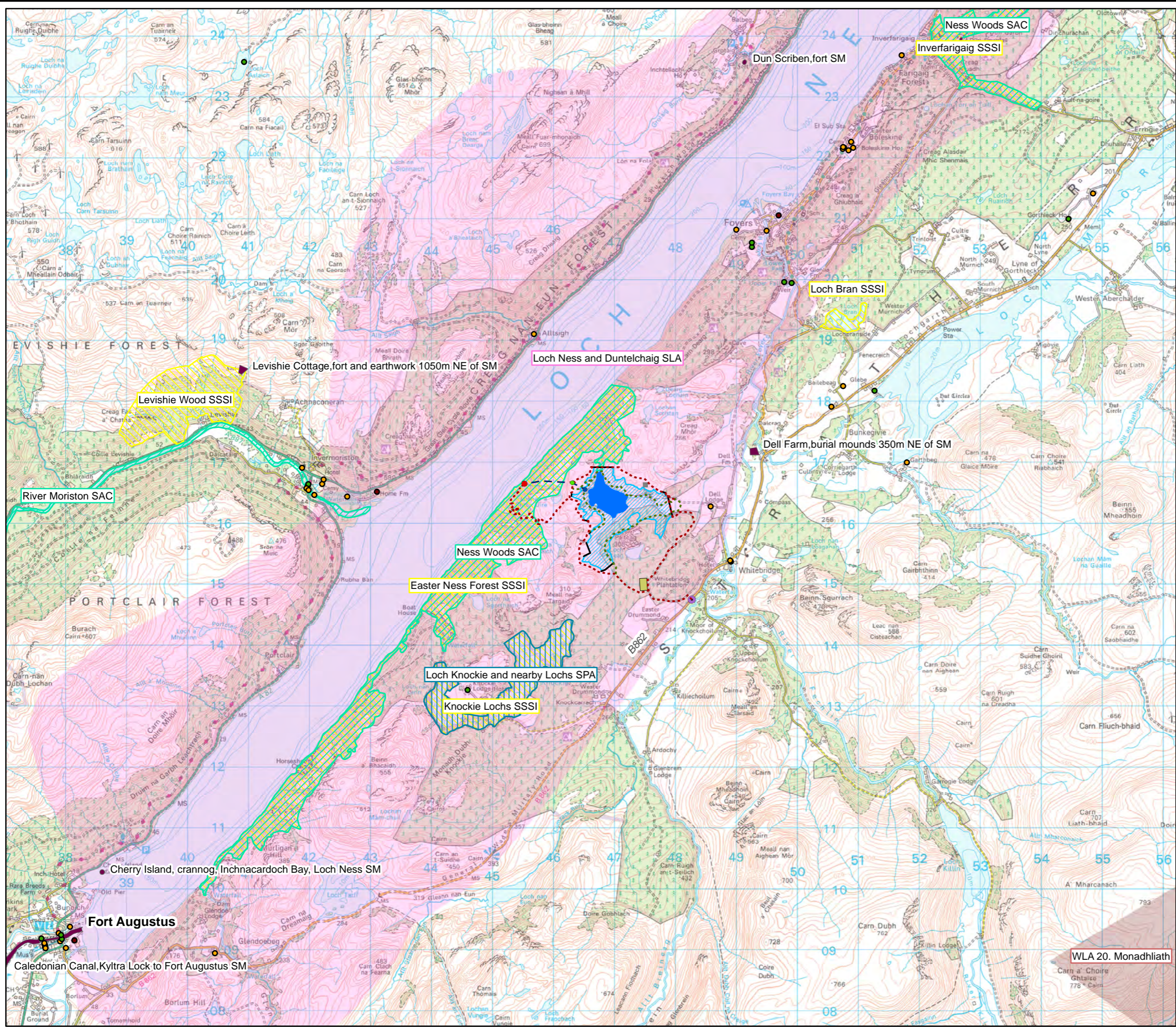
- Loch Kemp Surface Area
- Maximum Inundation
- Temporary main site establishment / site accommodation area
- Dam
- Tunnel
- New permanent track
- Existing track to be upgraded for operation
- New temporary track
- Existing tracks to be upgraded for construction
- Powerhouse
- Surge Shaft
- Inlet Structure
- Estate Fishing Lodge
- Access onto B862

Scale 1:10,000 @ A3
 Km
 0 0.5















Figure 2
Scheme Overview and
Existing Infrastructure (1:10,000)






Kemp Pumped Storage
Scoping Report







Key

-  Loch Kemp Surface
-  Maximum Inundation
-  Temporary main site establishment / site accommodation area
-  Dam
-  Tunnel
-  Operational Track
-  Temporary Track
-  Powerhouse
-  Surge Shaft
-  Inlet Structure
-  Estate Fishing Lodge
-  Access onto B862

Environmental Designations and Protected Areas

-  Special Area of Conservation (SAC)
-  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

Scale 1:60,000 @ A3



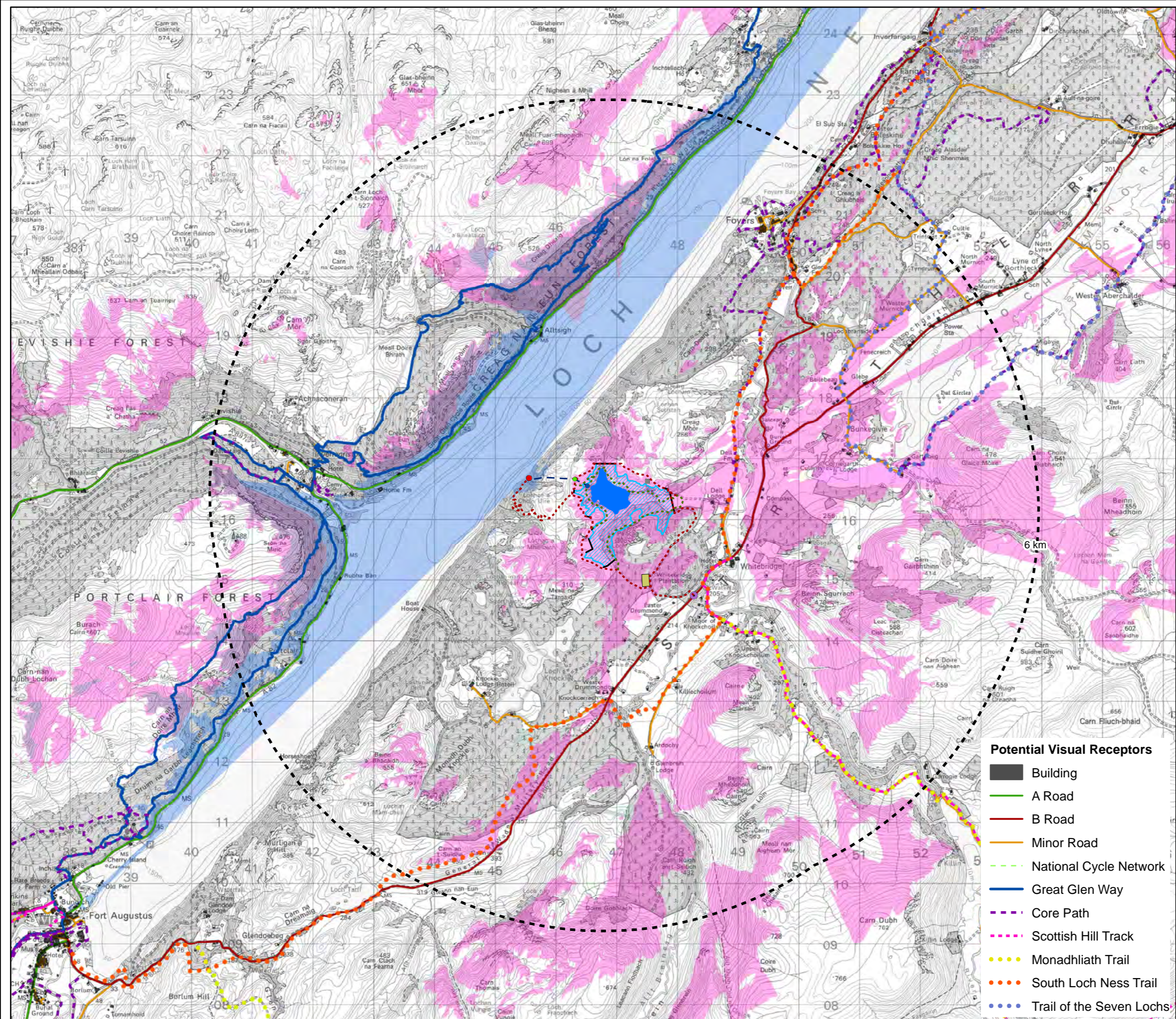



Figure 3
Environmental Context

Kemp Pumped Storage
Scoping Report



Key

- Loch Kemp Surface Area
- Maximum Inundation
- Temporary main site establishment / site accommodation area
- Dam
- Tunnel
- Operational Track
- Temporary Track
- Surge Shaft
- Inlet Structure
- Estate Fishing Lodge
- Access onto B862
- Proposed LVIA Study Area

Zone of Theoretical Visibility (ZTV)

- One or more dams
- Powerhouse
- One or more dams and Powerhouse

The ZTV has been run on a bare ground model, based on Terrain 5 Digital Terrain.

Potential Visual Receptors

- Building
- A Road
- B Road
- Minor Road
- National Cycle Network
- Great Glen Way
- Core Path
- Scottish Hill Track
- Monadhliath Trail
- South Loch Ness Trail
- Trail of the Seven Lochs

Scale 1:60,000 @ A3



Figure 4
Zone of Theoretical Visibility (ZTV)
and Potential Visual Receptors

Kemp Pumped Storage
Scoping Report

