RIVER BARLE @ DULVERTON:
RIVER JELLY LICHEN SURVEY REPORT

April 2014

A report to Atkins by:

Dr Nigel T H Holmes
ALCONBURY ENVIRONMENTAL CONSULTANTS
The Almonds, 57 Ramsey Road, Warboys, Huntingdon PE28 2RW
Tel: 01487 822020; Mobile: 07957 424887: EMAIL: n.holmes3@btinternet.com

1. Purpose: This is a brief note to Atkins following a request to check a site on the River Barle (Dulverton, West Somerset) for the presence/absence/locations of River Jelly Lichen *Collema dichotomum*. The lichen is a protected species (schedule 8 of the WCA 1981), and as such damage to any populations has to be avoided unless there are extreme mitigating circumstances. The reason for needing to know the whereabouts of the species in the river at Dulverton was because an historic weir has been breached, and there is a desire to restore it without impacting the River Jelly Lichen population in any way.

The survey was undertaken on Wednesday 3rd April 2014 when river discharge was low and good visibility made for ideal conditions for accurate survey. The only thing hampering reliable survey was the extent of vegetation growing on stable boulders and bedrock, notably the seasonal explosive growth of the red alga *Lemanea*.

2. Location: The location of the site is shown in Figure 1 below.

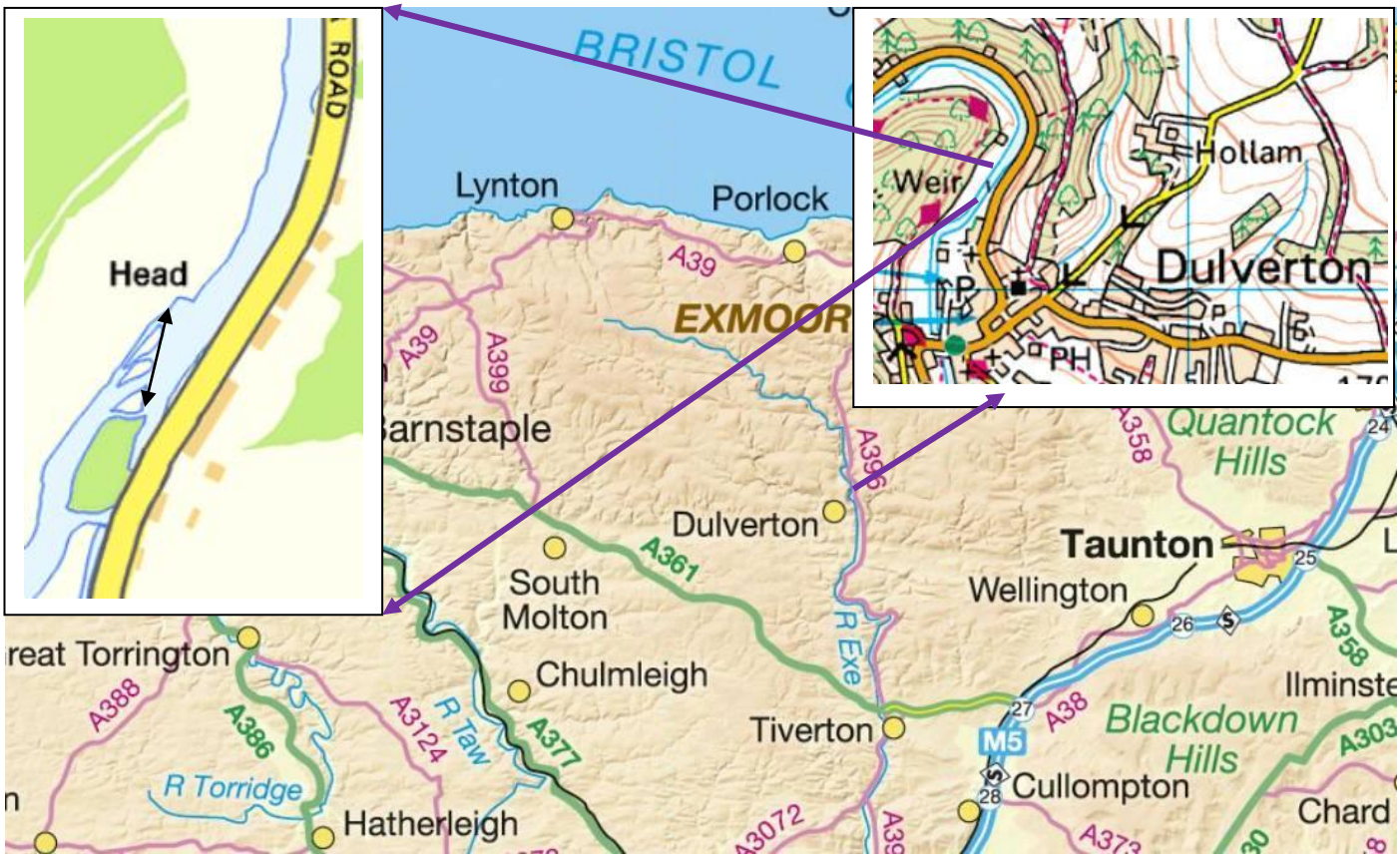


Figure 1. Location of the site, north of Dulverton. The weir (shown by black arrow) runs for c60m north to south from SS914284 to SS914283.

3. Over-view of site characteristics: Figure 2 summarizes the site characteristics, with images presented in Appendix 1 illustrating most of the main features visually. In summary the relevant characteristics were:

- The weir has several breaches, and downstream of this three small river islands have been developing for many decades;
- Flow between the three islands is shallow and over very unstable cobbles and pebbles;
- The larger channel immediately upstream of the grill to the mill leat has a more stable flow and bed, but this too is dominated by pebbles and cobbles;
- Downstream of the weir flow is directed towards the right bank where some larger boulders are present, and some are firmly embedded;
- Opposite the main outfall at the southern end there is some bedrock on the right side of the channel, with the usual loose cobbles on the left side;

- A line of mature trees along the right bank downstream of the weir supports a good bryophyte community, with abundant *Porella pinnata* present to approximately 1m above low-flow water level (see Appendix 2 showing national distribution);
- Upstream of the weir the water velocity is generally sluggish (would be ponded when weir restored) for over 70m upstream;
- The right (west) side of the channel is dominated by unstable cobbles and the deeper left side (east) dominated by larger boulders;
- Around 75m from the weir there is a faster-flowing, shallower section with bedrock present along the left side of the channel.

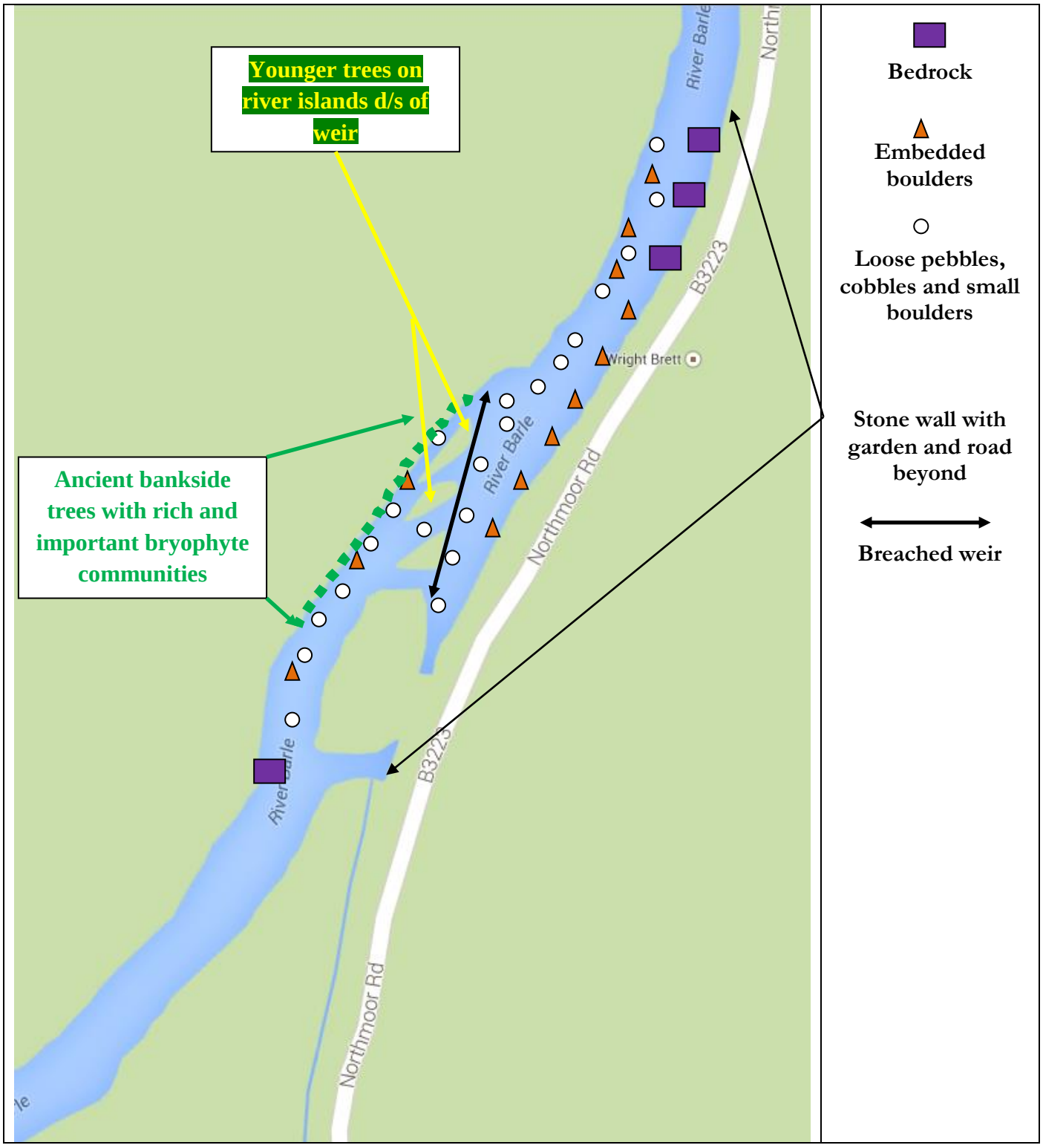


Figure 2. Summary of key physical characteristics of the site.

4. Summary of survey for River Jelly Lichen: Figure 3 below shows where the lichen was found, and where it was not. There is reasonable confidence in the findings since the locations where RJL was found coincide with where the most stable areas of bed are located (bedrock and embedded boulders) and it was never found on the loose cobbles. The loose cobble areas also had least moss and algal cover, and so if the lichen had been present in such areas it would have been easier to see. The only area where it was reasonably common was the only location where habitat was optimum – upstream on the left side of the channel c75m from the weir.

Due to the extent of algal cover, and water depth, it was impossible to photograph the lichen in situ. A small amount of material was collected as voucher specimens (sent to Atkins) and a photo in Figure 4 shows this material for reference to accompany this report.

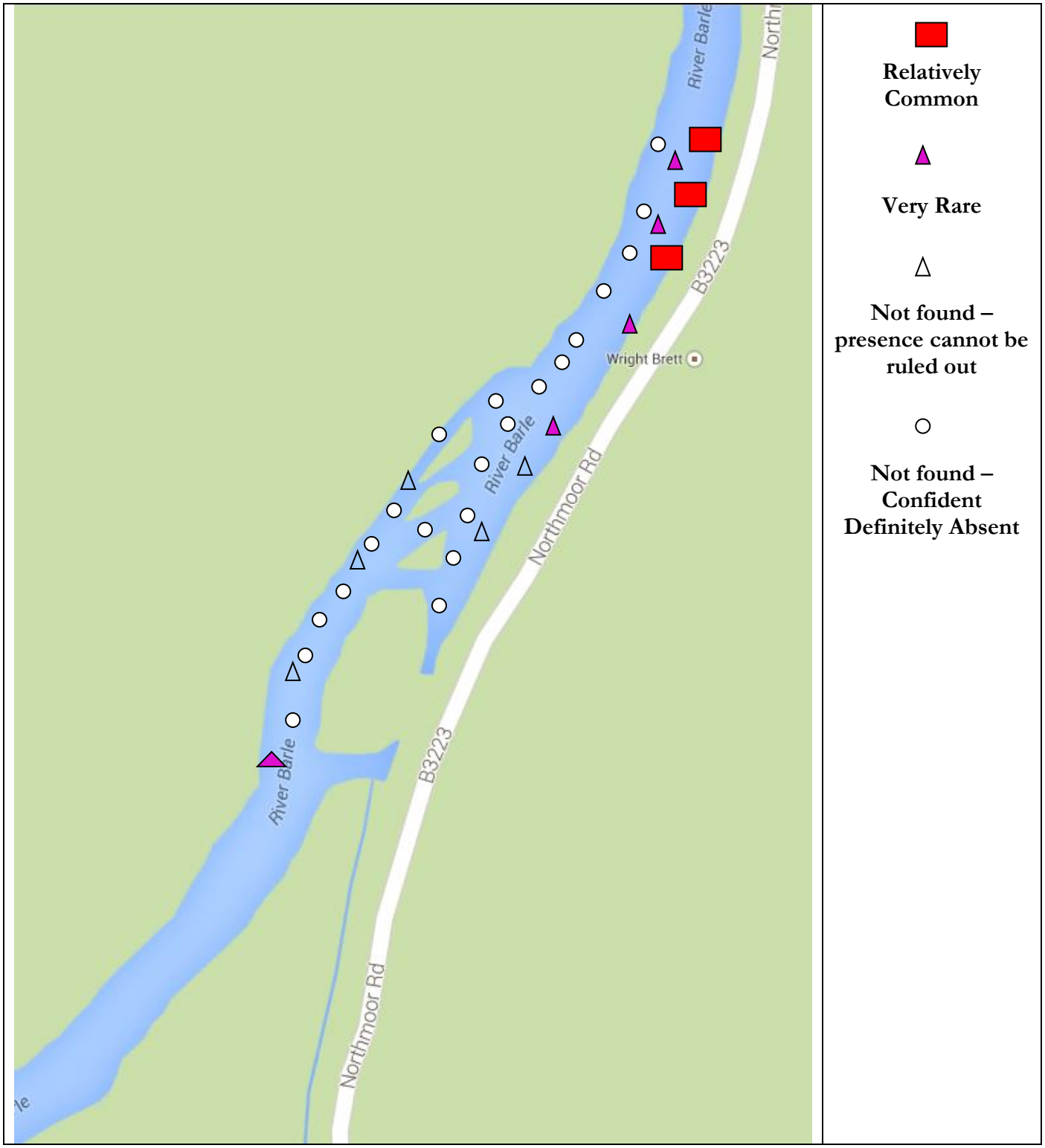


Figure 3. Result of River Jelly Lichen survey.

5. Other vegetation recorded IN the river at the site: Box 1 below lists the aquatic taxa noted at the site (all those on the standard EA Macrophyte Recording list were recorded if seen). It should be noted that within the sections marked as being dominated by unstable cobbles in Figure 2 the cover of macrophytes was virtually zero, whilst in the more stable bedrock areas cover exceeded 100%. Noteworthy finds were: very abundant *Porella* on trees along the right bank downstream of the weir and the alga *Nostoc parmelioides* – a species rarely recorded yet almost always present where *Collema dichotomum* is found.

Latin name	Common name	Abundance
Phormidium	Black scum alga	R
Nostoc parmelioides	'Eared Nostoc'	D
Lemanea fluviatilis	Wire-alga (red alga)	D
Rhodochorton purpureum	Red alga	D
Cladophora/Rhizoclonium	Blanketweed	O
Vaucheria	Mole-pelt alga	R
	Other non-slimy filamentous algae	R
Verrucaria	Encrusting lichen	F
Dermatocarpon fluviatilis	Lichen	O
Collema dichotomum	River Jelly Lichen	O (LF)
Chiloscyphus polyanthos	Pale liverwort	R
Porella pinnata	Pinnate Scalewort	O (LA)
Scapania undulata	Earwort	R
Brachythecium rivulare	River Feather-moss	O (LF)
Cinclidotus fontinaloides	Smaller Lattice-moss	O (LF)
Fontinalis antipyretica	Greater Water-moss	R
Fontinalis squamosa	Alpine Water-moss	D
Hygroamblystegium fluviatile	Brookside Feather-moss	A
Hygrohypnum ochraceum	Claw Brook-moss	F
Orthotrichum (rivulare)	River Bristle-moss	R
Platyhypnidium riparioides	Long-beaked water Feather-moss	F
Schistidium rivulare	River Grimmia	R
Thamnobryum alopecurum	Fox-tail Feather-moss	O
Oenanthe crocata	Hemlock water-dropwort	R
Phalaris arundinacea	Reed Canary-grass	R

Box 1. Other aquatic species noted at the site. R = rare; O = occasional; F = frequent; A = abundant; D = dominant. (L denotes 'locally' within the site more common than overall).

Figure 4. Image of *Nostoc parmelioides* (left) alongside specimen of RJL (right) collected at the site.

6. Mitigation/methods: The findings of the survey presented in this report suggest that weir restoration can be easily undertaken without in any way affecting the River Jelly Lichen. Figure 5 below shows areas of river and bank where no access or disturbance should take place to ensure: a) all River Jelly Lichen as avoided; b) the important oceanic liverwort population of *Porella pinnata* remain in place.

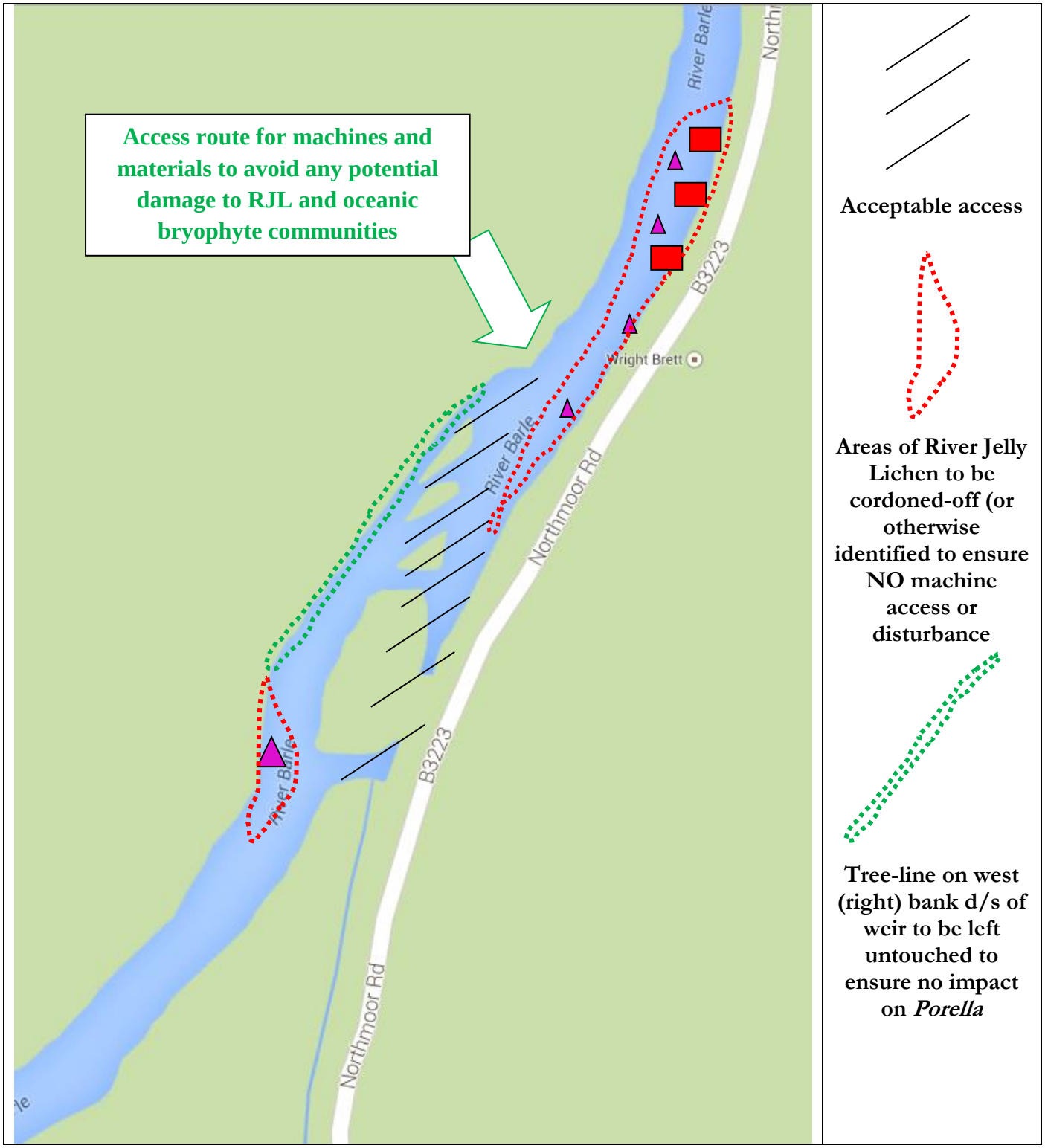


Figure 5. Recommendations to ensure no impact on River Jelly Lichen and *Porella* occurs during weir repair.

Appendix 1: Images illustrating character of the site.


Images of Barle at downstream end of survey site where bed predominantly composed of loose cobbles but with a bedrock outcrop at the downstream limit (image on left)


Typical loose cobbles in channel by the islands and the tide-line of *Porella* on bankside trees downstream of the weir


Views looking along the weir. On the left looking downstream – note unstable cobbles and shallow water d/s of the weir. On right looking upstream – again note very unstable cobble bed – both upstream and downstream is totally unsuitable for RJL along entire length of the weir. Yellow arrow shows suggested access point for machines and materials

View looking along top end of weir showing: unsuitable RJL substrate; start of important bryophyte communities on bankside trees ➡ and recommended acceptable access points ⇩

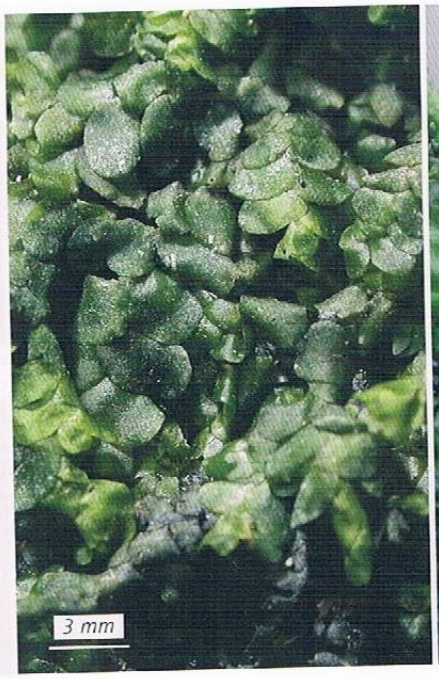
View of upstream survey limit (c75m u/s weir) showing only location where RJL found commonly

Appendix 2: Info on *Porella* showing importance of communities in south-west England and west Wales.

Jungermanniales

Porella pinnata

Pinnate Scalewort



Identification A lax, dark green species of *Porella*, with shoots 2–4.5 mm wide, and large leaves (up to about 2 mm wide and 2.5 mm long) that contrast with very small, flat lobules and underleaves. Growth form and habitat are strong pointers to identification: *P. pinnata* floats like a fan on the downstream side of rocks and tree roots in rivers.

Similar species *P. cordaeana* (p. 207) and *P. platyphylla* (p. 206) also grow by rivers, albeit usually further east in Britain than the core range of *P. pinnata*. Both have lobules with up-curved margins and bases that run down onto the stem. *Chiloscyphus polyanthos* (p. 187) shares the habitat of *P. pinnata* and has similarly sized leaves, although it tends to be slightly lighter green. However, *C. polyanthos* looks very different through a hand lens because of its deeply divided underleaves and lack of lobules.

Habitat A locally common liverwort by rocky, non-calcareous rivers in south-western Britain and in Ireland that is rarely found with other *Porella* species. It grows on the downstream side of rocks – both on the river's edge and in mid-flow – or on tree roots, and is submerged whenever water levels are high. Most colonies are in the wooded, upper or middle reaches of rivers, although small patches of *P. pinnata* may be found on tree roots further downstream in the flood plain. Occasionally it grows on rocks on the edges of lakes.