

# FANNICH HYDRO SCHEME



Renewable Energy Project Management

## Environmental Statement

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## 1 Introduction

This Environmental Statement (ES) supports a planning application for a 500kW run-of-river micro hydro power project on the Fannich Estate.

The Fannich Estate is situated on the north side of Loch Fannich 20km to the west of Garve. The Estate is located in an area of high annual rainfall levels well suited to hydro power. The roads to the Estate and the surrounding infrastructure are a result of a large scale hydro power station built in the 1950s and still operational today.

With the exception of the existing large scale hydro developments the Fannich Hills area is otherwise considered relatively wild and untouched. The landscape, environmental and built heritage of this expansive area are considered valuable and relatively sensitive, with the Fannich Hills Special Area of Conservation (SAC) and Special Site of Scientific Interest (SSSI) designations to conserve it.

The Fannich Estate is a 3700 hectare family owned typical upland Highland estate, owned by the current proprietor since 1976. The estate has four residential properties and employs three full time staff, plus additional seasonal staff and tradesmen from the local area.

The location is remote and isolated with limited grid/phone connectivity, local services or facilities. The estate is not connected to the grid and therefore all onsite energy is provided via diesel generator and heating oil. A private water supply serves the properties.

The overriding objective of the proposed hydro scheme is a sustainable development within this remote and sensitive site to underpin the long term sustainable viability of this estate. A key driving objective is to remove the reliance on fossil fuels and improve energy security on the estate which currently limits its occupation and management.

The hydro project would contribute towards National carbon reduction targets and also provide a more sustainable source of power and greater energy security for the estate. This project would provide a sustainable long term income stream which is essential for the continued positive management and sustainable occupation of Fannich Estate and in doing so provide reinvestment potential to conserve the natural and built heritage for future generations.

Numerous alternative development options were considered to achieve these objectives. Hydro power is considered to provide the least impact but also present the most long term sustainable option. A large number of alternative compositions and layouts of this proposal have been considered in order to find the best solution for this remote and sensitive site.

During the early investigations the site was identified as having a number of sensitivities, particularly relating to the designated features, which are predominantly habitat, most notably blanket bog. There are also a number of protected species across the site (i.e. otters and water vole) and typical upland bird assemblages. While the water environment is of good quality, there is no migratory fish passage over the existing Loch Fannich dam and there are also limited resident brown trout populations. The site has no fresh water pearl mussels (by virtue of the absence of salmon) and is not an important site for bryophytes.

Extensive survey work has been undertaken to identify the baseline sensitivities of the site and assess the potential impacts caused by the proposal so as to inform the design and micro-siting of the scheme and appropriate construction methods and detailed mitigation proposals. The extent of survey works completed includes National Vegetation Classification (NVC) and Ground Water Dependent Terrestrial Ecosystem (GWDTE) habitat surveys, tree surveys, fish habitat surveys, wintering and breeding bird surveys, mammal surveys, archaeology surveys and a Landscape and Visual Impact Assessment, covering all areas of the proposed development including any necessary access improvements.

Extensive consultation with the statutory consultees has been undertaken from a very early stage in this project and has continued throughout in order to fully identify and incorporate any concerns into the project proposal. Scottish Natural Heritage (SNH) has been a key consultee in this process and its input has been very much appreciated and valued.

The original proposal was for an 880kW scheme over three water courses (i.e. Allt a' Choire Riabhaich, Allt a' Choire Bhig and Allt a' Choire Mhoir), consisting of three intakes, two power houses and nearly 5km of penstock. Compared to the final proposal, the initial proposal had a combined installed capacity 80% greater and a net worth 150% greater.

As a result of the detailed assessments and consultation, the scheme layout has been significantly reduced, refined, micro-sited and designed to take full account of potential impacts such that what is now presented is believed to be the least possible impact and most sustainable option.

The final proposal consists of three small intake structures abstracting water from just two water courses (Allt a' Choire Riabhaich and Allt a' Choire Bhig) into 3.8km of buried plastic penstock (pipelines) running into a single power house. A number of minor access upgrades will be required along the private estate track along with site compounds, laydown areas, reopening of existing borrow pits and permanent and temporary new access tracks.

This scheme is estimated to generate 1,410MWh of renewable electricity per annum, equivalent to the demand of 350 average UK households which would offset 750 tonnes of greenhouse gas emissions. Up to 5% of generated electricity will be consumed on site and the rest exported to the grid. This scheme will immediately remove the need for the estate's existing diesel generator and will also remove the need for oil heating over the longer term as it is the intention to move all heating onto electricity, powered by the hydro scheme.

The potential impacts of the proposal on these sensitivities have been identified and mitigation proposed such that the residual impacts have been significantly reduced to 'Low' on all accounts except impacts on blanket bog which unavoidably remain 'Moderate'.

In response to this single 'Moderate' residual impact, Fannich Estate also offers to commit to a Management Plan. This Plan will deliver positive environmental management measures additional to the mitigation measures and restoration proposals directly required for the proposed development. Measures include control of invasive species, native tree planting and positive peatland management. The objective of this Plan is to enhance the long term

recovery of the SAC to help offset some of the unavoidable impacts of the proposed micro hydro project.

This ES details this process of impact assessment and design, and outlines the mitigation and further environmental enhancement offered as part of this proposal such that the merit of this scheme can be fully assessed and the planning application can be determined.

This ES is the culmination of over three years of work to refine the scheme to an acceptable sustainable proposal within this sensitive but remote site with limited opportunities.

It is believed that this proposal represents the most sustainable development option for the Fannich Estate which can underpin the continuation and enhancement of the stewardship and positive management of this otherwise remote and hostile site, whilst not adversely affecting the natural and cultural heritage integrity of this site.

An application for a CAR licence has been submitted to SEPA on February 28<sup>th</sup> 2014.



## 2 EIA Methodology

### 2.1 Screening and Scoping

**December 2010** – A request for a Screening Opinion for a 100 kW run-of-river hydro project on the Allt a Choire Riabhaich Burn was submitted to the Highland Council.

**March 2011** – A response to the screening request was received confirming that an Environmental Impact Assessment (EIA) would be required. The response confirmed that consultation with SNH had identified that the proposal had the potential to have a significant effect on the Fannich Hills SSSI and SAC particularly in terms of ecology – blanket bog, wet heath, montane grassland and landscape.

**July 2011** – A request for a Scoping Opinion was submitted to the Highland Council for the 100 kW scheme on Allt a' Choire Riabhaich and for a 500 kW scheme on Allt a' Choire Mhoir and Allt a' Choire Bhig. The inclusion of the 500 kW scheme reflected the development of the proposals at that time in terms of overall feasibility and viability.

**August 2011** – Scoping Opinions were received for both the 100 kW and 500 kW proposals. They confirmed that consultations had been carried out with the roads, environmental health, landscape, access, forestry and archaeology teams within the Highland Council and with SNH, Scottish Environment Protection Agency (SEPA) and the Scottish Ministers. There was not expected to be significant impacts on archaeology, cultural heritage, the historic environment or woodland and trees and these issues could be scoped out of the assessment.

SEPA identified a range of issues to be considered and confirmed that the proposals would require authorisation from SEPA under the Controlled Activities Scotland Regulations (CARS).

The potential for the proposals to have significant effects on the Fannich Hills SSSI and SAC was identified by SNH and it was confirmed that the assessment would need to consider any impact on the designated features of interest and identify ways that this can be reduced, by for example complete restoration of affected qualifying habitats. The need for surveys related to water voles and breeding birds including raptors was identified. It was also confirmed that a Landscape Character and Visual Impact Assessment (LVIA) would be needed.

Additional items identified related to potential transport impacts, noise, private water supplies and relevant planning policies.

From the scoping responses it appeared that the two most significant issues related to impacts on the Fannich Hills SSSI/SAC and the water environment through the CARS regime.

## 2.2 Consultations

Regular consultations have been undertaken by the core team involved on this project as outlined below.

The key individuals involved in this process and specifically referred to below include:-

Fannich Estate	Coneloch Renewables LLP (Renewable Consultant)	Statutory Consultees	Other Experts
Albert van Dedem (Owner)	Cara Gelati (Environment)	Mary Gibson (SNH)	Quadrat Scotland (EIA) Nikki Dayton (Ecologist)
Ruari Mathieson (Keeper)	Joe Geoghegan (Planning)	Graham Sullivan (SNH)	Gordon MacKenzie (Specialist Contractor)
Angus Davidson (Agent)	John Pullen (Engineering)	Cameron Scott (SEPA)	
		David Wilby (SEPA)	
		Philip Waite (Access)	
		Steven Grant (Roads)	

**February 2011** – Onsite meeting between Cara Gelati, Mary Gibson and Cameron Scott to walk Allt a’ Choire Riabhaich, Allt a’ Choire Mhoir and Allt a’ Choire Bhig to introduce the proposed scheme and discuss any key concerns or areas for particular investigation. SEPA seemed relaxed about the proposals given limited fish populations but highlighted their emerging hydro guidance and particular consideration for flood risks and pollution prevention. SNH preferred the Allt a’ Choire Riabhaich proposal and confirmed that their key concerns were landscape impacts and the integrity of the SAC but that there should be a viable scheme subject to due diligence being applied throughout the process of the development.

**June 2011** – Consultation between Cara Gelati (CR) and Mary Gibson (SNH) to discuss layout options for the original maximised scheme proposed, as submitted for a Scoping Opinion.

**July 2011** – Onsite meeting held between Cara Gelati (CR), Mary Gibson (SNH), Ruari Mathieson (Fannich Estate Head Keeper) and Angus Davidson (Agent for Fannich Estate). The key purpose of this meeting was to walk the scheme proposals on the ground with SNH, discuss any concerns and explore tests for impacting the integrity of the site.

SNH’s key comments included: keep as far out of the top of the Choires as possible, design features to minimise landscape impacts, minimise habitat disturbance by managing as tight a construction corridor as possible. All of this has been fully factored into the layout and design of the scheme finally proposed.

**November 2011** – As the scoping responses had identified possible impacts on the SSSI/SAC and the water environment as being potentially particularly significant, discussions were initiated with SNH/SEPA to scope out these issues in more detail. A meeting took place with representatives of SEPA and SNH at SEPA’s offices in Dingwall. SEPA confirmed that in terms of its interests neither of the schemes were an EIA project and its concerns would be dealt with through the CARS procedures.

SNH reiterated its position that an EIA is required for the schemes on the basis that both of them were in the Fannich Hills SSSI/SAC. The main areas of concern related to impact on peat, habitat, species and landscape. These areas of concern were discussed in more detail.

**October 2012** – Following on from further consideration of the proposals formal requests for pre-application advice for local developments were submitted to the Highland Council. In tandem with this, and in order to explore the evolution of the proposals further on site, a site meeting was arranged. Representatives of the Council’s planning, roads, access and landscape teams were invited along with SNH and SEPA, in order to optimize advice related to the specifics of the proposals and the sites.

The site visit was attended by representatives of the Council’s roads (Steven Grant) and access (Philip Waite) teams along with SNH (Mary Gibson and Graham Sullivan). The others who had been invited were happy for the site visit to proceed in their absence. The meeting was also attended by a representative from Fannich Estate (Albert van Dedem) and their renewable consultant’s environmental and planning advisers (Cara Gelati and Joe Geoghegan).

This site visit was particularly helpful in establishing the requirements of the Council’s roads team regarding visibility at the junction of the access with the A832, the potential for any impacts on access tracks, footpaths, rights of way and especially in terms of SNH’s concerns about potential impacts on the SSSI/SAC. The areas proposed for the schemes were walked over in detail with the representatives from SNH and this was crucial in informing the further evolution of the proposals.

**December 2012** – The response to the request for pre-application advice was received from the Council. It identified relevant policies from the Highland Wide Local Development Plan (adopted 2012) along with relevant Council supplementary planning guidance.

The section of the response entitled “Principle of Development, Siting and Design” stated that the principle of the proposed developments is supported by national and local planning policy. The key planning matters were identified as being access, construction of penstock, impacts on natural/built heritage, impact on trees and landscape/visual impact. It was confirmed that the planning application would require to be accompanied by an environmental statement in terms of the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011.

**January 2013** – Site meeting between Cara Gelati (CR), Mary Gibson (SNH) to walk new routes proposed, discuss possible alternatives, micro-siting and mitigation options.

**May 2013** - Teleconference held between Cara Gelati (CR), Nikki Dayton (Quadrat Scotland, hereafter QS), Mary Gibson (SNH) and Graham Sullivan (SNH) to discuss penstock routes and agree proposals in principle. The key conclusions were a general agreement for: i) the Bhig scheme penstock route to come south of the plantation on the basis of topographical limitations (i.e. top of plantation higher than intake) and the Argo track being more visible on the ground than the Stalkers Path (i.e. follow route of greater level of existing disturbance); and ii) the Riabhaich scheme penstock route to be on the west bank on

account of following route of greater existing disturbance levels and being on the edge of less extensive blocks of blanket bog (i.e. fragmented by existing tracks) compared to the east bank which is more pristine and extensive. CR agreed to go back to site and investigate if a higher intake site was achievable on Allt a' Choire Bhig such that the penstock could be positioned over the Stalkers' Path.

**June 2013** – Various onsite meetings by CR to assess alternative intake locations on Allt a' Choire Bhig. Although some alternative intake sites located, the levels between here and the top of the plantation were too close to determine visually.

**July 2013** – Topographical surveys undertaken to inform decision about penstock routes and intake site.

**July 2013** – Various meetings between representatives of Fannich Estate (Angus Davidson), Lochluichart Estate (Glyn Robson) and SSE (Alastair Ross) to discuss and agree works required on third party land.

**August 2013** – Discussions between Cara Gelati (CR) and Mary Gibson (SNH) regarding the additional investigations into alternative intake sites. SNH agree in principle that the Bhig scheme penstock route below the plantation is in fact preferable, subject to micro siting to avoid sensitive features.

**September 2013** – Site meeting between Cara Gelati (CR), John Pullen (CR – engineer) and Gordon MacKenzie (Civils Contractor with significant experience on designated sites and hydro projects) to micro site the power house and assess construction feasibility under the constraints of avoiding/mitigating potential impacts.

**August – November 2013** – Nikki Dayton (QS) released results of key EIA survey works. Extensive discussions between Cara Gelati (CR) and Nikki Dayton (QS) regarding micro siting the scheme, mitigation measures and restoration methods.

**November 2013** – Various detailed discussions between Cara Gelati (CR), Joe Geoghegan (CR - planner), John Pullen (CR – engineer) and Nikki Dayton (QS) to agree mitigation proposals and construction and restoration methods.

**December 2013** – Various onsite meetings between Cara Gelati (CR), John Pullen (CR) and Nikki Dayton (QS) to micro site penstocks in relation to environmental/archaeological/landscape baseline data, impact assessment, avoidance and mitigation proposals against construction feasibility.

**December 2013** – Discussions between Cara Gelati (CR) and David Wilby (SEPA) in particular relation to:- i) potential impacts (i.e. aquatic ecology) where the water abstracted from both Allt a' Choire Bhig and Allt a' Choire Riabhaich for the hydro scheme will be discharged to a single point back into Allt a' Choire Riabhaich only; and ii) the proximity of the penstock which in places is unavoidably within 10m of the water course in order to avoid other constraints (i.e. particularly blanket bog, GWDTE flushes and vole burrows).

This informal consultation was very useful and suggested in relation to the above options that:- i) this is as already accepted under the earlier consultations with SEPA and will be satisfactory providing no flood risk can be demonstrated and hands off and compensation flows are maintained as suggested; and ii) again this should be satisfactory providing that the extent of works within the 10m standard buffer of water courses are specifically identified and the reaches affected quantified and that stringent construction methods and mitigation proposals are detailed within the CMS to ensure no bank erosion or pollution incidents.

**January 2014** -Site meeting between Cara Gelati (CR) and Nikki Dayton (QS) to complete tree survey and micro site power house access and tailrace in relation to these results and previous mammal survey results.

**January 2014** – Site meeting between Cara Gelati (CR) and Mary Gibson (SNH) to walk final micro sited layout of proposal for submission to planning and discuss construction methods, restoration and mitigation proposals on the ground.

### **Summary**

This timeline is intended to give an indication of the key consultation meetings and timescales although this is by no means an exhaustive list. Over the last three years the core team members have been in very regular contact, consulting as additional information became available and all the time refining the project to achieve the most sustainable possible outcome.

The extensive consultation is further demonstrated in the substantial alternatives considered in order to propose a viable, least impact project as further described under section 5.0 Alternatives Considered.

### 2.3 Specialist Contractors

A specialist team was required to develop the proposed project, which was led by Coneloch Renewables LLP on behalf of the landowner. The key personnel involved in the preparation of the EIA are described in the table below.

Coneloch Renewables LLP is a consultant and client side project manager for renewable energy projects specialising in hydro power. Coneloch Renewables LLP is responsible for the design of the scheme and the overall delivery of the EIA.

Quadrat Scotland was appointed by Coneloch Renewables LLP to provide the specialist surveying input into the EIA. Quadrat Scotland is an ecological consultancy with particular expertise in EIA work for hydro power proposals. They have prior experience working on the Fannich site and also work closely with SNH (i.e. undertake site condition monitoring of designated sites for SNH). Quadrat Scotland appointed Mike Hyatt Landscape Architects and Waterside Ecology to provide survey input into the EIA.

MNV Consulting were appointed by Coneloch Renewables LLP to undertake a hydrology survey and gauging over a 6 month period to support the hydraulic calculations and design, whilst also confirming appropriate compensation flows.

Survey/input	Surveyor (company)	Relevant qualification/experience	Output
Habitat-Peat-Mammals-Ornithology-NATURA - Design and Mitigation - general input and advice	Nikki Drayton Quadrat Scotland	BSc Environmental Science MIEEM	Input into full ES and CMS
Habitat Ornithology	Ruth Maier Quadrat Scotland	BSc Ecology MSc Habitat Survey Assessment	Appendix 4 Appendix 6
	Tim Rafferty Quadrat Scotland	CEnv. MIEEM BSc Environmental Science,	
Fish Habitat	Jon Watt Waterside Ecology)	B.Sc., Ph.D., MIEEM, MIFM	Appendix 3
Mammals (EPS)	Jon Watt Waterside Ecology	B.Sc., Ph.D., MIEEM, MIFM	Appendix 5
Hydrology	Richard Johnson MNV Consulting	Experienced hydrologist	Appendix 8
LVIA	Mike Hyatt Landscape Architects	Landscape Architect	Appendix 7
Archaeology	Colin Wells Quadrat Scotland	BSc Ecology PhD	Appendix 2
Construction methods	Gordon MacKenzie G&G McKenzie	Civil engineering and building contractors experienced with hydro power and upland sites.	n/a
Project management and environmental management	Cara Gelati Coneloch Renewables LLP	BSc Zoology, MSc Sustainable Rural Development, MRICS	ES and Appendices 1, 8, 10, 11, 12
Planning consultancy	Joe Geoghegan Coneloch Renewables LLP	BA, MRTPI Public and private sectors	ES Appendix 9
Technical design and construction methods	Dr John Pullen Coneloch Renewables LLP	CEng PhD	ES Appendix 11

## 2. ARCHAEOLOGY & CULTURAL HERITAGE

### 2.1 Introduction

This section considers the potential effects of the proposed hydro-electric power schemes on cultural heritage in Choire Riabach and Choire Mhor, Fannich Hills.

The assessment has been undertaken in accordance with the guidelines set out in Highland Council's *Standards for Archaeological Work*.

Cultural Heritage resources are considered to include:

- World Heritage Sites
- Scheduled Monuments and other archaeological features
- Listed Buildings and other buildings of historic or architectural importance
- Conservation Areas and other significant townscapes
- Historic Gardens and Designed Landscapes and other significant historic landscapes.

Resources relevant to the current proposed development comprise **archaeological features** and one **building of historic importance**.

There are no Scheduled Monuments, Listed Buildings or other buildings of historic or architectural importance, Historic Garden and Designed Landscapes and other significant historic landscapes or World Heritage Sites or Conservation areas within the assessment area.

The specific objectives of this cultural heritage assessment were to:

- Identify the cultural heritage baseline within and in the vicinity of the proposed development area
- Assess the proposed development site in terms of its archaeological and historic environment potential
- Consider the potential and predicted effects of the construction and operation of the proposed development on the cultural heritage resources, within the context of relevant legislation and policy guidelines
- Propose measures, where appropriate, to mitigate any predicted significant adverse effects.

### 2.2 Approach and Methods

#### 2.2.1 Planning requirements

The Scottish Historic Environment Policy (SHEP) sets out Scottish Minister's policies for the historic environment, and provides policy direction for Historic Scotland and a framework that informs the day-to-day work of a range of organisations that have a role and interest in managing Scotland's historic environment. Through the implementation of the SHEP, Scottish Ministers seek to achieve three outcomes for Scotland's historic environment:

- That the historic environment is cared for, protected and enhanced for the benefit of our own and future generations.

- To secure greater economic benefits from the historic environment.
- That the people of Scotland and visitors to our country, value, understand and enjoy the historic environment. Cultural heritage resources include sites with statutory and non-statutory designations, as defined in Scottish Planning Policy (SPP): Planning and the Historic Environment.

### 2.2.2 Sites with Non-Statutory Designations: Other Historic Environment Interests

There is a range of other non-designated archaeological sites, monuments and areas of historic interest, including battlefields, historic landscapes, other gardens and designed landscapes, woodlands and routes such as drove roads that do not have statutory protection. Sites without statutory protection are curated by the local planning authority and Scottish Planning Policy (SPP) and Planning Advice Note (PAN) 2/2011: Planning and Archaeology provide national planning policy guidance and advice on the treatment of such resources. SPP requires that planning authorities ensure that development plans provide land use policy frameworks for the protection, conservation and enhancement of the historic environment within which any development impacts can be properly assessed. PAN indicates that the principle that should underlie all planning decision-making is preservation of cultural resources in situ, where possible and by record if destruction cannot be avoided. It is recognised in the PAN that preservation may not always be possible, and where damage is unavoidable various mitigation measures may be proposed.

## 2.3 Assessing Significance

### 2.3.1 Assessment of importance of cultural heritage features

Archaeological and built heritage sites and features represent a non-renewable resource that are often fragile and suffer from constant attrition, from both natural and human causes. The relative importance of cultural heritage resources is summarized in Table 2.1.

**Table 2.1 - Importance of Cultural Heritage Resource Types**

<b>Importance</b>	<b>Site types</b>
International	World Heritage Sites
National	Scheduled Monuments Sites of schedulable quality Category A Listed Buildings Inventory status Gardens and Designed Landscapes Outstanding Conservation Areas
Regional	Archaeological sites and areas of distinctive regional importance Category B Listed Buildings Conservation Areas
Local	Local Archaeological sites and areas of local importance Category C(S) Listed Buildings Unlisted buildings and townscapes of some historic or architectural interest
Lesser	Other archaeological sites Find-spots
Unknown	Unknown Archaeological sites whose morphology, character and date are



	currently not established
--	---------------------------

The importance of cultural heritage resources are assessed to the criteria published in SHEP and SPP. The main thresholds of archaeological importance defined by SPP are sites of national importance, protected by statute, and sites with non- statutory designations of regional and local importance.

Sites of national importance comprise those sites protected by scheduling under the 1979 Act, and sites of “schedulable quality”. Scheduling is an ongoing process and not all sites of “schedulable quality” are currently scheduled.

Sites of regional and local importance are those that do not merit scheduling, but which have significance within a regional or local context. This may, for example, apply to their importance to regional or local history, or they may be the only local example of a monument type.

**2.4 Level of Impacts**

Potential impacts on cultural heritage interest have been assessed in the following categories:

- **None:** where no impact is predicted
- **Direct:** where there would be a physical impact on a site caused by the proposed development. Direct impacts tend to have permanent and irreversible adverse effects upon cultural heritage remains. They may be caused by a range of activities associated with the construction and operation of the proposed development including ground disturbance, vehicle movement, and soil and overburden storage. Direct impacts are normally adverse, permanent and irreversible.
- **Indirect:** where the setting of a site may be affected. Indirect impacts may relate to new development reducing views to or from cultural heritage features with important landscape settings, may result from increased noise or vibration, or may cause increased fragmentation of the historic landscape and the loss of connection between its component parts. Indirect impacts can be adverse, neutral or beneficial in effect.
- **Uncertain:** where there is a risk that the works may impinge on a site, for example where it is not clear where the location or boundaries of a site lie, or where the baseline condition of a site cannot be established satisfactorily from desk-based assessment and field survey alone, or where the precise nature of development works is not known.

Impacts have been assessed in terms of their magnitude (Table 1.2) in the categories imperceptible, low, medium or high.

**Table 2.2 - Definitions of magnitude of impact**

<b>HIGH</b>	Major impact fundamentally changing the baseline condition of the receptor, leading to total or major alteration of character or setting
<b>MEDIUM</b>	Moderate impact changing the baseline condition of the receptor materially but not fundamentally, leading to partial alteration of character or setting
<b>LOW</b>	Minor detectable impact which does not alter the baseline

	conditions
<b>IMPERCEPTIBLE</b>	A very slight and barely distinguishable change from the baseline conditions
<b>NONE</b>	No discernible change to the baseline condition of the character or setting of the receptor

Table 2.3 combines these criteria to provide an assessment of whether or not an impact is considered to be significant as required by Environmental Impact Assessment (Scotland) Regulations 1999.

**Table 2.3** Assessment of significance of impact

<b>Magnitude of effect</b>	<b>Sensitivity of receptor</b>			
	<b>LESSER</b>	<b>LOCAL</b>	<b>REGIONAL</b>	<b>NATIONAL/ INTERNATIONAL</b>
HIGH	MINOR	MODERATE	MAJOR	MAJOR
MEDIUM	NEGLIGIBLE	NEGLIGIBLE	MINOR	MINOR
LOW	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	MINOR
IMPERCEPTIBLE	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	MINOR
NONE	NONE	NONE	NONE	NONE

## 2.5 Baseline Conditions

### 2.5.1 General

Six cultural heritage sites have been identified within the assessment area (and are shown on Map 1 - Cultural Heritage Assets). These comprise one building of historic interest and five undesignated sites of archaeological interest.

Appendix 1 provides detailed information on the character and baseline condition of each site.

### 2.5.2 Sources for desk-based study

Current information was obtained from appropriate sources on the potential locations and extents of recorded cultural heritage sites within or close to the proposed development site.

Details of any potential Scheduled monuments, Listed Buildings and Historic Gardens and Designed Landscapes within 1 km of the proposed construction routes of the hydro schemes were searched for and information on non-designated sites within the search area was obtained from the Highland Historic Environment Record (HER) and the National Monuments Record of Scotland (NMRS) and their online database Pastmap ([www.pastmap.org](http://www.pastmap.org)).

Assessment was also made of historic cartographic sources, which are detailed in the references.

In addition an assessment was made of vertical aerial photographs collection held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). Sorties from 1947, 1950, 1971 and 1988 were examined, together with recent satellite imagery available via internet sources (Google Maps, Bing Maps, Apple Maps) but these provided no further information relevant to the assessment.

### 2.5.3 Field Survey

Walk-over field surveys were undertaken on 19/05/13 & 17/06/13 to assess any visible archaeological features that were not recorded in the documentary records. Five areas of archaeological interest were noted during this exercise, mainly comprising shieling features and associated infrastructure. These were recorded and photographed; details may be found in Appendix 1 and their locations marked on Map 1. Feature positions were recorded using a Magellan Toughcase GPS with an accuracy of 3 m.

## 2.6 Predicted Impacts

### 2.6.1 Construction impacts

No direct effects are predicted to occur on identified cultural heritage assets as a result of the construction works.

The single building of historic interest present within the development area (Fannich Lodge) will not be affected by the proposed development as it lies well to the south of the development. The archaeological structures recorded during the field survey are located in areas away from the main construction path that are easily avoided by contractors. As much of the pipeline corridor travels through peatland, there is, however, the potential to discover hitherto unrecorded wetland archaeological remains.

Using the assessment criteria detailed in section 2.4, Table 2.4 lists the predicted effects of the proposed development on the cultural heritage sites identified within the proposed development area.

**Table 2.4 - Predicted effects on Cultural Heritage Features**

Site ID	Importance	Effect	Effect magnitude	Significance of effect
Fannich Lodge	Local	None	None	None
Arch 1 shieling	Local	None	None	None
Arch 2 shieling	Local	None	None	None
Arch 3 borrow pit	Local	None	None	None
Arch 4 shieling	Local	None	None	None
Arch 5 shieling	Local	None	None	None

## 2.7 Mitigation

The development as proposed would have no effect on the cultural heritage resource that has been recorded in the area and the archaeological potential of the land-take for

the development is considered to be low. It is, therefore, recommended that no further work need be carried out in advance of development. However, any archaeological mitigation work that was considered appropriate would be presented in a Written Scheme of Investigation (WSI), drawn up in consultation with the Highland Council Historic Environment team (HET) and presented for approval by the planning authority. The mitigation works would be carried out at an appropriate stage in the development works programme, as agreed with the Highland HET.

Identified cultural heritage features should be avoided by the development. If required, written guidelines would be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known archaeological sites. Those guidelines would contain arrangements for calling upon retained professional archaeological support in the event that buried archaeological remains of potential archaeological interest were discovered in areas not subject to archaeological monitoring. The guidance would make clear the legal responsibilities placed upon those who disturb artefacts or human remains.

## **2.8 Residual Impacts**

No significant residual effects in relation to cultural heritage interests would arise from the construction and operation of the hydro schemes.

## **2.9 Summary**

Six sites of archaeological/historic building significance have been identified by the assessment, using a range of desk-based sources and field study. The sites include Fannich Lodge and five previously unrecorded areas containing shieling-related structures.

It is possible that additional buried remains of archaeological significance survive in the peatland which would be traversed by the lines of the proposed hydro construction routes, although it is considered that the likelihood of encountering such remains is low.

The development proposals have been assessed against the cultural heritage baseline.

No sites are predicted to be directly affected by the development.

No significant residual effects are anticipated in relation to cultural heritage interests and the development proposals are considered to conform to the aims of national, regional and local planning policy as regards cultural heritage.

## **2.10 References/Bibliography**

Highland Council (2012) Standards for Archaeological Work

Historic Scotland (2009) Assessment of Impact on the Setting of the Historic Environment Resource – Some General Considerations, Scoping of Development Proposals, Annex

Historic Scotland (2009); *Scottish Historic Environment Policy (SHEP)*. Historic Scotland, Edinburgh

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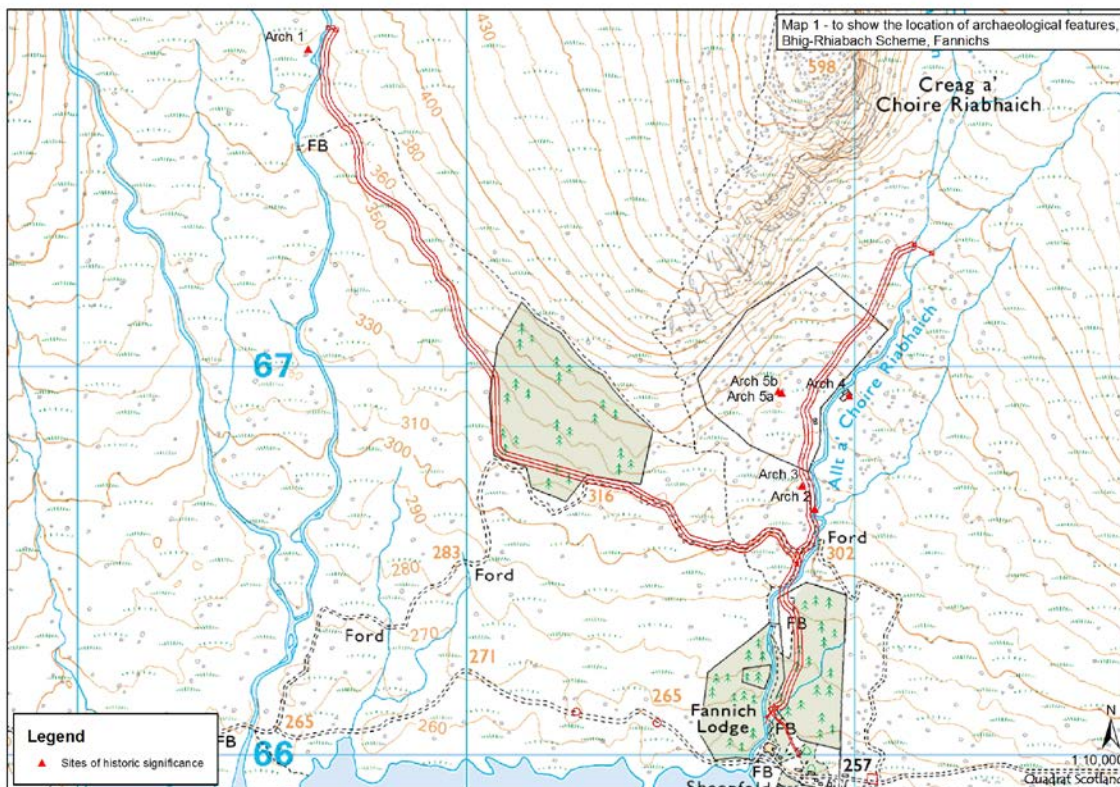
UK Government (1979); Ancient Monuments and Archaeological Areas Act 1979. HMSO, London

UK Government (1997); *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997*. HMSO, London

- **Cartographic sources**

- OS one-inch Inverbroom 1st edition 1874-1881
- OS one-inch Inverbroom 2nd edition 1885-1900
- OS one-inch Inverbroom 3rd edition 1908-1912
- OS one-inch Sheet 26 1921-1939
- OS one-inch Sheet 26 1947
- OS one-inch 7th series Sheet 20 1958

- OS 6-inch Ross-shire & Cromartynshire Sheet LXXIII 1875-1881
- 1902-1905





**Appendix 1 Archaeological features noted within area of search**  
(aspects indicate direction of photo)

**Arch 1**

NGR: 220954 867818

Remains of possible storage hut, small pen fold or perhaps small 'beehive' shieling.  
2.5 x 3 m. Stonework ca. 0.5m above ground surface, entrance SW corner.



*Context: NE*



*Detail: SE*



*Detail: NW*



*Detail: NE*



*Detail: SW*



*SW: possible clearance mound/enclosure wall*



## Arch 2

NGR: 221898 866624

Possible remains of oval sheiling or enclosure wall/clearance cairn.  
Ca. 2 x 3 m + wall/extension further 6 m south.



*Detail: E*



*Context: E*



*Context: S*



*Context: N*



**Arch 3**

NGR: 221876 866692

Probable old borrow pit.



*Detail: S*



*Context: N*

#### Arch 4

NGR: 221987 866925

Large enclosure/shieling/croft complex. Several rectilinear stone wall foundations - width of walls ca. 60-80 cm



*8 m x 11 m; SW*



*6 x 10 m; SW*





*12 x 19 m; SW*



*6 x 9 m; SE*



*6 x 7 m; SE*



*Context: SW*



*Context; SE*



**Arch 5a**

NGR: 221804 866925

Shieling & enclosure. Shieling ca. 6 x 4 m



*Context: SE*



*Context: SW*



*Context: NW*



*Context: NE*

**Arch 5b**

NGR: 221813 866932

Rectilinear enclosure, ca. 5 x 13 m



*Context: SW*



*Context: SE*



*Context: NE*





*Context: NW*



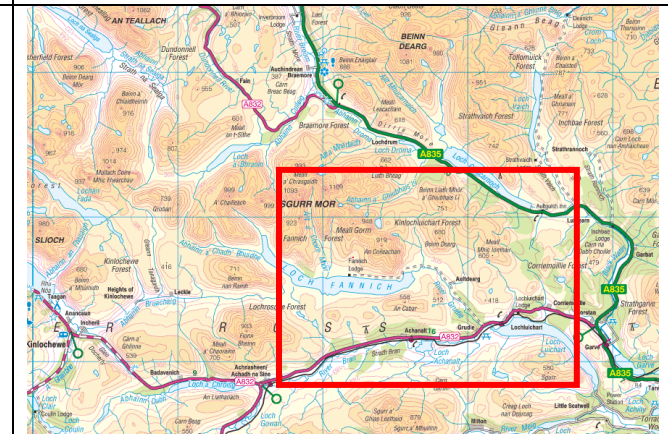
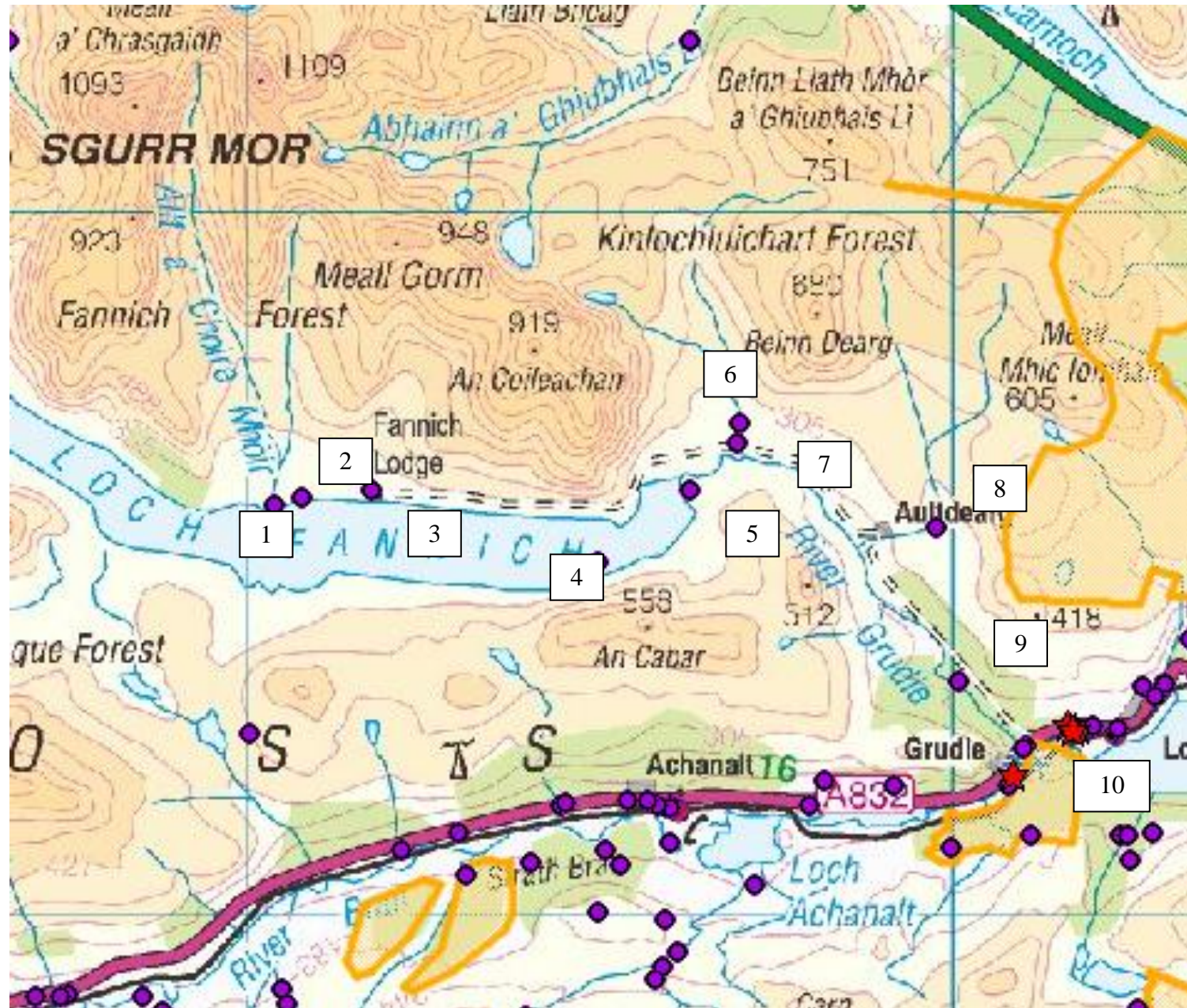
*Context: SW*



*Context: SE*



# Fannich Hydro Scheme Built Heritage Designations - Overview



Project Fannich Hydro  
 Drawing 07-03-081  
 Scale nts

### Key

- ★ Listed Buildings
- Scheduled Monuments
- Monuments/Buildings
- Investigations

### Revisions

Rev	Initials	Date	Details
A	CG	24/02/2014	First Issue



### NATIONAL/SCOTTISH SITES AND MONUMENT RECORDS

1. **Enclosure** – now underwater due to damming of Loch Fannich
2. **Enclosure** (unroofed building) – now underwater due to damming of Loch Fannich
3. **House** – Fannich Lodge
4. **Axehead** – Bronze Age
5. **Dam** – Loch Fannich Dam
6. **Shieling Hut**
7. **Shieling Settlement** – two unroofed huts and enclosures
8. **Shieling Hut**
9. **Shieling Settlement** – unroofed huts and enclosure
10. **Grudie Bridge**

Data derived from Highland Council Historic Environment Record, available online at <http://her.highland.gov.uk/Map.aspx?clear=true>

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