

## Stage 2 Report, Site 3: Primrose Lodge, Clitheroe

### Introduction

This study follows on from a pre feasibility report produced by Inter Hydro Technology on behalf of the Forest of Bowland AONB, this is published at [www.forestofbowland.com](http://www.forestofbowland.com). This stage two study has focussed on the lodge itself, rather than the site selected at stage one. Some of the main unresolved items at this site included establishing land ownership, flow and head of the outflow, and integration with current planning proposals.

TEP (an environmental consultancy) are in the process of preparing a report on the hydrology and hydraulics of the water course at Primrose Lodge, which includes a detailed site investigation and survey into the water management.

It is apparent that the mill pond is very silted up and requires extensive dredging. There is an existing mill race that runs around the perimeter of the mill pond which has historically acted as an overflow. The outflow from this channel and from the pond both flow to the same weir which is beneath the Primrose Mill access road. The silt removed from the pond may be used to fill in the historic channel which is now empty and mostly dry.

The pond and surrounding habitat is designated as a Biological Heritage Site but is unmanaged and is not currently in good condition. Japanese Knotweed and Himalayan Balsam are both present.

### Proposal

It is proposed that the mill pond be re-established as a woodland and wetland habitat. This would not quite involve reinstating the pond to its original extent, but would increase the capacity of the pond and ensure a clear channel to the outflow.

The most likely location for a hydro scheme on this site is at the outlet of flow from the site. Water flows from the old overflow and pond over a weir beneath a bridge supporting the Primrose Mill access road. The head available has not been surveyed, but it is estimated that there is at least a two metre drop available.

In order to establish the feasibility of the turbine installation itself, it will be necessary to establish the space available between the bridge soffit and the water level. It is also recommended that road and flood risk engineers are consulted to establish how any installation might affect the bridge structure. It is understood that the bridge was rebuilt in 1978, and it is suggested that plans of the bridge construction will exist. There is limited space between the road and the pond water level. This will make the construction of any hydro installation challenging.

### Power and energy predictions

Due to the relatively small flow of water from this pond, it is thought that the power and energy yields from this scheme will be small (see Stage 1 study for Primrose Mill).

### Planner and Environment Agency Feedback

The watercourse is classified as Main River by the Environment Agency, despite being a fairly small watercourse. Flooding issues would need to be taken into account if any alterations were made to the existing outflow (including a turbine installation).



There is currently no fish passage provision across the weir. The Environment Agency initially suggested providing fish passage by installing a series of small weirs below the existing main weir. However, this may result in the water level being raised above the building on the left bank, and therefore would increase the risk of flooding. Due to the constriction beneath the road bridge and the steep drop from the weir to the watercourse, the provision of fish passage will be challenging.

The lodge is designated a BHS. The site is not currently in good condition but does have some areas with good successional habitat. Any scheme here should look at whether it could improve the habitat quality within the site.

Under the Water Framework Directive this watercourse is classified as being at Moderate Ecological Status. Any scheme at Primrose Lodge must not result in the deterioration of this status.

Any fish pass proposed as part of this scheme will require approval from the National Fish Pass Panel.

## Public consultation

Any development at Primrose Lodge will require thorough public consultation with residents and stakeholders to ensure all viewpoints and issues are considered prior to any further proposals for development.

## Next Steps

The next steps at Primrose Lodge are to:

- Commission a survey of levels at and below the weir to establish the head and the gap available between the water level and the soffit of the road bridge.
- Use TEP's report to identify how a hydro scheme could be incorporated into future plans for the site.
- Consult a flood risk engineer to establish whether any installation on the weir would increase flood risk upstream.
- Consult a road engineer to confirm what installation might be possible without compromising the structure of the road and bridge.

