ERW FAETHLON

HEP

TYWYN

ECOLOGICAL SURVEY

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1.0 SUMMARY

- There is a proposal to develop a small-scale run-of-river HEP scheme to provide electricity to supply a farm butchery business.
- The penstock route passes almost entirely through Improved pastures of little floristic interest.
- The in-stream bryophyte flora is limited to two common species only.
- No Protected plant species were found within the study area.
- No signs of otters were noted during the survey.
- A small area of Badger feeding scrapes were found near the upper end of the penstock but it is concluded that this species will be unaffected by the proposal.
- No signs of water voles were noted during the survey.
- While bats undoubtedly feed over the survey area, principally near the farmhouse complex, no roosting opportunities were found in the study area. Bats, it is concluded, will not be affected by the proposal.
- Birds will not be affected by the proposal.
- Reptiles will not be affected by the proposal.
- No Invasive Non-Native Species were found anywhere in the study area.
- Biodiversity Enhancement is suggested at the end of the report.
- In conclusion, the site for the proposed HEP is of very low ecological interest and no significant environmental impacts are foreseen.

2.0 INTRODUCTION

The owners of Erw Faethlon Farm in Cwm Maethlon (NGR: SN627 987), Tywyn, wish to develop a small-scale run-of-river HEP scheme. The generated electricity is intended to supply the farm's butchery business's freezers and fridges. An ecological survey is required to accompany the Planning Application to the Snowdonia National Park Authority, the LPA. **Gritten Ecology** have been commissioned to undertake this survey which covered all vegetation and Protected Species along the penstock as well as along the affected reach of the small unnamed stream. The survey was carried out on 21.9.23 during clear dry weather. The survey was carried out by Dr Rod Gritten who has over forty years' experience of upland ecological surveys in North Wales.

The layout for the scheme is shown in **Map 1**. The Intake Weir is to be located at SN 63014 99318 at a height of 162 metres asl (**Photo 1**) and the Turbine House will be located at SN 62769 98862 at a height of 81 metres asl (**Photo 5**) (**Map 1**). The site for the scheme is located within the Snowdonia National Park but outside any statutory nature conservation designations.

Access to build the scheme, which will only require a 200mm penstock, will be largely from existing farm tracks across Improved pastures.

Map 1: The layout for the scheme (pipeline in red).

3.0 VEGETATION

3.1 Legislative Context

Under the Wildlife and Countryside Act 1981, it is an offence to intentionally pick, uproot or destroy any wild plant included in Schedule 8. Particular care must be taken if any

plants (or habitats) listed under Section 42 of the NERC Act (2002) might be affected. This act was superseded by the Environment (Wales) Act 2016 and its Section 7 List of Species and Habitats of Principal Importance for Wales. The implications of this are that "Welsh Ministers" must take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section of the Act. The list of habitats and species is currently exactly the same as the Section 42 (2002) list but this is under review.

3.2 Results

The penstock route was walked first and all species recorded. The affected reach of the stream was then walked, where possible, and all riparian and in-stream species noted.

3.2.1 The penstock route

As a generality, the entire penstock route except for a very small section will be buried through sheep and cattle grazed pastures that have all been reseeded since 2016. The uniformity of the vegetation cover can be seen in the aerial photo shown in **Map 2**.

Map 2: Aerial view of the penstock route. It mainly passes through Improved pastures.

The Intake (**Photo 1**) is located within a narrow riparian strip which is fenced out both sides from the adjoining pastures. The penstock passes through an area of dense Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus agg*) before passing through a fence. The sward here corresponds to **NVC: W25 *Pteridium aquilinum-Rubus fruticosus agg*** underscrub, reflecting the lack of grazing along the riparian zone of the stream. Other species noted here, sometimes over-topping the dense Bracken and Bramble are *Molinia caerulea, Sorbus aucuparia, Ilex aquifolium, Juncus effusus, Digitalis purpurea, Dryopteris filix-mas, Ulex gallii, Urtica dioica, Vaccinium myrtillus, Cirsium palustre, Agrostis capillaris, Stellaria alsine, Deschampsia cespitosa, Chrysosplenium oppositifolium* (in flushes), *Blechnum spicant* and the bryophytes *Thuidium tamariscinum, Polytrichastrum formosum, Dicranum scoparium* and *Hypnum jutlandicum.*

Photo 1: Once beyond the Intake Weir, the penstock passes through a riparian zone dominated by Bracken and Bramble

The penstock then heads south parallel to the stream through a slightly wetter area with much the same vegetation (**Photo 2**) although the sward is dominated by *Juncus effusus* and *J. acutiflorus*. The ground is a mosaic of **NVC: W25** and **M23 *Juncus effusus/acutiflorus-Galium palustre*** rush-pasture with, additionally, *Galium palustre, Angelica sylvestris, Potentilla erecta, Carex panicea, Cardamine pratensis* and *Vaccinium oxycoccus.* Bryophytes are represented by *Pleurozium schreberi* and *Calliergonella cuspidata*.

This fifty-metre sward is arguably the most interesting vegetation along the entire penstock route. It is more or less fed by groundwater seepage from the steep slope to the west. Since the ground is so flushed and the steep slope makes access by machinery very difficult, this short section of the penstock will be laid on the ground surface, thus causing minimal damage to the vegetation and its dependent hydrology. The slight break of slope along this section will mean the over ground pipeline will be virtually unseen from any viewpoint across Cwm Maethlon, so there will be no landscape implications. The very low grazing pressure here will allow the vegetation to grow over the pipeline very quickly, further hiding it from view.

Photo 2: The penstock will be over-grounded along this fifty-metre wetland section.

Once through the next fence, the penstock will be buried roughly parallel to the stream (**Map 1**) through a sheep and cattle grazed improved pasture of very little floristic interest (**Photo 3**). The sward is dominated by *Lolium perenne* and *Trifolium repens* with rarely *Taraxacum officinale agg., Cirsium arvense, C. vulgare, C. palustre, Deschampsia cespitosa, Geranium dissectum, Urtica dioica, Holcus lanatus, Juncus effusus, Festuca ovina, Ranunculus repens, Agrostis capillaris, Cerastium fontanum, Rumex acetosella, R. obtusifolius, Cynosurus cristatus, Danthonia decumbens, Achillea millefolium, Plantago major* and, very occasionally, *Prunella vulgaris.* The field is clearly a sown *Lolium perenne* ley which, in some areas is reverting to **NVC: U4 *Festuca ovina-Agrostis capillaris-Galium saxatile*** acid grassland, especially where Bracken is re-invading.

Photo 3: The penstock will be buried (red line) through this improved pasture.

Once through this field, the penstock will be buried in the track for a short distance (*Polygonum aviculare* and *Filago vulgaris*) and then across another improved pasture (**Photo 4**) before passing through a low hedge, over the stream and into the Turbine House next to a small barn (**Photo 5**). The flora in this field is identical to the field above it having been reseeded at the same time. The hedge has only developed since the riparian zone was fenced out and includes young *Salix cinerea, Fraxinus excelsior, Crataegus monogyna, Corylus avellana, Acer pseudoplatanus, Rubus fruticosus agg* and *Sambucus nigra*. The hedgerow will be allowed to regrow once the penstock has been built through it. However, since the penstock is so narrow, threading it through the hedge is unlikely to create much damage to it.

Photo 4: The penstock buried through the next improved pasture.

Photo 5: The penstock will be threaded through the hedge (right) and into the small Turbine House which will be sited next to the shed arrowed.

3.2.2 The affected reach of the stream

The small stream is generally only half a metre wide, widening to about one metre wide at the Turbine House (**Photo 5**). Since most of the stream and its narrow riparian zone is fenced out from grazing along almost its length, the bankside vegetation has generally over-topped the stream so it is difficult to gain access to survey its in-stream bryophyte flora. Coupled with the profusion of Bramble growth in the riparian zone (and the spate conditions at the time), the survey was by force limited to very small areas where access to the stream was possible.

Despite these limitations, it was considered that adequate reaches of the stream were accessible enough to provide a comprehensive picture of the bryophyte flora that could be affected by water abstraction during the running of the scheme. The in-stream bryophyte assemblage was limited to only two species: *Scapania undulata* and *Platyhypnidium riparioides*, both typical of mildly acidic fast-flowing streams. *Pellia epiphylla* was the only other species noted growing on bankside rocks in the riparian zone, isolated here because of its high humidity requirement. No other bryophyte species were found. The lack of in-stream bryophytes may well be due to the shading effects of the over-topping riparian vegetation growth.

3.2.3 The grid connection

This will be limited to a wire going through the wall into the meat unit which is just next door to the Turbine House (**Photo 5**). Here it will connect to the existing electrical system without need for any outside work or structures. Thus, there will be no impact on vegetation or any fauna.

3.2.4 Conclusion

This is a very modest HEP scheme proposal crossing over Improved pastures of extremely limited ecological interest. The stream itself is also of limited ecological interest as far as its bryology is concerned.

4.0 OTTERS (*Lutra lutra*)

4.1 Legislative Context

The European Otter is fully protected in England and Wales under Sections 9.1 and 9.5 of Schedule 5 of the Wildlife and Countryside Act 1981 under which it is an offence to kill, injure or take an otter without a licence; to intentionally damage, destroy or obstruct a holt; or to disturb an otter in its resting place.

In addition, it is protected under the European Habitats & etc. Directive (92/43/EEC) since it falls under Annex 2a and 4a of the Bern Convention (Appendix III). Otters are, therefore, 'European Protected Species'. They also receive worldwide protection under CITES (Convention on International Trade of Endangered Species). Licences are required for checking known holts or for carrying out work that may disturb otters such as the management of trees that are known to be used as resting (lie-up) sites. In Wales, the licensing authority is NRW.

4.2 Survey Methodology

Otters are very largely nocturnal animals and in practice are rarely seen during surveys. Instead, surveyors have to rely on characteristic field signs. The most common of these are their droppings, known as spraints. These have a very distinctive smell and appearance and are used to mark otter territories. They are, therefore, often deposited on prominent riparian features such as rocks, beneath bridges or on large tufts of tussocky vegetation. Careful examination of these spraints can often reveal the recent diet of these

illusive animals since fish bones, scales etc. pass through the otter's gut relatively unaffected by digestive enzymes. The texture and appearance of spraints can also be used to determine how recently they were deposited. The frequency of their distribution can also inform surveyors of the relative otter activity within a catchment. The characteristic smell of fresh spraints can often be detected some time before the spraints themselves are seen.

Other field signs are also important indicators of otter activity. These include prey remains, footprints and slides, holts and lie-up sites. Holts (breeding sites) and lie-up sites are usually marked by sprainting activity near their entrances.

In the context of the present survey, a careful search was made for, holts, lie-up sites and spraints and other otter signs along the penstock corridor, the affected reach of the un-named stream and, in particular, all around the Intake Weir and Turbine House/outflow sites (see **Maps 1** and **2**).

4.3 Results

No signs of spraints, holts or lie-up sites were noted during the survey.

4.4 Conclusion

If otters do use this small stream for feeding or to gain access to the uplands above, this small HEP scheme is likely to have no impact on them.

5.0 BADGERS (*Meles meles*)

5.1 Legislative Context

Badgers enjoy statutory protection under the Protection of Badgers Act 1992. Under this legislation, it is an offence to:

- willfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so,
- or to intentionally or recklessly interfere with a sett.

Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. Under this legislation, a sett is defined as "any structure or place which displays signs indicating current use by a badger". It is thus important to be able to distinguish between an old unoccupied sett and one in current usage.

In Wales, the Welsh Government (WG) provide licences for developments and construction activities which might disturb badgers but for developments listed under S.55(1) of the Town and Country Planning Act 1990, such as HEP schemes, it is NRW who have the appropriate powers. Developments and construction activities include:

- the use of heavy machinery (generally defined as tracked vehicles) within 30 metres of any entrance to an active sett,
- the use of lighter machinery (generally defined as wheeled vehicles), particularly for any digging operations, within 20 metres,
- light work such as hand digging or scrub clearance within 10 metres.

In practice, construction activities that require blasting with explosives will need to be licensed if more than 30 metres from an active sett. Thus, the need for a licence (and mitigation) will depend on the precise location and extent of the proposed development in relation to an active sett. In any event, it is probably best to consult both NRW and WG if there is any reasonable doubt about the possibility of disturbance to a sett.

5.2 Survey Methodology

Badgers are nocturnal animals and are rarely seen during the day, generally emerging from their setts at dusk. Thus, survey techniques rely on being able to detect field signs of these surprisingly common animals. Setts are the most obvious feature and a surveyor will be able to determine whether setts are active or not and gain some understanding of the population size and its fecundity by the number of entrances being used and the nature of the spoil outside these sett entrances. Other field signs include latrines, runs and footprints, feeding scrapes and the presence of their characteristic hairs caught on barbed-wire fences and other obstructions. If runs were located, these were followed for some distance in an attempt to find the location of active setts.

In practice, a thirty metre corridor either side of the proposed pipeline and grid connection route was surveyed in detail for signs of badger activity.

5.3 Results

No signs of setts were noted during the survey. However, that Badgers frequent the area was shown by a small area of grassland that had been characteristically dug up by a Badger feeding, probably, on Tipulid or ground beetle larvae at SN 62970 99242 (**Photo 6**). This area is close to the route where the penstock will be buried across the top pasture.

5.4 Conclusion

Though Badgers certainly feed within the study area, their presence will not be deleteriously affected by the proposed HEP scheme.

Photo 6: The small area of grassland where a Badger had recently been feeding.

6.0 WATER VOLES (*Arvicola amphibius*)

6.1 Legislative Context

Water Voles are protected by law and are a conservation priority within the UK's Biodiversity Action Plan (BAP). Under the Wildlife and Countryside Act 1981 (as amended by Variation of Schedule 5) (England) Order 2008 it is an offence to intentionally or recklessly:

- damage, destroy or obstruct access to any structure or place that water voles use for protection or shelter,
- disturb a water vole whilst it occupies such a place.

- This increased protection adds prohibitions against intentional killing, taking or injury, possession and sale. It should also be noted that Section 10 of the Act requires that "reasonable" steps are taken to avoid unnecessary damage to such structures or places.

Should it be considered that water voles might be disturbed by a development or construction activity, a licence will need to be obtained from NRW.

6.2 Survey Methodology

It is understood that water voles have declined by as much as 90% in the UK over the past few decades. Up to the 1950s and early '60s, in was common to see water voles in daylight plopping into watercourses and swimming across the ditches, slow-moving streams, ponds and lakes that was their commonest habitat. Because of extensive land-drainage and the predation affects of American Mink (*Neovison vison*), particularly in lowland areas, it is now extremely uncommon to see water voles. Thus, this species is now more common in upland areas. As a result, surveying for the presence of water voles has to be based on field signs rather than hoping to see the animals themselves. This involves a careful and detailed examination of the riparian and wetland habitats where they live and looking for the following signs: burrows, latrines, runs and larders.

A careful search was made of the riparian zone of the affected reach of the river and the wetland areas along the lower section of the penstock route.

6.3 Results

No signs of water voles were noted anywhere within the survey area. The lack of plant food diversity suggests the habitat here is sub-optimal for this species.

6.4 Conclusion

Water voles will not be affected by the proposed HEP scheme.

7.0 BATS

7.1 Legislative Context

All species of bats have been listed on Annex IV of the EC Habitats & etc. Species Directive (1994). Bats are, therefore, 'European Protected Species'. The domestic UK legislation which underpins this Directive ensures that individual bats and their breeding

sites (maternity roosts), nursery roosts and resting places (roosts) are protected. Before undertaking any works that might either directly affect bats or their roosts, surveys have to be carried out to ascertain the degree, if any, of usage by bats. Should any signs of bats be found, a licence from the WG has to be applied for before works commence. Developers starting such works will be breaking the law if a licence has not been granted before works commence.

7.2 Survey Methodology

Bats are nocturnal and remain well-hidden during the day. They are generally inactive in the winter when they are hibernating. Different species prefer different roosting sites. In the present context it was considered adequate to confine bat surveys to looking for potential roosting sites in cavities or under loose bark of trees where they might be vulnerable to felling or pruning during construction works. The barn next to the site of the Turbine House (**Photo 5**) was also examined externally to see if there were any suitable crevices that might allow access to roosting bats.

7.3 Results

Careful survey of the study area suggests there are no suitable sites that might provide roosting opportunities for bats. There are hardly any trees and, in any event, none of these will be affected by the proposal. The barn next to the site of the Turbine House showed no signs of bat usage. Whilst bats undoubtedly feed over the study area, neither construction nor the running of the proposed HEP scheme is likely to have any impact on these species.

7.4 Conclusion

Bats will not be affected by the proposal.

8.0 BIRDS

8.1 Legislative Context

Under the UK Wildlife and Countryside Act (1981), it is an offence to take, damage or destroy the nest of any wild bird while that nest is in use or being built, or to take or destroy an egg of any wild bird. Under the same legislation, it is an offence to intentionally or recklessly disturb any bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young, or disturb dependent young of such a bird. Should there be a possibility that any bird nests be damaged during the construction of the HEP scheme, works would have to stop until the young had flown and there was no possibility of a second or subsequent brood being raised in the same nest.

8.2 Survey Methodology

A careful search was made along the proposed penstock route for nests and birds. Binoculars were used to facilitate identification. As well as current signs of breeding bird activity, a very detailed search was undertaken for previous years' nests along the pipeline route, particularly of ground-nesting birds. Ideally, breeding bird surveys involve searching

for signs of birds which may then lead surveyors to the site of nests. Finding nests themselves, especially in dense ground vegetation is, in practice, quite rare unless an observer can spot them by inadvertently 'flushing' the birds.

8.3 Results

No signs of previous birds' nests were noted within the study area. Only one species was seen during the survey, a wren (*Troglodytes troglodytes*). Certainly, other species will feed over the area but since the majority of the study area is composed of Improved pastures of very limited floristic diversity, the bird interest is likely to be limited. In any event, this small HEP scheme is unlikely to have an impact on birds.

8.4 Conclusion

Birds will not be affected by the proposal.

9.0 REPTILES

9.1 Legislative Context

Under the Wildlife and Countryside Act 1981, it is an offence to intentionally kill, injure or take any reptile included in Schedule 5. In the present context, this would include Adder (*Vipera berus*), Common Lizard (*Zootoca vivipara*), Slow-worm (*Anguis fragilis*) and Grass Snake (*Natrix helvetica*). The Countryside and Rights of Way Act (NERC) 2006 gives additional protection against "reckless" behaviour that might endanger the life of these reptiles. All four species are included on the Section 42 list and are now included on the Section 7 list of the Environment (Wales) Act (2016). It is now accepted practice, where there is a known and significant population of any of the above reptile species or the development is of such a scale, to exclude them from the site by appropriate fencing, capture and translocation.

9.2 Methodology

It is most unusual to find reptiles during a survey, so survey was therefore based on simply assessing the suitability of the study area as reptile habitat.

9.3 Results

No signs of reptiles were noted during the survey. The habitat is considered to be sub-optimal for reptiles being largely composed of Improved pastures that are regularly grazed by sheep and cattle. Areas of dense Bracken at the upper end of the penstock would provide excellent cover for reptiles and these are often close to open areas that would provide basking opportunities.

9.4 Conclusion

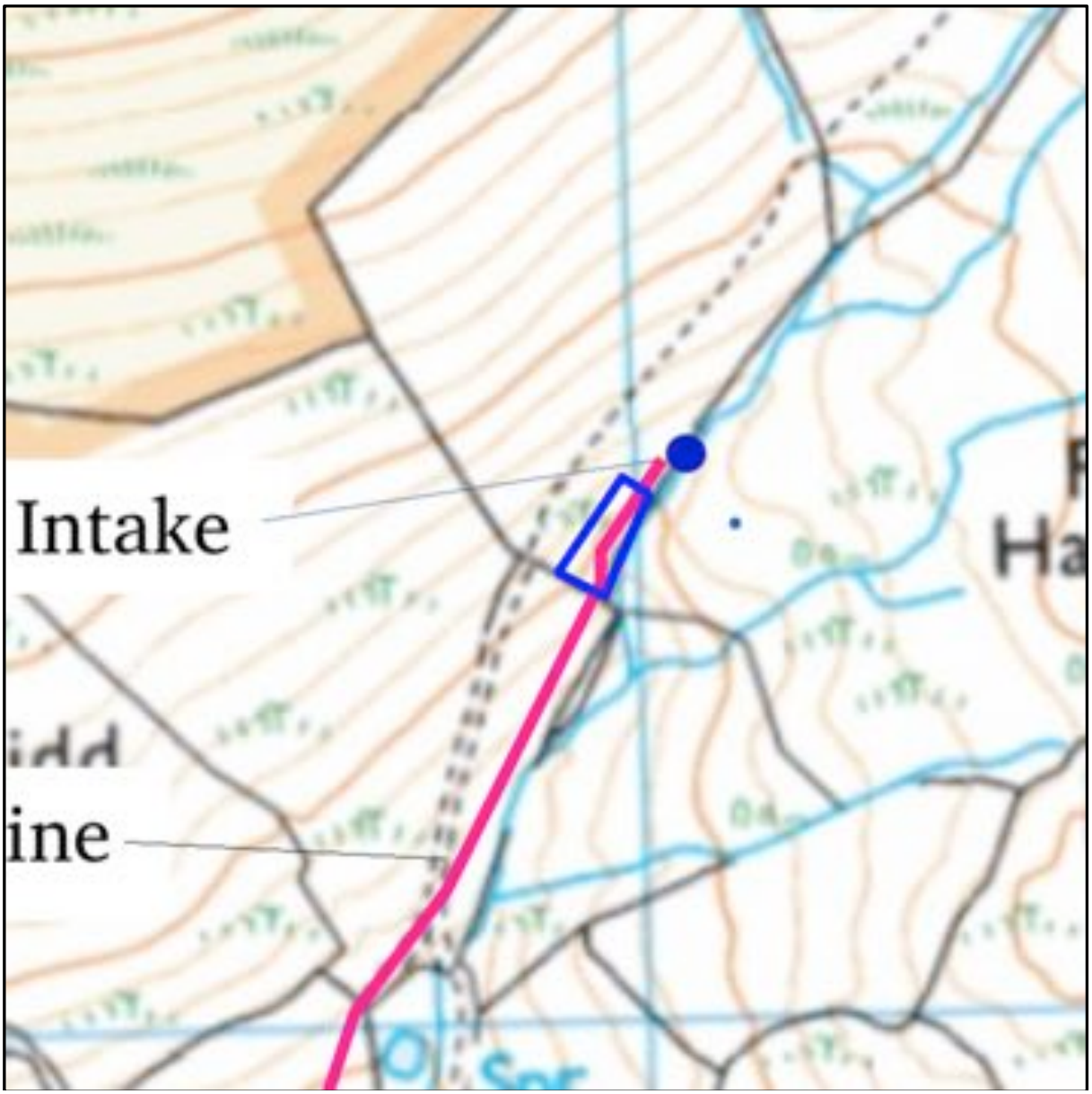
However, it is considered that reptiles, if present, are unlikely to be affected by the proposal.

10.0 INVASIVE NON-NATIVE SPECIES (INNS)

No INNS were noted anywhere within the study area.

11.00 BIODIVERSITY ENHANCEMENT

On a farm that is largely composed, at least within the broad area of the proposed HEP scheme, of recently Improved pastures, creating an area of meaningful Biodiversity Enhancement is somewhat problematic. However, the landowner has agreed to fence off a small compartment (**Map 3**) from grazing to allow a small woodland to development by natural colonisation from the riparian trees adjoining it (*Sorbus aucuparia, Ilex aquifolium*). This will cover the area where the pipeline will be laid on the surface and is an area of degraded wetland mentioned in **3.2.1** above. Considering the proposed scheme will have minimal ecological impacts, creating a small scrub woodland will be a significant positive gain.



Map 3: The small rectangle in blue denotes the area to be fenced off for Biodiversity Enhancement.