

Fearna Pumped Storage Hydro Scheme

Environmental Scoping Report

February 2024



Fearna Pumped Storage Hydro Scheme

Revision History

Revision	Date	Details	Authorised	Position
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Executive Summary

Fearna PSH Ltd. (FPSH) (“the Applicant”), is proposing to construct and operate the Fearna Pumped Storage Hydroelectric scheme (hereafter referred to as “the Proposed Development”), located 4930m northwest of Kingie Lodge, Invergarry. The Proposed Development will require submission of a Section 36 application under the Electricity Act 1989.

The Proposed Development comprises construction and operation of a new large-scale long-duration electricity pumped storage hydroelectric scheme of up to 2000MW capacity, up to 36 Gigawatt Hours (GWh) of energy storage and approximately 18 hours of sustainable dispatchable electricity generation at full power. Water would be stored and transferred between a lower and an upper reservoir and flow between these during pumping and generating cycles via screened inlet/outlet structures and underground waterways (tunnels).

The lower reservoir would utilise Loch Quoich, which is currently used as a reservoir for conventional hydro generation and is the largest storage reservoir in the UK. No modifications to the existing dams or operational level range are proposed in Loch Quoich. The proposed 36GWh storage capacity of the Proposed Development would require approximately 10% of the storage capacity of Loch Quoich and the water would remain within the Quoich catchment.

The upper reservoir would be created by raising the level of Loch Fearna from its current level of 538m AOD to a maximum of 600m AOD. An adjacent coire (Coire Dubh) is also proposed to be dammed and inundated, to provide additional storage.

A powerhouse structure is proposed on the edge of Loch Quoich, with the pump-turbine units housed in deep underground shafts. Water would flow in and out of Loch Quoich and Loch Fearna via screened inlet/outlet structures. The powerhouse would be located on the site of a disused former quarry, designed to sit discreetly within the surrounding landscape.

Engineering studies will be carried out in parallel to an Environmental Impact Assessment (EIA) to confirm the layout and design of the Proposed Development.

A SEPA CAR Licence application is proposed to be submitted simultaneously with the Section 36 application.

It is proposed that EIA surveys will inform the Environmental Impact Assessment Report (EIA Report). Preliminary surveys have already been undertaken, with the final suite of surveys proposed in 2024.

Gilkes Energy Limited (GEL) (“the Developer”) is preparing the application on behalf of 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. GEL is an established developer and operator of hydroelectric generation assets in the UK.

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

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to this Scoping Report contained within the Scoping Opinion and ongoing consultation with relevant statutory consultees.

1. Introduction

1.1 Background Information

- 1.1.1 Fearna PSH Ltd. (FPSH) (hereafter referred to as “the Applicant”) is proposing to construct the Fearna Pumped Storage Hydroelectric scheme, located as shown in **Figure 3.1**. 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 on behalf of the Applicant by Gilkes Energy Ltd., (hereafter referred to as “the Developer”).
- 1.1.2 The generating capacity of the Proposed Development would be up to 2000MW, with approximately 36 Gigawatt Hours (GWh) of energy storage. It would be capable of generating at full capacity for approximately 18 hours. This would make it one of the largest energy storage facilities in the UK, providing a very significant contribution to the Scottish Government’s commitment to increase dispatchable electricity generation via pumped storage hydro capacity, as set out in the Scottish Energy Strategy².
- 1.1.3 As the Proposed Development comprises an electricity generating station with a generation capacity of greater than 50MW, consent under Section 36 of the Electricity Act 1989 is required. The development falls within the definition of Schedule 2 development contained in regulation 2(1) of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017³ (hereafter referred to as “the EIA Regulations”). The Developer has voluntarily agreed to prepare an Environmental Impact Assessment (EIA) Report in accordance with the EIA Regulations, rather than requesting a Screening Opinion. Deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997⁴, as amended, will also be sought.
- 1.1.4 The main Pumped Storage Hydroelectric (PSH) site, comprising the upper and lower reservoir works is located approximately 12 miles (18km) along the C1144 minor public road, between the A87 trunk road and Kinloch Hourn.

1 The Electricity Act 1989. Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents> [Last Accessed January 2023].

2 Scottish Government, 2017. The Scottish Energy Strategy. Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> [Last Accessed January 2023].

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 January 2023].

4 Town and Country Planning (Scotland) Act 1997 (as amended) Available at: <https://www.legislation.gov.uk/ukpga/1997/8/contents> [Last Accessed January 2023].

1.2 The Proposed Development

- 1.2.1 The Proposed Development would operate by transferring water between a lower loch (Loch Quoich) and upper reservoir, comprising Loch Fearna and Coire Dubh. Loch Quoich is currently the largest storage reservoir in the UK and no modifications to the existing dams are required to support the Proposed Development. The operational range of Loch Quoich would also remain unchanged from its current maximum and minimum levels and the existing Quoich Hydro station would continue to operate.
- 1.2.2 The addition of the Proposed Development would not increase spill at Quoich Dam, nor would it affect the current compensation flows or any other aspect of the existing SEPA CAR Licence covering the Quoich Hydro / Garry Cascade.
- 1.2.3 Filling the upper reservoir would require approximately 10% of the usable storage volume within Loch Quoich, with the water remaining within the same catchment area.
- 1.2.4 The upper reservoir would be created by constructing two dams from rock excavated on site, to extend the natural storage of the existing Loch Fearna. The upper and lower reservoirs would be connected by an underground waterway system, comprising vertical shafts and tunnels. A powerhouse structure is proposed on the banks of Loch Quoich, with the pump-turbine units housed deep within underground shafts. Water would flow in and out of Loch Quoich and Loch Fearna via screened inlet/outlet structures to prevent fish and debris from entering the system.
- 1.2.5 The C1144 minor public road between the A87 and Kinloch Hourn runs in close proximity to the site but is currently unsuitable for use by construction traffic of the type required to build a PSH scheme. Whilst the C1144 could potentially be upgraded, a preferred alternative access route is being considered for construction traffic, that would utilise the forest tracks through Glen Garry Forest and is referred to as the “Southern Access Route” (SAR). It is envisaged that the SAR would utilise an improved or new junction off the A87, and existing and/or upgraded forest tracks where possible through Glen Garry Forest, with a new section of track constructed to meet up with the C1144 public road, as illustrated on **Figure 3.1**.
- 1.2.6 A temporary construction compound would be required along the preferred SAR, which would act as the main accommodation, storage and administration area for the duration of the construction works. Smaller compounds are also proposed within the main PSH site.
- 1.2.7 A new section of track will be required to provide access from the lower reservoir works to the upper reservoir works around Loch Fearna.
- 1.2.8 A number of borrow pits are proposed around the site, which will provide the rock material to construct the scheme. No excavated rock is proposed to be exported from the site at this stage.
- 1.2.9 During the operation of the scheme it is envisaged that the C1144 would be used for day to day access, however, use of the preferred SAR may be necessary to bring in any abnormal loads during major maintenance operations.

- 1.2.10 Whilst the use of the SAR for the construction stage is the preferred option, landowner negotiations are ongoing at this stage.

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:
- Introduce and describe the Proposed Development;
 - Set out the overall approach to the EIA;
 - Summarise key baseline information;
 - Describe the proposed assessment methodology;
 - Identify key potential effects both during construction and operation of the Proposed 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 This Scoping Report is divided into 20 chapters:
- Chapter 1: introduces the Proposed Development and provides context for the Scoping Report;
 - Chapter 2: summarises the consultation process;
 - Chapter 3: describes the Proposed Development;
 - Chapter 4: outlines the planning policy context;
 - Chapter 5: provides information on the structure of the EIA Report;
 - Chapters 6 -18: detail the environmental features to be assessed as part of the EIA;
 - Chapter 19: 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
 - Chapter 20: 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 1.4 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 Specialist Team

- 1.4.1 The Developer recognises that the Proposed Development may give rise to some environmental effects. Specialist consultants were therefore appointed by the Developer to provide expert knowledge on the environmental topics to inform the Scoping Report, as follows:
- Water Management: Gilkes Energy Ltd and Mott MacDonald Limited;
 - Landscape and Visual: ASH design+assessment Ltd;
 - Land Use and Recreation: ASH design+assessment Ltd;
 - Terrestrial Ecology: Envirocentre Ltd;
 - Ornithology: Mike Coleman Ecology;
 - Aquatic Ecology: Gavia Environmental Ltd;
 - Geology, Soils and Water: SLR Consulting Ltd;
 - Cultural Heritage: Catherine Dagg;
 - Traffic, Access and Transport: Pell Frischmann Ltd;
 - Noise and Vibration: SLR Consulting Ltd;
 - Air Quality: SLR Consulting Ltd;
 - Forestry: Upland Ecology Ltd; and
 - Planning Consultancy: Savills.
- 1.4.2 Other inputs relating to the construction and future maintenance of the Proposed Development have been provided by the Developer and the Applicant. The preparation of the Scoping Report has been co-ordinated on behalf of the Applicant by the Developer.
- 1.4.3 Specialist consultants would be appointed by the Developer co-ordinate the EIA and to provide expert knowledge and advice on the environmental topics scoped in to the EIA.

1.5 Local Supply Chain

- 1.5.1 Pumped Storage Hydro Projects require significant local resource for their development, construction and operation, due mainly to the scale of civil engineering works required and ongoing operations and maintenance. They can therefore offer potentially valuable and sustainable benefits to the local supply chain over the lifespan of the project, which is expected to be over 100 years.

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- 1.5.2 Both the Applicant and the Developer have extensive experience in the development, construction and operation of hydro projects in Scotland and therefore have strong relationships with the supply chain in this area. The Applicant is committed to continuing proactive engagement with the local supply chain to ensure that local companies participate in the procurement process for the required contracts related to the Proposed Development.
- 1.5.3 The local supply chain has already been engaged in the project, with local surveyors, consultants and advisors providing support to the early stages of development.

2. Consultation

2.1 Consultation to Date

2.1.1 Prior to scoping, preliminary contact has been made with the following organisations:

- The Highland Council (THC);
- Scottish Government, Energy Consents Unit (ECU);
- SEPA; and
- Transport Scotland.

2.1.2 A Major Projects Pre-Application (23/01810/PREMAJ) session was held with The Highland Council (THC) and key stakeholders on 10th May 2023, with the Draft Response Pack provided by THC on 7th June 2023. The advice provided within the response has also been considered within this Scoping Report.

2.2 Scoping Stage Consultation

2.2.1 The Scoping Report will be issued to key stakeholders as advised by ECU. The key statutory consultees are listed below:

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

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

- British Horse Society Scotland;
- 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 Scotland;
- National Air Traffic Services (NATS) Safeguarding;

- Lochaber District Salmon Fishery Board;
- Lochaber Fisheries Trust;
- RSPB Scotland;
- 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.

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

- Glengarry Community Council; and
- Spean Bridge Community Council.

2.3 Public Consultation

2.3.1 A series of in person public exhibitions and have been held locally including on:

- 17th August 2023: Kingie Shed - Due to the remoteness of the site and in discussion with local representatives, the Applicant considered that a focussed event within Glen Garry, followed by a Public Consultation at Invergarry was an appropriate approach. The response was positive, with over 30 attendees and numerous other residents contacting GEL by email before and after the event. As a follow-up, GEL has separately met a number of the residents who could not attend to discuss the project in further detail on a one-to-one basis.
- 6th December 2023: Invergarry Community Hall (12:00-19:00). A Pre-Scoping Public Consultation event was held at the Invergarry Community Hall. The event was well attended, with 38 attendees, including members of the local community, community council members and councillors.

2.3.2 The purpose of the public consultation events was to seek views from local residents and other interested parties about the Proposed Development. The exhibitions provided information about the Developer, the need for new pumped storage, and specific details about the Proposed Development. The exhibitions also provided an opportunity for members of the public to ask questions about the Proposed Development and community engagement. Representatives from the development team were present to answer questions and take a register of public comments.

2.3.3 In order to inform the community of the proposed public consultation and engagement events, the Developer has undertaken the following:

- Contacted residents along the C1144 public road to invite them to the consultation event on 17th August 2023 (see paragraph 2.3.1) via a local distribution list;

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- Contacted the Invergarry Community Council to invite them to the public consultation events;
- Displayed posters at the public consultation event venues, community notice boards and, where possible, at local amenities; and
- Placed adverts in the public notice section of the Oban Times (incorporating Lochaber Times) with details of the Pre-Scoping consultation for two weeks in November / December 2023.

2.3.4 The Applicant has created a project website, www.fearnastorage.co.uk, where information and updates on the Proposed Development will be available to the general public. An informational video has also been prepared and is available at the link <https://vimeo.com/850609421/b0265482e0?share=copy>

2.3.5 Further public consultations will be held at the pre-application stage, as agreed with THC. The public consultation process will follow the published guidance of THC. A Pre-application Consultation (PAC) Report will be prepared to document the consultation process, and will be submitted with the Section 36 application.

3. The Proposed Development

3.1 Introduction

- 3.1.1 This chapter describes the Proposed Development. The location of the Proposed Development is shown in **Figure 3.1** and its arrangement is shown in **Figure 3.2**.
- 3.1.2 The function of the Proposed Development would be to create a nationally significant large-scale long duration energy storage scheme to store and release energy to or from the electricity transmission system to balance supply and demand for electric power at a national scale. This would also allow the further deployment of intermittent renewable generation and facilitates the reduction of fossil fuel deployment.
- 3.1.3 The Proposed Development would be operated either in:
- ‘generating’ mode during periods of low supply / high demand, when electricity would be generated by releasing water from the upper reservoir (Loch Fearna) through the reversible pump turbines and into the lower reservoir (Loch Quoich) and exported to the grid; or
 - ‘pumping’ mode, when surplus electricity in the grid would be used to pump water through the reversible pump turbines from the lower to the upper reservoir, to be stored and allow generation when required.
- 3.1.4 The generating capacity of the scheme would be up to 2000MW, with enough storage with the upper reservoir full to generate for approximately 18 hours at this capacity. Based on OFGEM published data on average electricity consumption, the Proposed Development could potentially provide power to 3.6 million average homes for up to 18 hrs. The pumping capacity would also be rated at 2000MW, which would allow national-scale renewable generation projects to continue to operate, rather than being paid to constrain, with the power being imported at the Proposed Development.
- 3.1.5 The Proposed Development would utilise the storage reservoir of the existing Quoich Hydro conventional hydro generation scheme as its lower reservoir. As Loch Quoich is currently the largest storage reservoir in the UK, no modifications to the existing dams are required to support the operation of both schemes.
- 3.1.6 The operational range of Loch Quoich would remain unchanged from its current maximum and minimum levels and the existing Quoich Hydro station would continue to operate as usual. The addition of the Proposed Development would not divert water out of the existing catchment of Loch Quoich, increase spill at Quoich Dam, nor would it affect the current compensation flows or any other aspect of the existing SEPA CAR Licence covering the Quoich Hydro/Garry Cascade. The Proposed Development would be constrained from pumping water when Loch Quoich is below an agreed level, with sufficient reserve for compensations flows.
- 3.1.7 The Proposed Development would not present any additional flood risk or increase spill from Loch Quoich. An agreement is being developed with the owners of Quoich Hydro which dictates that the Proposed Development would not release water to Loch Quoich when it is above an agreed level, thereby avoiding spill over the dam.

3.1.8 The principal permanent components of the Proposed Development would be:

Loch Fearna (Upper Reservoir)

- Two rockfill dams (referred to as Fearna Dam and Coire Dubh Dam) would be constructed to allow the reservoir to store water between the levels of 538m AOD and 600m AOD. This would provide storage of approximately 40 Mm³ of water. It is anticipated that the dams would be constructed from rock which has been excavated from borrow pits located around the site and from other project related excavation works. The dams would be of similar appearance and construction to the existing Quoich Dam.
- An upper inlet/outlet structure within Loch Fearna would feed water to/from the underground pressure tunnels. The structure would be screened to prevent debris and fish from entering the underground waterway system.

Underground Waterway System

- Water would transfer between Loch Fearna and Loch Quoich via underground pressure tunnels, constructed through bedrock. It is not anticipated that surge shafts would be required on this scheme and therefore it is unlikely that associated infrastructure would be visible from above ground. The pressure tunnels would be lined with concrete and additionally with steel at the lower reservoir due to the high water pressures.
- An access tunnel would be required to provide access to the pressure tunnels during construction and periodic maintenance. The adit to provide access to this tunnel is proposed to be located within the disused former quarry adjacent to the proposed powerhouse site.

Loch Quoich (Lower Reservoir)

- Loch Quoich is currently used as a storage reservoir for the operational Quoich Hydro project and provides approximately 360 Mm³ of water storage.
- A lower inlet/outlet structure would be constructed on the banks of Loch Quoich adjacent to the powerhouse, to allow water to be abstracted or released as required. Again, this structure would be screened to prevent fish and debris entering the underground waterways.

Powerhouse

- The powerhouse would be located on the shores of Loch Quoich within a disused former quarry and would comprise deep vertical shafts which would house the pump-turbine units, with a superstructure above. The shafts are required to be sufficiently deep to allow the units to function across the full operational level range of Loch Quoich. An indicative arrangement of the powerhouse is shown in **Figure 3.3**. The powerhouse would be designed to be sympathetic to the surrounding landscape and utilise naturally available materials where possible.
- During operation, the powerhouse would house an office and administration area, which would be used by operational staff to operate and maintain the project.
- Parking, welfare and maintenance facilities would also be provided.

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- Electrical works associated with connecting the project to the National Grid would also be provided in or around the powerhouse.

Site Access Tracks

- 3.1.9 Access roads would be provided for the construction of the Proposed Development and for operational and emergency access including:
- Access to the main PSH site via public roads and preferred SAR;
 - Access to the powerhouse in the site of a disused former quarry; and
 - Access to the upper reservoir works.

3.2 Site Selection

- 3.2.1 Pumped storage hydro for long duration electricity storage requires a site with the following attributes:
- Suitable topography to be able to create an upper and lower reservoir, either by re-using existing assets, altering the level of existing waterbodies, or by creating new ones;
 - As high as possible an elevation difference (head) between the upper and lower reservoirs;
 - As short as possible a distance between the upper and lower reservoirs;
 - Suitable geological conditions;
 - Practicable access to the electricity transmission network;
 - Practicable access to the site;
 - The minimum number and severity of adverse effects on the natural environment from the construction and operation of the scheme; and
 - Minimal impact on local communities and potential for added community socio-economic benefits during the construction and operational phases.
- 3.2.2 The Proposed Development scored highly on these attributes, making it an excellent candidate site. The Proposed Development would also have one of the largest storage capacities and smallest footprints of any large-scale pumped storage hydro project in the UK.

3.3 Site Description

- 3.3.1 The main PSH works (comprising the upper and lower reservoirs and associated works) are situated in close proximity to the west of the Quoich Dam.
- 3.3.2 The main PSH site comprises south and southwest-facing slopes and corries of upland blanket mire, heathland, and flush habitat; burns with associated riparian woodland; acid grassland, bracken, mire, and heath habitats in the lower-lying ground and a rock shingle beach along Loch Quoich's shoreline. M15 wet heath is the most widespread community within the survey area, followed by M17 blanket bog, and M25 mire.

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- 3.3.3 No woodland would be affected by the main PSH works, however, the preferred SAR would impact on some native and commercial woodland. No ancient woodland would be affected by the main PSH works.
- 3.3.4 The site is used for highland sports, commercial forestry, hydroelectric generation and recreation and the Applicant is working closely with landowners to ensure any potential adverse effects on their existing interests are minimised.
- 3.3.5 The site sits fully within the upper catchment of the River Garry. Loch Fearna outfalls via the Allt Fearna to Loch Quoich. Loch Quoich was dammed in the 1950s at both its east and west ends to create the storage for the Quoich Hydro project. Loch Quoich operates on a 26m vertical range, therefore is already subject to significant modification by hydropower infrastructure including dams, a reservoir with fluctuating water levels and associated drawdown scarring, an intake tower, control building and a power station downstream.

3.4 Grid Connection

- 3.4.1 The Developer has accepted a Grid Connection Offer from National Grid. The preferred solution to connect the Proposed Development to the Transmission Network has not yet been confirmed. The grid connection and any associated environmental effects would be covered by a separate planning application by the Transmission Operator.
- 3.4.2 Notwithstanding this, the Applicant is cognisant that grid infrastructure would be required in the vicinity of the powerhouse site and is working closely with the Transmission Operator on the preliminary conceptual arrangement.

3.5 Site Access

- 3.5.1 Options for site access include the C1144 minor public road (which runs between the A87 and Kinloch Hourn in close proximity to the site) and a “Southern Access Route” (SAR) running through Glen Garry forest. Both options are shown in **Figure 3.1**. Both access routes would require upgrading to make them suitable for use by construction traffic required to construct the Proposed Development. The Applicant understands that upgrades to the C1144 are proposed as part of the proposed Skye Upgrade Reinforcement Project and these are yet to be constructed and the scope of these works is unknown. However, the SAR has been identified as the preferred route for the construction of the Proposed Development as it would mitigate traffic impacts on the C1144, reduce disturbance during construction and it also offers areas for a main construction compound.
- 3.5.2 It is envisaged that the preferred SAR would utilise an improved or new junction off the A87, and would utilise existing and/or upgraded forest tracks where possible through Glen Garry Forest, with a new section of track constructed to meet up with the C1144 public road, as illustrated on **Figure 3.1**. Between this point and the Proposed Development site, upgrades to the C1144 would be required to provide adequate public and temporary construction access. The extent of the required C1144 upgrades would be developed once the scope of the proposed upgrades through this section for the Skye Reinforcement Project are known, however may range from additional passing places to a temporary construction lane adjacent to the existing carriageway.

- 3.5.3 A new access track would also run from the C1144 up to the upper reservoir. Following completion of construction, this track would be reduced in width where possible to form an operational access track. The elevation difference between the lower and upper reservoirs dictates that the track would require to generally contour up the hillside at approximately 10% gradient.
- 3.5.4 A 4x4 operational track would be constructed above the maximum water level of the upper reservoir, to allow access for maintenance.
- 3.5.5 The access track alignments would be designed sensitively to achieve manageable and safe gradients for both construction and operational vehicles and to minimise visual impact. Best practice would be applied to the design, construction and reinstatement.
- 3.5.6 Operational access to the lower works including the powerhouse site and the main construction area within the disused former quarry is proposed via a new access track off the C1144 public road. A junction would be required to allow vehicles to turn in both directions. It is envisaged that the C1144 would be used for day to day access, however, use of the preferred SAR would be necessary to bring in any abnormal loads during major maintenance operations. See **Figure 3.1**.

Additional Temporary Construction Tracks

- 3.5.7 During construction, temporary construction tracks would be required within the inundated area to allow the excavation and movement of material and general construction access. On completion of the construction, the temporary tracks would be reprofiled to a natural landform and ultimately submerged.

Public Access

- 3.5.8 The footpath which forms part of the route to Spidean Mialach and Gleouraich would be affected by the creation of the site access track and upper reservoir, with a potential diversion required around the southern side of Loch Fearna. Section 8 provides details of the scope of the proposed land use and recreational assessment, which would describe the public access arrangements during construction and operation.

3.6 Excavated Rock Management

- 3.6.1 The aim of the Proposed Development is to manage the excavated rock to achieve a mass balance, whereby all excavated material would be reused on site, rather than exported from site. This site presents favourable conditions to achieve this balance, with large volumes of rock available at or near surface.
- 3.6.2 Rock from surface excavations, such as the powerhouse area, lower inlet/outlet and borrow pits would be used for the construction of the site compound area, access tracks and dams where possible. The powerhouse façades may also use site-won rock.

- 3.6.3 Material from underground excavations would be used for concrete aggregate, landscaping and reinstatement of borrow pits. Due to the relatively short lengths of tunnels and avoidance of an underground cavern, the underground excavation volumes would be minimised. Unsuitable engineering fill materials would be used to reinstate borrow pits and for landscaping and finishing works.
- 3.6.4 An indicative Mass Balance Strategy and Spoil Management Plan would be developed, which would provide information on the anticipated volume, source, usage, temporary storage and handling of material generated and used during the construction of the works.

3.7 Site Establishment

Construction Compounds

- 3.7.1 A main site compound is envisaged at the western end of the preferred SAR. This compound would act as the primary administration, laydown/storage, accommodation and staging area for the Principal Contractor. The movement of labour, materials and equipment from this compound would be managed by the Principal Contractor.
- 3.7.2 A secondary site compound is proposed within the disused former quarry adjacent to the proposed powerhouse site. An adjacent area is proposed for the processing and temporary storage of material, which would be used for the construction.
- 3.7.3 A satellite compound is proposed at the upper reservoir area.
- 3.7.4 The location of the compounds and laydown areas would be refined and assessed during the EIA process.

Borrow Pits

- 3.7.5 The Proposed Development site presents excellent potential for borrow pits and preliminary calculations suggest that there are sufficient rock volumes available to construct the project.
- 3.7.6 The proposed borrow pits are generally adjacent to the works areas, such as the dams and ends of the access tracks. 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, as well as any environmental sensitivities.
- 3.7.7 As outlined in Section 3.6, excavated and processed stone material from borrow pits would be used to construct new dams, tracks, compounds and for the production of concrete. Material which was unsuitable would be used to reinstate borrow pits and for landscaping and finishing works.
- 3.7.8 The lower borrow pit adjacent to the main construction compound would provide material in the early stages of construction, primarily to allow the construction of the access track and main site compound.
- 3.7.9 The borrow pits used for the construction of the dams would be located in the upper reservoir area and therefore not visible when the upper reservoir was full.

Concrete Batching Plant

- 3.7.10 Concrete batching plants are proposed, for the production of concrete. These would use the site-won aggregate for concrete production. Site access would be designed accordingly to allow batching plants to be delivered to site.

3.8 Project Construction

- 3.8.1 The Proposed Development would be constructed in accordance with all statutory legislation and best practice guidance in order to achieve a high-quality, robust finish.
- 3.8.2 It is anticipated that the construction period would last approximately five years and that the workforce would peak at between 400 to 500 people on-site in the middle of the construction period. The number of construction workers on-site would also vary throughout the construction period depending on the specific elements under construction.
- 3.8.3 Construction mitigation and environmental protection measures would be implemented via a Construction Environmental Management Plan (CEMP), an outline of which would be included as an appendix to the EIA Report.

3.9 Project Operation and Maintenance

- 3.9.1 The Proposed Development would be manned, with most operations being controlled from the control building within the powerhouse, or remotely. Regular visits would be made to inspect and maintain the scheme components as follows:
- Daily visits to the powerhouse and inlet/outlet screens for routine inspection and maintenance;
 - Weekly visits to the dams, for routine operation and maintenance;
 - 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.

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 would 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;

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- Where removal of infrastructure, for example the dams, would result in more damage than leaving in place, they would be left in-situ and dewatered; 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 The Planning Policy chapter of the EIA Report will summarise the national, regional and local planning policy guidance and development plan policies that are relevant to the Proposed Development. In addition to this, a Planning Statement will be submitted as a supporting document to the Section 36 Application, which will assess in more detail the Proposed Development against the relevant policies and plans summarised in the chapter. Policies related to individual disciplines will be examined within the relevant technical chapters.
- 4.1.2 The Planning Policy chapter will identify the land-use policies and strategies applicable to the Proposed Development. The policies and plans which will be consulted as part of the assessment are briefly outlined below. These documents reflect the current direction of the Scottish Government's objectives for accommodating pumped storage hydro schemes.
- 4.1.3 Electricity demand in the UK is predicted to double by 2050, driven primarily by the increase in electric vehicles and the electrification of heating systems, to reduce the dependency on fossil fuels⁴.
- 4.1.4 In order to decarbonise electricity generation in the UK, large-scale long-term energy storage is required to allow renewables to displace the predominantly gas-powered electricity generation system, by assisting with balancing renewable energy supply and consumer demand.
- 4.1.5 Given the vast scale of the proposed rollout of renewable energy in the coming years, sufficient storage capacity must be provided to allow the storage of intermittent renewable energy, to balance supply and demand. Pumped storage is a vital technology in achieving this balance and driving towards Net-Zero. It is the only mature electrical energy storage technology which can be deployed at the large scale required and which has one of the highest cycle efficiencies of any energy storage process. The installed capacity of the Proposed Development would be up to 2000MW, with an energy storage capacity of up to 36 GWh, providing approximately 18 hours of generation at full capacity. The electricity storage capacity of the Proposed Development would exceed the total of all other currently operational electrical energy storage in the UK⁵.
- 4.1.6 Additionally, pumped storage hydro technology provides other crucial services to maintain grid stability, including inertia, black start and frequency response. With the reduction of fossil-fuelled electricity generation, heavy rotating equipment technology is being replaced by wind and solar, which cannot offer these services.

4 Climate change committee <https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Electricity-generation.pdf>

5 Electricity System Operator, Potential Electricity Storage Routes to 2050, 2022

4.2 National Planning Framework 4

- 4.2.1 NPF4⁶ was adopted on 13th February 2023 as the national spatial strategy for Scotland and replaces NPF3 and Scottish Planning Policy. It places the need to reduce greenhouse gas emissions as a key strategic aim in response to the global climate emergency and sets out six principles which will play a key role in delivering on the United Nations Sustainable Development Goals and Scotland's national outcomes.
- 4.2.2 In relation to pumped hydro storage, NPF4 declares pumped hydro storage as one of 18 National Developments with the following policy impacts presented:
- Rebalanced Development
 - Conserving and Recycling Assets
 - Rural Revitalisation
 - Just Transition
- 4.2.3 NPF4 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'.⁶
- 4.2.4 Additionally, 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'.⁶
- 4.2.5 Finally, 'Depending on the nature of the projects taken forward and considering both direct and indirect effects, the lifecycle greenhouse gas emissions assessment concludes this development will likely have an overall net positive impact on achieving national greenhouse gas emissions reduction targets.'⁶

4.3 Climate Change Plan 2018-2032

- 4.3.1 The 2018 Climate Change Plan and its 2020 update⁷ sets out the ambition of Scottish Government decarbonisation plans 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, for example when there is less wind energy available.

⁶ <https://www.gov.scot/publications/national-planning-framework-4/>

⁷ 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/>

4.4 Local Planning Policy

- 4.4.1 The site lies entirely within the jurisdiction of THC. The Highland Wide Local Development Plan (HwLDP) 2012⁸, provides the local planning framework for the area and the general policy context against which the Proposed Development would be assessed.
- 4.4.2 THC have also developed Supplementary Guidance of relevance to the Proposed Development, The Highland Renewable Energy Strategy and Planning Guidelines⁹, which 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.
- 4.4.3 The Highland Council Area Local Development Plan covering the Proposed Development is the West Highland and Islands Local Development Plan (WestPlan) adopted in 2019. WestPlan's primary focus is on identifying specific site allocations and therefore is not directly relevant to this proposal, however it contains strategies which may inform community engagement or benefit and will be referred to accordingly. It will also be referred to as the most up to date reference for information on the Moidart, Morar and Glen Shiel SLA.

⁸ 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 January 2023]

⁹ 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 January 2023]

5. Proposed Approach to the Environmental Impact Assessment

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 prepare chapters for inclusion in the EIA Report.
- 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. Where relevant consideration will also be given to advice contained in Planning Advice Note 1/2013: Environmental Impact Assessment¹⁰ and Planning Circular 1/2017: Environmental Impact Assessment Regulations¹¹.
- 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 9.1** 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 either 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. This 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.

¹⁰ Scottish 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 January 2023]

¹¹ Scottish 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 January 2023]

5.2 Structure of the EIA Report

5.2.1 It is proposed that the EIA Report will contain:

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

5.2.2 The Volume 1: Main Report 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.

5.2.3 For each of the environmental features assessed in Volume 1: Main Report, the following information will be included in the respective chapters:

- An executive summary;
- Introduction to the environmental features;
- Scoping and consultation responses;
- Assessment scope, methodology and study area;
- Baseline conditions;
- Impact assessment (including cumulative impacts) and proposed mitigation; and
- References.

5.2.4 Sections 6-18 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 19 of this Scoping Report provides recommendations for environmental features that do not need to be considered in the EIA Report.

5.2.5 Volume 1: Main Report 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.

5.3 EIA Report Format

5.3.1 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 the ECU. Where requested, hard copies and electronic copies will be made available to consultation bodies and consultees. Figures/drawings, visualisations and detailed specialist reports will be provided in Volumes 2, 3 and 4 respectively.

- 5.3.2 A confidential appendix will be prepared containing sensitive, confidential ecological/ornithological information to be provided to the Scottish Government and NatureScot.

5.4 Supporting Documents

- 5.4.1 The EIA Report will include visualisations prepared to both NatureScot¹² and THC¹³ standards, illustrating how the elements of the Proposed Development at the upper and lower reservoirs may appear. Visualisation locations will be identified at locations where members of the public would be most likely to obtain views of the Proposed Development. The exact location for each visualisation would be identified following a site survey and would be agreed with THC and NatureScot. At this stage, it is proposed that visualisations may be included from the following (which have been presented on **Figure 5.1**):

Table 5.1: Proposed Visualisation Locations

VL	Name	Approximate grid ref	Reason for inclusion
1	Minor public road near proposed power station site	205856, 801899	Illustrative of close-up views of powerhouse obtained by travellers on the C1144 public road (within SLA).
2	Path from Quoich Dam	206808, 801122	Illustrative of low level views of the dam within SLA.
3	Gleouraich Summit (Munro)	204035, 805211	Illustrative of views of upper reservoir obtained from local summit within SLA and WLA 18.
4	Spidean Mialaich Summit (Munro)	206560, 804288	Illustrative of views of upper reservoir obtained from local summit within SLA and WLA 18.
5	Gairich Summit (Munro)	202591, 799571	Illustrative of views of dam and upper reservoir obtained from local summit to the south of the Proposed Development, within SLA and WLA 18.
6	Residential receptors and travellers within Glen Garry	209511, 801421	Illustrative of views obtained by residents and travellers within Glen Garry.
7	Minor public road near Loch a' Choire Bheithe	197994, 803719	Illustrative of views obtained by travellers along the C1144 public road within NSA.

¹² Scottish Natural Heritage, (2017), Visual Representation of Wind Farms (Version 2.2) (the SNH, 2017 Guidance).

¹³ The Highland Council (THC), (2016), Visualisation Standards for Wind Energy Developments (the THC, 2016 Guidance).

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- 5.4.2 Visualisations will assist with 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 the operation of the scheme at 15 years after reinstatement has fully established. A selection of visualisations illustrating the construction of the Proposed Development and the powerhouse on completion would also be included. The visualisations will be included in the Volume 3: Visualisations of the EIA Report.
- 5.4.3 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, the 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.
- 5.4.4 A Design and Sustainability Statement will be prepared setting out the sustainable design principles that have informed the design of the Proposed Development. The Design and Sustainability Statement will be included in Volume 4: Technical Appendices.

6. Hydrology and Water Management

6.1 Introduction

- 6.1.1 The main Fearna PSH site (comprising the upper and lower reservoirs and associated works) sits wholly within the upper catchment of the River Garry. As the pumped storage operation transfers water between Loch Quoich and Loch Fearna / Coire Dubh, no flows would be diverted out of the catchment.
- 6.1.2 Loch Fearna outfalls via the Allt Fearna watercourse to Loch Quoich. Coire Dubh outfalls via the Allt Mheil burn, also to Loch Quoich.
- 6.1.3 Compensation flows from Loch Fearna would also be passed to the Allt Fearna and Allt Mheil watercourses at flow rates in accordance with the SEPA CAR Licence.
- 6.1.4 A spillway would be included on the Fearna Dam to pass flood flows via the Allt Fearna in times of spate, should this coincide with the upper reservoir being full.
- 6.1.5 There is an existing small-scale hydro station on the Allt Mheil, located downstream of the Proposed Development. Compensation flows from the Coire Dubh Dam would be released into the Allt Mheil burn which in turn flow to the Allt Mheil hydro intake. Additionally, the Applicant is in discussion with the operator of the Allt Mheil scheme to agree commercial and operational terms to ensure that this scheme is provided with sufficient water to maintain its commercial operation.
- 6.1.6 Loch Quoich outflows to the Gearr Garry. The Quoich outflow comprises i) abstraction for hydro generation ii) compensation flow through the Quoich Dam iii) release through a valve in the base of Quoich Dam and iv) flood flows over the Quoich Dam spillway. No modifications to the existing flow regime are required nor proposed on Loch Quoich.
- 6.1.7 The Proposed Development would not present any additional flood risk or increase spill from Loch Quoich. An agreement is being developed with the owners of Quoich Hydro which dictates that the Proposed Development would not release water to Loch Quoich when it is above an agreed level, thereby avoiding spill over the weir.
- 6.1.8 Similarly, the Proposed Development would not affect the existing compensation flow arrangements as stipulated within the SEPA Car Licence for Quoich Hydro and wider Ness Hydros. The Proposed Development would be constrained from pumping water when Loch Quoich is below an agreed level, with sufficient reserve for compensations flows.
- 6.1.9 An Operational Interface Agreement between the two projects would be developed to formalise the operating and constraint parameters.
- 6.1.10 The watercourses and catchments crossed by the preferred Southern Access Route would not be affected by the access works.
- 6.1.11 Further aspects of hydrology and water management not discussed in this chapter are covered in Section 12, Geology, Soils and Water.

- 6.1.12 Once in operation the Proposed Development would essentially be operating as a closed system, transferring water between the upper and lower reservoirs. Loch Quoich provides a ready supply of water to fill the system once it is commissioned.

6.2 Baseline Description

- 6.2.1 Loch Fearna has a small catchment of approximately 1.35km² and is 1.94km in length. This is a typical high upland catchment which comprises of steep terrain, and an average altitude of 667m. Standard Average Annual Rainfall between 1961 and 1990 (SAAR6190) is 3354mm.
- 6.2.2 Coire Dubh also has a small catchment of 1.54km² and is 1.11km in length. This is a similarly high, steep catchment with an average altitude of 675m. SAAR6190 is 3618mm.
- 6.2.3 Loch Quoich has a catchment area of approximately 130.7km² and is 20km long at its longest point. Its catchment has an average altitude of 439m, and a SAAR6190 of 3581mm.
- 6.2.4 Loch Quoich was dammed in the late 1950s to create the largest storage reservoir in the United Kingdom, storing approximately 360 Mm³. This stored volume is approximately equivalent to the average annual inflow to the loch.
- 6.2.5 The Quoich Hydro station is rated at 18 MW under the Renewables Obligation Certificate scheme (ROCs). Loch Quoich Hydro operates on a maximum vertical range of 26m, between 175m AOD and 201m AOD (spillway level). Its large catchment and vast storage coupled with a relatively low generating capacity means that the Loch has never been shown to run dry nor spill during normal hydro operations.
- 6.2.6 River gauging has been carried out previously to support the development of small hydro projects on Allt Fearna and Allt Mheil. SEPA has confirmed that this gauge data is appropriate for re-use for the purposes of the CAR Licence application for the Proposed Development.

6.3 Potential Significant Effects

Construction Phase

- 6.3.1 During the construction phase, potential significant impacts may be experienced as a result of temporary works in/near the water environment.
- 6.3.2 Impacts related to the construction stage would be managed and mitigated by the Principal Contractor in accordance with best practice and the CEMP.

Operational Phase

- 6.3.3 Due to the influence of the upper storage reservoir there would be modification to the characteristics of the Allt Fearna and Allt Mheil catchments. Otherwise the hydrological characteristics of Loch Quoich and its catchment would not be significantly affected.

- 6.3.4 With Loch Fearna proposed to store approximately 40Mm³ in comparison to 360Mm³ available in Loch Quoich, the impact of Fearna PSH on Loch Quoich levels is low and would not compromise the existing hydro operation.
- 6.3.5 Preliminary calculations show that a full pumping cycle from Loch Quoich to the upper reservoir would result in a reduction in level of Loch Quoich of between 2-3m depending on the start level of the cycle. This fluctuation would occur over a period of approximately 24 hours. In reverse, a full generation cycle from the upper reservoir to Loch Quoich would result in increase in the level of Loch Quoich of between 2-3m, depending on the start level of the cycle. This fluctuation would occur over a period of approximately 18 hours. These analyses will be refined in the coming months.
- 6.3.6 However, pumped storage projects are predicted to typically operate through numerous short cycles per day, driven by wind and solar generation and fluctuating demand. Full drawdown events are predicted to be more infrequent, for example during cold, still winter periods. Therefore, the day-to-day fluctuation of Loch Quoich by Fearna PSH is anticipated to be negligible when also considering other factors of varying natural inflow and Quoich Hydro generation.

6.4 Proposed Scope of Assessment

- 6.4.1 It is proposed to carry out further detailed hydrological modelling. This would explore and assess the potential effects of the Proposed Development on water management within this upper part of the Garry 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.
- 6.4.2 A chapter describing the hydrology and 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 scheme;
 - Compensation flows in the Allt Fearna and Allt Mheil; and
 - Proposed abstraction and discharge rates and volumes.

6.5 Questions to Consultees

- 6.5.1 Do the ECU, THC and SEPA agree with the proposed scope of the hydrology and water management assessment?

7. Landscape and Visual

7.1 Introduction

- 7.1.1 This part of the Scoping Report discusses the proposed scope of the Landscape and Visual Impact Assessment (LVIA) which will be undertaken for the Proposed Development. The LVIA will 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 will 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, referring to the visualisations outlined in Section 5.4.

7.2 Baseline Description

- 7.2.1 The main PSH works (comprising the upper and lower reservoirs and associated works), are located 25km west of Invergarry and 10km east of Kinloch Hourn. The lower reservoir would utilise Loch Quoich, which is already a dammed hydro reservoir. The proposed powerhouse would be located on the shore of Loch Quoich, immediately west of the old quarry used for the construction of the Quoich Dam. From Loch Quoich there are open views across and along the loch towards the towering hills beyond. Scattered patches of native woodland can be found on the grassy slopes. This is a large scale landscape with a relatively rugged and remote character. Settlement is sparse, although the minor public road which extends to Kinloch Hourn follows the northern shoreline of Loch Quoich, and the 132kV overhead line from Skye runs to the north of the minor public road. There are also a number of existing hydro developments within the area.
- 7.2.2 The proposed upper reservoir would utilise Loch Fearna and Coire Dubh, where two rockfill dams would be constructed to allow the reservoir to store water between the maximum and minimum levels. Loch Fearna is a small natural loch located approximately 1km north of Loch Quoich at its eastern end, and just over 1km from the Loch Quoich Dam. It sits within a natural bowl in an area of upland moorland at the base of the Spidean Mialach summit. Coire Dubh sits to the northwest of the loch. Landcover generally consists of peatland, grasses and heather, with extensive rock outcropping.
- 7.2.3 The preferred SAR would pass through Glen Garry, starting from White Bridge (Invergarry) and passing through areas of commercial forestry to the south of Loch Garry, before connecting with the C1144 minor public road to the west of Kingie.

Designations

- 7.2.4 The Proposed Development would not be located within any nationally designated landscapes, although it would be located approximately 7km east of the Knoydart NSA (see **Figure 7.1**). The upper reservoir and tracks would be located within Wild Land Area (WLA) 18: Kinlochhourn – Knoydart – Morar. Although not a statutory designation, this area is identified as a nationally important asset and given protection within NPF4. The key attributes for WLA 18 include its high, remote,

rugged and rocky mountains, remote interior deep glens and lochs which cut through the high mountains as well as elevated rocky cnocan and plateaux which contain hidden depressions and lochs.

- 7.2.5 At a regional/local level, the Proposed Development is situated within the Moidart, Morar and Glen Shiel Special Landscape Area (SLA), identified and designated by The Highland Council in its document 'Assessment of Highland Special Landscape Areas', 2011. The special qualities of this landscape include a pattern of east-west-aligned mountain ridges, deep glens and lochs typical of the West Highland landscape and the description notes that the "quiet, uninhabited glens and isolated peaks create a landscape experience where the sense of wildness, and tranquillity are key qualities". The preferred SAR would not be located within any designated landscapes.

Landscape Character

- 7.2.6 NatureScot has undertaken detailed review and classification of the various landscape areas and types of Scotland. Within the study area there are nine identified Landscape Character Types (LCTs). Most of the Proposed Development elements, including the upper reservoir, would be located within LCT 239: Interlocking Sweeping Peaks – Lochaber, while the access route would be within LCT 237: Rocky Moorland – Lochaber and LCT 235: Broad Forested Strath (see Figure 7.3).

Visual Amenity

- 7.2.7 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.
- 7.2.8 There are a limited number of residential receptors within the study area. There are some scattered properties within Glen Garry, particularly along the C1144 minor public road, with the nearest group of properties near Kingie, approximately 5 km to the east of the main PSH works. There is also a cluster of properties at White Bridge (Invergarry) at the eastern end of the preferred SAR.
- 7.2.9 The C1144 minor road from Munerigie to Kinloch Hourn passes along the northern shore of Loch Quoich. The A87/A887 passes to the north of the Proposed Development. A number of tracks and paths can also be found in the area.
- 7.2.10 A preliminary Zone of Theoretical Visibility (ZTV) has been prepared for the two dams at Loch Fearna and is presented in Figures 7.2 – 7.3. This indicates that potential visibility of the dams would be concentrated around the immediate surroundings of Loch Fearna, to the south and west around Loch Quoich and some of the elevated areas beyond and Glen Garry to the east. Visibility to the north would be contained by the range of hills including the summits of Spidean Mialach and Creag Coire na Fiar Bhealaich. There would be some theoretical visibility from a limited number of building-based receptors in the vicinity of Kingie and Poulary, and from route-based receptors including the minor road from Munerigie to Kinloch Hourn, as well as from mountain routes and Scottish Hill Tracks identified within the study area, as illustrated on **Figure 7.2**.

7.3 Potential Significant Effects

- 7.3.1 An overall judgement will be made on the sensitivity of each receptor and the likelihood for significant effects resulting from the proposed developments. Judgements will be based on value, susceptibility, scale, geographical extent, duration and reversibility – with reference made to the baseline conditions. The primary levels of effects will be major, moderate, minor and negligible, although there may be intermediate correlations such as major/moderate. The LVIA will outline where significant effects are likely, in line with EIA Regulations.
- 7.3.2 Potential significant effects on landscape and visual amenity, may include:

Construction

- Temporary physical effects on the 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 term effects on views obtained by residents, travellers and recreational users of the landscape.

7.4 Proposed Scope of Assessment

Proposed LVIA Study Area

- 7.4.1 The potential visibility of the Proposed Development, particularly the permanent features, is likely to be limited by prevailing topography and tree cover to the east particularly within Glen Garry. A study area of 10km from the dams, upper reservoir and powerhouse, also encompassing an area stretching 1km to the south of the preferred SAR and up to and including the C1144 minor road to the north is therefore anticipated to encompass all potential significant landscape and visual effects.

Scope of LVIA

- 7.4.2 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, in accordance with GLVIA3. The sensitivity of landscape receptors will be based on the perceived

susceptibility of the landscape receptor based on the type of development proposed. The sensitivity of visual receptors will be based on the susceptibility of the viewer to the type of development proposed. The assessment of operational effects will assume that any proposed mitigation measures have been established for around 15 years.

- 7.4.3 The assessment will be supported by various figures as required, including the visualisations referred to in Section 5.4.
- 7.4.4 The key aspects of the LVIA are set out below.

Zone of Theoretical Visibility

- 7.4.5 The LVIA will be informed by a series of ZTVs. A 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 ZTVs would be produced for the main constructed elements of the proposal, to give an idea of where these individual elements may form a feature within views. Preliminary ZTVs of the dam structures based on the outline design proposal are included in **Figures 7.1, 7.2 and 7.3**.

Landscape Assessment

- 7.4.6 The Landscape Character Assessment will include assessment of the Proposed Development in relation to the LCTs within the study area (presented on **Figure 7.3**) considering potential for effects on the fabric and character of the landscape. This will include the direct effect of potential change to landscape elements, experiential effects on the character of the Proposed Development site and surrounding areas and potential indirect effects on the broader landscape resource.
- 7.4.7 The assessment will also consider the potential for effects on the Special Qualities of the Moidart, Morar and Glen Shiel SLA. A WLA Assessment in accordance with current NatureScot Guidance will also be included, looking at the potential effects to the Wild Land Qualities (WLQs) of WLA 18: Kinlochhourn - Knoydart – Morar, within which the Proposed Development would be located. These areas are presented on **Figure 7.1**.
- 7.4.8 Given the distance from the Proposed Development and limited ZTV coverage, significant effects to the Knoydart NSA are considered very unlikely and it is proposed that a Special Landscape Qualities assessment of the NSA should not be required.

Visual Assessment

- 7.4.9 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 visual receptors located at residential properties and workplaces, recreational sites and those using roads and other recreational routes throughout the study area. The Visual Assessment will include potential visual receptors within the study area (presented on **Figure 7.2**).

Cumulative Landscape and Visual Assessment (CLVIA)

- 7.4.10 A cumulative assessment of other proposed similar large scale developments within the study area that may lead to cumulative effects will be undertaken. Sites to be included within the CLVIA will be confirmed through consultation with THC.

7.5 Questions to Consultees

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

8. Land Use and Recreation

8.1 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.

8.2 Baseline Description

Landuse

- 8.2.1 The upper reservoir at Loch Fearna and Coire Dubh is located within an area of upland moorland. Loch Fearna is a small natural loch, which sits at the base of the Spidean Mialach summit. Loch Quoich, which forms the lower reservoir, is an existing hydro reservoir and forms part of SSE's Garry Cascade, which in turn is part of the Great Glen System. Patches of native woodland can be found on its shores.
- 8.2.2 Commercial forestry and woodland, including patches of ancient woodland, can be found to the east and south-east within Glen Garry and Glen Kingie. The Southern Access Route would pass through areas of forestry to the south of Loch Garry.
- 8.2.3 Other waterbodies within the area include Loch Garry to the east, Loch Arkaig to the south, and Loch Loyne and Loch Cluanie to the north. Hydro development is relatively common, including SSE's Great Glen Hydro System, which encompasses many of the abovementioned waterbodies.
- 8.2.4 Settlement is limited within the area. Some individual scattered properties are located within Glen Garry, along the C1144 minor public road, which runs through the glen and follows the northern shore of Loch Quoich to Kinloch Hourn. This includes the group of properties at Kingie, approximately 5km to the east of the main PSH works (comprising the upper and lower reservoirs and associated works), as well as at Poulary, Tomdoun and Torr na Carraidhy, further east. The nearest settlements are Invergarry, located approximately 2km to the east of the entrance to the preferred SAR, and Kinloch Hourn, located 10km to the north-west of the main permanent built elements of the Proposed Development. The 132kV overhead line from Skye to Fort Augustus substation runs to the north of the C1144 minor public road.

Recreation

- 8.2.5 There are a number of summits in the area which are popular with hill walkers, including the Munros of Spidean Mialach and Gleouraich immediately to the north of the upper reservoir. There is a circular route leading up to these summits, which may need to be rerouted to avoid the upper reservoir at Loch Fearna and Coire Dubh. The summit of Gairich is located to the south of Loch Quoich, and is accessed from the eastern end of Loch Quoich.
- 8.2.6 There are a number of other mountain routes and Scottish Hill Tracks within the area, and there are some popular camping spots in the area around Loch Quoich.

8.3 Potential Significant Effects

8.3.1 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.

8.4 Proposed Scope of Assessment

8.4.1 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. A review of planning applications in the area will be undertaken. A study area of 10km from the dams, upper reservoir and powerhouse, also encompassing an area stretching 1km to the south of the preferred SAR and including the C1144 minor road to the north, is anticipated to encompass all potential significant effects on land use and recreational activities. The assessment will consider potential disruption or disturbance to existing land use and recreational activities during the construction and operational phases of the development and will 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 Quoich.
- The temporary construction compounds and laydown areas; and
- Temporary and permanent access tracks and use thereof.

8.4.2 Potential impacts on existing routes, including the path to Spidean Mialach, which the upper reservoir may affect, will be considered, including discussion of potential mitigation measures and provision of alternative access. A Draft Outdoor Access Management Plan will be included within the planning submission. Potential effects on visual amenity of recreational routes will be included in the Landscape and Visual Assessment, the scope of which is outlined in Section 7 of this report. A figure will be prepared showing land use and recreational routes and points of interest within the study area.

8.5 Questions to Consultees

- 8.5.1 Do the ECU, THC and NatureScot agree with the proposed scope of the Land Use and Recreation assessment?
- 8.5.2 Are the ECU, THC and consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?
- 8.5.3 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

9.1 Introduction

- 9.1.1 This section sets out the proposed baseline conditions and scope in relation to terrestrial ecological receptors within the site. In order to determine an ecological baseline for the Proposed Development, an Ecological Assessment comprising an Ecological Constraints survey and a National Vegetation Classification (NVC) survey was undertaken for the dams, reservoir, powerhouse site and associated access tracks during June - September 2023.
- 9.1.2 This section uses the ecological baseline to define the scope of further survey and specifies how the Ecological Impact Assessment (EclA) will be undertaken.
- 9.1.3 The initial evaluation of the baseline environment presented in this chapter has been made through a combination of desk-based study and initial field surveys.

9.2 Baseline Description

Statutory Designated Sites

- 9.2.1 Information obtained from Highland Biological Recording Group (HBRG) and NatureScot Sitelink website¹⁴ confirms that no statutory designated sites are located within the Proposed Development site. There are statutory designations within 10km of the Proposed Development site which are considered important in terms of terrestrial ecology (see **Figure 9.1: Environmental Designations**)
- 9.2.2 The West Inverness-shire Lochs^{15,16}, located 4.6km east of the site, are designated as SSSIs and SPAs for the breeding population of Common Scoter (*Melanitta nigra*) and Black-throated Diver (*Gavia arctica*) and are considered to be of international importance. These are hydrologically connected to the site via Loch Quoich and the River Garry. This important ecological feature is to be considered in terms of Ornithology (Section 10).

Non-statutory Designated Sites

- 9.2.3 Information obtained from Highland Biological Recording Group (HBRG) confirms that no non-statutory designated sites for nature conservation are located within the site or within 5km of the site.

¹⁴ Available at: [SiteLink \(nature.scot\)](#) (Accessed November 2023)

¹⁵ West Inverness-shire Lochs SSSI. Available at: [SiteLink \(nature.scot\)](#) (Accessed November 2023)

¹⁶ West Inverness-shire Lochs SPA. Available at: <https://sitelink.nature.scot/site/9187>

Ancient Woodland

- 9.2.4 An area of long-established (of plantation origin) ancient woodland (AW_2459) located c.170m west of the proposed track (see **Figure 9.1**) is linked to the site via mire, and wet heath habitat is listed in the Ancient Woodland Inventory (AWI)¹⁷. The woodland parcel extends across 8.7 hectares and is considered to be a mixture of native and nearly native woodland.
- 9.2.5 The preferred SAR intercepts six parcels of ancient woodland (of semi-natural origin) listed in the AWI.¹⁸

Habitats

- 9.2.6 The habitat field survey commenced in June 2023 and comprised an NVC Survey and mapping covering the Proposed Development site boundary and a wider survey area, but excluding the preferred SAR. The survey area included the site boundary in place at the time, a 100m buffer, and extensions to note lower-topography ground near the Loch Quoich that could be strategically important during the construction phase. The survey area was extended to include the Coire Dubh, and a further NVC survey was undertaken in this area during August 2023. The final NVC Survey Area Boundary is displayed in Appendix 9.2 and the NVC Survey Plan is displayed in Appendix 9.3.
- 9.2.7 The site comprises south and southwest-facing slopes and corries of upland blanket mire, heathland, and flush habitat; burns with associated riparian woodland; acid grassland, bracken, mire, and heath habitats in the lower-lying ground and a rock shingle beach along Loch Quoich's shoreline. M15 wet heath is the most widespread community within the survey area, followed by M17 blanket bog, and M25 mire.
- 9.2.8 The mesotrophic waters of Loch Fearna support the aquatic A22 community. The hill ground surrounding Loch Fearna within the middle and southern area of the inundation zone and dam area contains M17 blanket bog on low gradient with occasional bog pools (M1 and M3) and M10 mires fed by alkaline springs. Areas of dry and montane heath habitats (H14, H17, H21) are present on promontories and steep ground with thin mineral soils. The northern inundation zone within Coire Dubh is dominated by a mosaic of M15 wet heath (70%) and M25 mire (30%) with restricted pockets of M17 blanket bog scattered in peaty depressions. Narrow M10 mires are commonplace on the Coire slopes alongside restricted patches of M6 mire, U4 acid grassland, and exposed cliff face to the west. Bog pools are frequent within the M15 wet heath and M17 blanket bog to the west.
- 9.2.9 The proposed access track to the upper reservoir cuts across M15 wet heath and M25 mire for most of its length and occasional areas of M17 blanket bog, U20 bracken stands, and W17 woodland, where the track intercepts the riparian corridor of Allt Fearna.

¹⁷ Available at: <https://www.environment.gov.scot/maps/scotlands-environment-map/>

¹⁸ AW_15307, AW_2648, AW_2986, AW_2993, AW_2969, and AW_2975.

- 9.2.10 The powerhouse and associated infrastructure predominantly covers M25 mire, with M15 wet heath existing as a secondary mosaic component. U20 bracken, U4 grassland, and W23 scrub cover will be minorly impacted.
- 9.2.11 Woodland is confined to a stand of W17 (which is mapped on the Ancient Woodland Inventory) to the west of the survey area on the steep banks of the Allt Fearna gorge at c. 400m altitude, and a sliver of W11 woodland lining the Allt Fearna.
- 9.2.12 The preferred SAR would be situated south of Loch Garry and River Garry, spanning from Loch Quoich dam to White Bridge, following existing forestry tracks for most of the route with a new section of track constructed to meet up with the C1144 public road, as illustrated on **Figure 3.1**. Most of the route is situated within native and non-native woodland cover, including non-native conifer plantation, felled plantation, native broadleaved woodland including upland oak and upland birch woodland, and Caledonian Pine forest. The western section of the route is likely to cross areas of blanket bog and peatland habitats. The route crosses multiple watercourses including upland burns and rivers.¹⁹ Ground survey and assessment for habitats or protected species has not been undertaken for the preferred SAR, but would form part of the EIA assessment if progressed.

Invasive Non-Native Species

- 9.2.13 No records of INNS from within 2km radius of the site were returned by Highlands Biological Records Centre (HBRC) during the desk study.
- 9.2.14 A large infestation of Rhododendron (*Rhododendron ponticum*) is present within the woodland to the west of the site (AW_2459), along the road, along the banks of Allt a' Mheil, and along the shore of Loch Quoich. Further scattered Rhododendron shrubs were present up to 600m AOD in the Coire Dubh and on ground nearby the proposed access track.
- 9.2.15 A scat on top of a watercourse boulder on a minor watercourse near the Loch Quoich Dam was considered to be that of American mink (*Mustela vison*).
- 9.2.16 Rhododendron and American mink are INNS listed under Schedule 9 of the Wildlife and Countryside Act (1981)²⁰ as amended by the Nature Conservation (Scotland) Act (2004) and the Wildlife and Natural Environment (Scotland) Act (2011) and are considered to be negative in value.
- 9.2.17 Larch was found within the ancient woodland, where it occurs frequently within the woodland canopy and occasionally in small single-species stands. Larch is undesirable and is considered to be negative in value in an ancient woodland context.

¹⁹ The most substantial watercourses include the River Garry, River Kingle, Allt Choire a Bhalachain, Allt Garaldh Ghualaich, Allt Coire nan Saobhaidh, and the Allt Ladiach.

²⁰ The Wildlife and Countryside Act: Schedule 9. Available from: <https://www.legislation.gov.uk/ukpga/1981/69/schedule/9>

Protected/Notable Species

- 9.2.18 Records of protected and notable species for the main PSH site and a 2km radius were obtained from HBRG in June 2023. The results of the desk study are summarised in Appendix 9.1.
- 9.2.19 Protected species surveys commenced in June 2023, comprising walkover surveys for bats (*Chiroptera* spp.), otter, water vole (*Arvicola amphibius*), red squirrel (*Sciurus vulgaris*), pine marten, badger, hedgehog (*Erinaceus europaeus*), mountain hare (*Lepus timidus*), amphibians, reptiles, and invertebrates, and habitat survey where notable/protected plant species were noted. Field evidence of protected species is presented in Appendix 9.2.
- 9.2.20 Dwarf juniper (*Juniperus communis* ssp. *nana*) is occasional to rarely occurring within the H17 heath and M15c wet heath communities within Corie Dubh and on the Meall a' Mheil ridge (up to 550m AOD).
- 9.2.21 Great sundew (*Drosera anglica*) is present across the site occurring in M10 mire and M1 bog pools.
- 9.2.22 Lesser butterfly-orchid (*Platanthera bifolia*) occurs rarely on site with low altitude grassy swards of M25 mire and U4 grassland (below 300m AOD).
- 9.2.23 The trees within the riparian woodland bordering the site to the east along Allt Garuidhe and woodland in the west along Allt a' Mheil were noted to contain multiple Potential Roost Features (PRF) for bats, including stem cavities, tear-outs and cracks in branches.
- 9.2.24 Three historical records (most recent 2004) of otter (*Lutra lutra*) were returned from 2km northwest of the main PSH works on the slopes of Gleouraich. Several otter spraints were discovered at the bridge over Allt a' Mheil as well as three dry and intact spraints approximately 375m upstream. In the southwest of the survey area, a small, old, intact otter spraint was present upon an exposed rock along the shoreline.
- 9.2.25 One record of pine marten scat (2014) had a 4-figure grid reference assigned to within 2km of the site. A fresh pine marten scat was identified on a mossy hummock to the west of the survey area near the ancient woodland (AW_2459).
- 9.2.26 Evidence of active badger was identified within the locale (see confidential badger annex).
- 9.2.27 Mountain hare droppings were recorded across the open moorland habitats, particularly within the west of the survey area in Coire Dubh.
- 9.2.28 Common toad (*Bufo bufo*) and common frog (*Rana temporaria*) were observed frequently across the survey area.
- 9.2.29 Red deer (*Cervus elaphus*) individuals and droppings were observed frequently across the survey area.
- 9.2.30 Nineteen records of larval Azure Hawker (2018) from bog pools near Loch Quoich dam, 1km south of site. Three records of observations of adult Azure Hawker (*Aeshna caerulea*) (2018) from Glen Loyne, north of the site (beyond 2km). One

record of Northern Emerald (*Somatochlora artica*) (2018) from Poll a' Gharbh Fearna, c. 1km southeast of site²¹.

9.3 Potentially Significant Effects

Construction

9.3.1 Potential significant effects to habitats during construction in the absence of mitigation may arise from:

- Habitat loss, degradation, and fragmentation (permanent and temporary) from the flooding of habitats within the proposed inundation area and construction of associated infrastructure. Based on baseline survey data, this is likely to comprise:
 - Annex 1 habitats blanket bog (M1, M3, and M17), wet heath (M15), alpine heath (H14 and H17), dry heath (H21), upland alkaline flush (M10), Caledonian forest (W18), and oligotrophic lake (A22), considered to be of international importance.
 - Priority Habitats, listed on the Scottish Biodiversity List (SBL), including upland birchwood (W17), upland oakwood (W17 and W18), and pine woodlands (W18), and upland flushes, fens and swamp (M6 and M10) are considered to be of National (Scottish) importance.
 - Acid grassland (U4), bracken (U20), disturbed ground, and scrub (W23) are considered to be of site importance.
- Possible changes to groundwater flows, pollution of surface-water and groundwater pathways, and alterations to soil structure and profile, affecting groundwater dependent terrestrial ecosystems (GWDTEs) and peatland habitat types;
- The loss, degradation, and fragmentation of habitat important for the breeding success of invertebrates (including dragonflies and damselflies listed on the Odonata Red Data List), including bog pools and upland waterbodies;
- Inadvertent killing or injuring of fauna;
- Disturbance to fauna due to vehicular traffic, plant, the presence of construction workers, lighting, noise and vibration (including from blasting activities);
- Permanent losses of protected or notable species' habitats, shelters and breeding or feeding areas, from the installation of proposed infrastructure and flooding of inundation areas;
- Sediment or other pollution of watercourses from construction activities and vehicular traffic; and
- Inadvertent transfer of invasive non-native species, for example through vehicle movements and hydrological pathways.

²¹ British Dragonfly Society Recording Scheme 2023. Dragonfly records from the British Dragonfly Society Recording Scheme. Occurrence dataset on the NBN Atlas.

Operation

9.3.2 During operation of the Proposed Development, in the absence of mitigation, it is anticipated that impacts may arise from:

- Vehicular traffic and operational lighting causing collision risk and/or disturbance to fauna; and
- Environmental incidents and accidents (e.g. spillages) from maintenance activities or vehicles.

9.4 Proposed Scope of Assessment

Desk Study

9.4.1 Data for protected and notable species records and non-statutory sites within 2km of the main PSH works have already been obtained from HBRG. Furthermore, a search of commercially available records on NBN Atlas²² was undertaken. A search will be carried out for any relevant data collected in relation to other nearby developments as part of the EIA assessment. Details of any other organisations who may be able to provide relevant data would be welcomed as part of the Scoping Response. A study of protected and notable species would also be required for the preferred SAR.

Additional Field Surveys

9.4.2 This section details further field surveys which will be undertaken in 2024. The results of each survey will be reported within baseline survey reports, which will form Technical Appendices to the EIA Report.

9.4.3 If trees are scheduled for removal to accommodate nearby works/access, a close inspection/survey of bat PRFs within 50m of the proposed works would be undertaken to confirm the character of the PRF or presence/absence of bats to inform the need for Species Protection Plan (SPP) and highlight any licence requirements.

9.4.4 The ecological baseline with regards to otter, pine marten, badger, mountain hare, and water vole should be maintained leading up to the commencement of works,

²² Available at: https://records.nbnatlas.org/search#tab_spatialSearch

following current guidance^{23,24,25,26,27,28}. In line with survey guidelines, the survey will cover all areas of suitable habitat within 100m of the development footprint and extend to 250m for otter and water vole. The results of this survey work will inform the need for Species Protection Plan (SPP) and highlight any licence requirements.

- 9.4.5 A dragon fly survey for species of conservation importance²⁹ would be undertaken within the survey area. Species which utilise upland bog pools and mesotrophic lochs would be considered during the survey, including the endangered white-faced darter (*Leucorrhinia dubia*), the near-threatened northern emerald, and the vulnerable azure hawk and brilliant emerald (*Somatochlora metallica*).
- 9.4.6 Surveys will be required along the preferred SAR including a UKHab survey of the preferred site compound area and any areas of new track creation to determine the need for further NVC survey for areas of potential GWDTE or priority/Annex 1 habitat. Invasive species surveys of the preferred SAR and preferred compound area and within 50m of the working area will be required. A Potential Roost Assessment (PRA) of all bridges and trees to be directly impacted by the work would be required to advise the need for bat activity surveys of bridges. Otter, badger, pine marten, water vole, and red squirrel surveys and inspection of areas of track/compound creation would be undertaken.

Assessment of Effects

- 9.4.7 The ecological impact assessment will be based on current Chartered Institute of Ecological and Environmental Management (CIEEM) guidelines³⁰ which have been endorsed by NatureScot. It will also draw on other, more specific guidance as appropriate. Liaison with other technical specialists (e.g. with hydrogeologists with respect to GWDTEs and geologists with respect to peat) will be carried out as required.
- 9.4.8 The impact assessment process will involve the following steps:
- Identifying important ecological receptors, i.e., receptors of sufficient value and/or receptors subject to legal protection, for which detailed assessment is necessary. From the information obtained to date these are expected to include:

²³ Chanin, P. (2003). *Monitoring the Otter Lutra Lutra*. Conserving Natura 2000 Rivers, Monitoring Series (No. 10). Peterborough: EN, CCW, EA, SEPA, SNH & SNIFFER.

²⁴ Birks, J. (2012) Pine marten. In: Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trehwella, W.J., Wells, D. and Wray, S. (2012). *UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton

²⁵ Scottish Badgers: Surveying for Badgers – Good Practice Guidelines. Version 1: 2018. Available from: https://www.scottishbadgers.org.uk/userfiles/file/planning_guidelines/Surveying-for-Badgers-Good-Practice-Guidelines_V1.pdf

²⁶ NatureScot: Licensing Guidance. Available from: https://www.nature.scot/sites/default/files/2018-10/Guidance%20-%20Licensing%20-%20Badgers%20-%20What%20is%20a%20Badger%20sett_.pdf

²⁷ Strachan, Rob & Moorhouse, Tom. (2006). *Water Vole Conservation Handbook, Second Edition*.

²⁸ NatureScot: Protected Species Advice for Developers – Badger. Available from: <https://www.nature.scot/species-planning-advice-badger>

²⁹ Species listed in the The Odonata Red Data List for Great Britain. Available at [The Odonata Red Data List for Great Britain \(jncc.gov.uk\)](http://jncc.gov.uk)

³⁰ Chartered Institute of Ecology and Environmental Management (CIEEM) (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. CIEEM, Winchester

Fearna Pumped Storage Hydro Scheme

- Annex 1 habitat including blanket bog, wet heath, dry heath, montane heath, mesotrophic lake, alkaline flush, Caledonian forest, and western Atlantic woodland;
 - SBL priority habitats including pine woodland, upland birchwood, upland oakwood, and upland fens;
 - Potential GWDTEs;
 - INNS;
 - Bats;
 - Otter;
 - Pine marten;
 - Red squirrel;
 - Badger;
 - Water vole
 - Mountain hare; and
 - Invertebrates.
- Identifying and assessing impacts on important ecological receptors during the construction and operational phases: in accordance with the CIEEM guidelines, when describing impacts, reference will be made to the following: magnitude (e.g. area or number of individuals to be impacted); extent; duration; and reversibility, i.e. will the impact be permanent or reversible over a given timescale;
 - Assessing the significance of effects by considering unmitigated impacts using appropriate guidance and professional judgement;
 - Incorporating measures to avoid and mitigate (reduce) potentially significant effects;
 - Assessing the significance of any residual effects after mitigation;
 - Identifying appropriate compensation measures to offset significant residual effects (if required);
 - Identifying opportunities for biodiversity enhancements; and
 - Cumulative impact assessment along with other developments (operational and planned).
- 9.4.9 Potential GWDTEs identified based on SEPA guidance³¹ will be investigated by a hydrogeologist to assess whether they are sustained by groundwater as part of the proposed hydrological field work (see Section 6). The assessment of effects on any GWDTE identified will be undertaken as part of the hydrological assessment, with the key findings summarised within the terrestrial ecology chapter of the EIA Report.
- 9.4.10 An assessment of the potential impacts on deer welfare, habitats, neighbouring and other interests (e.g., access and recreation, road safety, etc.) and a draft deer

³¹ Scottish Environment Protection Agency (SEPA) Land Use Planning System Guidance Note 31: Guidance on Assessing the Impacts of Development on Ground Water Abstractions and Ground Water Dependent Terrestrial Ecosystems Accessed online at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf> (Accessed November 2023)

management statement will be included as part of the EIA Report, in accordance with current NatureScot guidance³².

- 9.4.11 The potential for cumulative impacts with other developments will be assessed. For terrestrial (non-avian) ecological receptors potential cumulative impacts are only likely to be significant for other developments within the same hydrological catchments or located within the regular range of more mobile species. The cumulative assessment will be restricted to other developments within 5km or located within the same hydrological catchments. Assessment will include operational projects; projects under construction; consented projects which are not yet under construction and projects for which planning applications have been submitted.
- 9.4.12 Mitigation, compensation and enhancement measures will be developed as appropriate, and details will be provided in the terrestrial ecology chapter of the EIA Report. A range of 'standard' good practice measures would be implemented during construction to avoid and reduce impacts. A draft CEMP will be included in the EIA Report, to form the basis of the final CEMP, which would be produced and agreed with THC post consent.
- 9.4.13 Outline details of compensation for significant residual ecological effects, e.g., loss of bog, heath, lake, flush habitats, and details of proposed biodiversity enhancements will be provided in an Outline Habitat Management Plan (HMP) to be included as part of the EIA Report. A detailed HMP would subsequently be produced and agreed with THC post consent. In line with National Planning Framework 4, significant biodiversity enhancements would be provided, such that biodiversity would be in a demonstrably better state than without intervention. In Scotland, there is currently no agreed approach to how enhancement is measured and we would welcome feedback from consultees on their preferred approach.
- 9.4.14 Matters proposed to be scoped out of the terrestrial ecology EIA Report chapter include:
- Quoich Spillway SSSI is situated 500m east of the main PSH site and is designated for its geological importance and will therefore not be considered in terms of terrestrial ecology (see Section 12: Geology, Soils and Water).
 - West Inverness-shire Lochs SSSI/SPA located 4.6km east of the main PSH site, and c.700m south of the preferred SAR at its closest point. It is designated for its populations of breeding Scoter and Black Throated Diver and will not be considered in terms of terrestrial ecology (see Section 10: Ornithology).
 - Amphibian surveys are not proposed. The site is considered unlikely to support amphibian species of conservation concern, notably great crested newt (*Triturus cristatus*) due to its location (with no known records in this area of the Highlands) and setting, with suboptimal habitat for breeding amphibians.
 - Reptile surveys are not proposed, as it is expected that reptiles would be protected through standard good practice mitigation measures, and due to the impracticality of surveying over such a large area, and the expectation that reptiles are likely to be present at low density only, given the habitats present. Instead, a habitat-based assessment will be undertaken to inform the

assessment of potential impacts and the need for mitigation measures during construction.

9.5 Questions to Consultees

- 9.5.1 Do consultees agree with the proposed scope of further surveys?
- 9.5.2 Do consultees agree with the proposed scope of assessment?
- 9.5.3 Do consultees agree with the proposed matters to be scoped out of assessment?
- 9.5.4 Do consultees agree with the proposed approach to assessing designated sites?
- 9.5.5 Do consultees have details of any other organisations who may be able to provide relevant data, or other sources of relevant information?
- 9.5.6 Can consultees provide feedback on the preferred approach to measuring enhancement?

10. Ornithology

10.1 Introduction

- 10.1.1 The EIA will include an assessment on the potential effects on ornithological interests resulting from the construction and operation phases of the Proposed Development. This section:
- Describes the key ornithological issues associated with the Proposed Development; and
 - Outlines the ornithological baseline information for the Proposed Development, based on a desk study and field survey data from the period April 2022 to July 2023.

10.2 Baseline Description

Statutory Designations

- 10.2.1 There are no statutory designations for their ornithological interest within the site, however, there are two designations within 10km of the main PSH site.
- West Inverness-shire Lochs Special Protection Area (SPA): c. 5km northeast and 5.5km east-southeast of the main PSH site – Designated for its breeding Black-throated Diver (*Gavia arctica*) and Common Scoter (*Melanitta nigra*).
 - West Inverness-shire Lochs Site of Special Scientific Interest (SSSI): c. 5km northeast and 5.5km east-southeast of the main PSH site – Designated for its breeding Black-throated Diver and Common Scoter.

Ornithological Baseline

- 10.2.2 Breeding bird surveys were undertaken on the main PSH site between April and late-July 2022 and between early-May and mid-July 2023. A wintering bird survey consisted of three site visits between late-October 2022 and mid-March 2023.
- 10.2.3 Surveys of the preferred SAR are proposed during the breeding bird season in 2024.
- 10.2.4 In late 2022, the Applicant was made aware of the potential presence of Common Scoter on Loch Fearna and an ongoing joint initiative between organisations including NatureScot, the Royal Society for the Protection of Birds (RSPB), the Wildfowl and Wetlands Trust (WWT) and FLS. No Common Scoter was recorded during 2022, however, following specific Common Scoter monitoring during 2023, a pair was observed on Loch Fearna, although no evidence of breeding was determined.

- 10.2.5 The breeding bird survey method was an adapted version of the British Trust for Ornithology (BTO) Breeding Bird Survey (BBS) method³³ and the standard Brown & Shepherd moorland bird survey³⁴ comprising three dawn visits per spring. In 2023, four visits were undertaken as Common Scoter monitoring was undertaken simultaneously, using the standard guidance³⁵. The winter bird surveys followed the same method as the breeding bird surveys.
- 10.2.6 In total, 38 species were recorded during the entire survey period.
- 10.2.7 Although most of these species constitute birds that are expected within suitable habitats across the Scottish Highlands, 30 of them are nationally rare, localised or are species of either local or national conservation concern:
- Three species recorded are afforded additional legal protection under both national and international legislation;
 - One species is afforded additional international protection;
 - Two are afforded additional national protection;
 - A further 22 species recorded are of conservation concern on a national scale and appear on either the Birds of Conservation Concern (BoCC) Amber List or Red List; and
 - Two other species recorded appear on the Scottish Biodiversity List (SBL).
- 10.2.8 Merlin (*Falco columbarius*), Whooper Swan (*Cygnus cygnus*) and Red-throated Diver (*Gavia stellata*) all appear on both Schedule 1 of the Wildlife and Countryside Act (WCA 1981) and Annex 1 of the Birds Directive.
- 10.2.9 Golden Plover (*Pluvialis apricaria*) appears on Annex 1 of the Birds Directive. Redwing (*Turdus iliacus*) and Common Scoter appear on Schedule 1 of the WCA 1981.
- 10.2.10 The following species appear on the BoCC Red List: Merlin, Common Scoter, Lapwing (*Vanelius vanellus*), Lesser Redpoll (*Acanthis cabaret*), Mistle Thrush (*Turdus viscivorus*), Skylark (*Alauda arvensis*), Herring Gull (*Larus argentatus*), Ringed Plover (*Charadrius hiaticula*), Goldeneye (*Bucephala clangula*) and House Martin (*Delichon urbicum*).
- 10.2.11 The following species appear on the BoCC Amber List: Whooper Swan, Redwing, Dunnock (*Prunella vulgaris*), Kestrel (*Falco tinnunculus*), Dipper (*Cinclus cinclus*), Common Sandpiper (*Actitis hypoleucos*), Greylag Goose (*Anser anser*), Mallard (*Anas platyrhynchos*), Meadow Pipit (*Anthus pratensis*), Red-breasted Merganser (*Mergus serrator*), Sedge Warbler (*Acrocephalus schoenobaenus*), Snipe (*Gallinago gallinago*), Wheatear (*Oenanthe oenanthe*), Common Gull (*Larus canus*), Willow Warbler (*Phylloscopus trochilus*) and Wren (*Troglodytes troglodytes*).

33 BTO Breeding Bird Survey method. <https://www.bto.org/our-science/projects/breeding-bird-survey/about-breeding-bird-survey> (Accessed January 2023)

34 Brown A.F. & Shepherd K.B. 1993. A method for censusing upland breeding waders. Bird Study, 40: 3, 189-195. Or, online at <https://www.tandfonline.com/doi/pdf/10.1080/00063659309477182> (Accessed July 2023)

35 Gilbert, G., Gibbons, D.W., & Evans, J. 1998. Bird Monitoring Methods: A Manual of Techniques for Key UK Species. Online at <https://www.rbbp.org.uk/wp-content/uploads/2020/10/Common-Scoter-Gilbert-et-al.pdf> (Accessed July 2023)

10.2.12 Merlin, Whooper Swan, Red-throated Diver, Golden Plover, Redwing, Common Scoter, Lapwing, Skylark, Lesser Redpoll, Herring Gull, Dunnock, Kestrel, Red Grouse and Hooded Crow all appear on the SBL.

10.3 Potential Significant Effects

10.3.1 Potential significant effects on the bird life of the area include:

- The direct loss and / or fragmentation of bird habitats due to the 'land take' of the Proposed Development. This may reduce the quality and quantity of available nesting, foraging and roosting habitat for bird species including passerines, raptors, waterfowl and waders.
- The modification of habitats due to hydrological change should construction activities alter hydrological processes. This may have a potential effect on nesting, foraging or roosting habitat for a range of passerines, waders and waterfowl.
- The permanent or temporary disturbance and / or displacement of birds during the construction and operation phases of the Proposed Development as a result of increased noise or visual stimuli. This may have a potential effect on the preferred nesting, foraging and roosting areas for passerines, raptors, waders and waterfowl.

10.4 Scope of Assessment

- 10.4.1 Field surveys for the main PSH works commenced in April 2022 and consisted of three rounds of breeding bird surveys until July 2022, followed by three rounds of wintering bird surveys between October 2022 and March 2023. These surveys covered the main PSH area of works, including the proposed access tracks, including a 500 m buffer, and a thorough scan of Loch Quoich from the road. To incorporate an updated layout to the main PSH works, a further four rounds of breeding bird surveys, visiting a slightly extended area (including Coire Dubh and buffer), was undertaken between early-May and mid-July 2023, which incorporated Common Scoter Monitoring on Loch Fearna.
- 10.4.2 An additional season of wintering bird surveys is planned between October 2023 and March 2024 to include the preferred SAR and Coire Dubh area.
- 10.4.3 No other survey work within the proposed area of works, or specific-species monitoring, is considered necessary at this time, although pre-construction checks should be made ahead of any enabling works commencing on site.
- 10.4.4 Continued monitoring of the Common Scoter is recommended. This will provide a greater understanding of their behaviour and habitat requirements within and immediately adjacent to the Proposed Development. From this data, specific mitigation measures can be implemented, minimising any potential effects on the scoter as a result of the construction or operation of the completed scheme, as well as (following consultation with the relevant landowners, stakeholders and agencies) offering the potential to provide recommendations for appropriate habitat enhancement or habitat restoration within the wider area.
- 10.4.5 The results of the desk study and field surveys will be used to inform the Ecological Impact Assessment (EclA) component of the EIA. This will be conducted in

accordance with the guidelines produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). Where significant effects are predicted by the EclA, then specific mitigation measures will be proposed that would minimise potential adverse effects during both the construction and operation phases of the Proposed Development. Enhancement measures that are proportionate to the impact of the Proposed Development will also be considered in pursuance of the objective of Scottish Planning Policy to achieve biodiversity benefits from development.

10.5 Questions to Consultees

10.5.1 Is the scope of ornithological assessment acceptable?

10.5.2 Are there any other key receptors which should be taken into account?

11. Aquatic Ecology

11.1 Introduction

- 11.1.1 To inform the scoping exercise a desk-based study on aquatic ecology was undertaken on Loch Fearna and Loch Quoich in December 2022. The objectives of the desk study were to identify any constraints and potential adverse impact to the Proposed Development in relation to the aquatic ecology within the main PSH site, and therefore, may influence the design.
- 11.1.2 Fish Habitat Assessments have been conducted to determine the aquatic habitat quality and the presence of specific fish species in the watercourses present within the Proposed Development boundaries. Initial assessments were conducted on 29th November 2022 and found no evidence of important aquatic ecological factors, due to the impassable barrier at the outflow of Loch Fearna. It has therefore been concluded that no migratory species are present in Loch Fearna, though resident species such as Brown trout (*Salmo trutta*), Arctic charr (*Salvelinus alpinus*), Three-spined stickleback (*Gasterosteus aculeatus*) and, Common minnow (*Phoxinus phoxinus*) are likely to reside in the loch.
- 11.1.3 During initial survey works carried out to inform scoping, it was recommended that further baseline surveys needed to be undertaken to inform the EIA and specifically the Aquatic Ecology: Fish Chapter. Therefore, a finer Fish Habitat and Population Assessment were conducted in July 2023. The objectives of this study were to conduct (1) a Fish Habitat Assessment, (2) a Fish Population Assessment along with in-situ Water Quality Assessment, (3) a Macroinvertebrate Population Assessment as well as (4) an eDNA Assessment in Loch Fearna, Coire Dubh and, Loch Quoich, within the main PSH site of the Proposed Development.
- 11.1.4 Aquatic surveys along the preferred SAR were carried out in late 2023.

11.2 Baseline Description

Designated Sites

- 11.2.1 No protected sites were identified within the main PSH site. Within a 2km buffer zone of the main PSH site, the Loch Quoich Spillway Special Site of Scientific Interest (SSSI) was identified (NatureScot, 2022). Additionally, this area was also identified as a Geological Conservation Review site. These areas are located approximately 700m east from the lower inlet/outlet works of the Proposed Development and are not relevant to aquatic ecology.
- 11.2.2 As part of this study a review was undertaken of existing planning portal information at a 5km buffer from the main PSH site. No sites with prior acknowledged sensitive aquatic species were identified. As part of the EIA, further data requests will be undertaken with the following organisations: NatureScot, SEPA, the Highland Council, Glen Garry Community Council, the Biological Records Centre, the Scottish Wildlife Trust, the Lochaber Fisheries Trust, the Lochaber District Salmon Fishery Board, and the Botanical Society of the British Isles. Within the desk study exercise, records of fish and macroinvertebrates, within the past 20 years and within 5km of the main PSH site, were obtained. No records of fish or macroinvertebrates detailed

on the Scottish Biodiversity List were found for Loch Fearna. Loch specific information for each waterbody is detailed below.

Description of Loch Fearna

- 11.2.3 Loch Fearna is a small and shallow freshwater loch with an area of 10ha, a catchment area of 1.35km² (included within the River Garry catchment), and a mean depth of 6.6m. It is proposed as the upper reservoir for the Proposed Development and is situated at an elevation of 538m AOD. The Loch Fearna micro-system is composed of a total of seven adjacent tributaries (i.e., in- and outflows). Six adjacent tributaries are feeding the loch taking their source northward in Coire Glas. An additional tributary taking its source from a humid bog ground situated southeast of the Loch (Grid Reference - NH055028) is also present. The outflow of Loch Fearna is situated southwest via the River Allt Fearna to Loch Quoich, which forms the proposed lower reservoir of the Proposed Development (also within the River Garry catchment). No watercourse or tributaries of Loch Fearna were identified within the SEPA (2022) Water Classification Hub.

River Allt Fearna

- 11.2.4 The River Allt Fearna take its source from Loch Fearna and is an adjacent tributary of Loch Quoich. Its watercourse runs down a steep hill side and a succession of impassable waterfalls are present.

River Allt a' Mheil

- 11.2.5 The River Allt a' Mheil take its source from Coire Dubh and is an adjacent tributary of Loch Quoich. Its watercourse runs down a steep hill side and a succession of impassable waterfalls are present. A hydroelectric weir is present in the watercourse channel (Grid Reference - NH 04642 03122).

Loch Quoich

- 11.2.6 Loch Quoich is a large freshwater loch and is the third and highest Loch on the Garry system. It forms the proposed lower reservoir of the Proposed Development. The basin of Loch Quoich is simple with steep and uniform sides. The surface is 1746ha, the catchment area is 13221ha, the mean depth is 31.9m and maximum depth of 85.6m. It is important to note that since 1955 a hydroelectric dam has been present on the eastern end of the loch (Grid Reference - NH070023). Two smaller dams were also built on Loch Quoich at this time at the western end of the loch.

11.3 Barriers to Migration

- 11.3.1 Within the main PSH site, one anthropogenic barrier to migration has been identified in the watercourse channel of the River Allt a' Mheil, a hydroelectric dam present in the watercourse channel (Grid Reference - NH 04642 03122). Furthermore, a hydroelectric dam is present on the eastern end of Loch Quoich (Grid Reference - NH 07002 02326). The feature is located approximately 700m to the east of the main PSH site and currently operates with no fish pass. Therefore, the presence of migratory species such as Atlantic salmon and Sea trout has not been considered.

11.4 Fish Population

- 11.4.1 A Fish Population Assessment has identified the presence of Brown trout and Common minnow at the confluence of the River Allt Fearnha and Loch Quoich. An extant population of Arctic charr (sensitivity score 4 – site considered as more robust to broad scale environment change (Maitland and Adams, 2018)) exist within Loch Quoich and evidence for riverine use has been recorded (Maitland and Adams, 2018; Walker, 2007). There is no record of an existing fish population in Loch Fearnha.

11.5 Macroinvertebrate Population

- 11.5.1 The status of the macroinvertebrates has been informed by a Macroinvertebrate Population Assessment. Within the main PSH site, no threatened or nationally scarce species were recorded. A large variation of family groups was present across the Proposed Development area. The diversity of taxa was stable and relatively high ranging from 669 to 200 in the proposed upper reservoir (Loch Fearnha and tributaries). However, it appears that the taxa diversity is drastically reduced in the proposed lower reservoir (Loch Quoich) ranging from 76 to 26.
- 11.5.2 The taxa representing the highest abundance were the following: *Elmis aenea* (*Coleoptera* – *Elmidae*), *Chironomidae* sp (*Diptera* – *Simuliidae*), *Simulium* sp (*Diptera* – *Simuliidae* Rhodani) and *Atlantiscus* sp (*Ephemeroptera* – *Baetidae*) as well as *Polycentropus flavomaculus* (*Tricoptera* – *Polycentropidae*).
- 11.5.3 No species of nature conservation interest were noted from the sampling conducted. Species recorded were dominated by common and widespread taxa, typical of a range of habitat types. Within the samples collected, the species composition was that of marginal and lotic environments.

11.6 Flora

Bryophytes

- 11.6.1 A bryophytes assessment was conducted by Hodgetts, (2016) (Bryophyte survey of Loch Fearnha and the Allt Fearnha, Easter Glenquoich Estate. Report for Adrian Laycock Ltd). A review of this report will be undertaken as part of the EIA assessment.

Lichens

- 11.6.2 No lichen records exist within the main PSH site.

Aquatic Flora

- 11.6.3 No aquatic flora records exist within the main PSH site.

11.7 Potential Significant Effects to Aquatic Ecology

11.7.1 The construction of the Proposed Development could potentially have the following effects:

- During the potential de-watering period of Loch Fearna, macroinvertebrate and fish population as well as aquatic flora communities would be impacted. This could cause loss of spawning ground and eggs aerial exposure. A high mortality of eggs could cause a generational shift and disturb the population dynamic by missing a year of juvenile recruitment. Furthermore, high mortality of macroinvertebrate can affect prey/predatory interactions and ultimately have a negative effect on fish population.
- Permanent effects on habitat suitability and fish and/ or macroinvertebrate populations within waterbodies in the Proposed Development due to pollution events during construction.

11.7.2 The operation of the Proposed Development could potentially have the following effects:

- The running operation of the hydro power pump storage Proposed Development could have consequences on the dynamic of both Lochs. The water level of Loch Fearna would fluctuate over a range of 60m.
- Water levels would increase over the Loch Fearna natural shoreline during pumping operations and decrease during generation (i.e., water being released from Loch Fearna down to Loch Quoich).
- Potential for effects on fish spawning ground area situated within both shallow and deeper waters, close to the shore and/or in adjacent streams. This could create a generational shift in the population dynamic of Loch Fearna by loss of eggs and damage to spawning habitat.
- Potential for effects on the habitat and habitat use by the aquatic communities such as invertebrate and fish populations. This could lead to decline of macroinvertebrate communities, causing disturbance in predation and ultimately decrease fish population fitness.
- Potential for temporary and/or permanent impacts to macroinvertebrate populations with preferential habitat requirements loss and risk of desiccation from aerial exposure.
- Potential for temporary and/or permanent effects to macrophyte populations due to loss of preferential habitat.
- Potential for the movement of water between the lochs to cause the entrapment of fish, resulting in injury, severe injury, or mortality.
- Potential for the movement of water to cause colonisation issues, transfer of pathogens and/or invasive non-native species.

11.8 Proposed Scope of Assessment

11.8.1 To confirm the baseline conditions and inform the assessment, the following surveys will be conducted:

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- A Fish Population Assessment using fully quantitative electrofishing techniques in areas of suitable riverine habitat for salmonids within the Proposed Development boundaries and watercourses crossed by access tracks.
 - In consultation with Marine Scotland Science (MSS) and NatureScot, a Fish Population Assessment will be conducted in Loch Fearna by gill netting or environmental DNA along with hydroacoustic assessment.
 - A fish Habitat Assessment using SEPA guidelines for fish habitat surveys within the Proposed Development boundaries and watercourses crossed by access tracks.
 - A Macroinvertebrate Population Assessment within the Proposed Development boundaries and watercourses crossed by access tracks.
 - A Salmonid (i.e. Brown trout and Arctic charr) Spawning Habitat Assessment in Loch Fearna and Loch Quoich.
 - Aquatic Macrophyte Assessment on Loch Fearna and Loch Quoich conducted during the appropriate survey seasons (i.e. June-September).
 - Water quality survey.
- 11.8.2 Baseline bryophyte and lichen studies will be undertaken to identify any important ecological features.
- 11.8.3 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.
- 11.8.4 Advice from NatureScot, SEPA, and MSS provided through the responses to the Scoping Report will be used to inform the detail of further assessment works.

11.9 Questions to Consultees

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

12. Geology, Soils and Water

12.1 Introduction

- 12.1.1 This chapter of the report provides an overview of the soils, geology, and the water environment (hydrology and hydrogeology), the potential effects associated with construction and operation of the Proposed Development and a summary of the proposed assessment methodology. Refer to Section 6 for further discussion on hydrology and water management.

12.2 Baseline Description

Soils and Peat

- 12.2.1 The National Soil Map of Scotland (1:250,000 scale) indicates that the proposed reservoirs are underlain by montane soils to the north and east, and peaty podzols to the south and west. The preferred SAR is also underlain by peaty podzols.
- 12.2.2 Priority peatland mapping published by Scottish Natural Heritage (now NatureScot) is reproduced as **Figure 12.1** and indicates that discrete sections of the access route are located within areas designated as Class 2 peatland, which is considered nationally important and of high conservation value. The area surrounding Loch Fearna is shown as Class 3 peatland whilst the rest of the Proposed Development is shown to be located within Class 5 peatland. Class 3 and Class 5 peatland areas have potential for occasional or no peatland habitats, however carbon rich soils and areas of deep peat may be present.
- 12.2.3 A programme of peat probing has been undertaken at the proposed reservoirs to inform the scoping stage of the project, as shown on **Figure 12.2**. In summary:
- the depth of soil / peat was recorded at more than 2,200 locations;
 - soil and peat thickness of between 0 and 3.2m were recorded;
 - approximately 55% of all probes recorded no peat (<0.5m depth); and
 - approximately 5% of probes confirmed peat in excess of 1.5m thick.
- 12.2.4 Additional peat probing is proposed and will be undertaken to inform the emerging site design. The probing will include all elements of the Proposed Development, including the preferred SAR where new or improved access track is proposed.

Geology and Hydrogeology

- 12.2.5 The Proposed Development is shown by the British Geological Survey (BGS) to be underlain by several bedrock units comprising psammites and pelites. Parts of the preferred SAR are underlain by the West Highland Granite Gneiss Intrusion (granites).
- 12.2.6 Published mapping suggests that the bedrock is generally overlain by superficial deposits of hummocky glacial deposits with areas of peat. Alluvium is recorded adjacent to the banks of the larger watercourses and a small area of alluvial fan

deposits is located to the east of Loch Fearna. The mountain peaks and slopes are shown to be absent of superficial deposits.

- 12.2.7 Given the nature of the superficial deposits little shallow groundwater is expected. The bedrock has been classified by the BGS as a low productivity aquifer, whereby small amounts of groundwater may be present in near surface weathered zones and secondary fractures. Groundwater may be present in the alluvial and alluvial fan deposits and any groundwater in these deposits is likely to be in hydraulic continuity with adjacent watercourses and lochs.

Hydrology and Designated Sites

- 12.2.8 The Proposed Development is located within the surface water catchment of River Garry, particularly the following sub catchments:
- Loch Quoich - The western extent of the Proposed Development drains to Loch Fearna and its outfall the Allt Fearna, which flows generally southwest before discharging into Loch Quoich. The northern extent of the Proposed Development Area is drained by the Allt a'Mheil, which flows generally southwest before discharging into Loch Quoich to the southwest of the site.
 - The preferred SAR is drained by several tributaries of River Garry including (from west to east) the River Kingie, Allt Choire a'Bhalachain, Allt Lon Glas Bheinn, Greenfield Burn, Allt Ladaidh and Allt na Cailliche.
- 12.2.9 Several Private Water Supply (PWS) and Controlled Activity Regulation (CAR) licences are recorded by THC and SEPA within 1km of the Proposed Development. It is likely that properties locally maintain a private water supply source.
- 12.2.10 Review of SEPA fluvial and surface water flood maps (now and in the future) confirms that majority of the Proposed Development is not considered at risk from flooding. Where shown, flood extents are generally localised and confined to the watercourse channels and immediate loch boundaries.
- 12.2.11 Review of NatureScot SiteLink website confirms that there are no water dependent designated sites within the Proposed Development.
- 12.2.12 The Quoich Spillway Site of Special Scientific Interest (SSSI) and Geological Conservation Review Site (GCR) is noted immediately downstream of Loch Quoich and has been designated for its exposure of Moine Supergroup outcrops. The River Garry and Loch Garry are part of the West Inverness-shire Lochs SSSI and Special Protected Area (SPA) and have been designated for breeding bird assemblage.

12.3 Potential Significant Effects

- 12.3.1 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;

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- an increase in flood risk during construction through increased surface water runoff from areas of working and material stockpiling;
- potential adverse changes to surface and groundwater flow paths and contribution to areas of peat and Groundwater Dependant Terrestrial Ecosystems (GWDTE), water dependent habitat, designated sites 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 potentially 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.

12.4 Proposed Scope of Assessment

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

Geology, Soils and Peat

- National Planning Framework 4, Scottish Government, February 2023;
- SEPA Regulatory Position Statement, Developments on Peat, Scottish Environment Protection Agency, 2012;
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments, Scottish Government, January 2017;
- 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);
- National Planning Framework 4, Scottish Government, February 2023;
- 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;
- 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.

- 12.4.2 It is proposed that the Study Area extends up to 500m from the Site Boundary. In accordance with SEPA's Guidance Note 31 the Study Area for the assessment of potential areas of GWDTE would extend to a distance of no less than 250m from any element of the Proposed Development.
- 12.4.3 A desk-based appraisal of the Proposed Development will be undertaken initially and then a further field programme of investigation undertaken to verify (or otherwise) the desk study findings. The desk study and field programme will be used to inform the emerging site design.
- 12.4.4 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. This collaborative approach would include assessing the condition of peat and areas of potential peatland restoration as part of the development proposals.
- 12.4.5 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:
- Further peat probing to confirm the depth of peat and peat condition, and if required, the re-use of peat will be assessed so that the existing peat deposits be avoided where possible and safeguarded in accordance with the mitigation hierarchy promoted in NPF4. The peat probing would include all elements of the Proposed Development, including the preferred SAR.
 - If appropriate, a Peat Landslide Hazard Risk Assessment (PLHRA) and Peat Management Plan (PMP) will be prepared.
 - Visual assessment of the proposed borrow pit locations to confirm characteristics of the underlying bedrock and suitability for use, the potential

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volume of rock that can be won from the borrow pits and a comparison to the volume of rock required onsite.

- A hydrological site walkover survey to determine the likely effects of the Proposed Development on the hydrological regime.
- 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 within the Study Area, including Quoich Spillway SSSI and GCR and West Inverness-shire Lochs SSSI and SPA.
- In consultation with the project ecologists, assessment of potential effects on GWDTE.
- Assessment of potential flood risk and drainage during construction and operation.
- Assessment of potential cumulative or in-combination effects.

12.4.6 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 the Proposed Development 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 Report and measures that would be used to control the rate and quality of runoff will be specified. Management of the water storage reservoirs and full flood risk associated with failure of any of the proposed dams would be covered by the Reservoirs (Scotland) Act 2011, following grant of any planning permission.
- Water quality monitoring. Classification data is available from SEPA for the principal watercourses 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 assessment.
- 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 Controlled Activity Regulations (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 scheme, should the Proposed Development be granted planning permission.

12.5 Questions to Consultees

- 12.5.1 Are the ECU, THC and Statutory Consultees aware of any additional key sensitive receptors, which have not already been highlighted, that should be taken into account?
- 12.5.2 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?
- 12.5.3 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 (noting the principles for the control and management of runoff will be presented in the EIA Report). The drainage design would be part of the Construction Site Licence application which would be required to be submitted to SEPA prior to construction commencing should the site be granted planning permission.
- 12.5.4 Is it agreed that no water quality monitoring or detailed geomorphological survey is required as part of the EIA Report?
- 12.5.5 Is it agreed 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)?

13. Cultural Heritage

13.1 Introduction

- 13.1.1 This chapter discusses the need for the EIA Report to include a chapter on the potential effects of the Proposed Development on cultural heritage assets, comprising archaeological and historical features, areas, features and sites of historical or folkloric interest. A detailed desk-based study was carried out in March 2022 for the Proposed Development to identify baseline sites and inform this evaluation. A further review of the preferred SAR was undertaken in 2023. The conclusion of the evaluation is that Cultural Heritage could be scoped out of the EIA report.

13.2 Baseline Description

- 13.2.1 Desk study and field studies carried out previously in the vicinity of the Proposed Development have led to the conclusion that the area contains only minor sites of little to no cultural heritage significance and the probability of further previously unidentified archaeological features or other sites of cultural heritage interest is low to negligible. One designated site is located within 1km of built elements of the Proposed Development.

13.3 Statutory/Designated Sites

- 13.3.1 There is one Listed Building at the eastern end of Loch Quoich, within 1km of built elements of the Proposed Development: Great Glen Hydro Electric Scheme, Quoich Dam and Intake Gatehouse Towers (LB51704). While protected by law from visual intrusion and impact on setting, this functional structure dating to 1955 is not, in practice, vulnerable to alterations to its setting. It could be argued that the Proposed Development, as a more modern approach to hydroelectric power, complements and adds interest to the earlier scheme.

13.4 Non-Designated Sites

Recorded Sites

- 13.4.1 There are no sites recorded on the Historic Environment Record (HER) within the boundary of the Proposed Development. This reflects the low level of human activity which has left a mark on the archaeological record and supports the conclusions of the desk-based cartographic and archival historical evidence. In effect, all the archaeological evidence for 19th century commercial sheep farming and sporting activities along the shores of Loch Quoich are now inundated by the increased water levels of the loch due to the 1955 hydroelectric scheme.

Unrecorded Sites

- 13.4.2 Within the boundary of the Proposed Development there are two minor features recorded on early mapping but not on the HER:

- 19th century road alignment: lying within the upper and lower limits of the water level of loch Quoich. This would be considered to be of local interest only and of minimal significance or sensitivity.
- Possible woodland plantation boundary dyke: immediately to the east of the proposed substation site there may be the remains of a rubble dyke constructed in the mid-19th century to contain a small plantation, now no longer extant. This would be considered to be of local interest only and of minimal significance or sensitivity.

13.5 Potential for further archaeological features

- 13.5.1 The range and distribution of known archaeological and historic features would indicate a very low potential for further archaeological sites within the area of the Proposed Development.

13.6 Summary of Baseline Description

- 13.6.1 All evidence from archive material, early mapping and heritage databases point to a very low level of human activity leaving an archaeological trace within or adjacent to the boundary of the Proposed Development. The known heritage assets date to the second half of the 19th century or later and are associated with the development of the sporting estate, are of Local interest and therefore of low sensitivity to direct or indirect impacts from the Proposed Development.

13.7 Potential Significant Effects

Construction

- 13.7.1 No significant effects are predicted for the construction phase of the proposed Development.

Operational

- 13.7.2 No significant effects are predicted for the operational phase of the Proposed Development.

13.8 Proposed Scope of Assessment

- 13.8.1 There is considered to be very low potential for the Proposed Development to affect cultural heritage assets. No impact, direct or indirect is predicted for designated sites. Any further cultural heritage assessment is unlikely to alter this conclusion. It is therefore proposed that Cultural Heritage considerations be scoped out of the EIA.

13.9 Questions to Consultees

- 13.9.1 Do the ECU, THC and Statutory Consultees agree that Cultural heritage considerations can be scoped out of further evaluation?

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- 13.9.2 Are the ECU, THC and Statutory Consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?

14. Transport and Access

14.1 Introduction

- 14.1.1 This section covers the predicted transport and access issues that may arise from the construction of the Proposed Development, the significance of these effects and what suitable mitigation can be put in place to avoid, minimise or offset any adverse impacts.
- 14.1.2 The Transport & Access EIA Report Chapter will be supported by a Transport Assessment report, Abnormal Load Route Survey and technical figures.
- 14.1.3 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.
- 14.1.4 The potential effects of these will be examined in detail.
- 14.1.5 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); and
 - Guidelines for Transport Assessments (The Highland Council, 2014).

14.2 Baseline Description

- 14.2.1 Locally sourced material or materials won on site will be used wherever feasible and traffic will avoid impacting on local communities as far is possible. This will include the extensive use of borrow pits, potential onsite accommodation and/or the bussing of construction staff to and from the site to suppress traffic generation.
- 14.2.2 To reduce the disruption caused by construction activities, it is proposed that construction traffic and Abnormal Indivisible Loads (AIL) would bypass at least the majority of properties between the site access junction and the A87 on the C1144 by using an existing forestry access track located to the south of Glen Garry, defined in this report as the preferred Southern Access Route (SAR). This track would be extended to join the C1144 to the east of Quoich Dam. It is proposed that the C1144 is widened between this point around the Quoich Dam, beyond the site access junction to the bottom of the proposed hill track to the upper reservoir. The widened road would allow a construction access lane to be provided adjacent to a lane retained for public access.

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- 14.2.3 The preferred SAR would be accessed from the A87 near White Bridge via a new or improved junction and crossing over the River Garry. The Applicant is aware of other projects which propose new access provision at White Bridge and is engaged with the relevant developers on this aspect.
- 14.2.4 The existing forestry tracks along the preferred SAR will be upgraded as required to suit the construction traffic, with track widening, localised realignment and replacement of bridge structures as required.
- 14.2.5 A new bridge structure would be required across the Gearr Garry to link the preferred SAR to the site.
- 14.2.6 A satellite parking area may be considered for site staff to then be bussed to the accommodation and working areas, which could also provide a delivery point for site supplies, which the main contractor would then transfer to the main site compound.
- 14.2.7 A main site compound is proposed within the commercial forestry area on the south side of Glen Garry, which would also provide the primary site accommodation for construction staff. Secondary compounds would be provided at the site.
- 14.2.8 Material deliveries to the site would be made via the A87 and the preferred SAR, with deliveries accessing the site from the east. Wider access from the A82 to the north and south will also likely occur for the delivery of materials.
- 14.2.9 The proposed use of the preferred SAR requires the landowner agreements to be finalised, otherwise the use of the C1144 be considered, subject to a programme of road upgrades.
- 14.2.10 Operational access to the powerhouse site will be taken from the C1144 via a new access junction that will provide direct access to the development site. The junction will be built to THC standards.
- 14.2.11 The study area will be formed from the road network that will be used for import of raw materials, construction staff commuting and the proposed Abnormal Indivisible Load (AIL) route to the site. The study area is therefore proposed to include:
- C1144 between the site access junction and its junction with the A87;
 - The A87 between Invergarry and Bunloyne Bridge;
 - The A887 between Invermoriston and Bunloyne Bridge;
 - The A82 between Fort William and Invermoriston.
 - The A830 between Corpach and Fort William;
- 14.2.12 New ATC surveys will be undertaken for one week to record classified traffic data for a neutral month at the following locations to inform the baseline review:
- The C1144 at the site access junction;
 - The A87 at its junction with the C1144; and
 - The A887 in Invermoriston.
- 14.2.13 Department for Transport (DfT) database and Traffic Scotland traffic counts will also be used to provide further wider area data, for the A82 and A87. Future year traffic growth will be factored using Low National Road Traffic Forecast (NRTF) estimates.

- 14.2.14 Three years of traffic accident data will be collected using the online resource crashmap.co.uk for the A87 and C1144 to inform the baseline review. Transport Scotland's accident database would also be consulted for the trunk road network.
- 14.2.15 Online sources such as the National Cycle Route map and Ordnance Survey maps will be used to obtain details of the sustainable travel network.
- 14.2.16 A detailed Route Survey Report (RSR) will accompany the EIA and will set out the mitigation measures required on the route for abnormal load access and the proposed access junction arrangement. The AIL movements are likely to include the turbine sets, transformers and construction plant. The worst case load would be assessed and is likely to access the site from the Port of Inverness to site via barge access on Loch Ness and via the A82 (from a lochside landing north of Fort Augustus), A87 and the preferred SAR. An alternative route from the Port of Corpach is also being considered.
- 14.2.17 A site visit will be undertaken as part of the AIL route survey. This will also review of general road infrastructure and other relevant points.

14.3 Potential Significant Effects

- 14.3.1 Potential impacts that may arise during the assessment may include the following for users of the road and those resident along the delivery routes:
- Severance;
 - Driver delay;
 - Pedestrian delay;
 - Pedestrian amenity;
 - Fear and intimidation; and
 - Accidents and safety.
- 14.3.2 The impacts on receptors within the study area will be reviewed during the construction phase, with a peak construction period assessment undertaken. This will review the maximum impact and presents a robust assessment of the effects of construction traffic on the local and trunk road networks.
- 14.3.3 The effects that will be considered will be based upon percentage increases in traffic flow and reviewed against the impacts noted above.
- 14.3.4 Once operational, it is envisaged that the level of traffic associated with the Proposed Development would be low. The Proposed Development would be continuously manned, with most operations being controlled from the control building within the powerhouse or remotely. Regular visits would be made to inspect and maintain the various scheme components. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the site for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.
- 14.3.5 For major, periodic maintenance, the preferred SAR is proposed to remain in place for the lifespan of the project subject to landowner agreement, to provide AIL access.

- 14.3.6 The traffic generation levels associated with the decommissioning phase would be less than those associated with the development 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, although a commitment to reviewing the impact of this phase would be made immediately prior to decommissioning works proceeding.

14.4 Proposed Scope of Assessment

- 14.4.1 Environmental Assessment of Traffic and Movement (IEMA 2023) 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
 - Potential impacts (of changes in traffic flows) on land uses and environmental resources fronting these roads, including the relevant occupiers and users.
- 14.4.2 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.
- 14.4.3 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.
- 14.4.4 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.
- 14.4.5 Potentially significant environmental effects will then be assessed where the thresholds as defined above are exceeded. Suitable mitigation measures will be proposed, where appropriate.
- 14.4.6 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 would not be included.
- 14.4.7 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 is therefore proposed.

14.4.8 Standard mitigation measures that are likely to be included in the assessment are:

- 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;
- A Staff Sustainable Access Plan; and
- A Framework Abnormal Load Transport Management Plan.

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

14.5 Questions to Consultees

14.5.1 Is the proposed methodology acceptable?

14.5.2 Are the methods proposed for obtaining traffic flow data acceptable?

14.5.3 Is the use of Low National Road Traffic Forecasts (NRTF) acceptable for the whole of the study?

14.5.4 What committed development schemes should be included in the assessment?

15. Noise and Vibration

15.1 Introduction

- 15.1.1 This section outlines the proposed scope of the noise and vibration assessment which would be undertaken for the Proposed Development.
- 15.1.2 Given the location of the site, its context and intervening distances to residential sensitive receptors, it is proposed to scope out detailed assessment of some items, and these are highlighted with justification in the sections that follow.

15.2 Baseline Description

- 15.2.1 The closest Noise Sensitive Receptors (NSRs) to the principal works are summarised in Table 15-1 below and included on **Figure 15.1**. Further receptors are located in the vicinity of the River Garry to the east of the Proposed Development in proximity to the preferred SAR.
- 15.2.2 NSR 1 is noted to be an unmanned existing hydroelectric powerhouse, on this basis sensitivity to noise and vibration (at the magnitudes and distances expected) would be negligible from the outset, on this basis no further assessment is considered warranted.
- 15.2.3 In addition, NSR 2 is closer in real terms to the principal works site than NSR 3 or 4 (although still relatively distant at circa 3400m) and on this basis impacts assessed at NSR 2 are therefore likely to be worst case and there is no need to consider NSR 3 or 4 as receptors, other than as receptors associated with site access.

Table 15-1 – Noise Sensitive Receptors.

NSR Location	Description	Location		Imagery		
		Northing	Westing			
NSR1	Existing Hydroelectric Powerhouse South of C1144 to West of Site	57°04'28.99" N	5°15'8.92" W			
NSR2	Kingie Lodge North of C1144 East of Site	57°03'53.89" N	5°08'27.46" W			

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NRS3	Residential Dwelling North of C1144 and South of Kingie Lodge	57°03'52.07" N	5°08'23.73" W	
NSR4	Residential Dwellings Near Faichem/Invergarry and River Garry	Various Around Approximate Point		
	(Associated with potential Southern Access Route works	57°04'18.55" N	4°50'23.95" W	

15.3 Potential Significant Effects

- 15.3.1 Key considerations in relation to potential significant effects in respect to noise and vibration associated with the Proposed Development are likely to comprise noise and vibration associated with construction plant and activities and construction road traffic movements both within the site and on public access routes, as well as operational noise and vibration from proposed operational plant.
- 15.3.2 However, given the intervening distances associated with the principal development areas and the key identified sensitive receptors (NSR 3 and 4) being a minimum of 3,400m away, impacts are unlikely to be significant.

Embedded Mitigation and Design Principles

- 15.3.3 Noise and vibration will be a consideration throughout the EIA and design process for the Proposed Development with embedded mitigation likely to involve the following:
- locating the majority of the operational power station underground / within a building (powerhouse);
 - where deemed required, selection of low noise equipment may be appropriate;
 - appropriate location of any noise barriers identified as being required;
 - minimising the permanent design footprint as far as is possible; and
 - using best practice construction methods and good working practices to limit construction noise and vibration as far as reasonably practicable.

15.4 Proposed Scope of Assessment

- 15.4.1 Based on the key parameters of the Proposed Development, the following potential significant effects have been considered for inclusion in the noise and vibration Chapter of the EIA Report:

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- noise and vibration associated with construction plant and activities;
 - noise and vibration associated with construction road traffic on the surrounding road network;
 - vibration associated with blasting and material extraction and enabling works; and
 - any above ground noise associated with the operation of plant and activities occurring at the Proposed Development during operation.
- 15.4.2 Construction noise and vibration, and blasting is proposed to be assessed via quantitative and qualitative methods of assessment to be completed as a desk-top study to fixed limits.
- 15.4.3 It is proposed this assessment is undertaken to fixed limits from BS5228 Parts 1 and 2, as well as other relevant guidance.
- 15.4.4 Based on the location of the site and the nature of the Proposed Development, which would require limited staff and only periodic maintenance, it is proposed to scope potential effects associated with operational road traffic noise out of the EIA.
- 15.4.5 Operational noise associated with moving water will likely be all sub-surface noise and any above ground noise at sensitive receptors will be imperceptible and therefore it is also proposed that this is scoped out of the EIA.
- 15.4.6 Operational noise from the powerhouse will be very unlikely to be a significant impact given the nearest NSR is 3,400m distant. On this basis it is suggested this element can also be scoped out of the EIA and controlled by application of fixed limits.
- 15.4.7 On the basis of the above it is also proposed to scope out baseline noise surveying. Fixed limits suitable to protect residential amenity will be proposed in the EIA in respect to construction and operational noise and vibration.

15.5 Proposed Assessment Methodology

Assessment Guidance

- 15.5.1 The noise and vibration assessment will be carried out in accordance with the following standards and guidance: Institute of Environmental Management & Assessment (2014), 'Guidelines for Environmental Noise Impact Assessment'.
- 15.5.2 Relevant sections of the following guideline documents and British Standards will be referred to during assessment of the indicated phases.

Significance of Effect for all Phases of the Site Life:

- Guidelines for Environmental Noise Impact Assessment, produced by the Institute of Environmental Management and Assessment (IEAM), and published in October 2014.

Construction Phase:

- BS5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'.
- BS5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'.
- PAN 50 Annex A: 'The Control of Noise at Surface Mineral Workings and Planning Advice Note 1/2011: planning and noise'.
- PAN 56 Planning and Noise (In relation to guidance on blasting and overpressure limits).

Operational Phase:

- BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'.
- The 'Guidelines for Community Noise' document (WHO, 1999) and 'Night Noise Guidelines for Europe' (WHO, 2009).
- BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.
- AQTAG09 Air Quality 'Technical Advisory Group 09 Guidance on the effects of industrial noise on wildlife'
- Calculation of Road Traffic Noise (CRTN).
- Design Manual Roads and Bridges (DMRB) LA 111.

Construction Noise and Blasting

- 15.5.3 A quantitative assessment of construction noise and blasting will be completed as a desk-top study.
- 15.5.4 For static construction activities, confined to a specific area of works, such as for the powerhouse, a computer prediction model will be employed, 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.
- 15.5.5 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 would use noise propagation corrections as detailed in ISO 9613.
- 15.5.6 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*.
- 15.5.7 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*.
- 15.5.8 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) fixed limit 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, as well as those applicable to weekend work respectively.

- 15.5.9 A framework for the Construction Noise Management Plan (CNVMP) would be provided in the EIA Report, setting out the procedures and policies that would be adopted for the purpose of demonstrating how construction noise, and construction related ground vibration would be effectively managed for each activity through the duration of the works.
- 15.5.10 Blasting is typically controlled via good practice blast practice design, where practical guidance will be given on suitable design limits and activity distances. As noted above, this is not expected to give rise to significant effects given the intervening distance to residential NSRs, particularly as much of the blasting activity will be constrained within tunnel structures, outside of brief periods of works associated with tunnel entrance and exit works.

Construction Vibration

- 15.5.11 Vibration from construction works is complex to predict, as transfer of vibration through the ground depends on a number of factors including:
- local ground conditions at the construction site;
 - 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.
- 15.5.12 However, in general terms guidance is readily available in respect to vibration magnitude at fixed distances through various materials and substrates for items such as drilling, tunnel boring and piling, this information is presented within BS 5228-2.
- 15.5.13 It is expected from the outset to be able to readily demonstrate a negligible or low impact at the large distances associated between work areas and residential NSR locations. As such a qualitative summary risk assessment will be undertaken and presented in the EIA Report.
- 15.5.14 A framework for the CNVMP would be provided in the EIA Report, setting out the procedures and policies that would be adopted for the purpose of demonstrating how construction noise, and construction related ground vibration would be effectively managed for each activity through the duration of the works.

Construction Traffic Noise (public roads)

- 15.5.15 For the purpose of assessing any impact resulting from additional construction traffic using local public roads, in particular to properties located along the main transport

links, traffic noise calculations will be completed in accordance with the procedure detailed in the guidance '*Calculation of Road Traffic Noise*'³⁶

- 15.5.16 Using the Transport Assessment including current (baseline) and predicted post-development traffic flows (both light and heavy vehicles), the noise change, in terms of $L_{A10,18hr}$ will be calculated.
- 15.5.17 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)*³⁷.

Ecological Receptors

- 15.5.18 Construction noise at ecological receptors will be considered in the noise and vibration chapter of the EIA Report in the context of the AQTAG09 Air Quality 'Technical Advisory Group 09 Guidance on the effects of industrial noise on wildlife'.
- 15.5.19 Construction phase noise modelling imagery would identify expected noise levels, and in consultation with the project ecologist this would be used to assess potential effects on ecological receptors and if required, mitigation measures.

Operational Sound and Vibration

- 15.5.20 The closest NSR position is located at a large distance of approximately 3,400m from the proposed powerhouse.
- 15.5.21 At this propagation distance, the sound level reduction, relative to the source sound power emission of 100dBA, assuming simplified spherical propagation would be -82 dB, taking account of distance attenuation alone giving rise to noise levels outside dwellings of circa 18dB or approximately NR25 as a fixed limit noise rating curve value.
- 15.5.22 Other propagation features, such as physical screening, topography, atmospheric and ground absorption attenuation, would only further increase this attention figure.
- 15.5.23 It is further highlighted that the 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 in much closer proximity than the above risk assessment.
- 15.5.24 It is therefore proposed to scope out operational plant and services noise impact assessment from the proposed development from the EIA Report.
- 15.5.25 In the unlikely event, and in response to the emerging site design, assessment of operational noise is deemed required within the EIA Report, a qualitative assessment of operational sound would be proposed, using supporting evidence and statements relating to the developing design proposals for equipment and the powerhouse building, to demonstrate that sensitive receptors, located at large

³⁶ Department of Transport, Welsh Office: '*Calculation of Road Traffic Noise*' (CRTN) (1988).

³⁷ The Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7 – Noise and Vibration, Highways Agency, 01.11.2011

distance from the surface powerhouse, would not be significantly affected by operational sound.

- 15.5.26 Hydro turbines are installed on concrete inertia bases and are designed to minimise vibration on and local to the equipment, so as to preventing this entering the ground. It is proposed to scope out operational vibration impact from the EIA Report on this basis.

15.6 Questions to Consultees

- 15.6.1 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.
- 15.6.2 Based on the explanations provided, does THC EHO agree to the proposal for scoping out an ambient sound survey.
- 15.6.3 Based on the explanations provided, does THC EHO agree to the proposal for adherence to fixed limits for qualitative and quantitative assessment of construction noise, vibration and blasting.
- 15.6.4 Based on the explanations provided, does THC EHO agree to the proposal for scoping out of operational vibration impacts from the outset.
- 15.6.5 Based on the explanations provided, does THC EHO agree to the proposal to scope out operational noise from the EIA Report and for fixed limits (NR25 or alternative agreed figure).
- 15.6.6 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.

16. Air Quality

16.1 Introduction

- 16.1.1 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.
- 16.1.2 Aspects of the Proposed Development that require consideration within the air quality assessment would comprise:
- Generation of dust emissions from onsite operations during the construction phase and its impact on dust-sensitive ecological receptors, human health and disamenity;
 - Generation of vehicle and plant emissions from construction traffic and NRMM with the potential to increase ambient concentrations of NO_x, NO₂ and particulate matter (PM₁₀ & PM_{2.5}) and its impact on human health and sensitive ecological receptors; and
 - Generation of vehicle emissions from operational traffic with the potential to increase ambient concentrations of NO_x, NO₂ and particulate matter (PM₁₀ & PM_{2.5}) and its impact on human health and sensitive ecological receptors.

16.2 Baseline Description

- 16.2.1 The Proposed Development is located wholly within THC's jurisdiction with no Air Quality Management Areas (AQMA) declared within 60km of the Proposed Development.
- 16.2.2 There is no air quality monitoring within the Proposed Development locale, with the nearest monitors located in excess of 25km away. Due to the distance between the Proposed Development and monitoring locations, monitoring data has not been considered further.
- 16.2.3 In lieu of monitoring data, baseline concentrations for the Proposed locale are assumed to be aligned with Scottish Government and DEFRA background concentrations maps for the 1km x 1km grid squares. These are shown in Table 16-1.

Table 16-1: Baseline Concentrations in the Site Locale

	2023 Mapped Background Concentrations ($\mu\text{g}/\text{m}^3$)		
	PM ₁₀ ^a	PM _{2.5} ^b	NO ₂ ^a
Storage Scheme ^c	5.3	3.2	1.1
Southern Access Route ^c	5.1	3.2	1.3
Air Quality Objective	18	10	40
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 c) Maximum concentration from grid squares area			

- 16.2.4 As illustrated in Table 16-1 background concentrations for the Proposed Development locale are well below the relevant air quality standards for human health.
- 16.2.5 The baseline NO_x concentrations³⁸ within the areas of ancient woodland within the area is reported to be a maximum of 1.29 $\mu\text{g}/\text{m}^3$. This is well below the relevant air quality standards of 30 $\mu\text{g}/\text{m}^3$ for NO_x.
- 16.2.6 There are no human receptors or statutory ecological designations in close proximity to the pumped storage scheme. The closest human receptors are located approximately 3.6km east. The closest statutory ecological designation is the West Inverness-shire Lochs SSSI/SPA approximately 4.5km to the east.
- 16.2.7 There is one discrete human receptor located adjacent to the preferred SAR, 450m from the closest proposed bridge construction works at the River Garry crossing. There are no statutory ecological designations in close proximity to the preferred SAR.

16.3 Assessment Scope

Construction Dust

- 16.3.1 Screening criteria provided within the relevant guidance document³⁹ is used to determine whether effects from dust emissions are likely to be significant.
- 16.3.2 With regard to the pumped storage scheme, there are no sensitive human or ecological receptors with sensitivity to dust within the screening distance (250m and

³⁸ Air Pollution information System [WWW] <https://www.apis.ac.uk/> Accessed November 2023

³⁹ IAQM, 2024. Guidance on the assessment of dust from demolition and construction. Version 2.2, January 2024.

50m for human and ecological receptors, respectively). The level of risk is therefore considered to be negligible with effects unlikely to be significant.

- 16.3.3 With regard to the PSAR, there are six human receptors (residential dwellings) within the screening distance of the preferred SAR. The majority of which are located along Faichemard Farm Road to the east of the A87 at the eastern extent of the preferred SAR. Works would be limited to short term construction activities relating to track improvement works.
- 16.3.4 Embedded mitigation would be implemented as part of the Proposed Development and detailed within a designated 'Dust and 'Air Quality Management Plan (AQMP)' prepared as part of the Construction Environmental Management Document (CEMD). The principal measures that would be included within the AQMP with regard to dust emissions include the following:
- Site access hard paved;
 - Wheel washing system at site access;
 - Paved parking area for of-site vehicles;
 - Tractor and bowser for on-site haulage routes;
 - Water suppression available for dust-generating activities, as required;
 - Suitable speed limits imposed;
 - Seeding of long term stockpiles as soon as practicable;
 - Stockpiles along the PSAR to be a minimum of 250m from residences;
 - Regular site inspections; and
 - All bulk cement and fine powder materials to be delivered in enclosed tankers and stored in silos with suitable emissions control systems to prevent the escape of material and overfilling during delivery.
- 16.3.5 Based on the extent of receptors and the embedded mitigation measures, the level of risk with regard to dust emissions from the upgrading works of the PSAR is considered to be negligible with effects unlikely to be significant.
- 16.3.6 Assessment of construction phase dust impacts is therefore proposed to be scoped out of the EIA.

Traffic Emissions

- 16.3.7 Activities associated with the operational phase would be negligible in comparison to those associated with the construction phase; due to the minimum number of vehicle trips associated with operations and routine maintenance and the absence of any potential dust sources.
- 16.3.8 It is therefore proposed that traffic movements during the operational phase of the Proposed Development on air quality are scoped out of further assessment in the EIA.

- 16.3.9 Screening criteria provided within relevant guidance documents^{40,41} are used to determine whether effects from traffic emissions generated during the construction phase, using the local road highway network are likely to be significant.
- 16.3.10 Whilst confirmed traffic movements for the construction phase are currently unavailable, activities are considered unlikely⁴² to generate movements greater than the screening criteria, presented below:
- Screening criteria for impacts on human receptors:
 - Relevant human exposure located within 200m of road links that experience:
 - A change of traffic flows of light duty vehicle (LDV) flows of more than 500 annual average daily traffic (AADT); or
 - A change of traffic flows of heavy duty vehicle (HDV) flows of more than 100 AADT.
 - Screening criteria for impacts on ecological receptors:
 - Any sensitive qualifying features are located within 200 m of a road link projected to experience developmental-generated vehicle movements; and
 - Construction activities are likely to generate either >1,000 (and/ or >200 HDV) AADT movements on a road link within 200 m of the ecological receptor.
- 16.3.11 In line with the relevant guidance, impacts on internationally-designated ecological sites (e.g. SAC, SPA and Ramsar) would need to be undertaken in-combination with other projects and plans. Impacts on national and/ or local ecological designations can be undertaken in reference to the development trips in isolation.
- 16.3.12 Whilst confirmed traffic movements are currently unavailable, activities are considered unlikely to generate movements greater than the relevant screening criteria for further assessment of human or ecological impacts. Furthermore, there are no international ecological designations within 200m of the road links utilised by construction traffic, therefore consideration of in-combination impacts would not be required.
- 16.3.13 Effects on human and ecological receptors from traffic emissions are considered unlikely to be significant and are proposed to be scoped out of the EIA.

NRMM Emissions

- 16.3.14 According to the IAQM 'Guidance on the Assessment of the Dust from Demolition and Construction', experience of assessing exhaust emissions from NRMM suggests that they are unlikely to make a significant impact on local air quality.

⁴⁰ IAQM, 2020. A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites. V1.1, May 2020.

⁴¹ IAQM, 2017. Land-Use Planning and Development Control: Planning for Air Quality. January 2017.

⁴² Assumptions are based upon traffic movements calculated for similar hydro schemes of similar magnitude in the local area which have identified AADTS of LDVs and HDVs to be consistently below 500 and 100 AADT, respectively throughout the construction phase.

16.3.15 Embedded mitigation would be implemented as part of the Proposed Development and detailed within a designated 'Dust and 'Air Quality Management Plan (AQMP)' prepared as part of the Construction Environmental Management Document (CEMD). The principal measures that would be included within the AQMP with regard to NRMM emissions include the following:

- All stationary NRMM (i.e. generators) to be located away from receptors, as far as possible.
- All vehicles to switch off engines when stationary – no idling vehicles.
- All plant should maintain good standards, serviced in line with manufacturer recommendations

16.3.16 Based upon the above and the embedded mitigation measures the level of risk from NRMM emissions is considered to be negligible with effects unlikely to be significant and have therefore been proposed to be scoped out the EIA.

Decommissioning Phase

16.3.17 Decommissioning is not envisaged. However, if required, effects would likely be less than those associated with the development 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. An assessment of the decommissioning phase is therefore proposed to be scoped out, although a commitment to reviewing the impact of this phase would be made immediately prior to decommissioning works proceeding.

Cumulative Impacts

16.3.18 Following a preliminary review of the consented developments within the THC's planning system, receptors within the area are greater than 200m from other potential construction sites. Therefore, cumulative impacts on air quality are proposed to be scoped out of the EIA.

16.4 Proposed Scope of Assessment

16.4.1 Table 16.3 summarises the potential impacts proposed to be scoped in and out of the EIA with regard to air quality.

Table 16-3: Summary of Impacts Relating to Air Quality Scoped in (✓) and Scoped Out (x)

	Construction	Operation	Decommissioning
Dust Impacts at Human Receptors	x	x	x
PM ₁₀ impacts at Human Receptors	x	x	x
Dust Impacts at Ecological Receptors	x	x	x

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Traffic Emissions at Ecological Receptors	x	x	x
Traffic Emissions at Human Receptors	x	x	x
NRMM Emissions at Ecological Receptors	x	x	x
NRMM Emissions at Human Receptors	x	x	x
Cumulative Effects	x	x	x

16.5 Questions to Consultees

16.5.1 Do consultees agree that air quality impacts can be scoped out of the EIA Report, subject to the following:

- Preparation of the Dust and Air Quality Management Plan within the CEMP; and
- Provision of supporting information provided to THC to confirm construction and operational phase traffic numbers prior to the submission of the EIA Report.

17. Socio-economics and Tourism

17.1 Introduction

- 17.1.1 This section provides a brief introduction of potential socio economic and tourism effects of the construction and operation of the Proposed Development. This includes 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.
- 17.1.2 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.

17.2 Baseline Description

- 17.2.1 The baseline environment will cover and compare three study areas:
- Local Area, comprising electoral wards (Caol and Mallaig) that cover the location of the development and nearest settlements (for instance Invergarry to the east);
 - Highland (the local authority); and
 - Scotland.
- 17.2.2 The economic impacts will be quantified and presented for the Highland and Scotland study areas.
- 17.2.3 The baseline study will cover:
- 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;
 - Analysis of tourism statistics in Scotland, Highland and the local area (Caol and Mallaig);
 - Identification of local tourism assets, including accommodation providers, visitor attractions and assets;
 - 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;
 - 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; and

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- 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).
- 17.2.4 Important attractions attributed to Highland and Glengarry will also be identified due to their increased sensitivity.
- 17.2.5 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:
- National Strategy for Economic Transformation, 2022;
 - National Planning Framework 4 (Deposit Draft), 2022/23;
 - Net Economic Benefits and Planning, 2016;
 - 2020 Routemap for Renewable Energy in Scotland, 2020;
 - Highland and Islands Region Strategy for Economic Transformation, 2022,
 - Inverness and Highland City-Region Deal, 2016;
 - Tourism Scotland 2030, 2020;
 - Highland Visitor Management Plan, 2022; and
 - Strategic Tourism Infrastructure Development Plan for Highlands, 2022
- 17.2.6 These policy documents would also allow for the relevant baseline to be collected.

17.3 Potential Significant Effects

- 17.3.1 The issues that will be considered in this assessment will include the potential socio-economic and tourism effects associated with the Proposed Development.
- 17.3.2 An economic impact analysis will be undertaken using the methodology developed by RenewablesUK and deployed by MKA Economics, which has been used to assess over 30 renewable developments across Scotland, including the Earba and Coire Glas Pumped Storage Schemes, both in the Highlands. 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.

- 17.3.3 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, neither at the local authority level nor in the areas immediately surrounding developments.
- 17.3.4 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, tourism businesses, local accommodation, and tourism and recreational trails, such as:
- Spidean Mialach munro;
 - Giariach munro;
 - Gleourach munro;
 - Kinloch Hourn and walking routes to Knoydart;
 - Sporting Estate activities; and
 - Local tourism and recreational routes and public Rights of Ways.
- 17.3.5 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 as in many cases the tourism assets are also recreational assets and therefore this assessment will, in part, assess similar receptors when considering tourism/recreational trails and routes.
- 17.3.6 Other issues, such as the implications for the agricultural and forestry sectors, may emerge during the assessment and will require consideration.
- 17.3.7 Effects will be considered based on the guidance from guidelines for Environmental Impact Assessments and a Handbook for EIA (2004)

Construction

- 17.3.8 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 Power Station
 - Outlet Area
 - Access Tunnels
 - Access Roads; and
 - Rock Spoil Management - In addition to the above, there would be a need for site establishment and lay down areas.
- 17.3.9 Employment estimates will be based on dialogue with the Developer, their technical consultants, as well as drawing on the economic consultant's own knowledge from

other pumped storage schemes, including Earba and Coire Glas Pumped Storage Schemes in the Highlands. 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; and
- Labourers.

17.3.10 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

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

17.3.12 Information from other pumped storage schemes suggests that the types of staff likely to be employed once fully operational include:

- Station managers;
- Assistant station managers;
- Civil engineers;
- Electrical engineers;
- Mechanical engineers;
- Electrical/mechanical fitters;
- Administration officers;
- Cleaners; and
- Security guards.

17.3.13 There would be a range of other 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 power station 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 in exceptional circumstances.
- Periodic inspection of the underground tunnel works and statutory inspections of the dams and ancillary works; and
- As required maintenance of the access tracks and other infrastructure as noted during routine visits to the site.

17.3.14 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 Highlands and Scotland levels.

17.3.15 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 significant for the construction related activity, and it is assumed that displacement would be low 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.

17.3.16 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 national, regional and local 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.

17.4 Proposed Scope of Assessment

17.4.1 There is no established guidance for conducting a socio-economic assessment as part of the EIA process. It is therefore proposed that the assessment uses desk-based information sources to assess the likely scale of effects, supplemented by consultation with local stakeholders, informed by professional judgement. Cross-

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reference would be made to other technical assessments to consider potential effects on recreational assets and other leisure and tourism attractions in the vicinity, for example due to visual impact, traffic, and noise.

- 17.4.2 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.
- 17.4.3 Socio-economic impacts associated with pumped storage schemes primarily relate to job creation, use of local services and income spent in the locality of a project. These impacts can have both short and long term, direct beneficial effects for surrounding local communities.
- 17.4.4 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.
- 17.4.5 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 more specifically the Caol and Mallaig ward. 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, THC, The Highland Tourism Partnership and other relevant consultees within the vicinity of the Proposed Development.
- 17.4.6 In respect of recreation and access, these will be assessed in the Recreation and Land Use Chapter and are therefore scoped out of the Socio-Economic and Tourism Assessment.
- 17.4.7 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.
- 17.4.8 The applicant is committed to implementing accepted good practice measures during construction and operation, thereby ensuring that many potential adverse social and economic effects can be avoided or reduced. Possible mitigation measures may include the following:
- The programming of the transportation of abnormal loads wherever practicable to avoid peak visitor, or other busy periods, to mitigate the effect of the Proposed Development on particularly sensitive locations, tourist/visitor viewpoints, and road corridors.
 - Local sourcing of construction materials where possible to reduce the import and export of materials to and from the site, limiting traffic movements on the surrounding road network and hence minimising related adverse effects upon visitors and locals.

17.4.9 It is considered that there are opportunities to enhance positive effects resulting from the Proposed Development, including:

- Local promotion of contract and supply chain opportunities during construction and operation to maximise the use of local business and labour.
- Skills development and training programmes to increase local take up of training, apprenticeship and employment opportunities associated with the Proposed Development.
- Establishing effective linkages with local job centres, employability programmes and partners.
- Promotion of the wider area and its opportunities as part of the marketing of the Proposed Development.

17.5 Questions to Consultees

17.5.1 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council (Access, Tourism and Economic Development Teams);
- VisitScotland (as national tourism lead body);
- Highland Tourism Partnership (as the industry representative body for tourism);
- The Scottish Rights of Way and Access Society (ScotWays);
- Mountaineering Scotland; and
- Any local recreation and tourism groups.

17.5.2 Are the ECU, THC and Statutory Consultees aware of any key sensitive receptors, which have not already been highlighted, that should be taken into account?

17.5.3 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?

17.5.4 Do consultees agree with the proposed scope of the socioeconomics and tourism assessment?

18. Forestry

18.1 Introduction

- 18.1.1 This section sets out the proposed approach to the assessment of the potential effects on trees and woodland during construction and operation of the Proposed Development, including the potential construction and operation of the preferred SAR and the Construction Compound as described in sections 3.5 and 3.7. This section:
- Describes the key forestry and woodland issues associated with the Proposed Development;
 - Outlines the trees and woodland baseline information for the Proposed Development, based on desk study and site visits during winter 2023-24;
 - Outlines the potential effects of the Proposed Development upon trees and woodland; and
 - Outlines the measures being taken to review these impacts in more detail for the purposes of the EIA, and then outlines possible measures to minimise and mitigate these impacts during the detailed design and construction stages of the project.

18.2 Baseline Description

Statutory Designations

- 18.2.1 There are no statutory designations for their native woodland interest within the site, and there are no designated sites with notified native woodland features within 300 metres of the Proposed Development.
- 18.2.2 The nearest designated site important for native woodland features is the Garry Falls Site of Special Scientific Interest (SSSI) which is located in close proximity to the northwest of a potential new access point from the A87 onto the preferred SAR within the National Forest Estate, and which is notified for its Upland Mixed Ashwood and Bryophyte features (refer to **Figure 9.1: Environmental Designations**).

Ancient woodland and native woodland habitats

- 18.2.3 Desk studies have indicated the presence of a number of notable ancient woodland features in the vicinity of the Proposed Development, mainly in relation to the preferred SAR. These woodland features include Upland Birchwood, Upland Oakwood and Native Pinewood BAP Priority Habitats, as well as areas defined as 'Core' and 'Buffer' zones on the Caledonian Pinewood Inventory (CPI), and areas of Plantations on Ancient Woodland Sites (PAWS).
- 18.2.4 These ancient woodland remnants include significant numbers of mature and veteran trees, which are likely to be of particularly high biodiversity value and which may also provide valuable habitat and possible breeding sites for protected species such as bats.

Commercial forestry and non-native woodlands

- 18.2.5 The baseline surveys and desk study have confirmed the presence of both mature non-native conifer crops (>40 years old) and young non-native conifer crops (<10 years) within the construction corridor for the preferred SAR and the construction compound.

18.3 Potential Significant Effects

- 18.3.1 Potential significant effects on the trees and woodlands of the area include:
- The construction corridor for the preferred SAR and the construction compound would potentially involve significant impacts upon both mature non-native conifer crops (Sitka spruce and Lodgepole pine, >40 years old) and upon young conifer crops (Sitka spruce, <10 years old).
 - The impacts on non-native conifers would be focused primarily on two areas of commercial woodland: firstly the construction compound which could potentially be situated in an area of commercial conifers on the National Forest Estate (FLS); and secondly within the commercial forestry plantation to the west of the Kingie river, where a new road would be constructed through a maturing unthinned conifer crop for a distance of around 2.5km.
 - The impacts at the above sites (potential construction compound and preferred SAR) would likely require approximately 25ha of woodland removal within non-native conifer woodland.
 - The construction corridor for the preferred SAR could potentially also involve significant impacts upon Ancient Semi Natural Woodland (ASNW) and Plantation on Ancient Woodland Sites (PAWS) habitats, including potential impacts on the Glengarry Caledonian Pinewood Inventory site.

18.4 Scope of Assessment

- 18.4.1 A desk-based review of available forestry and woodland datasets was carried out for the footprint of the Proposed Development. In addition, a desk-based review and a preliminary walkover survey of the preferred SAR was carried out in December 2023. The Proposed Development was considered in the context of the Highland Council Supplementary Guidance on Trees Woodland and Development (2013) and the datasets reviewed were as follows:
- Scottish Ancient Woodland Inventory;
 - Native Woodland Survey of Scotland;
 - Caledonian Pinewood Inventory;
 - SSSI and SAC boundaries (and a review of Sitelink data including Citation and Site Management Statements for nearby SSSI sites); and
 - FLS compartment database and relevant existing FLS Land Management Plan for Glengarry Forest.
- 18.4.2 The results of the preliminary forestry and woodland desk study and field surveys will be used to inform the forestry and woodland related component of the EIA. Where significant effects upon forestry, trees and woodland are predicted, then

specific additional survey and consequent mitigation measures will be proposed that would minimise potential adverse effects during both the construction and operational phases of the Proposed Development. These are likely to include a commitment to carry out a full Tree Survey and Tree Protection Plan in accordance with BS 5837: 2012 (Trees in Relation to Design Demolition and Construction) prior to any site excavations or groundworks in the vicinity of ancient woodland and veteran native trees.

- 18.4.3 Any proposals for significant woodland removal will be accompanied by a detailed proposal for Compensatory Planting in accordance with the Scottish Governments' Control of Woodland Removal policies. In addition, the proposals for future maintenance of the new woodland created as Compensatory Planting will be outlined as part of an overall Forestry Plan for the development. Additional native woodland restoration and enhancement measures which are proportionate to the impact of the Proposed Development will also be considered in recognition of the objective of Scottish Planning Policy to achieve biodiversity benefits from development.

18.5 Questions to Consultees

- 18.5.1 Is the scope of forests, woodlands and trees assessment proposed for the EIA acceptable?
- 18.5.2 Are the ECU, THC and Statutory Consultees aware of any additional key sensitive receptors, which have not already been highlighted, that should be taken into account?
- 18.5.3 Are there any other key forestry and woodland issues which should be taken into account?

19. Recommended Features to be Scoped out of EIA

19.1 Population and Human Health

- 19.1.1 The Proposed Development is located in a rural area with relatively few nearby sensitive receptors. The closest sensitive receptors to the east of the main PSH works are the properties at Kingie Lodge on the C1144. The preferred SAR proposes to bypass all properties within the Glen.
- 19.1.2 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.
- 19.1.3 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.
- 19.1.4 The visual assessment described in Section 7 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.
- 19.1.5 Potential impacts on water quality during construction and operations are addressed in Section 12 of this Scoping Report and will be considered further as part of the Geology, Soils and Water assessment in the EIA.
- 19.1.6 Construction noise and vibrations are addressed in Section 15 of this Scoping Report and will also be considered further as part of the noise and vibrations assessment in the EIA.
- 19.1.7 As potential effects on human health that are relevant to the Proposed Development will be adequately covered in the EIA it is proposed that a separate assessment be scoped out of the EIA.

19.2 Risk of Major Accidents

- 19.2.1 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. Management of the reservoirs and risks associated with failure of any of the proposed dams would be covered by the Reservoirs (Scotland) Act 2011, following grant of any planning permission, rather than form part of the EIA. Other potential flood risk impacts are addressed in Section 12 of this Scoping Report and will be further considered as part of the EIA.
- 19.2.2 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 to be very 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.

19.3 Climate Change

- 19.3.1 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.
- 19.3.2 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 Section 16 of this Scoping Report. It is 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.
- 19.3.3 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 12, 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. There will be a loss of localised areas of woodland as part of the upgrade works required for the preferred SAR. 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.
- 19.3.4 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.

19.4 Material Assets

- 19.4.1 The main PSH works would be located between the East and West Glenquoich Estates and land owned by SSE Generation.
- 19.4.2 The preferred SAR crosses land owned by FLS, Glen Kingie Forest, Kingie Estate, SSE Generation and East Glenquoich Estate.
- 19.4.3 The estates are used for highland sports, commercial forestry, hydroelectric generation, holiday accommodation and walking. These activities would be disrupted on or in the vicinity of the Proposed Development during construction.
- 19.4.4 The existing Quoich Hydro station located on SSE Generation's land would be expected to continue operations for the majority of the construction period. However, a temporary drawdown on Loch Quoich may be required to allow the installation of the lower inlet/outlet structure within Loch Quoich.

- 19.4.5 Most of the impacts on existing material assets would be temporary and limited to the construction phase of the Proposed Development only. 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.

19.5 Telecommunications, TV, Radio Links

- 19.5.1 The Proposed Development is 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.

19.6 Questions to Consultees

- 19.6.1 Do the Consultees agree that the features detailed in sections 19.1 to 19.5 above can be scoped out of the EIA?

20. Response to the Scoping Report

- 20.1.1 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.
- 20.1.2 The responses to the Scoping Report will inform the detailed methodology for each aspect of the environmental 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.
- 20.1.3 The ECU will seek the views of those consultees listed in Section 2.2 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 Allan Brogan

- 20.1.4 This Scoping Report is also available online at www.fearnastorage.co.uk.

Glossary and List of Abbreviations

Glossary

Term	Meaning
Access Tunnel	A tunnel built to create access from the surface to an area 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)
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 (2×10^{-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.
L _{Aeq,T}	L _{Aeq} 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
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

Fearna Pumped Storage Hydro Scheme

Term	Meaning
Dam	A barrier built 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 to or from the pump turbines
The Applicant	Fearna PSH Ltd.
The Developer	Gilkes Energy Limited
The EIA Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
The Proposed Development	The (up to) 2000 Megawatt Fearna 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, surge shafts and other structures below ground, connecting the upper and lower reservoirs, via the hydro pump / turbine powerhouse.

List of Abbreviations

Abbreviation	Meaning
AADT	Annual Average Daily Traffic
AIA	Arboricultural Impact Assessment
AIL	Abnormal Indivisible Loads
AOD	Above Ordnance Datum
ATC	Automatic Traffic Count
AQMA	Air Quality Management Area

Fearna Pumped Storage Hydro Scheme

Abbreviation	Meaning
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BMP	Biosecurity Management Plan
BS	British Standard
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan
dB	decibel
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DTM	Digital Terrain Model
EC	European Commission
EcIA	Ecological Impact Assessment
ECU	Energy Consents Unit
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
FLS	Forestry and Land Scotland
FRA	Flood Risk Assessment
GI	Ground Investigation
GW	Gigawatt
GWDTE	Groundwater Dependent Terrestrial Ecosystems
GWh	Gigawatt Hours
ha	Hectares

Fearna Pumped Storage Hydro Scheme

Abbreviation	Meaning
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HSE	Health and Safety Executive
HRA	Habitats Regulations Appraisal
HwLDP	The Highland Wide Local Development Plan
IEA	Institute of Environmental Assessment
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
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Area
LCT	Landscape Character Types
LDP	Local Development Plan
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
NPF4	The 4 th National Planning Framework
NPPG	National Planning Policy Guidelines

Fearna Pumped Storage Hydro Scheme

Abbreviation	Meaning
NRTF	National Road Traffic Forecast
NVC	National Vegetation Classification
OS	Ordnance Survey
PAN	Planning Advice Note
PM	Particulate Matter
PSH	Pumped Storage Hydro
PWS	Private Water Supply
RBMP	River Basin Management Plan
SF	Scottish Forestry
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
TWL	Top Water Level
UK	United Kingdom
WFD	Water Framework Directive
ZTV	Zone of Theoretical Visibility