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Red John Pumped Storage Hydro Scheme

Volume 2, Chapter 1: Introduction

ILI (Highlands PSH) Ltd.

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Quality Information

Prepared By	Checked By	Verified By	Approved By
Sarah Young	Victoria Deacon	Catherine Anderson	Catherine Anderson
Graduate EIA Consultant	Principal EIA Consultant	Associate Director	Associate Director

Revision History

Revision	Revision Date	Details	Authorised	Name	Position
1	November 2018	Submission	CA	Catherine Anderson	Associate Director

Distribution List

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1 Introduction

1.1 Introduction

1.1.1 This Environmental Impact Assessment (EIA) Report has been prepared by AECOM on behalf of Intelligent Land Investments (ILI) (Highlands PSH) Ltd. (hereafter referred to as the 'Applicant'). This EIA Report has been prepared to accompany an application for consent to construct, operate and decommission a pumped storage hydro scheme (PSH) to be known as the Red John Pumped Storage Hydro (referred to throughout as the 'Development') under Section 36 of the Electricity Act 1989 (the 'Act').

1.1.2 This EIA Report describes the results of the EIA for the Development. This chapter introduces the Development and sets out the content and structure of the EIA Report.

1.2 About the Development

Background

1.2.1 Hydropower is an established electricity generation technology in Scotland. The first public hydro scheme was built by the Benedictine monks at Fort Augustus Abbey in 1891, to power the abbey and village at the southern end of Loch Ness. However, it was not until after World War II that the adoption of hydropower became widespread across Scotland.

1.2.2 The 1943 Hydro Electric Development (Scotland) Act drove the creation of the North of Scotland Hydro Electric Board. The efforts of the Board, combined with growing energy demands in particular from the aluminium industry, resulted in significant development in hydropower technology. By 1965, 54 main hydropower stations had been constructed with a total generating capacity of more than 1000 megawatts (MW) (Ref 1) including 460 MW within the Highland Council area (Ref 2).

1.2.3 The first Scottish PSH scheme; Cruachan Power Station (440 MW) opened in 1965. At the time it was the first PSH of its scale in the world (Ref 3) and is still the largest operational hydropower scheme in Scotland.

1.2.4 Today, hydropower is a commercial technology in Scotland that accounts for around 10% of Scotland's total energy generation (Ref 4). As set out within the Energy Strategy: The Future of Energy (Ref 5) further development of hydropower in Scotland and PSH in particular is supported by the Scottish Government in the pursuit of a flexible and resilient future energy network and power supply.

1.2.5 A Scottish-wide review of the untapped hydropower potential to identify locations suitable for PSH development was conducted by the Applicant. Through this review the potential for a PSH scheme utilising Loch Ness was identified.

1.2.6 There are a number of hydro-electric schemes that currently utilise Loch Ness and surrounding water bodies. This includes Foyers PSH (305 MW), which has been operating since 1974 (whilst being initially constructed in the late 19th Century to power an aluminium smelting plant) (Ref 1) and the 100 MW Glendoe conventional storage hydro-electric scheme that began generation in June 2009 (Ref 6). In addition there are also several smaller conventional hydropower schemes in operation or under construction in the Loch Ness area. These include Coiltie Hydro (2 MW), which is a commercial installation, and private, run-of-the-river schemes such as Allt Killianan (0.1 MW) and the Dell Estate Hydro

(0.3 MW). The prevalence of hydropower in the Loch Ness area is facilitated by the local topography and geology being suited to hydro development.

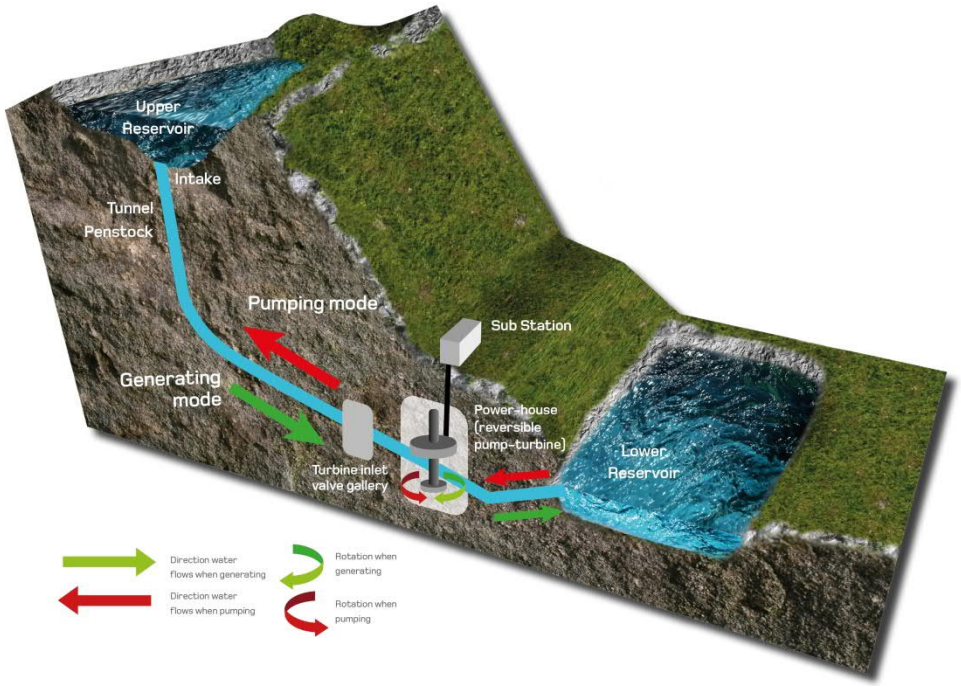
1.2.7 Given the demonstrable success of hydropower in the Loch Ness area, further feasibility work has been undertaken and has reaffirmed the suitability of the site selection for the development of a PSH scheme. The resultant Development is known as the Red John Pumped Storage Hydro.

Concept of Pumped Storage

1.2.8 The main principle of pumped storage is to release water from an upper reservoir to a lower reservoir when there is a demand to generate electricity and to pump water from a lower to an upper reservoir when there is either a low demand or excess supply of electricity. As the water transfers between the upper and lower reservoir, the water passes through the pumped turbine either generating or storing electricity depending on what mode the scheme is in.

1.2.9 Pumped storage is currently the most efficient technology for storing large amounts of energy and is capable of generating and pumping, in a relatively short period of time, when there is a demand or a surplus of electricity. Pumped storage is complementary to variable intermittent energy sources such as wind and solar and is able to reduce the curtailment of excess generation by providing load and energy storage for the grid. Therefore, can enable greater deployment of renewable energy into the grid and at the same time providing flexibility to generation plants to meet the demands from the grid.

1.2.10 The schematic below provides an indicative view of how a pumped storage system works. Note that this does not accurately represent the proposed scheme for the Development.



Insert 1.1: Schematic of a Typical Pumped Storage Hydro Scheme

Red John Pumped Storage Hydro

1.2.11 The Development will have a storage capacity of approximately 2800 megawatt hours (MWh) and an installed electrical generation capacity of over 50 MW. The Development is located in the Scottish Highlands, approximately 14 kilometres (km) southwest of Inverness, centred on National Grid Reference (NGR) NH 60479 32531.

1.2.12 As illustrated on Figure 1.1: Location Plan (in Volume 3 of this EIA Report), the Development is situated between Loch Duntelchaig and Loch Ness.

1.2.13 The Development Site boundary is shown by the red outline on Figure 1.2 (Volume 3) and includes all the land that is required during construction, operation and decommissioning including Headpond and Embankment, Tailpond Inlet / Outlet structure, Jetty, Cofferdam and Pier, Waterways, Power Cavern, Access Tunnels, Access and other associated permanent and temporary infrastructure. The total area within the red line boundary is approximately 950 hectares (ha). Not all of the area within the red line boundary will be developed.

1.2.14 The Development is currently is currently known as Red John, however this is a working title and is expected to change prior to the determination of Section 36 application. This is in line with the feedback received prior to the application being submitted.

The Applicant

1.2.15 The Applicant has been developing renewable energy projects for nearly 15 years, ranging from wind farms down to the single medium sized wind turbines associated with the UK's Feed-in Tariff. In recognition of their success, the Applicant was a finalist at both the 2014 and 2015 Scottish Green Energy Awards.

1.2.16 The Applicant has now diversified into PSH as they seek to play their part in meeting Scotland's future energy needs. Their proposal to develop three PSH plants in Scotland was acknowledged in the Draft Scottish Energy Strategy: The future of energy in Scotland published by the Scottish Government in January 2017 for public consultation (Ref 7).

1.2.17 Further details on ILI are provided at http://www.ili-energy.com/

1.3 Consenting Requirements

1.3.1 As the Development will comprise an electricity generating plant with a gross electrical output in excess of 50 MW, consent to construct and operate will be required from the Scottish Ministers under Section 36 of the Act. The Section 36 application will be prepared in accordance with the requirements of the Act and submitted to the Energy Consents Unit (ECU) of the Scottish Government. The Scottish Ministers will also be requested to give a direction for planning permission to be deemed granted under Section 57(2) of the Town and Country Planning (Scotland) Act 1997.

1.4 The Environmental Impact Assessment Report

Requirement for Environmental Impact Assessment

1.4.1 As consent is sought under Section 36 of the Act, the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the 'EIA Regulations') also apply to the Development. By virtue of its size, nature and location, the Development constitutes an 'EIA development' under Schedule 2 of the EIA Regulations.

1.4.2 An EIA has therefore been undertaken. More details on the EIA process and the approach to EIA for the Development are set out in Chapter 4: Approach to Environmental Impact Assessment.

1.4.3 In compliance with Regulation 5(1) of the EIA Regulations, this EIA Report has been prepared to accompany the application for Section 36 consent.

Content and Structure of the EIA Report

1.4.4 This EIA Report describes the results of the EIA for the Development. This includes a detailed description of the Development and its surroundings, an overview of the design process, and technical assessments with associated reports by individual environmental topic.

1.4.5 The EIA Report has been published in six volumes:

- Volume 1: Non-Technical Summary (NTS) - concise and written in non-technical language, providing a description of the Development, a summary of its residual environmental effects, and proposed mitigation measures;
- Volume 2: EIA Report Main Text - contains the introductory and topic specific environmental assessment Chapters, which is structured around the chapter headings as set out in Table 1.1;
- Volume 3: Figures - contains the figures relating to the EIA Report chapters;
- Volume 4: Visualisations - contains photomontages (to both The Highland Council (THC) and Scottish Natural Heritage (SNH) standards), projecting how the Development will sit within the surrounding landscape;
- Volume 5: Appendices - contains supporting Appendices to the EIA Report. The Appendices include detailed technical information such as raw data, survey reports and plans that are cross referenced where relevant within Volume 2 of the EIA Report.
- Volume 6: Confidential Appendices - contains supporting Appendices which are only provided to certain competent bodies due to the nature of the information which is contained within them.

Table 1.1 Volume 2: EIA Report Main Text Chapter Structure

Chapter No.	Title
01	Introduction
02	Project & Site Description
03	Evolution of Design and Alternatives
04	Approach to EIA
05	Geology and Ground Conditions
06	Terrestrial Ecology
07	Aquatic Ecology
08	Ornithology
09	Flood Risk & Water Resources
10	Water Environment
11	Landscape and Visual

Chapter No.	Title
12	Forestry
13	Archaeology and Cultural Heritage
14	Socio-economics and Tourism
15	Traffic and Transport
16	Noise and Vibration
17	Summary of Effects and Conclusions

Availability of the Environmental Impact Assessment Report

1.4.6 This EIA Report and other documentation prepared to support the Section 36 application are available for download from the Highland Council Planning Portal website: http://wam.highland.gov.uk/wam/ and the ECU website: http://www.energyconsents.scot/.

1.4.7 The EIA Report will be available for viewing at the following locations:

- Scottish Government Library, Victoria Quay, Edinburgh, EH6 6QQ.
- The Highland Council Planning Office, Glenurquhart Road, Inverness.
- The Dores Post Office, Dores, Inverness IV2 6TT.
- Farr Community Hall, Farr, Inverness IV2 6XA.

Representations

1.4.8 Any representations regarding the application should be made by completing the online representation form on the Scottish Government, Energy Consents website at:

http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-Consents/Support-object

1.4.9 Or by email to The Scottish Government, Energy Consents Unit mailbox at: econsentsadmin@scotland.gsi.gov.uk

1.4.10 Or by post to:

Energy Consents Unit, Energy Division, Directorate for Energy and Climate Change, Scottish Government, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU

1.4.11 Representations should be dated and should clearly state the name (in block capitals) and full return email or postal address of those making representation. All representations to the Scottish Government will be copied in full to the planning authority, and made available to the public on request, unless individuals request otherwise.

Copies of the Application Documents

1.4.12 Hard copies of the full application can be made available at a fee of £250 per application copy. Electronic copies of the application documents (with the exception of Volume 6: Confidential Appendices) can be made available at a fee of £10 per DVD or pen drive. A paper copy of the Non-Technical Summary can be made available free of charge. Cheques should be made payable to AECOM Ltd, with your name and address on the back.

1.4.13 To request copies of the EIA Report documents please contact the Red John PSH Project Team at the following address:

Red John PSH Project Team, AECOM, 1 Tanfield, Edinburgh EH3 5DA

E-mail: pumpedstorage@aecom.com

1.4.14 Information on the Development will also be available on the Development website: http://www.redjohnpsh.co.uk/ and requests for copies of the EIA Report may be submitted through the queries form.

1.5 Other Supporting Information

1.5.1 Other documents that will be submitted along with the EIA Report as part of the Section 36 Application, include:

- Planning Statement;
- Pre-Application Consultation Report; and
- Planning Drawings.

Secondary Consents

1.5.2 It is recognised that other consents and licenses are required for the construction and operation phase of the Development. At present it has been identified that the following may be required:

- Acquisition of Water Rights application;
- Controlled Activities Regulation (CAR) Licence;
- European Protected Species licences;
- Felling Licence;
- Reservoir registration under the Reservoir (Scotland) Act 2011; and
- Construction Site License.

1.5.3 This list is not exhaustive and will be updated as required. Information on when and who will gain the relevant consents and licenses has been included within the Mitigation Register in Chapter 17: Summary and Conclusions of this EIA Report (Volume 2). As much information as possible is provided within the EIA Report to support the application for these secondary consents.

1.6 References

Ref 1. Scottish and Southern Energy plc. Power from the Glens. http://sse.com/media/87078/powerfromtheglens.pdf. [Accessed 02/08/18].

Ref 2. The Highland Council. Hydro Storymap. http://highland.maps.arcgis.com/apps/MapJournal/index.html?appid=d844796af9f44eacbdb1cf2c038fe1b5. [Accessed 02/08/18].

Ref 3. Scottish Power. (2018). Cruachan. https://www.visitcruachan.co.uk/pages/history.aspx. [Accessed 02/08/18].

Ref 4. Scottish Government. (2011). Hydro. https://www.gov.scot/Topics/Business-Industry/Energy/Energy-sources/19185/17851-1. [Accessed 02/08/18].

Ref 5. Scottish Government. (2017a). Scottish Energy Strategy: The Future of Energy. [Online]. Available: https://www.gov.scot/Resource/0052/00529523.pdf. [Accessed 20/08/18].

Ref 6. Scottish and Southern Energy plc. (2018). Glendoe. http://sse.com/whatwedo/ourprojectsandassets/renewables/Glendoe/. [Accessed 02/08/18].

Ref 7. Scottish Government. (2017b). Draft Scottish Energy Strategy: The Future of Energy in Scotland. [Online]. Available: https://www.gov.scot/Resource/0051/00513466.pdf [Accessed 20/08/18].

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