Chapter 1: Introduction and Background

Figures

1 Introduction and Background

1.1 Introduction

1.1.1 This Environmental Impact Assessment Report (EIA Report) has been prepared and submitted by ASH design + assessment Limited (ASH) and SSE Renewables Developments (UK) Limited (SSE Renewables) on behalf of Coire Glas Hydro Pumped Storage Limited.

1.1.2 Coire Glas Hydro Pumped Storage Limited (referred to hereafter as the Applicant) is a wholly owned subsidiary of SSE plc established for the development and construction of Coire Glas Pumped Storage scheme.

1.1.3 The Applicant is proposing to construct Coire Glas Pumped Storage scheme (referred to hereafter as "The Proposed Development") between Loch Lochy (lower reservoir) and a new reservoir created at Loch a' Choire Ghlais (upper reservoir). The scheme would have a maximum generating capacity of up to 1500 megawatts (MW).

1.1.4 The primary function of The Proposed Development would be to extract, store and release energy to or from the electricity transmission system as required to help balance supply and demand for power at a national scale.

1.1.5 The Applicant is submitting an application for consent to construct and operate The Proposed Development to the Scottish Ministers under Section 36 of The Electricity Act 1989, to include deemed planning permission under Section 57(2) of The Town and Country Planning (Scotland) Act 1997. This EIA Report is submitted in support of the application for consent.

1.2 Background to the Scheme

1.2.1 In February 2012, Coire Glas Pumped Storage Scheme Environmental Statement (ES) was submitted in support of an application for consent under the Electricity Act 1989 to construct and operate a 600 MW hydroelectric pumped storage scheme at Coire Glas. Section 36 consent was granted on 13th December 2013, with an extension to this granted by Scottish Ministers on 14th March 2017, which is due to expire on 12th December 2021 (referred to hereafter as The Consented Development).

1.2.2 To maximise the potential of the site, in addition to contributing to The Scottish Government's commitment to pumped storage hydro[1], the Applicant is now proposing to increase the generating capacity of the project from the consented 600 MW to up to 1500 MW.

[1] The Scottish Energy Strategy (December 2017) recognises that pumped storage hydro will play an important role in achieving a balanced energy portfolio.

1.3 Development Context

1.3.1 The key components of The Proposed Development are situated on Forestry Commission (Scotland) land to the south west of Laggan Locks, approximately 19 kilometres (km) to the south west of Fort Augustus in The Highlands of Scotland, as shown on Figure 1.1.

1.3.2 The Proposed Development comprises two main areas of work: the upper reservoir works comprising the upper reservoir, dam, upper control works, surge shaft and ventilation shaft; and the lower reservoir works comprising the lower control works, a jetty, administration building, and emergency access tunnel portal on the shore of Loch Lochy, linked by a series of underground tunnels and the underground cavern power station. The lower slopes encompass a combination of woodland and commercial forestry whilst the upper area consists primarily of upland moorland with no active land use.

1.3.3 The upper reservoir works would be accessed off the A87 at White Bridge (Invergarry) utilising existing forestry tracks (some of which require to be upgraded) and the creation of new tracks. The lower reservoir works would be accessed off the A82 at North Laggan, following the minor public road and existing forestry tracks, both of which would require upgrading.

1.4 Project Need

1.4.1 Hydro power is a very flexible method of electricity generation due to its ability to rapidly start and stop without constraint. Pumped storage hydro schemes add to this the ability to consume and store large quantities of energy, making them the most flexible of all electricity generation technologies. The role which pumped storage hydro has traditionally played in power network management is primarily in managing relatively short term differences between electricity supply (generation) and demand (consumption). As the proportion of electricity generated from less-flexible renewable sources rises[2], this role will become increasingly important and may begin to include the management of longer term imbalances due, for example, to frontal weather systems. The Applicant believes that highly flexible large scale energy storage schemes will become essential to compliment the ongoing significant increase in less-flexible energy generation due largely to the development of renewable energy.

1.4.2 Due to unavoidable inefficiencies in the energy conversion processes, all energy storage systems use more energy than they generate. Pumped storage hydro is the only mature energy storage technology which can be deployed on such a large scale and has one of the highest cycle efficiencies of any energy storage process[3].

[2] Scotland's target for renewable electricity generation is for renewables to generate the equivalent of 100% of gross annual consumption by 2020 (2020 Routemap for Renewable Energy in Scotland, updated in 2015, The Scottish Government).

[3] Scottish Renewables (2016), The Benefits of Pumped Storage Hydro to the UK.

1.4.3 Pumped storage hydro is therefore an efficient electricity storage solution which helps balance supply and demand across the National Grid, and has the ability to quickly respond to varying demands. As the UK seeks to increase the proportion of low-carbon generation in its electricity mix, pumped storage hydro is an essential component of the electricity network in maintaining electricity system flexibility.[4]

1.4.4 The installed capacity for The Proposed Development would be up to 1500 MW, with an energy storage capacity of up to 30 Gigawatt Hours (GWh). The Proposed Development would be unique when compared to other existing pumped storage hydro schemes in the United Kingdom (Dinorwig, Ffestiniog, Cruachan and Foyers) in its ability to extract and release energy to or from the electricity transmission system for a much longer period.

1.5 Proposed Changes from The Consented Development

1.5.1 Due to the increase in generating capacity of The Proposed Development, which is more than doubling the capacity of The Consented Development, certain modifications would be required to the consented design. It is anticipated that the main design changes of The Proposed Development compared to The Consented Development would be:

- Increase in size of underground waterway system to enable water to be transferred through the system to support the larger generating / pumping capacity;
- Increase in size of the underground cavern power station to facilitate larger and/or greater number of reversible pump-turbines, motor generators, transformers and other associated equipment;
- Increased footprint of the lower control works (i.e. screened inlet/outlet structures and stop logs);
- Increase in the excavated material generated by the underground works (tunnels, shafts and caverns);
- Requirement for a surge shaft (and associated access track), to respond to the fluctuations in pressure within the tunnels due to increased flow rates;
- Requirement for a ventilation shaft adjacent to the surge shaft to circulate fresh air through the access tunnel and underground cavern power station;
- Requirement for an intake tower within the reservoir footprint;
- Creation of a temporary haul road to connect the lower reservoir works with the upper reservoir works to enable tunnel spoil (rock), excavated from the underground works, to be transported and used to supplement construction materials at the dam;
- Construction duration likely to increase; and
- The flow rate of water being transferred between the upper and lower reservoirs would be greater, however, it is not intended to manage Loch Lochy outwith the existing level range (as per The Consented Development).

[4] Scottish Renewables (2016), The Benefits of Pumped Storage Hydro to the UK.

1.5.2 A full description of The Proposed Development is included in Chapter 3: Description of Development.

1.6 Consent Requirements

1.6.1 Consent for construction of The Proposed Development is being sought by way of a new application to the Scottish Ministers under Section 36 of the Electricity Act 1989, as amended. If Section 36 consent is granted the Scottish Ministers may also direct under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 that planning permission for The Proposed Development is deemed to be granted.

1.6.2 Given the complexities associated with procuring, designing and constructing a project of this magnitude, the Applicant requests that if consented, a five year period of consent be granted, as was the case for The Consented Development.

1.6.3 Consent for abstraction, diversion and use of water for generating electricity is being sought under Section 10(5) and Schedule 5 of the Electricity Act 1989 by the Applicant.

1.6.4 The Consented Development was assessed and approved by Scottish Environment Protection Agency (SEPA) under the Water Framework Directive and the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR) and a CAR licence was issued on 23rd September 2013. A revision to this CAR licence would be required from SEPA for The Proposed Development and this will be subject to a separate application.

1.6.5 The dam forming the upper reservoir would create a "large raised reservoir" under the terms of the Reservoirs (Scotland) Act, 2011. A qualified civil engineer (the "Construction Engineer") would therefore need to be engaged under the 2011 Act to oversee design and construction of the new upper reservoir.

1.6.6 A separate application would be made under Section 37 of the Electricity Act (1989) for the grid connection.

1.7 Environmental Impact Assessment

1.7.1 Environmental Impact Assessment (EIA) is the process of identifying and assessing the likely significant environmental effects of a proposed development, thus enabling such effects to be fully understood and taken into account during the design evolution of the project. The EIA process is also used to develop mitigation measures to avoid, reduce or offset any adverse effects where possible.

1.7.2 The results of the EIA also ensure that decision makers (such as The Energy Consents Unit, Local Planning Authority, statutory and non-statutory consultees) as well as the local community and other interested parties, are aware of the potentially significant environmental effects that could arise from a development so that these matters can be considered before a decision is taken on whether or not a development should be approved.

1.7.3 A Scoping Report for The Proposed Development setting out the proposed scope of the EIA Report was submitted to the Scottish Ministers on 12th May 2017 with a request for a formal Scoping Opinion[5].

1.7.4 During July 2017, following a period of consultation with statutory and non-statutory consultees, Scottish Ministers issued their Scoping Opinion for The Proposed Development, which defined what issues should be addressed in the EIA. A copy of the Scoping Opinion is included in Appendix 4.1 of Chapter 4: EIA Approach, Scoping and Consultation. A matrix detailing where the key issues raised in the Scoping Opinion have been addressed within the EIA Report is included in Appendix 4.2.

1.7.5 This EIA Report has been produced with reference to the Good Practice Guidance published by the Scottish Government's Energy Consents & Deployment Unit in January 2013, together with its Guidance on the EIA Regulations and the supplementary guidance on the amending Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2008. Consideration is also given to advice contained in Planning Circular 1/2013 (Environmental Impact Assessment) (and amended in 2017 to take account of the 2017 EIA Regulations) where relevant. Further information on the approach taken in this EIA is included in Chapter 4: EIA Approach, Scoping and Consultation.

1.8 Structure of the EIA Report

1.8.1 This EIA Report comprises a number of volumes as detailed below.

Volume 1: Non-Technical Summary

1.8.2 The Non-Technical Summary (NTS) summarises in non-technical language the findings of the EIA Report.

Volume 2: Written Statement

1.8.3 The Written Statement (this document) describes the project and the legal and policy framework within which the application will be determined. Details of how the design has evolved, is also included. The Written Statement includes the individual assessment undertaken under each of the specialist environmental topics identified, providing an assessment of the likely significant effects of The Proposed Development.

1.8.4 Volume 2 of the EIA Report contains the following chapters:

- 1: Introduction and Background
- 2: Consideration of Alternatives
- 3: Description of Development
- 4: EIA Approach, Scoping and Consultation
- 5: Planning and Policy Context

[5] Under The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000

- 6: Water Management
- 7: Spoil Management
- 8: Landscape Character
- 9: Visual Amenity
- 10: Terrestrial Ecology
- 11: Ornithology
- 12: Aquatic Ecology
- 13: Fish
- 14: Geology and Water Environment
- 15: Cultural Heritage
- 16: Traffic and Transport
- 17: Noise and Vibration
- 18: Air Quality
- 19: Land Use and Recreation
- 20: Socio-Economic
- 21: Forestry

Volume 3: Figures

1.8.5 This volume includes all accompanying figures referred to in Volume 2, with figure numbering corresponding to the chapter numbers e.g. Figure 1.1, 2.1 etc.

1.8.6 Wirelines and visualisations produced from key locations, as agreed with The Highland Council and SNH, are also included in this volume (see Figures 3.4 to 3.7). All visualisations have been produced in accordance with current guidance issued by The Highland Council (Visualisation Standards for Wind Energy Developments, July 2016).

Volume 4: Appendices

1.8.7 This volume includes all accompanying technical appendices referred to in Volume 2, with appendix numbering corresponding to the chapter numbers e.g. Appendix 1.1, 2.1 etc.

Supporting Documents

1.8.8 A Planning Statement is included with the application, considering the acceptability of The Proposed Development in the context of existing and emerging planning policies.

1.8.9 A Design Statement setting out the design principles that have influenced and shaped the design of The Proposed Development is included in Appendix 3.1.

1.8.10 A Draft Construction Environmental Management Plan (CEMP) is included in Appendix 3.3 and contains project environmental constraints and committed environmental mitigation measures identified in the EIA Report, along with industry best practice information applicable to the construction phase of The Proposed Development.

1.8.11 A Community Consultation Report detailing engagement regarding The Proposed Development between the Applicant and local Community Councils, statutory consultees and members of the public is included in Appendix 4.3.

1.9 The Project Team

1.9.1 In undertaking this environmental assessment and preparation of the EIA Report, the core ASH team has been supported by the following organisations and individuals, providing specialist inputs as follows:

- Planning – WYG;
- Landscape Character – ASH;
- Visual Amenity – ASH;
- Ornithology – EnviroCentre Ltd.;
- Terrestrial Ecology (Habitats and Mammals) – Blairbeg Consulting;
- Aquatic Ecology – EnviroCentre Ltd.;
- Fish – Waterside Ecology and EnviroCentre Ltd.;
- Geology and Water Environment – SLR Consulting;
- Cultural Heritage – Catherine Dagg;
- Traffic and Transport – WYG;
- Noise and Vibration – Spectrum Acoustics;
- Air Quality – SLR Consulting;
- Land Use and Recreation – ASH;
- Forestry – Neil McKay Forestry Consultant Ltd.;
- Socio-economics – MKA Economics; and
- Engineering and Water Management - MWH UK Ltd. (now operating as Stantec UK).

1.9.2 Other inputs relating to the construction and future maintenance of The Proposed Development have been provided by the Applicant and Stantec UK.