

Paper 8

Appendix

Extracts from Supporting Information

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Perth and Kinross Council
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Environmental Statement

Bruar
Hydroelectric Scheme

January 2012

PERTH AND KINROSS COUNCIL
DRAWING REF: 12/00009/32

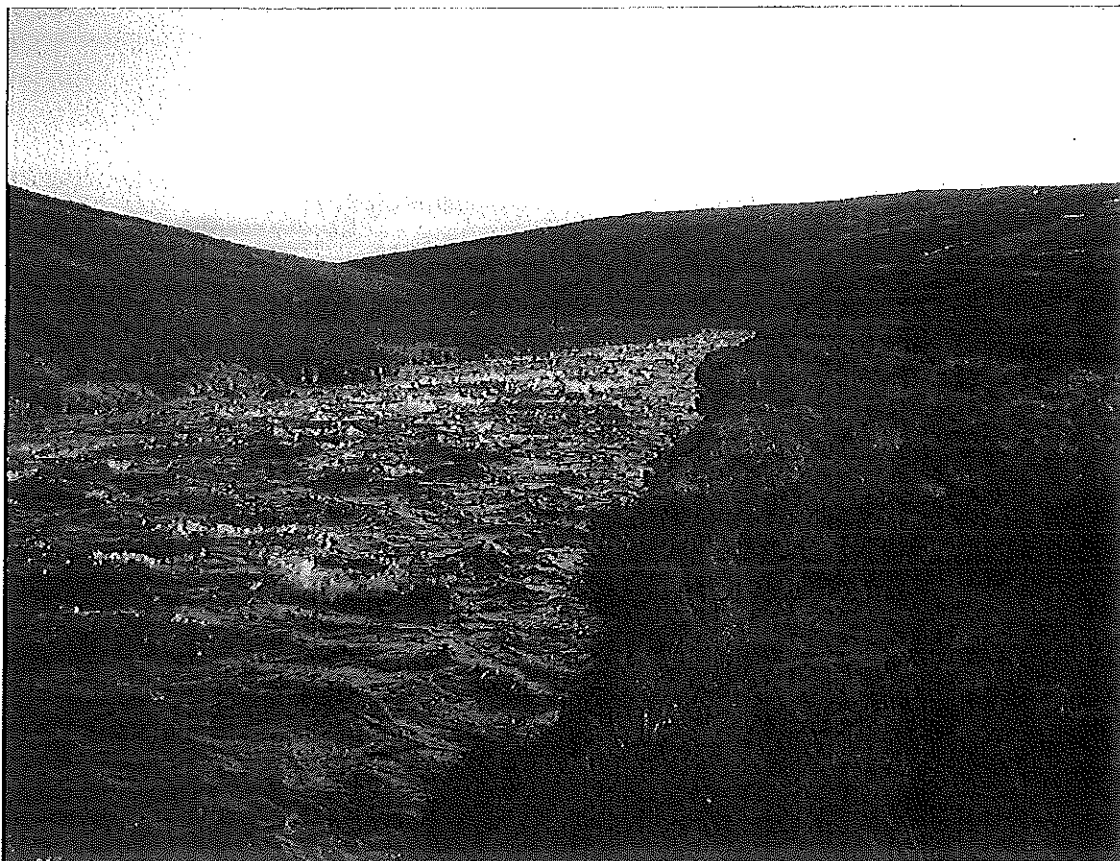


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 **Hydroplan**

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1 Non-Technical Summary

1.1 Introduction

It is proposed to construct and operate a new hydroelectric scheme at Bruar Water on the Atholl Estate, Perthshire.

The proposed 1.5MW hydro scheme would abstract water from the Bruar Water by means of an intake dam. A river diversion will be constructed on the Allt Beinn Losgarnaich to redirect the flow into the inundated area upstream of the dam. The powerhouse will be located on the right bank of the Bruar Water and the flow would also be returned to the Bruar Water.

1.2 Climate Change

It is widely accepted that the burning of fossil fuels, such as coal and oil, and the associated accumulation of carbon dioxide in the Earth's atmosphere is a major cause of climate change. Hydropower harnesses the potential energy of rivers; displacing fossil fuel generated electricity, and will be an ongoing source of renewable energy in the future. The Bruar hydro scheme will contribute towards Scotland's goal of producing 100% of its electricity from renewable sources by 2020.

1.3 Existing Environment

The development area is located at Glen Bruar on the Atholl Estate, Perthshire. The proposed scheme is sited within open upland vegetation, dominated by dry heath, wet heath and blanket bog communities. Most areas are managed by burning and there are noticeable herbivore impacts on some of the regenerating dwarf shrubs; though mature stands are unaffected. The majority of blanket bog communities have been drained and partially replaced with wet heath land vegetation on slopes.

Calcareous grassland is scattered throughout this site, often found on the banks of streams and along the main river valley on low-lying grasslands on shingle banks and islands within the stream corridor.

Woodland is scarce within the site but there is a stand of fern and bryophyte-rich birch woodland in a gorge along the Allt Scheicheachan, below the bothy. Woodland regeneration is occasional to frequent on steep heath banks but seedlings and saplings are usually small and show signs of grazing.

1.4 The Proposal

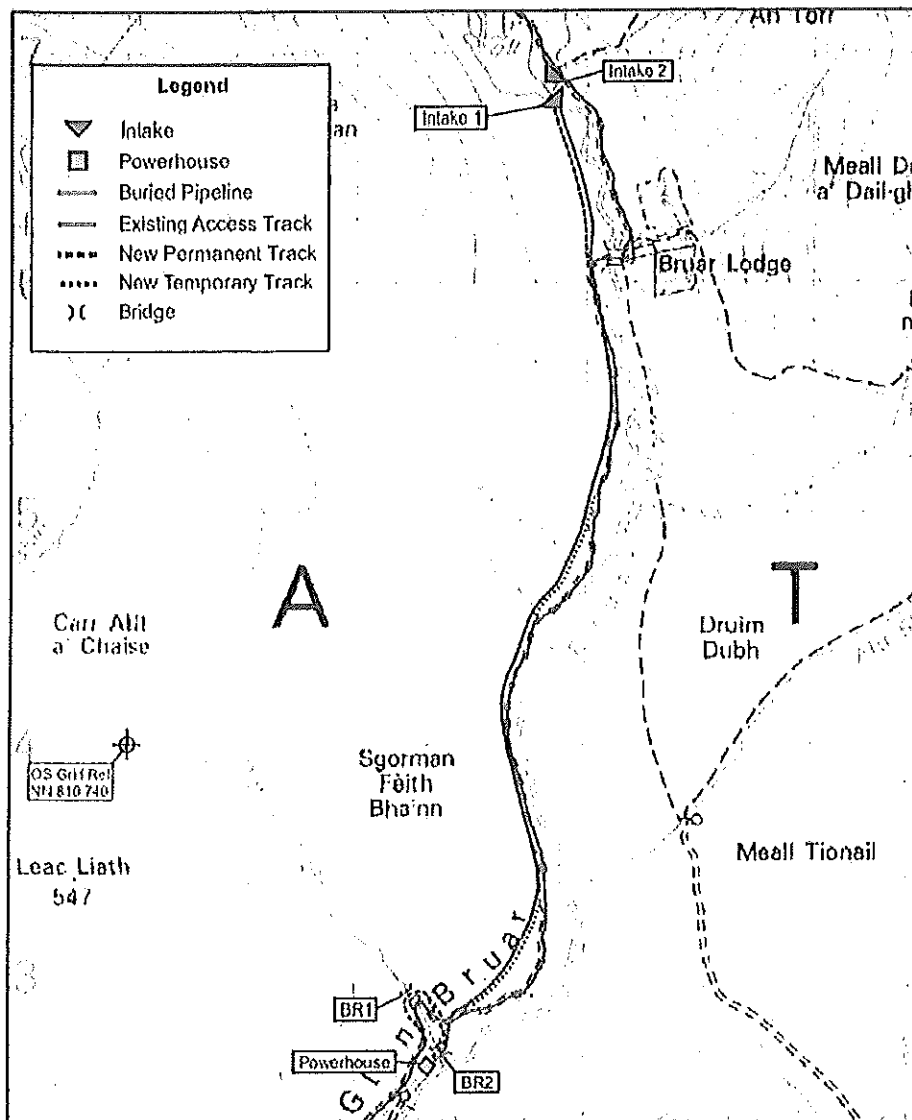
The proposed hydro scheme layout is shown in Figure 1-1. A dam and an intake on the Bruar Water would upgrade the existing dam. A river diversion on the Allt Beinn Losgarnaich would be constructed to redirect the flow into the inundated area upstream of the dam. The water from the main intake would be transported via a buried pipeline to the powerhouse. The water would then be discharged through a turbine, which would drive a generator to produce electricity. A tailrace leading from the powerhouse would return the flow to the Bruar Water, unchanged in quality or quantity.

The scheme will be a small storage design and the electricity generated will be exported to the nearby grid. There are four principle components to the proposal:

- Intake dam and river diversion
- High pressure buried pipeline
- Powerhouse
- Access tracks and bridges



Figure 1-1 - Scheme Layout



1.5 Construction

The construction programme is expected to last approximately 18-24 months, although much of the main civil works will be completed in two summer seasons. The main component of the works will be laying the pipeline, digging the trench, backfilling and landscaping.

1.6 Assessment of Environmental Impacts

A summary of the environmental impacts is presented briefly below.

Access & Traffic

During construction, total traffic flows on the A9 network will increase as a result of additional traffic moving to and from the site. This increase however, will be significantly less than the threshold as set out under industry standards. During this construction period, walkers will be temporarily diverted using localised diversions. Signs warning walkers of the construction traffic and giving details of the scheme will be provided and appropriate passing places created. Once operational, the scheme will place no restriction on access for the public.



Archaeology

Twenty archaeological sites were recorded in a desk-based and walkover survey. The proposed powerhouse location is situated within a shieling settlement that is intersected by the pipeline. Additionally, the Ruidh Dorcha More shieling are also at risk of damage from pipeline construction. No Scheduled Ancient Monuments are situated within or near the survey area. All structures will be avoided where possible, but mitigation measures have been described to reduce the impact of development on archaeology so that it can be considered minor.

Fish & Aquatic

The existing dam forming the lochan is impassable to upstream migrating trout. Trout fry and/or parr were present in each of the sites sampled above and below the lochan dam but generally in low densities. Invertebrate presence and diversity suggested high quality water and within the former SEPA River classification scheme, the upper Bruar Water would be classified as A1 Excellent. From the lochan to the SSE intake, the watercourse gradient was around 1.7% with no falls or barriers to fish (trout) migration. The SSE offtake below the proposed powerhouse location presents an impassable barrier to upstream fish migration at that point. Occasional recreational angling occurs in both the lochan and in the odd pool in the Bruar Water below the lochan dam.

Habitat (Flora)

Despite modification from land management, grazing and drainage, the majority of upland habitat at Bruar remains in good condition. The scheme is likely to have a moderate impact on blanket bog habitat and basic flushes. The pipe route should be sited as close as possible to the existing track to avoid damage to calcareous flushes on the eastern slope of the Sgorman Feith Bhainn and intact blanket bog elsewhere on the site. The installation of silt traps and culverts should help mitigate any changes to hydrology affecting these habitats. Impact to all other habitats is described as being of low significance.

Bryophytes

The overall impact of the scheme on the bryophyte interest in and by the watercourses will be minor. The pipeline will run across robust bryophyte communities that are locally common; therefore the impact on the bryophyte interest will be negligible and needs no mitigation. The same is true of the powerhouse and intakes.

Protected Mammals

Otter spraints were found at two locations near to the main intake and at two locations near to the proposed access to the powerhouse and the bridge over the Allt a' Chaise. Water vole burrows and/or droppings were found at seven locations, 6 of which lie near to the route of the proposed access to the main intake and the existing track. There was no evidence for the presence of any other protected mammals. Mitigation measures are described such that protected mammal species are unlikely to be adversely affected by the proposed development.

Birds

Although the site is positioned within an SPA for breeding Golden Eagles, eyries are set back sufficiently that they are unlikely to be impacted by construction disturbance. A restriction on movement of personnel or machinery north of intakes 1 and 2 would mitigate any construction disturbance. As a precaution, an on-site ornithologist would monitor the birds and may enforce a timing restraint on construction if there are signs of disturbance. The closest raptor nests are c.260m from the proposed pipeline, but are separated by the Bruar Water and are unlikely to require a timing constraint. A dawn/dusk timing constraint during March-May is likely to be enforced to mitigate



disturbance to ground nesting birds. Dissuasion measures are advised to discourage ground birds, waders and songbirds from nesting within working corridors.

Hydrology

The abstraction of the Bruar Water will result in lower flows between the intake and the powerhouse. A compensation flow of Q_{90} will be provided in the Bruar Water, which is sufficient to sustain river quality and ecological diversity. Abstraction will occur however, only when there is sufficient river flow to maintain an adequate compensation flow downstream of the intake. No more than the design flow will be abstracted, so that during flood events, the dam may overspill and the surplus water can continue downstream.

Morphology

The proposed intake on the Bruar Water upgrades an existing dam and therefore has minimal impact on the morphology of the river. The scale of this impact will be further reduced by a number of factors including the inclusion of a flushing pipe or scour valve in the intake structure, the presence of a compensation flow in the watercourse and the lack of an impact on flood flows, the main process for sediment movement. Moreover, it is envisaged that there will be gravel removal facilities at the main intake.

Landscape & Visual Impact

The scheme makes use of approximately 10km of existing track that runs through Glen Bruar, which will have little or no influence on the visual landscape. The addition of a small number of new tracks to access the intakes is therefore unlikely to significantly alter the character of the landscape. The intakes are likely to be visible from adjacent peaks and hillsides. However, the visual impact of the Bruar hydro scheme is also lessened by the presence of the existing dam on the Lochan and the SSE dam downstream of the proposed powerhouse location. The powerhouse will be in keeping with local architecture and the pipeline will be visible during the construction period but this will be fully restored in 2-3 years.

Noise

There are no dwellings in the vicinity of the proposed powerhouse position. Based on attenuation calculations, the sound pressure from the powerhouse will be equal to the ambient sound pressure level at a distance of 156.7m. Given that the nearest residential building, Bruar Lodge, is over 3.5km away, the impact of the scheme on noise levels at Glen Bruar can be considered negligible.

Socio-Economic Impact

An estimated average of 12-18 people will be employed during the construction of the hydro scheme. Local businesses are expected to benefit from the increase in construction staff and visitors in the area.

1.7 Conclusions

Although there are some minor environmental impacts associated with the proposal, the mitigation measures will reduce these to a level of very low significance. Given the contribution to Scotland's renewable energy targets and the associated carbon emissions reduction, this scheme offers significant national benefits.



2 Introduction

2.1 Location

It is proposed to construct a hydroelectric scheme at Bruar Water, on the Atholl Estate, Perthshire. The proposed scheme will be a storage type with a dam and intake built across the Bruar Water, encompassing an existing dam. A river diversion will also be built across the Allt Beinn Losgarnaich to re-direct the flow into the inundated area upstream of the dam. A buried pipeline will be constructed from the intake dam to a powerhouse, which will be located on the right bank (looking downstream) of the Bruar Water.

The site plan of the scheme is presented in Appendix L – Drawings and the details of the project are described in Chapter 3 – Scheme Description.

2.2 Context

2.2.1 Government Policy

It is widely believed that burning fossil fuels, such as coal and oil, and the associated accumulation of carbon dioxide in the Earth's atmosphere is a major cause of climate change. In 1997, the United Nations discussed the Kyoto Protocol in Japan, requiring industrialised nations to reduce emissions of greenhouse gases (which include carbon dioxide) by 5% of 1990 levels by 2008-2012. The UK government has agreed to meet this target, and has determined its own additional target of reducing carbon dioxide emissions by 50% by 2050.

As a member of the European Union, the UK has been set a target of generating 15% of its energy from renewable resources by 2020 and has set itself a national target of generating 30% of electricity from renewable sources by the same year. In addition to this the Scottish government has set its own target of a 42% cut in carbon emissions by 2020 and an 80% cut by 2050. The government has also set a target of generating 100% of Scotland's electricity from renewable resources by 2020.

The proposed development of the Bruar Hydro Scheme would contribute to all the above targets.

2.2.2 Regional Strategy

The Perth and Kinross Council recognises that there is a widespread consensus on the need to move towards sustainability in energy provision. Its policy, which is in line with national policies, supports and encourages the development of renewable energy in the area and it states that it will exercise its power as a regulatory authority to encourage appropriate renewable energy technologies that will deliver maximum benefits to the environment and the local economy.

Adopted in 2003, The Perth and Kinross Structure Plan seeks to promote the sustainable development of Perth and Kinross. It recognises that renewable energy technologies are diverse and so have very different effects upon the local environment. According to the Plan, the renewable energy technologies that offer the greatest potential in the area, in addition to the existing large-scale hydro schemes, are wind energy, small-scale hydro and the use of forest residues.

The Structure Plan states that proposals for the development of renewable energy schemes will be supported where they are considered environmentally acceptable and where their energy contribution and benefits in reducing pollution outweigh any significant adverse effects on local environmental quality.