

2 SCHEME DESCRIPTION

2.1 General Description

The Chais hydropower scheme would generate up to 99 kW using run-river flows. It would generate on average an estimated 495 MWh per year of green energy. It would comprise a small intake weir, buried pipeline and small powerhouse. It would have a connection into the grid and is located in close proximity to the existing Cuaich power station which is operated by SSE.

2.2 Intake

The intake will comprise a low concrete weir with Coanda screen feeding into a 450mm diameter HDPE buried pipeline. The weir will have multiple crests at different levels to allow passage of compensation flow, power generation flow, and floods. The coanda screen (which is self cleaning) will ensure that gravel larger than 1mm diameter and any vegetation or flood debris will be carried over the weir without entering the pipeline. There will be no effect on the sedimentation regime of the burn, and minimal effect on flood discharges. A similar structure is shown in figure 2.



Figure 2 – a coanda screen intake under construction

2.3 Fish Protection

Although there are not thought to be fish present in the burn, the Coanda screen and will not admit fish or particles larger than 1mm in size. The outfall will be fitted with a screen having 20mm spacing to deter the passage of fish and animals such as otters.

2.4 Pipeline

The pipeline will be 1600 m long, buried over its full length. It will be fusion jointed High Density Polyethelene (HDPE). This is the best material for ease of construction and minimising environmental disturbance, as it can be welded at a single location and winched up the hillside in strings of up to 400m long. A typical pipelaying operation is shown in figure 3.



Figure 3 – a 500mm diameter HDPE pipeline under construction

2.5 Powerhouse

The powerhouse will be a small pitched-roof building housing the turbine and generator with an outfall channel discharging water back into the burn at low velocity. It will be located on the right bank of the burn a short distance upstream of an existing intake dam for the Cuaich scheme. A typical building is shown in figure 4.



Figure 4 – a powerhouse for a 99kw turbine

2.6 Access and Traffic

Access to the powerhouse site will be using existing estate roads. A temporary track will be made to access the pipeline route. This will be for the use of small vehicles such as quad bikes or ATV's, and temporarily for tracked excavators during construction. Construction operations such as placing concrete will be carried out by helicopter to avoid damage to the local ecosystem.

2.7 Grid Connection

A grid connection has been applied for and is in process of determination by SSE.

2.8 Operation and Maintenance

Very little maintenance will be required other than periodic inspection of the intake and occasional screen cleaning. The turbine and electrical equipment will be covered by a routine maintenance programme which entails periodic checking and routine maintenance such as greasing bearings.