

## **Construction Method Statement & Construction Environmental Management Plan**

**Ref: 231120CMS-v1 (20/11/2023)**

**Project: Hydropower scheme for Ifan W. Jones at Tŷ Mawr, Mallwyd, SY20 9HS**

### **Trees & Vegetation:**

An arboricultural assessment of the site has been carried out. Please refer to Mynydd Timber Services Limited's Arboricultural Report which contains an Arboricultural Method Statement and Tree Protection Plan. The following is a summary from this report:

- Tree protection fencing and temporary ground protection is to be used at the power house as shown in the Tree Protection Plan
- During the installation of the overground section of penstock (Peg 300 to Peg 465), trees below the line of the penstock are to have their trunks protected with rubber matting extending up the tree stem to 600mm.
- The overground section of penstock (Peg 300 and Peg 465) is to be secured in place on the steep slope with steel stakes driven into the ground on the downhill side of the penstock. Stakes should be as far away as possible from tree stems to minimise damage to roots.
- For the overground section of penstock, where it is placed over exposed roots, it should be packed out on either side of the roots to reduce pressure and abrasion on them.
- Six trees will require removal. This will be done outside the bird nesting season (mid-February to August inclusive), or be immediately preceded by a detailed inspection by an ecologist for nests and, where appropriate, bat roosts. Should any active nests be found, they must be left undisturbed with at least a 5-metre buffer of cover around them until the young have fledged. Some branch and root pruning may also be required. All tree works should be carried out by professional arboricultural contractors with appropriate qualifications.
- No lighting of fires within 10 metres of the canopy of any tree.
- Signs, fencing, tree protection barriers or structures shall not be attached to or supported by trees.
- Mixing cement, use of chemical toilets and other use or storage of anything that would be harmful to trees shall not take place within, or close to a Root Protection Area (RPA). The distance away from the RPA must be sufficient, and the slope of the site must be such that contamination of soil in the RPA would not occur if there were spillage, seepage or displacement.
- No plant machinery with hydraulic arms (such as excavators) shall be operated within striking distance of any trees.

### Ground Nesting Birds:

All construction areas will be checked for nests by a qualified ecologist immediately before any work commences if the work is to be carried out in the nesting season (mid-February to August inclusive). Any active ground nests that are found will be clearly marked (e.g. with a coloured cane) and left undisturbed until the young have fledged, with a buffer zone of at least 30 metres established around each nest in which no activities will be undertaken.

### Otters:

Whilst the ecology report states that there were no signs of otter, the ecologist recommends a pre-construction survey immediately prior to construction to ascertain whether there is any new evidence of them (check for any newly established holts or couches).

In addition, the following procedures are to be adopted to minimise any impact on otters:

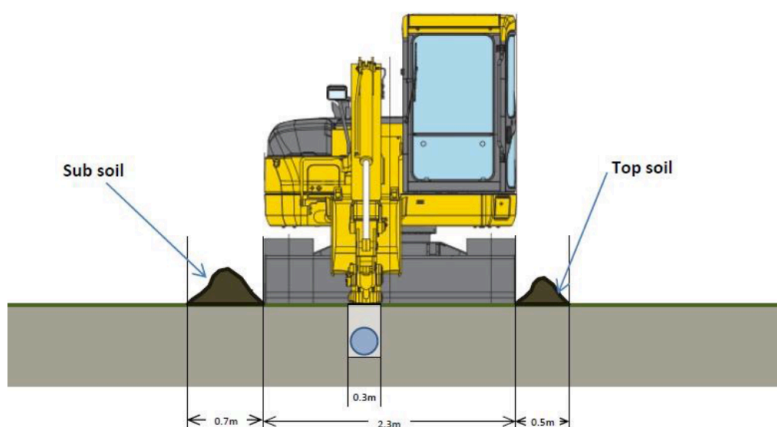
- No night time working
- No lighting of the watercourse
- Ideally trenches will not be left open overnight. In the event that this is unavoidable, ramps are to be left in them to enable otters to climb out.

### Trench Preparation:

During the preparation of the penstock and cable trenches, turf, top soil and subsoil will be removed and stored separately to ensure that when back filling, they are replaced in the correct order to minimise disruption and ensure a quick recovery.

The trench depth required for the penstock will be a minimum of 1000mm to provide at least 600mm of cover. In a few locations along the route, due to undulations in the land, deeper trenches will be required up to a maximum of 3,000mm to ensure a gradual fall in the penstock of at least 0.5%.

The trench width will be dictated by the bucket on the digger, but will be approximately 500mm wide for the shallow sections and up to 1,000 to 1,500mm wide for the deeper sections. The trench depth for the cable will need to be a minimum of 1000mm to provide safe cover. The working width required for the penstock and cable installations, including the temporary pile of spoil, will be about 3,500mm for the shallow sections and about 4,500mm for the deeper sections, as per the diagram below:



Trench preparation and installing the penstock and cable is expected to take 2 to 3 weeks.

**Works in the purple moor grass habitat (*Molinia caerulea*):**

For the preparation of the penstock trench, from the intake to Peg 150, the ecologist's advice is as follows:

*“Construction ground protection mats will be used for all work within the wet grassland habitat to alleviate pressure from tracked machinery.*

*During the preparation of the penstock and cable trenches, turf, top soil and subsoil will be removed and stored separately to ensure that when back filling, they are replaced in the correct order to minimise disruption and ensure a quick recovery.*

*In addition to the above condition, works in the *Molinia mire* habitat are subject to the following measures:*

- *All trenching works through this habitat will be completed within 48 hours to; improve the likelihood of successful reinstatement of vegetation and therefore aid recovery of this area, and to reduce the amount of time that ground level protection is in place.*
- *The top 0.5m of vegetation will be retained in a damp condition whilst it is displaced. The vegetation will be stored within a PVC sheet and watered at least twice in the 48 hour period.”*

**Crossing the highway with the generator's export cable**

The low voltage armoured cable, which runs from the power house to the grid connection point at Ty Mawr farm, will cross under the single track highway C2017 at NGR SH 89373 11355, adjacent to the proposed power house. Powys County Council need to be contacted and a licence application completed for these works, as required under Section 50 of the Highways Act, 1980. Contact details for the application form are:

Email: [street.works@powys.gov.uk](mailto:street.works@powys.gov.uk)

Phone: 01597 826667

The works must be carried out by “a person having prescribed New Roads and Street Works Act Qualification as Supervisor and in addition, must ensure that a person having a prescribed qualification as a trained operative is present on site at all times when work is in progress”. The council will be able to provide a list of accredited contractors.

**Access routes, transporting and storing materials:**

Construction access routes around the site will follow the penstock and cable routes with Existing stone and concrete tracks will be used where these are present. A new, permanent, stone access track will be built to the power house site.

Materials, including the penstock HPPE plastic pipe, will be offloaded at Ty Mawr farm where there is good access and stored on a mixture of hard standing and improved grassland adjacent to the farm buildings. These materials will be moved to the material storage areas as and when they are needed. For more details on deliveries, and the vehicles to be used to bring materials to the farm, please see the Transport Statement.

Care will be taken to store materials only in the designated storage areas (marked on the site layout 230209LB01). The materials will be moved to the storage areas adjacent to the intake and power house sites just before work begins to minimise the time that they are stored on the ground to limit impact on the grassland.

**Public Rights Of Way:**

The proposed works will cross two Public Rights of Way as follows:

- A Footpath (Route Code: 209/3/1) will be crossed by the penstock's trench at NGR SH 89582 11238 (near penstock Peg 523).

- A Restricted Byway (Route Code: 209/4/4) will be crossed by the low voltage cable's trench at NGR SH 89316 11726 (between cable pegs C420 and C430, where the cable trench crosses Ty Mawr farm's concrete access track).

During construction it will be ensured that these Rights Of Way are not obstructed. The construction workers are to guide walkers safely around the trench preparation. These sections of trench will only be open for a day or two at most and construction workers will ensure they are made safe with boards over them, at the locations where the rights of way cross them, if they are left open overnight.

#### **Restoration of the land post construction**

The construction methods outlined above should limit the creation of any areas of bare soil post construction, but if any do exist, and if these areas are situated within improved grassland (such as the cable trench), they will be re-seeded.

The majority of the remainder of the site (power house, penstock & material storage areas) are situated within acid grassland. The ecologist's recommendation for these areas is as follows:

*"It is important that any areas of bare earth which result from the work are **not** re-seeded with an improved grassland seed mix. The areas should be allowed to regenerate naturally or an acid grassland mixture should be used."*

#### **Intake weir construction:**

To construct the weir a temporary dam will be built upstream. This will consist of boulders, sand bags and plastic sheeting. A pipe will run from this temporary dam diverting the water around the intake site. This will ensure that the intake construction work is carried out in a dry area, removing the issue of water being contaminated with silt or concrete during construction. This temporary diversion will be required for at least two to four weeks to allow for construction and curing of the new intake. The construction work will be carried out at a time of year when the flow rate in the watercourse is low, to minimise any concerns of flood waters.

Whilst installing the bypass, any stranded fish will be carefully moved downstream of the bypassed section of the watercourse.

Quick drying cement will be used in the intake's floor slab to minimise the curing time and so minimise the chance of any contaminated run-off. A sump pump will be on-hand to remove any water which gets through the temporary dam. In addition, a small pipe will be inserted through the intake's floor slab, from upstream of the concrete shuttering, to constantly drain clean water through the construction area and prevent any concrete wash-out.

Installation of the weir is expected to take approximately two to six weeks.

#### **Power house construction:**

Care will be taken not to contaminate the watercourse with silt during the excavation for the tailrace and the installation of the headwall arrangement for the outfall. Work will be carried out from the watercourse embankment wherever possible. Silt trap fabric will be used between the outfall's headwall arrangement and the watercourse to limit any silt contamination of the watercourse. The working area for the outfall's headwall will also be isolated from the watercourse using sandbags to ensure work is carried out in a dry area to prevent any contamination of the watercourse with cement.

Installation of the power house is expected to take approximately four to six weeks.

**General working methods:**

*(Inline with Pollution Prevention Guidelines PPG5)*

In view of the fact that contamination of the watercourse with silt can cause suffocation of aquatic life, and that concrete and cement are very alkaline and corrosive, all reasonable measures will be taken to avoid contamination as follows:

- A temporary bypass of the watercourse around the construction site will be used as mentioned above.
- Adjacent to the watercourse, stripping of vegetation will be minimised to reduce any concern of run off being contaminated with soil and silt.
- Washing of construction vehicles will take place at least 10 metres away from the watercourse or any surface drain. Washing out of concrete mixing equipment will be contained within the farmyard hard standing areas.
- If the river needs to be crossed with vehicles, existing crossing points will be used where possible, rather than crossing through the watercourse.
- Work will be carried out from the bank, rather than in the river, wherever possible.
- Silt fence material, a suitably sized dewatering bag and pump will be available on site at all times, and staff trained in their use, if any event should arise where any watercourses are at risk of runoff containing silt.
- Concrete mixing areas will be at least 10 metres away from the watercourse or any surface drain.

All reasonable measures will be taken to avoid any contamination of the watercourse with diesel or other chemicals as follows:

- Re-fuelling of plant will mainly be done in the farm yard on impermeable hard standing. If occasionally it needs to be done nearer to the construction areas it will take place away from the watercourse or drains with a drip tray to catch minor spills.
- Small well sealed containers (jerry cans) will be used to refuel plant by hand, when it needs to be done near the construction sites, and these will not be left unattended overnight but removed to a secure area at the farm.
- No paint will be required in the construction of the intake weir. A small quantity may be required for the power house. This will be painted by hand to reduce risks of contamination associated with spraying. Small, well sealed containers will be used for paints and solvents and they will not be left unattended overnight, but stored in a secure area.
- A small quantity of sealants may be required in the construction works. Low solvent or water based products will be used where possible and stored securely overnight.
- No hazardous chemicals such as herbicides will be used for the construction.

**Habitat enhancement features:**

- In mitigation for the removal of the six trees, the woodland where the penstock will be laid overground (between Peg 300 and Peg 465) will be fenced with stock proof fencing. Inside this fencing 50 saplings of native species (Oak, Rowan, Birch, Hawthorn, Hazel, Holly and Honeysuckle) will be planted. Tree planting will take place between November and March when plants are dormant and ground moisture levels are high. The saplings will be protected with guarding and stakes to prevent damage by rabbits and hares. Guards and stakes to be removed from the trees from year 8-10, provided the plants are established and not at risk from browsing pressure.
- Where hedgerows have been impacted, they will be reinstated with Hawthorn and Blackthorn saplings planted in double rows at staggered 300mm centres, with the new plantings protected by temporary stock proof fencing.