



Report to Inform a Habitat  
Regulations Assessment

Stage 1 and Stage 2  
Assessments

**Upper Glas-y-Bont Common**

For

**Powys County Council**



Project No.: POW001/001/001/001

July 2023

[REDACTED]



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## 1. Summary

### 1.1 Summary

1.1.1 Powys County Council is carrying out a Habitat Regulations Assessment (HRA) to assess the likely impacts of canoe launching from Upper Glas-y-Bont Common in Glasbury on the River Wye, a Special Area of Conservation (SAC).

1.1.2 The location of the proposed project is shown on Figure 1.

#### ***Stage 1: Screening assessment***

1.1.3 The proposed project has the potential to affect the qualifying features of the River Wye SAC, as it may cause the following threats or pressures identified in the Site Improvement Plan (SIP) for the SAC:

- Direct and indirect disturbance to qualifying features;
- Physical modification of the watercourse; and
- Spread of non-native invasive species.

1.1.4 Following the HRA screening process, the likely significant effects in respect of water pollution were found to be negligible and were screened out from further assessment. In the context of this assessment, damage to the bank and beds is considered as direct disturbance rather than physical modification, since the canoe operation does not include the introduction of any engineered structures, or processes (such as dredging or realignment), to the channel or banks. Physical modification of the watercourse is therefore also scoped out of the assessment.

1.1.5 The works, in the absence of mitigation, were found to have the potential for a likely significant effect on eight of the qualifying features of the River Wye SAC, namely *Ranunculus* beds, Atlantic salmon, sea lamprey, river lamprey, shad species, bullhead and otter. There was also considered to be potential for likely significant effects on the migratory fish assemblage of the Severn Estuary SAC and Ramsar site. Consequently, it is recommended that the competent authority make an Appropriate Assessment of the implications of the project with regard to the conservation objectives of the site.

1.1.6 Likely significant effects were screened out for transition mires and quaking bogs, brook lamprey and white-clawed crayfish. Transition mires and quaking bogs are absent from the study area. White-clawed crayfish are considered to be absent from the main stem of the river due to the presence of Signal crayfish, and if present in the catchment are restricted to minor tributary streams. Brook lamprey is screened out as spawning occurs on in small tributary streams and no likely significant effects are anticipated on juvenile or adult life stage for this species.

#### ***Stage 2: Habitats Regulations Assessment***

1.1.7 The potential for physical damage to bank and/or channel habitats from canoe launching and recovery, and from the grounding out of canoes in the channel was considered, particularly

during the spring and early summer period (April to June) when gravel spawning fish including sea and river lamprey, and shad are spawning. Reference was made to water level data for Glasbury and Hay on Wye to assess the risk that flow conditions which may lead to grounding out of canoes may occur during the April to June period.

- 1.1.8** There was considered to be potential for likely significant effects on fish species which spawn on gravel habitats within the study section, including sea, and river lamprey and twaite shad, from repeated grounding out events which may impact on egg development. Uncertainty exists on the number of grounding out events, and hence the level of damage to gravel habitats which may represent a threat to shad and lamprey eggs. However, the risk of significant effects is increased when considered with other pressures such as low flow conditions and high spring temperatures, when they occur, which may result in lower dissolved oxygen concentrations. Grounding out events also represent a threat to similar gravel habitats used for foraging by Atlantic salmon and sea trout fry and parr, specifically if this occurs at a level where physical changes in the composition and structure of the habitat occur.
- 1.1.9** Four other canoeing schemes with applications pending consent by NRW were considered to have potential for significant adverse effects in combination with the Upper Glas-y-Bont Common canoe operation. There is no information on the numbers of canoes using the public canoe facility although data from surveys undertaken by the Environment Agency at Hay on Wye between 2011 and 2016 was used to assess the combined impacts of all schemes. The risk of repeated grounding out events increases with the number of canoes using the river, and thus in combination effects are predicted for lamprey and shad species which spawn on the shallowing sites and for juvenile Atlantic salmon which use the shallowing sites for feeding.

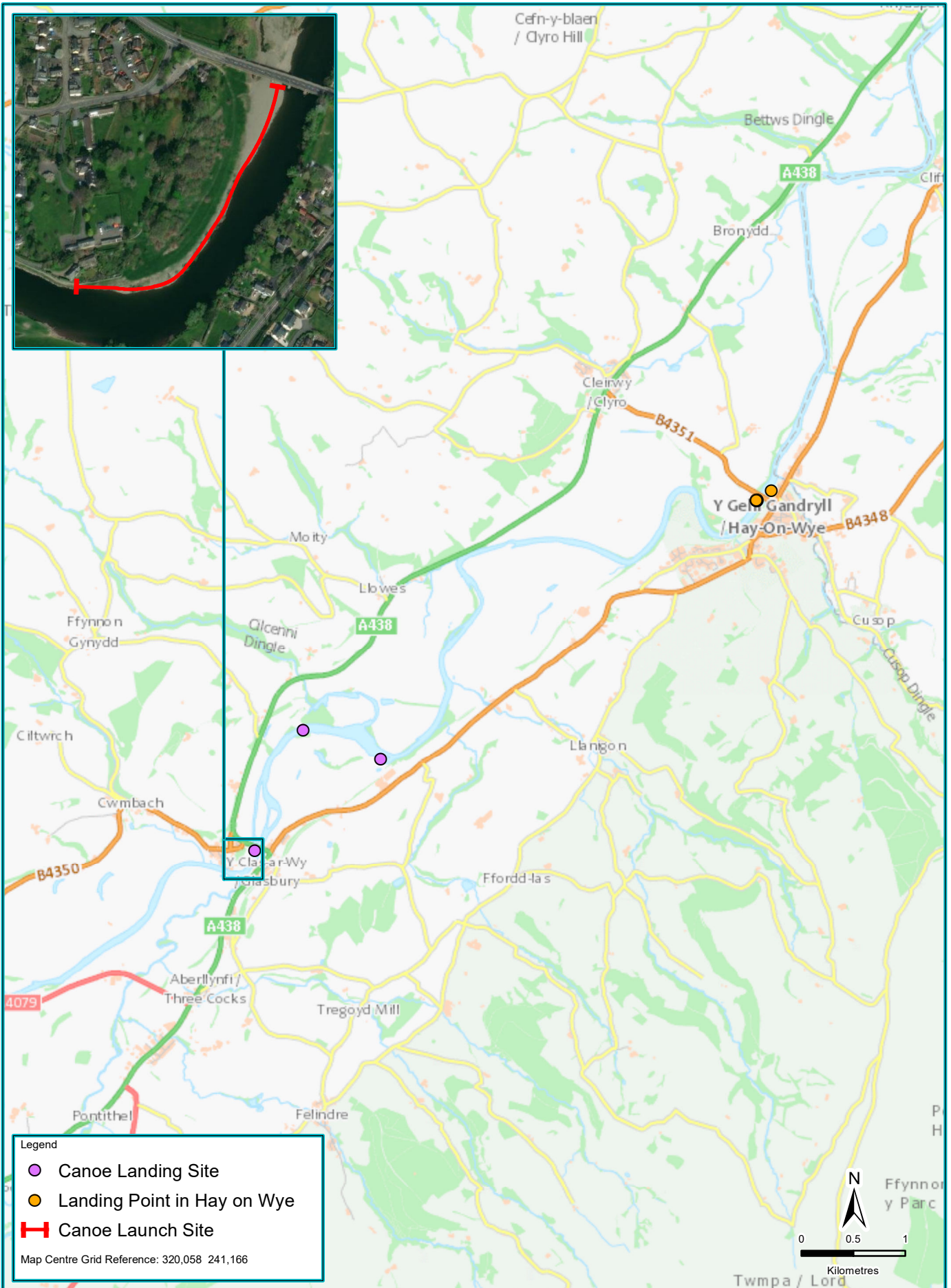
#### *Mitigation*

- 1.1.10** NRW have advised Powys Council to impose a close season for unguided hire groups from 1st April to 30th June annually. The restriction has been targeted at the user type considered to represent the greatest risk in terms of canoe grounding.
- 1.1.11** Models for managing recreation users have been demonstrated by South Wales Outdoor Activity Providers Group (SWOAPG) in relation to the Sychryd Gorge site and discussions are under way between Powys Council and SWOAPG about adopting a similar model for this site. PCC in collaboration with NRW has been able to ascertain that this can be enforced through civil action. An alternative route is available under the Wildlife and Countryside Act (1981), where it is a criminal offence for any third party to intentionally or recklessly destroy; damage; or disturb the notified features of the SSSI.
- 1.1.12** To provide additional protection for the shallowing site at Lower Glas-y-Bont where shad eggs have been recorded, there should be co-ordination of canoe groups entering that section by the various canoe operators in Glasbury.
- 1.1.13** Data from annual shad egg and lamprey electrofishing surveys undertaken by NRW should continue to be collated to determine presence of the species within the study reach. The surveys will provide further information on the use of the shallowing sites by key fish species.

- 1.1.14** It is concluded that, following the implementation of mitigation measures, the works are unlikely to result in an adverse effect on the integrity of the River Wye SAC.



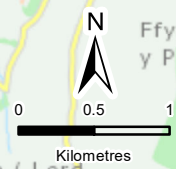
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**Legend**

- Canoe Landing Site
- Landing Point in Hay on Wye
- Canoe Launch Site

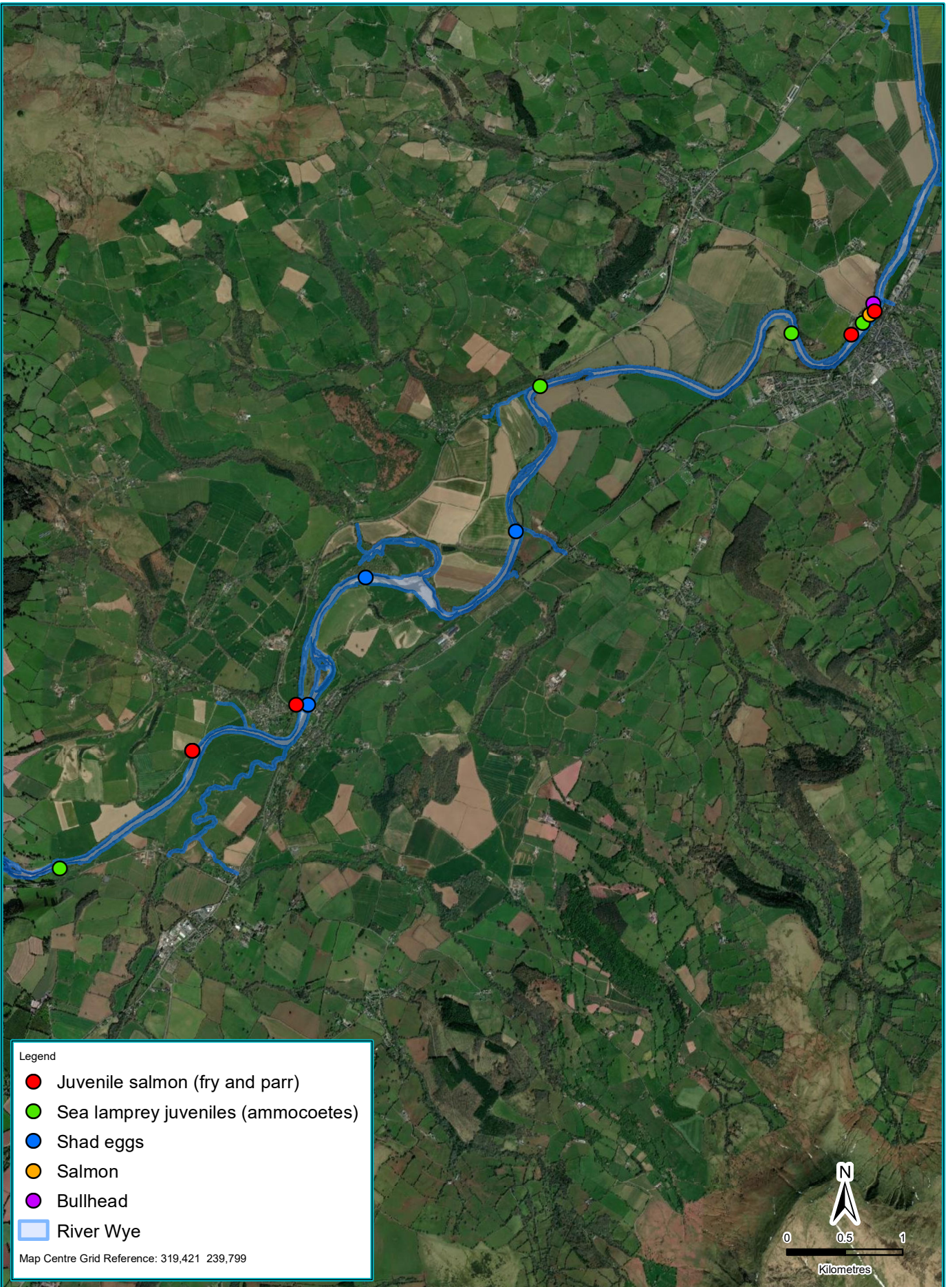
Map Centre Grid Reference: 320,058 241,166



Client	Powys County Council		Drawing Ref	POW001-001/40620/1		
Figure Number	1		Scale at A4	1:50,000		
Figure Title	Study Area between Glasbury and Hay on Wye showing canoe launch and landing locations		Drawn	MA	Checked	JB
			Date	30/05/2022	Date	30/05/2022



Filepath: V:\Water Ecology\POW001-001 - Upper Glas-y-Bont Habitat Regulations Assessment\Mapping\Working\POW001\_001\_Fig2\_FishSpawningSites\_JB\_210622.mxd  
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**Legend**

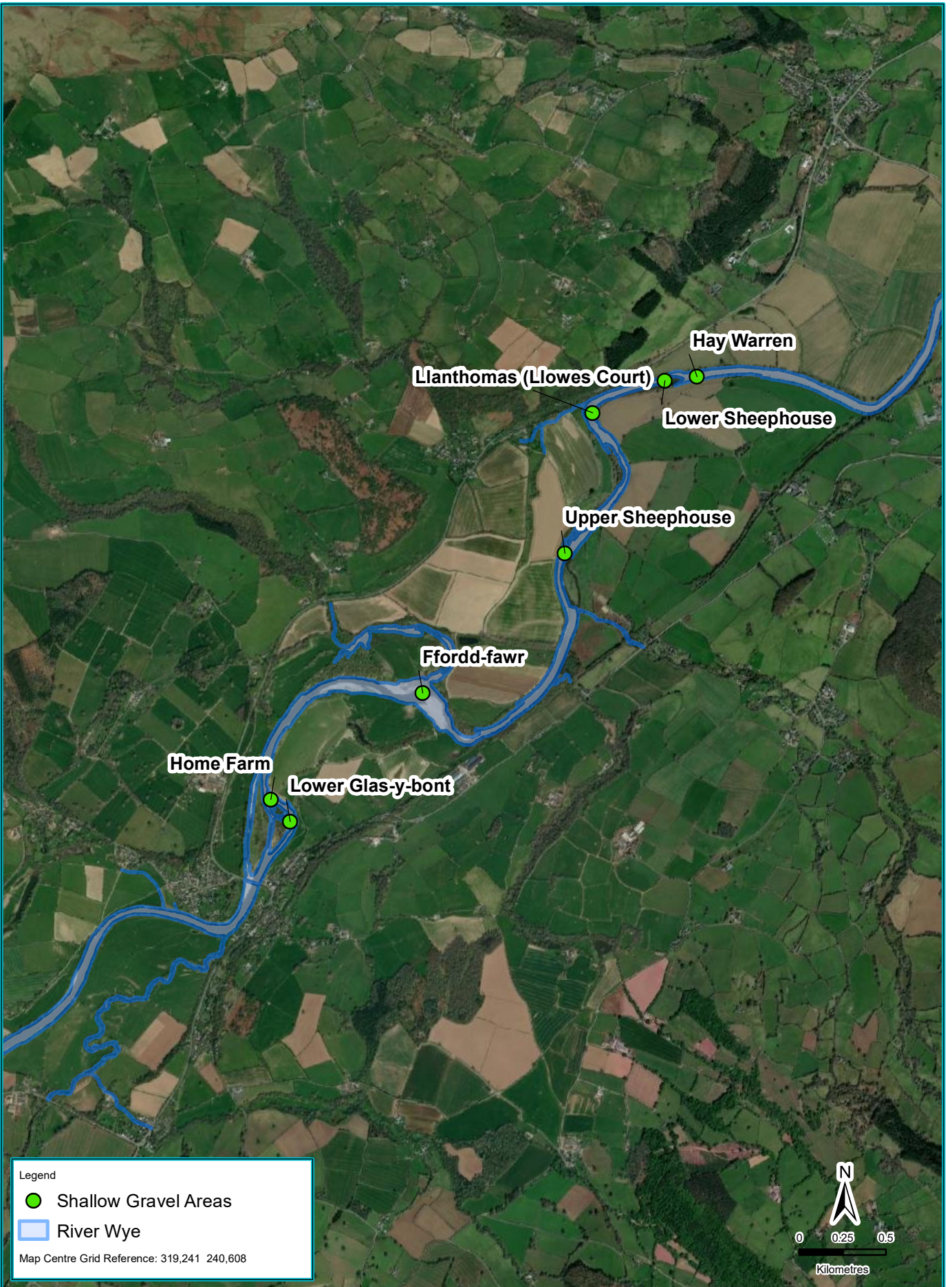
- Juvenile salmon (fry and parr)
- Sea lamprey juveniles (ammocoetes)
- Shad eggs
- Salmon
- Bullhead
- River Wye

Map Centre Grid Reference: 319,421 239,799

Client	Powys County Council		Drawing Ref	POW001-001/40777/1	
Figure Number	2		Scale at A4	1:45,000	
Figure Title	Fish Spawning Sites and Electrofishing Data		Drawn	JB	Checked
					AS
		Date	21/06/2022	Date	21/06/2022



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**Legend**

- Shallow Gravel Areas
- River Wye

Map Centre Grid Reference: 319,241 240,608

Client	Powys County Council		Drawing Ref	POW001-001/40751/1	
Figure Number	3		Scale at A4	1:30,000	
Figure Title	Shallow Gravel Areas		Drawn	JB	Checked
					AS
		Date	14/06/2022	Date	14/06/2022



## 2. Introduction

### 2.1 Project Background

**2.1.1** Powys County Council (PCC) is carrying out a Habitat Regulations Assessment (HRA) in order to assess the likely impacts of canoe launching from Upper Glas-y-Bont Common in Glasbury on the River Wye. The River Wye is designated as a Special Areas of Conservation (SAC) under the Conservation of Habitats and Species Regulations (2017) and a Site of Special Scientific Interest (SSSI) under the Wildlife and Countryside Act (1981) (WCA).

**2.1.2** Canoe launching on the River Wye from Upper Glas-y-Bont Common (hereafter referred to as 'the site') has taken place for many years through permission obtained from the Council as the sites' landowner and statutory undertaker under Section 28G of the WCA. There is no statutory right to launch canoes at this location. The site is used as a launching point for trips between Glasbury Bridge and Hay-on-Wye and the area is popular for canoe hire. Experience of the users ranges from novices to experienced canoeists and clubs.

**2.1.3** Under Section 28I of the WCA the Council must seek, and take into account, the advice of Natural Resources Wales (NRW) before permitting activities which may affect the SSSI. Given the rivers' designation as a Special Areas of Conservation (SAC), the permission must be supported by a HRA and canoe launching cannot take place until this has been carried out. NRW are also required to give advice to Section 28G authorities on the Habitats Regulations Assessment for the project.

### 2.2 Ecology Background

**2.2.1** Although previous HRAs have been carried out by NRW, following a review of the environmental consenting process NRW has advised that the Council will need to carry out the HRA itself. This will include new mitigation measures for low water levels and management of boat numbers.

### 2.3 The Brief and Objectives

**2.3.1** PCC commissioned Thomson Environmental Consultants on 8th April 2022 to undertake a Shadow Habitat Regulations Assessment (HRA) for the canoeing facility. The brief was to undertake the following:

- Review the core management plan for the River Wye SAC and information provided by NRW to understand the features of the SAC that may be impacted by launching of canoes and other non-motorised watercraft (e.g., stand up paddleboards.)
- Review the information already collated by Powys County Council, including that around other launch sites, potential mitigation options for launching at Upper Glas-y-Bont at low water levels, their management, and any seasonal considerations. Assess viability of mitigation measures.
- Identify and assess viable mitigation measures that may not already have been put forward.

- Visit the common and make use of public rights of way alongside the river to make visual site inspections, as necessary to understand the features of the river.
- Carry out survey work to assess whether salmon are spawning on this stretch of the river.
- Carry out research into any additional information available around environmental impacts and mitigation schemes for water-based activities at other sites, to inform the assessment.
- Consider the impacts of this ongoing activity and proposed mitigation at the launch site and indirect impacts downstream, in combination with other similar proposals.
- Liaise with Natural Resources Wales as necessary to prepare the shadow assessment. This will include defining the levels at which water levels are considered to be low enough for damage to occur in the SAC, as monitored against the water height gauge at Glasbury Bridge.
- Prepare a formal report to inform the Habitat Regulations Assessment.

**2.3.2** This report, which includes both Stage 1 screening and Stage 2 HRA is provided to aid the competent authority in undertaking an appropriate assessment for the proposed works in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended).

### 3. Basis for Habitats Regulations Assessment

#### 3.1 Background

**3.1.1** The Conservation of Habitats and Species Regulations 2017, as amended (by The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations, 2019), is hereafter referred to as the 'Habitats Regulations'. The Habitats Regulations collectively define protected sites in England and Wales as the 'National Site Network'. The National Site Network includes SAC, Sites of Community Importance (SCI), Special Protection Areas (SPA) and candidate Special Areas of Conservation (cSAC). These sites are now referred to as 'sites of national importance' in the Habitats Regulations.

**3.1.2** Additionally, it is government policy that possible SACs and proposed SPAs (pSAC and pSPA), Ramsar sites (and proposed Ramsar sites) and sites identified for Natura 2000 compensatory measures receive the same protection as National Site Network sites, as set out in the National Planning Policy Framework 2021 and Planning Policy Wales, 2021.

#### 3.2 Requirements of the Conservation of Habitats and Species Regulations

**3.2.1** The Habitats Regulations (Regulation 63) state that:

*'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—*

*(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and*

*(b) is not directly connected with or necessary to the management of that site,*

*must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives'.*

**3.2.2** The Habitats Regulations (Regulation 63) further state that:

*'In the light of the conclusions of the assessment, and subject to Regulation 64 (considerations of overriding public interest), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be)'.*

**3.2.3** The Habitats Regulations originally came into force on 30<sup>th</sup> November 2017. These regulations simply consolidate changes made to the previous Regulations since 2010 (which itself consolidated the 1994 Regulations and subsequent amendments) and did not alter the law regarding HRA. Subsequent amendments to the regulations following EU exit (as a result of the Habitats Regulations (Amendment) (EU Exit) Regulations, 2019) also do not change the law regarding HRA, however some of the terminology has been changed. For example, Section 3 (Interpretation) states that:

*“the National Site Network” means the network of sites in the United Kingdom’s territory consisting of such sites as–*

*(a) immediately before exit day formed part of Natura 2000; or*

*(b) at any time on or after exit day are European sites, European marine sites and European offshore marine sites for the purposes of any of the retained transposing regulations.”*

**3.2.4** SAC and SPA sites in the UK territory are therefore now considered part of the ‘National Site Network’ as opposed to the ‘Natura 2000 network’.

**3.2.5** The application of the Habitats Regulations involves the precautionary principle; that plans and projects can only be permitted once it has been determined there will be no adverse effect on the integrity of a National Site Network site. Plans and projects where an adverse effect on site integrity cannot be ruled out may still be permitted if imperative reasons of overriding public interest can be identified. In such cases compensatory measures will be necessary to ensure the overall integrity of the National Site Network.

## 4. Methodology

### 4.1 HRA Process Overview

4.1.1 The Habitats Regulations describe the procedure that provides for a systematic set of stages for the transparent consideration of the likely effects a plan or project could have on a National Site Network site. National Site Network sites considered relevant to the project are hereafter referred to as 'Relevant Sites'. Associated guidance states that there are four stages in producing an assessment:

- Stage One: Screening - the process which identifies whether the plan or project is required for the management of Relevant Site(s) and if not, whether there may be any effects upon a Relevant Site's designated features as a result of the plan or project, either alone or in combination with other projects or plans and considers whether these effects are likely to be significant. Stage One has various steps:
  - Step One: Management of the National Site Network - this step determines if the proposed works are directly connected with, or necessary to, the management of any Relevant Site.
  - Step Two: Description of the Project.
  - Step Three, Part 1: Characteristics of the Sites - describes characteristics of both the Project Site and Relevant Sites (including qualifying features, conservation objectives and site condition).
  - Step Three, Part 2: Identification of Potential Impacts 'Alone'.
  - Step Three, Part 3: Identification of Potential Impacts 'In Combination'.
  - Step Four: Assessment of Likely Significant Effects.
- Stage Two: Appropriate Assessment - the consideration of the impact on the integrity of the Relevant Site from the plan or project, either alone or in combination with other projects or plans, with respect to the Relevant Site's structure and function and its conservation objectives. Additionally, where adverse effects on the protected sites integrity exist, an assessment of the effectiveness of potential mitigation of those impacts will be made. If, after mitigation, a significant effect is still considered likely, then stages three and four must take place. Stage Two has various steps:
  - Step One, Part 1: Information on Relevant Sites.
  - Step One, Part 2: Potential Effects on Conservation Objectives.
  - Step Two, Part 1: Impact Prediction 'Alone'.
  - Step Two, Part 2: Impact Prediction 'In Combination'.
  - Step Three: Conservation Objectives.
  - Step Four: Mitigation Measures.
- Stage Three: Assessment of alternative solutions - the process which examines alternative ways of achieving the objectives of the plan or project that avoid significant effects on the integrity of the Relevant Site identified at Stage Two; and
- Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain – an assessment of compensatory measures where, in the light of an



assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the plan should proceed.

- 4.1.2** Each stage determines whether a further stage in the process is required. If, for example, the conclusions at the end of Stage One are that there are no likely significant effects on any Relevant Site, there is no requirement to proceed further.

*Interpretation of “Likely Significant Effect”*

- 4.1.3** Due to the subjectivity and interpretation of the Habitats Regulations, applicable case law can be used to interpret when effects should be considered as a likely significant effect, when carrying out an HRA.
- 4.1.4** An interpretation of Article 6(3) of the Habitats Directive, delivered by the Court of Justice of the European Union (ECJ) Case <sup>1</sup>, ruled that:
- An effect should be considered ‘likely’, “if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the protected site”;
  - An effect should be considered ‘significant’, “if it undermines the conservation objectives” of a Relevant Site; and
  - Where a plan or project has an effect on a protected site “but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the protected site concerned”.
- 4.1.5** This interpretation means that, even if the project or plan has an effect on the Relevant Site, the project or plan can still be screened out of further assessment if the effect, including when combined with effects from other projects or plans, obviously would not (or is very unlikely to) undermine the conservation objectives of the Relevant Site. Otherwise, the plan or project will need be assessed further at Stage 2 (when avoidance and mitigation measures can be considered), or substantially re-designed or relocated and assessed afresh.

#### **4.1 Appropriate Assessment**

- 4.1.1** The Appropriate Assessment methodology followed is based on EC guidance, in particular: Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2001)
- 4.1.2** The Appropriate Assessment is the second stage of the HRA. For the Appropriate Assessment, the relevant test is: Will the project adversely affect the integrity of the National Site Network site(s), either individually or in combination with other plans and project, in view of the National Site Network site’s conservation objectives?
- 4.1.3** The Appropriate Assessment follows a similar process to the screening assessment through identifying the sites and conservation objectives that may be affected. In this stage, potential

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<sup>1</sup> ECJ Case C-127/02 “Waddenzee” Jan 2004.

mitigation measures are considered in order to determine whether a negative likely significant effect is still anticipated. The conclusion on site integrity is determined by consideration of the conservation objectives; if the project, alone or in combination, would not breach the conservation objectives for any relevant national site, then a conclusion of no impact on site integrity can be reached. However, if the project, alone or in combination with other projects, would breach the conservation objectives or there is uncertainty, then the conclusion must be that there would be an adverse effect on the integrity of the National Site Network site.

- 4.1.4** If, after mitigation, a significant effect is still considered likely, then stages three and four must take place. These are an assessment of alternative solutions (stage three) an assessment where no alternatives exist and whether Imperative Reasons of Overriding Public Interest (IROPI) applies (stage four).

## **4.2 Conservation Objectives, Qualifying Features and Condition**

- 4.2.1** The Habitats Regulations require that the Secretary of State maintains or, where appropriate, restores habitats and species populations of European importance to favourable conservation status. The designation of National Site Network sites and setting conservation objectives for each of these sites is one way in which way the Secretary of State can meet this requirement.
- 4.2.2** The information on National Sites and their qualifying features was obtained from a search on the Multi-Agency Geographic Information for the Countryside (MAGIC) website. The original European sites citations and standard data forms were obtained from the Natural Resources Wales and Joint Nature Conservation Committee (JNCC) websites. The conservation objectives were obtained from Natural Resources Wales for each European site and the information on these form the basis against which to assess the likely impacts of the proposed works.
- 4.2.3** The conservation status of the interest features has been assessed based on information from the original Citation (JNCC, undated) and Standard Data forms with comparison with more recent site data including component Sites of Special Scientific Interest (SSSI) condition assessment records (from the Natural Resources Wales Protected Sites Baseline Assessment 2020 website). Baseline data for individual interest features was obtained from third party sources as described in Table 4-1.

**Table 4-1: Baseline data sources**

<b>Organisation/Data source</b>	<b>Baseline data obtained</b>
NRW	Juvenile (ammocoete) data for sea, river and brook lamprey  Spawning data for twaite shad  NRW Otter Survey Wales 2015-2017
Environment Agency	Electrofishing data for sea, brook and river lamprey downstream of Hay on Wye  Salmon rod return and fish counter data  Salmon and sea trout stock status reports  Distribution of salmon spawning redds on relevant section of Wye and up and downstream.  Site specific surveys for otter
Wye and Usk Foundation	Salmon rod return data for relevant salmon beats.  Salmon electrofishing data (parr and fry).
Herefordshire Biological Records Centre	Species records for twaite shad  Otter records  Sea lamprey records
Biodiversity Information Service for Powys & Brecon Beacons National Park	Otter records  White-clawed crayfish records  Twaite shad records  Salmon records  Bullhead records  River lamprey records

**4.2.4** The information on the condition of National Sites' features was obtained through review of the condition of the SSSI units, which are generally spatially coincident with the site, and the population range given in the original Citation and Natura 2000 Standard Data Form (SDF). The

information on the condition of SAC features was determined using the Favourable Reference Value (FRV) which was taken to be the range in number of individuals at the National Site according to the Natura 2000 SDF. A comparison was made with the FRV from the original citation, as the guidance is not clear as to which takes precedent (citation or SDF). The least favourable of the two comparisons was used to determine the condition, as a precaution.

## 5. Screening Assessment

### 5.1 Step One: Management of the National Site Network

- 5.1.1 The works are not directly connected with, or necessary to, the management of any Relevant Site and therefore it needs to be determined whether the works are likely to have significant effects on the identified Relevant Sites.

### 5.2 Step Two: Description of the Project

- 5.2.1 Canoe launching has taken place for many years at the site through permission of the Council as current owner of the common; however there is no statutory right to launch canoes from the site. A high proportion of those launching canoes use it as a start point for a river trip passing below Glasbury Bridge and travelling to Hay-on-Wye and beyond.
- 5.2.2 Although the canoe launch operation was previously covered by a SSSI consent, NRW have advised that this is no longer appropriate and that permission for the launch site should be granted by PCC as a Statutory 28G authority. Under Section 28I of the WCA the Council must seek, and take into account, the advice of Natural Resources Wales (NRW) before permitting activities which may affect the SSSI. Given the rivers' designation as a Special Areas of Conservation (SAC), the permission must be supported by a HRA and canoe launching cannot take place until this has been carried out. NRW are also required to give advice to Section 28G authorities on the Habitats Regulations Assessment for the project.
- 5.2.3 NRW wrote to PCC on 15/04/2021 advising on conditions that should be attached to the permission including limits on the numbers of boats and the imposition of a minimum water level below which boats should not be launched. NRW also advised that as well as the launch site, the canoeing activity itself downstream to Hay-on-Wye and the landing site at Hay on Wye needs to be considered, and impacts in combination with other paddle boating consents.
- 5.2.4 In subsequent correspondence on 25 March 2022 NRW advised that a closed season for unguided canoe groups should be applied from 1<sup>st</sup> May to 30<sup>th</sup> June each year instead of applying a minimum water level. In the interim, until the assessment is complete and mitigation measures are in place, canoe launching cannot take place. Correspondence with NRW is presented in Appendix 7.

### 5.3 Step Three, Part 1: Characteristics of the Sites

#### Project Site

- 5.3.1** The project site is located at OS Grid Reference SO 17900 39228 and lies upstream of the A438 road crossing and comprises an area of shallow beach on the inside of a sharp bend in the River Wye (Figure 1). The site is an area of common land with shallow beach access, car parking and public toilet facilities. The site and others around Glasbury are widely used as the starting point for river trips downstream to Hay on Wye; a distance of approximately 5.5 miles. The previous consent allowed for the launching of paddle boards as well as Canadian canoes and kayaks. There were no limits on the number of canoes that could be launched from the site.
- 5.3.2** Users range from unguided novices to educational guided groups, such as, for example from ██████████ Outdoor Education Centre, and experienced canoeists. The users also include commercial operators as well as clubs and third party individuals. There are currently no limits on the number of canoes that can be launched from the site. There is no vehicle access on to the Common except in emergencies. Canoes are unloaded from trailers in the car park and launched directly from the beach.
- 5.3.3** Canoeing was historically licenced by NRW, and now permitted by PCC as the S28G Authority, to take place at the site throughout the year, although most usage occurs during the spring and summer months. A voluntary code of conduct (Appendix 1) adopted by commercial operators using the site limits use of the Common for canoe launching to between 10am and 4pm, and requires that users are off the river by 5pm. The code of conduct includes locations of the permitted landing sites and the restrictions on launching and landing within the reach (Figure 2). Operators are required to advise their clients to minimise disturbance to the bank and bed of the river and to restrict launching and landing to permitted locations. The code of conduct also requires users to adopt basic biosecurity measures, namely that equipment is clean and dry before and after use.
- 5.3.4** Under the Conservation of Habitats and Species Regulations 2017 (as amended), a Habitat Regulations Assessment (HRA) is required to identify any likely significant effects the proposed works may have to nationally significant statutory designated sites of nature conservation importance. In this case, the River Wye/ Afon Gwy SAC. For the purposes of the HRA the study area covers the launch points at Glasbury and the length of river downstream to the landing point at The Gliss in Hay on Wye (Figure 2). It also includes the intermediate landing points referred to in the Code of Conduct and shown on Figure 2 at SO190402 and SO227425. It has also been assumed that there is no limit on the number of canoes, kayaks and paddle boards that can be launched from the Common. Based on the advice provided by NRW it has also been assumed that most trips are made downstream.

#### Relevant Sites

- 5.3.5** Relevant Sites that may be affected by the proposed works were identified through the MAGIC interactive mapping website that provides geographic information about the natural environment from across government (Defra, 2013). Given the nature of the proposal, a 15km buffer was

deemed appropriate to search for designated sites. Searches were undertaken on 11<sup>th</sup> April 2022.

- 5.3.6** The proposed canoe launching is directly into the River Wye SAC. Other Relevant Sites have been identified within 15km of the site, however, these have been scoped out from further assessment (see Section 5.3.39).

#### River Wye / Afon Gwy SAC

- 5.3.7** The River Wye SAC forms one of the longest near-natural rivers in England and Wales, stretching for 134 miles from Plynlimon in mid-Wales to the Severn Estuary and draining a catchment of 4136km<sup>2</sup>. Partially situated within the Wye and Usk Vales National landscape Character Area (NLCA29) and the lower Forest of Dean and Lower Wye National Character Area, the River Wye rises at an altitude of 680m at Plynlimon in the mountains of Wales and flows through Rhayader and, Builth Wells before it reaches the English border. From here it continues through Hay-on-Wye, Hereford and Ross-on-wye before passing by Monmouth before it meets the Severn Estuary just below Chepstow. The river exhibits a classic transition from bryophyte dominated upland stretches to crowfoot dominated lower stretches.

- 5.3.8** The river has a geologically mixed catchment, including shales and sandstones, and shows a clear transition between its upland reaches, with characteristic bryophyte-dominated vegetation, and the lower reaches, with extensive *Ranunculus* beds. The river channel includes gorges and significant areas of associated woodland. Annex 1 species covered by the designation are white-clawed crayfish *Austropotamobius pallipes*, sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, twaite shad *Alosa fallax*, allis shad *Alosa alosa*, Atlantic salmon *Salmo salar*, bullhead *Cottus gobio* and otter *Lutra lutra* (Natural Resources Wales 2022). The SAC designation also extends to its largest tributary the river Lugg, up as far as Hope under Dinmore.

#### Qualifying features

- 5.3.9** The Relevant Site qualifies as an SAC for the following reasons:
- **Annex 1 habitats that are the primary reason for the selection of this site :**
    - 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation. The Wye, on the border of England and Wales, is a large river representative of sub-type 2. It has a geologically mixed catchment, including shales and sandstones, and there is a clear transition between the upland reaches, with characteristic bryophyte-dominated vegetation, and the lower reaches, with extensive *Ranunculus* beds. There is a varied water-crowfoot *Ranunculus* flora; stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans* is abundant, with other *Ranunculus* species - including the uncommon river water-crowfoot *R. fluitans* - found locally. Other species characteristic of sub-type 2 include flowering-rush *Butomus umbellatus*, lesser water-parsnip *Berula erecta* and curled pondweed *Potamogeton crispus*. There is an exceptional range of aquatic flora in the catchment including river jelly-lichen *Collema dichotum*. The river channel is largely unmodified and

includes some excellent gorges, as well as significant areas of associated woodland.

- **Annex 1 present as a qualifying feature, but not a primary reason for the selection of this site:**
  - 7140 Transition mires and quaking bogs
- **Annex II species that are a primary reason for selection of this site:**
  - 1092 White-clawed (or Atlantic stream) crayfish. The Welsh River Wye system is the best site known in Wales for white-clawed crayfish. The tributaries are the main haven for the species, particularly at the confluences of the main river and the Edw, Dulas Brook, Sgithwen and Clettwr Brook.
  - 1095 Sea lamprey. The Wye is an extensive river system crossing the border between England and Wales and the sea lamprey population is found in the main stem below Llyswen. The site provides exceptionally good quality habitat for sea lamprey and supports a healthy population.
  - 1096 Brook lamprey. The Wye is an extensive river system spanning the border between England and Wales and the brook lamprey population is widely distributed in its catchment. The river provides exceptionally good quality habitat for brook lamprey and supports a healthy population.
  - 1099 River lamprey. The Wye is an extensive river system crossing the border between England and Wales, and the river lamprey population is widely distributed in the catchment. The Wye provides exceptionally good quality habitat for river lamprey and supports a healthy population.
  - 1103 Twaité shad. Twaité shad have long been abundant in the Wye, an extensive river system spanning the border between England and Wales. Twaité shad often spawn at or just above the tidal limit, but in the Wye they migrate over 100 km upstream, the highest spawning site being at Builth Wells. Data held by the Environment Agency indicate that, of the three selected rivers, the largest spawning areas for this species occur on the Wye. The river has relatively good water quality, adequate flows through an unobstructed main channel and a wide range of aquatic habitats conducive to supporting this fish species. In particular, there are a number of deep pools essential for congregation before spawning.
  - 1106 Atlantic salmon. Historically, the Wye is the most famous and productive river in Wales for Atlantic salmon, with high-quality spawning grounds and juvenile habitat in both the main channel and tributaries; water quality in the system is generally favourable. It is also one of the most diverse river systems in the UK, with a transition from hard geology, high gradients, rapid flow fluctuations and low nutrient-content in its upper reaches, to a more nutrient-rich river with lower gradient, more stable flow and softer geology in the lowlands. The effect of river engineering work on migration and spawning has been limited, although there is a localised influence from the Elan Valley reservoirs, through inundation of spawning and nursery habitat and fluctuations in flow and water levels in the upper Wye. The most important tributaries for spawning are included in the SAC. Although in the past non-native salmon may have been released to the system, the impact of this is likely to have been minimal. The Wye salmon population is particularly notable for the very high proportion (around 75%) of multi sea winter (MSW) fish, a stock component which has declined sharply in recent years throughout the UK. This pattern has also occurred in the Wye, with a consequent marked decline in the population since



the 1980s. However, the Wye salmon population is still of considerable importance in UK terms.

- 1163 Bullhead. The Wye represents bullhead in an extensive river system crossing the border between England and Wales. The Wye is one of the most diverse river systems in the UK, with a range of nutrient conditions and aquatic habitats and generally good water quality for fish species. The diversity of habitat types in the Wye means that it is likely to represent most of the habitat conditions in which bullhead occurs in Britain, highlighting the conservation importance of this river.
- 1355 Otter. The Wye holds the densest and most well-established otter population in Wales, representative of otters occurring in lowland freshwater habitats in the borders of Wales. The river has bank-side vegetation cover, abundant food supply, clean water and undisturbed areas of dense scrub suitable for breeding, making it particularly favourable as otter habitat. The population remained even during the lowest point of the UK decline, confirming that the site is particularly favourable for this species and the population likely to be highly stable.
- **Annex II species present as a qualifying feature, but not a primary reason for selection :**
  - 1102 Allis shad

**5.3.10** Further details of the Relevant Site and its reasons for designation are presented in the Core Management Plan (NRW, 2022). Condition assessment information was accessed from the NRW Protected Sites Baseline Assessment 2020..

#### *Conservation Objectives - Generic SAC objectives*

**5.3.11** Conservation objectives outline the desired state of a site in terms of its qualifying ecological features (e.g. habitats and species). Where these objectives are met, the SAC site is considered to be in favourable condition. Both generic and site specific conservation objectives are described for every SAC The River Wye is a cross border SAC and therefore conservation objectives are described by Natural England and Natural Resources Wales. The generic conservation objectives (Natural England, 2018) are:

- *Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:*
  - I. The extent and distribution of qualifying natural habitats and habitats of qualifying species;*
  - II. The structure and function (including typical species) of qualifying natural habitats;*
  - III. The structure and function of the habitats of qualifying species;*
  - IV. The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;*
  - V. The populations of qualifying species; and*
  - VI. The distribution of qualifying species within the site.*

- 5.3.12** Where the qualifying feature is considered to be in favourable condition, the objective is to maintain; where the qualifying feature is considered to be in an unfavourable condition, the conservation objective is to restore.

*Conservation Objectives - River Wye SAC-specific*

- 5.3.13** The site-specific conservation objectives described by Natural Resources Wales in their Core Management Plan (Natural Resources Wales, 2022) are detailed in Table 5-1.

**Table 5-1: Site-specific Conservation Objectives of the River Wye SAC**

Qualifying Feature	The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met
<p><b>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</b></p>	<ul style="list-style-type: none"> <li>• The natural range of the plant communities represented within this feature should be stable or increasing in the SAC. The natural range is taken to mean those reaches where predominantly suitable habitat exists over the long term. Suitable habitat and associated plant communities may vary from reach to reach. Suitable habitat is defined in terms of near natural hydrological and geomorphological processes and forms e.g. depth and stability of flow, stability of bed substrate, and ecosystem structure and functions e.g. nutrient levels, shade. Suitable habitat for the feature need not be present throughout the SAC but where present must be secured for the foreseeable future, except where natural processes cause it to decline in extent. The area covered by the feature within its natural range in the SAC should be stable or increasing.</li> <li>• The conservation status of the feature's typical species should be favourable. The typical species are defined with reference to the species composition of the appropriate JNCC river vegetation type for the particular river reach, unless differing from this type due to natural variability when other typical species may be defined as appropriate.</li> <li>•</li> </ul>
<p><b>Sea lamprey, brook lamprey, river lamprey, twaite shad, Atlantic salmon, allis shad and bullhead</b></p>	<p>The population of the feature in the SAC is stable or increasing over the long term.</p> <ul style="list-style-type: none"> <li>• The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. food supply. Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed.</li> </ul>

Qualifying Feature	The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met
	<p>There is, and will continue to be, a sufficiently large habitat to maintain the feature’s population in the SAC on a long-term basis.</p>
<b>Otter</b>	<ul style="list-style-type: none"> <li>• The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.</li> <li>• The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories. The whole area of the Wye SAC is considered to form potentially suitable breeding habitat for otters. The size of breeding territories may vary depending on prey abundance. The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site should be subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance must be managed.</li> <li>• The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers.</li> </ul>
<b>White-clawed crayfish</b>	<ul style="list-style-type: none"> <li>• The population of the feature in the SAC is stable or increasing over the long term.</li> <li>• The area covered by the feature within its natural range in the SAC should be stable or increasing.</li> <li>• The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near natural hydrological and geomorphological processes and forms eg. substrate type, water hardness and temperature, and ecosystem structure and functions eg. food supply, absence of invasive non-native competitors. Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity should be assessed.</li> <li>• There is, and will probably continue to be, a sufficiently large habitat to maintain the feature’s population in the SAC on a long-term basis.</li> </ul>

**5.3.14** A review of the Core Management Plan for the River Wye SAC (NRW, 2022) provides information on the conservation objectives of the SAC qualifying features. The results of this review are summarised in Table 5-2 below.

**Table 5-2: Information on Qualifying features and their condition for the River Wye SAC**

Qualifying Feature	Status of Feature
Sea lamprey	<b>Unfavourable.</b> Monitoring has shown that Sea lamprey ammocoetes were recorded in good numbers immediately upstream of the falls at Rhayader, their most upstream recorded site on the main Wye. They were also recorded in the Irfon and Ithon tributaries. However, their status has been downgraded to unfavourable based on existing evidence.
Brook lamprey and river lamprey	<b>Unfavourable.</b> Monitoring has shown that the overall catchment mean ammocoete density considerably exceeded the JNCC target threshold. However, <i>Lampetra</i> ammocoetes were recorded at only 30 of the 54 sample sites (56%), thus failed to meet the criterion of presence in at least two thirds of sites within their natural range
Twaite shad and allis shad	<b>Unfavourable.</b> A precautionary assessment of feature abundance due to uncertainty in species monitoring.
Atlantic salmon	<b>Unfavourable.</b> The current unfavourable status results from failure of the Management Target for adult run size as well as a precautionary assessment of juvenile distribution and abundance and the presence of adverse factors, in particular the potential for flow depletion and localised water quality failures. Acidification due to forestry is a factor in the upper reaches of the Wye and Irfon.
Bullhead	<b>Unfavourable.</b> The current unfavourable status results from the presence of adverse factors, in particular localised water quality failures.
Otter	<b>Unfavourable.</b> A lack of suitable breeding sites have been recorded around the middle reaches of the river.
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	<b>Unfavourable.</b> The status results from reduced water quality in some tributaries of the Wye.
White-clawed crayfish	<b>Unfavourable: Declining.</b> There is considerable anecdotal evidence of a major decline in the distribution and abundance of the species over the last few decades.
Transition mires and quaking bogs	<b>Unfavourable.</b> This status results from under-grazing.

### *Threats and Pressures*

**5.3.15** Threats on each of the features of the SAC are identified in the Core Management Plan (NRW, 2022). Natural England also identified threats and pressures on the sections of the River Wye

SAC in England in their Site Improvement Plan (SIP) (Natural England 2014). In the SIP the following threats and pressures to the condition of the qualifying features identified, include:

- Water pollution;
- Physical modification;
- Invasive species;
- Hydrological changes;
- Forestry and woodland management;
- Fisheries: freshwater;
- Fisheries: fish stocking;
- Water abstraction;
- Public access / disturbance;
- Air pollution: impact of atmospheric nitrogen deposition;
- Inappropriate scrub control;
- Under-grazing; and
- Transportation and service corridors.

#### *Site integrity of the River Wye SAC*

- 5.3.16** As detailed within the River Wye SAC Core Management Plan (NRW, 2022), the ecological structure and function of the SAC are dependent on hydrological and geomorphological processes, as well as the quality and connectivity of riparian habitats. Issues associated with maintaining the integrity of the SAC include water level and flow, water quality, eutrophication, disturbance, species maintenance and sedimentation.
- 5.3.17** Hydrological processes, particularly river flow (level and variability) and water chemistry, determine a range of habitat factors of importance to the SAC features (for example current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature). Maintenance of both high 'spate' flows and base-flows is essential. Reductions in flow may reduce the ability of adult migratory fish to reach spawning sites. Water-crowfoot vegetation thrives in relatively stable, moderate flows and clean water. The flow regime should be characteristic of the river to support the functioning of the river ecosystem.
- 5.3.18** Geomorphological processes of erosion by water and subsequent deposition of eroded sediments downstream create the physical structure of the river habitats. While some sections of the river are naturally stable, others undergo continual and at times rapid change through erosion and deposition as is typical of meandering sections within floodplains (called 'alluvial' rivers). These processes help to sustain the river ecosystem by allowing a continued supply of clean gravels and other important substrates to be transported downstream. In addition, the freshly deposited and eroded surfaces enable ecological succession required by specialist, early successional species. Processes at the wider catchment scale generally govern processes of erosion and deposition occurring at the reach scale, although locally factors such as the effect of

grazing levels on riparian vegetation structure may contribute to enhanced erosion rates. In general, management that interferes with natural geomorphological processes (for example preventing bank erosion through the use of hard revetments or removing large amounts of gravel) are likely to damage ecosystem structure and function.

- 5.3.19** Diverse riparian habitats have a vital role in maintaining SAC features in a favourable condition. The type and condition of riparian vegetation influences shade and water temperature, nutrient run-off from adjacent land, the availability of woody debris to the channel and inputs of leaf litter and invertebrates to support in-stream consumers. Light, temperature and nutrient levels influence in-stream plant production and habitat suitability for the SAC features. Woody debris provides refuge areas from predators, traps sediment to create spawning and juvenile habitat and forms the base of an important aquatic food chain. Otters require sufficient undisturbed riparian habitat for breeding and resting sites. In the more urban sections the focus may be on maintaining the river as a communication corridor but this will still require that sufficient riparian habitat is present and managed to enable the river corridor to function effectively. Overhanging trees provide valuable shade and food sources for Atlantic salmon whilst tree root systems provide important cover and flow refuges for juveniles. Bullheads are particularly associated with woody debris in lowland reaches, where it is likely that it provides an alternative source of cover from predators and floods. It may also be used as an alternative spawning substrate.
- 5.3.20** Habitat connectivity is an important property of river ecosystem structure and function. Many of the fish that spawn in the river are migratory, depending on the maintenance of suitable conditions on their migration routes to allow the adults to reach available spawning habitat and juvenile fish to migrate downstream. For resident species, dispersal to new areas, or the prevention of dispersal causing isolated populations to become genetically distinct, may be important factors. Naturally isolated populations that are identified as having important genetic distinctiveness should be maintained.
- 5.3.21** External factors operating outside the SAC, may also be influential, particularly for the migratory fish and otters. For example, salmon may be affected by barriers to migration in the Severn Estuary, inshore fishing and environmental conditions prevailing in their north Atlantic feeding grounds. Otters may be affected by developments that affect resting and breeding sites outside the SAC boundary
- 5.3.22** The River Wye is subject to measures to manage nutrients within the watercourse, in particular phosphates<sup>2</sup>. Phosphate levels are currently being exceeded at 31 points in the river catchment, with further failures anticipated. In light of recent case law known as the ‘Dutch Nitrogen Judgement’<sup>3</sup>, where a Site is failing its water quality objectives and is classified as unfavourable condition, there is limited scope for the approval of additional damaging effects and measures that cannot be relied upon or are uncertain. The current nutrient management plan therefore

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<sup>2</sup> River Wye SAC Nutrient Management Plan, Phosphate Action Plan. Natural Resources Wales, Environment Agency and Natural England. November 2021.

<sup>3</sup> The CJEU judgment on the joined Coöperatie Mobilisatie for the Environment cases (often referred to as the Dutch Nitrogen cases) affects how the assessment of plans and projects under the Conservation of Habitats and Species Regulations 2017 (as amended) (‘the Habitats Regulations’) must be interpreted and applied by competent authorities (local planning authorities in relation to planning matters).

cannot provide enough certainty to ensure that favourable conservation status will be achieved at the SAC.

*Other Relevant Sites*

**5.3.23** Four other Relevant Sites are present within 15km of the site. These are detailed in Table 3 below.

**Table 5-3: Other Relevant Sites within 15km of the project**

Site Name, Designation and Code	Centroid Grid Reference	Distance to Site	Qualifying Interest Features
Rhos Goch SAC (UK0014792)	SO197483	8.6km	<p>Annex 1 habitats that are the primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 7110 Active raised bogs</li> <li>• 7140 Transition mires and quaking bogs</li> </ul> <p>Annex 1 habitats present as a qualifying feature, but not a primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils</li> <li>• 91D0 Bog woodland</li> <li>• 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i></li> </ul>
Drostre Bank SAC (UK0012878)	SO096312	10.9km	<p>Annex 1 habitats that are the primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils</li> </ul> <p>Annex 1 habitats present as a qualifying feature, but not a primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i></li> </ul>
Llandgorse Lake / Llyn Syfaddan SAC (UK0012985)	SO131262	12.8km	<p>Annex 1 habitats that are the primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 3150 Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i>-type vegetation</li> </ul>



Site Name, Designation and Code	Centroid Grid Reference	Distance to Site	Qualifying Interest Features
River Usk / Afon Wysg SAC (UK0013007)	SO301113	15km	<p>Annex 1 habitats present as a qualifying feature, but not a primary reason for selection:</p> <ul style="list-style-type: none"> <li>• 3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</li> </ul> <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>• 1095 Sea lamprey</li> <li>• 1096 Brook lamprey</li> <li>• 1099 River lamprey</li> <li>• 1103 Twaite shad</li> <li>• 1106 Atlantic salmon</li> <li>• 1163 Bullhead</li> <li>• 1355 Otter</li> </ul> <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> <li>• 1102 Allis shad</li> </ul>

**5.3.24** There are no direct impacts on the Relevant Sites listed above as a result of the proposed works, and given the distance between the works and the SACs listed above, it can be reasonably concluded that there will be no likely negative impacts to the interest features of any other Relevant Site. These ‘Other Relevant Sites’ are not considered further.

**5.3.25** The qualifying species of the Severn Estuary SAC include twaite shad, river and sea lamprey, species which migrate between the sea and the headwaters of rivers to spawn (known as anadromous). This assemblage of migratory fish species is also one of the interest features for which the Severn Estuary is designated as a Ramsar site. Since the Wye is one of the tributaries of the Severn, there is a potential pathway for impacts on populations migrating from the Severn estuary into the Wye catchment to spawn. The Severn Estuary SAC is therefore scoped into the assessment in respect of these three species. No pathways for impacts on other qualifying species or habitats of the Severn Estuary SAC and Ramsar site have been identified.

**5.3.26** The Severn Estuary Ramsar site designation also includes sea trout (*Salmo trutta*) and European eel (*Anguilla anguilla*). Sea trout also spawn on gravel habitats similar to those used by Atlantic salmon in the headwaters of rivers, and therefore any adverse impacts on the integrity of these species is relevant to sea trout. Adult and juvenile eel are likely to be present throughout the year using the silty margins for foraging.

#### 5.4 Step Three, Part 2: Identification of Potential Impacts 'Alone'

5.4.1 As a result of the proposed canoe launching activities at the site there is the potential for direct and indirect impacts to occur on the qualifying features of the SAC. Canoe activity has the potential to affect the integrity of the SAC through launching of the canoes, landing canoes and accidental beaching on shallow gravels or walking through the river. These activities risk damage to or destruction of important spawning habitat and direct damage to eggs and ammocetes as well as juveniles. Other risks include disturbance to breeding activity for a range of species, or disruption to shy species.

5.4.2 Based on the description of the proposed works in Section 5.2 and the threats and pressures identified in the SIP (paragraph 5.3.15), the following potential impact pathways have been identified:

- Direct and indirect disturbance to qualifying features;
- Physical modification of the watercourse; and
- Water pollution;
- Spread of non-native invasive species.

##### *Direct and indirect disturbance to the qualifying features of the SAC*

5.4.3 There is the potential for disturbance of and damage to aquatic vegetation, along with potential disturbance of breeding habitat during times of spawning for some fish species including spawning lamprey, bullhead, Atlantic salmon and twaite shad, and juvenile lamprey. The potential for direct physical disturbance to bank and bed habitats arises from canoe launching, accidental beaching of canoes during low flow conditions and damage as a result of canoeists wading in the channel and climbing into and out of the river.

5.4.4 In the context of this assessment, damage to the bank and beds is considered as direct disturbance rather than physical modification, since the canoe operation does not include the introduction of any engineered structures, or processes (such as dredging or realignment), to the channel or banks. Physical modification of the watercourse is therefore scoped out of the assessment.

5.4.5 A preliminary assessment of impacts upon specific interest features due to physical disturbance is provided in Table 4 below. A detailed assessment of likely significant effects is presented in Section 7.

**Table 5-4: Evaluation of potential disturbance or damage to the interest features of the River Wye SAC and migratory fish assemblage of the Severn Estuary Ramsar**

Qualifying Feature	Potential for disturbance and damage	Likely Significant Effect
<p><b>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</b></p>	<p>No water crowfoot beds are located at the proposed launching site, however they are known to be present upstream. While water crowfoot beds are largely absent from the stretch of the river within the study site and are not generally present in areas where water is likely to be shallow enough for disturbance, there are nonetheless risks of damage to this habitat from canoes and paddles when water levels drop.</p>	<p>Yes</p>
<p><b>Transition mires and quaking bogs</b></p>	<p>This habitat type is not present within the part of the SAC relevant to the proposed canoe launching, with the only located of this habitat known to be at Colwyn Brook Marshes.</p>	<p>No</p>
<p><b>Sea lamprey</b></p>	<p>Sea lamprey requires clean gravel for spawning, and marginal silt or sand for the burrowing juvenile ammocoetes. The species spawns in May and June (the latest of the lamprey species) with incubation lasting 10-13 days, with larvae remaining in the nest for a further 4-5 days until moving to silty sediments on the river edge.</p> <p>The river provides exceptionally good quality habitat for sea lamprey and supports a healthy population. However, they are not known to spawn at the proposed launching site although sea lamprey has been recorded below Llyswen, approximately 4km upstream.</p> <p>Data supplied by NRW detected sea lamprey at Llowes and Hay-on-Wye sampling sites within the study area in 2005 and electrofishing data from 2010 upstream of Glaysbury at SO1585537887 and Hay-on-Wye at SO2218342512.</p> <p>The silty sediments at the river's edge which offer potential burrowing habitat for ammocoetes are likely to be avoided by canoeists attempting to alight from the channel. However, disturbance could occur during periods of low water, when canoes may ground out on the river margins or canoeists alight and drag canoes through shallow sections.</p> <p>Adults tend to migrate at night and are therefore at lower risk of disturbance from canoeing activity which is restricted to daylight hours. However, given that canoeing activity may occur into the evening (up to 9pm) there remains a risk of disturbance.</p>	<p>Yes</p>

Qualifying Feature	Potential for disturbance and damage	Likely Significant Effect
<b>Brook lamprey</b>	<p>The Wye river system provides exceptionally good habitat for brook lamprey and supports a healthy population. The species spawns between April and June in shallow areas of streams. Eggs are laid in gravels with ammocoetes settling in silt or sand where they are filter feed.</p> <p>This species is more likely to spawn and live in smaller watercourses that are unlikely to be affected by the proposals. The potential for likely significant effects is therefore screened out for brook lamprey.</p>	No
<b>River lamprey</b>	<p>The river provides exceptionally good habitat for river lamprey and supports a healthy population. The species is largely indistinguishable from the brook lamprey. The spawning cycle is similar to brook lamprey, spawning in March and April (Maitland, 2003) in shallow areas of smaller streams. Morris &amp; Maitland (1987). state that spawning starts when water temperatures reach 10-11°C, usually in March and April. Eggs are laid in gravels with ammocoetes moving to silt or sand deposits where they burrow in order to filter feed.</p> <p>The species does not spawn in the vicinity of the launch site. However, data supplied by NRW detected <i>L. fluviatilis</i> at Llowes and Hay-on-Wye sampling sites within the study area in 2005 so could be impacted by in a similar manner to sea lamprey from canoeists wading through the watercourse during low flow conditions.</p> <p>Like sea lamprey adults tend to migrate at night and are therefore at lower risk of disturbance from canoeing activity which is restricted to daylight hours. However, given that canoeing activity may occur into the evening (up to 9pm) there remains a risk of disturbance.</p>	Yes
<b>Twaite shad and allis shad</b>	<p>Shad species spawn in May and June. Eggs were recorded in suitable gravel habitats at Lower Glas-y-Bont during surveys in 2016 and 2019, and were absent in 2017 undertaken by NRW. It was observed during the surveys that eggs tended to occur at the tail end of gravel bars/shoals. They generally spawn at dusk or dark, therefore there is a reduced risk of disturbance to migrating adults however evening and night-time use of the river has the potential to affect the species.</p> <p>There is a risk that disturbance of spawning areas could occur as a result of by boat traffic during low flow conditions, when boats may ground out on the riverbed or canoeists are wading in the channel to bypass shallow areas.</p>	Yes
<b>Atlantic salmon and sea trout</b>	<p>Atlantic salmon spawn in winter in excavated depressions in the river bed known as 'redds' (Hendry and Cragg-Hind, 2003). Salmon do not typically spawn on the section of the river proposed for canoe launching and will generally migrate up river when water levels are too high for canoeing.</p>	Yes

Qualifying Feature	Potential for disturbance and damage	Likely Significant Effect
	<p>There is some potential for minor disturbance of spring-run salmon although they should be moving up river in the early morning and evenings, and resting during the day in deeper water.</p> <p>Clean gravel habitats provide nursery habitat for juvenile salmon, and salmon parr and fry have been recorded in the study section during electrofishing surveys undertaken by the Wye and Usk Foundation. Grounding out of canoes on gravel habitats during low flow conditions has the potential for disturbance to nursery habitat for juvenile salmon.</p>	
<b>Bullhead</b>	<p>Bullhead are crepuscular therefore will be most active between dusk and dawn, sheltering under stones during the day. Bullheads spawn between February and June, when there is a risk of disturbance from canoeing activity.</p> <p>There is a risk of disturbance to adults from canoeing activity during periods of low water, when boats may ground out on the riverbed or canoeists are wading in the channel to bypass shallow areas.</p>	Yes
<b>Otter</b>	<p>Otters are known to forage and breed along this stretch of the river and it is reported that there is a natal site located at Llowes within a side stream. Although foraging otters are known to be fairly tolerant of daytime canoe activity, evening launching may have a greater risk of disturbance.</p>	Yes
<b>White-clawed crayfish</b>	<p>White-clawed crayfish has not been recently recorded with no records since 2006 around the launch site and the population is largely confined to smaller brooks and tributaries which are unaffected by the proposals.</p> <p>Despite the risk of the spread of disease (see 'spread of invasive species' at paragraph 5.4.10) this is considered unlikely to have a significant impact on white-clawed crayfish as non-native signal crayfish (<i>Pacifastacus leniusculus</i>) which spread crayfish plague (<i>Aphanomyces astaci</i>) are already known to be present tributaries upstream of the stretch of river including the following Afon Edw, Sgithwen Brook and the Nant yr Offeiriad (NRW 2015). As such signal crayfish and crayfish plague are likely already present.</p>	No
<b>European eel</b>	<p>European eel are known to be present within the River Wye (DEFRA 2021) with silver eel recorded in multiple years.</p>	No

**5.4.6** As detailed above, likely significant effects on the integrity of the qualifying features of the River Wye SAC cannot be ruled out for water crowfoot beds; sea and river lamprey; twaite shad and allis shad; bullhead; Atlantic salmon and otter. Therefore direct and indirect disturbance to the qualifying features of the SAC is screened in for further assessment.

#### *Water pollution*

- 5.4.7** The proposals involve the launching of canoes directly from the shore, with no use of any form of motorised vehicle which could result in accidental spillage of polluting chemical or emissions of airborne contaminants. Accordingly, it is considered unlikely that any pollution events will occur which may result in a negative impact on the interest features of the SAC. Water pollution is therefore screened out of further assessment.

*Spread of non-native invasive species*

- 5.4.8** Along with angling and other recreational activities canoeing has the potential to cause the spread of non-native invasive species if biosecurity measures are not universally observed. For example, crayfish plague can potentially be spread through the movement of canoes, equipment and people. The disease is a highly infectious water mould that infects and causes mortality in all species of crayfish. The disease is readily spread by the non-native Signal Crayfish which are known to be present within the River Wye. The spread of crayfish plague is a key factor in the decline of the white-clawed crayfish and the proposals have the potential to impact this interest feature of the River Wye SAC.
- 5.4.9** Additionally, the bullhead densities have been found to be negatively correlated with densities of non-native crayfish, suggesting competitive and/or predator-prey interactions<sup>4</sup>.
- 5.4.10** The non-native invasive plant species Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*) are known to be widespread in the catchment, particularly the Irfon sub-catchment. Signal crayfish and crayfish plague are also present within the catchment. Movement of canoes and people has the potential to increase the spread of INNS. The spread of non-native species is therefore screened in for further assessment.

**5.5 Step Three, Part 3: Identification of Potential Impacts 'In Combination'**

- 5.5.1** A search was made of the Powys County Council and Herefordshire County Council planning portals for planning applications that may have the potential for effects in combination with the proposals. Type and date of works, distance to the Relevant Sites and the potential pathways for damage were all considered. No applications were found that have the potential to give rise to in-combination impacts.
- 5.5.2** However, there may be in combination risks from three other renewals of consent under consideration by NRW to launch canoes on the river. NRW have provided information on these requests. Details of these applications are provided in Table 5-5 .

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<sup>4</sup> Shams M. Galib, Jingrui Sun, Darren R. Gröcke, Martyn C. Lucas. Ecosystem effects of invasive crayfish increase with crayfish density. Freshwater Biology. 11 March 2022

**Table 5-5: Canoe consent renewals considered for in-combination assessment**

Scheme	Application name/location	Number of vessels	Group type	Time limits	Details
1	Unnamed private site in Glasbury	40 Canadian canoes; 20 kayaks and 5 paddleboards	Mixture of guided and non-guided groups or individuals.	Not stated	Consent granted prior to NRW advice to PCC on 15/04/2021.
2	[REDACTED]	<p>Personal use: Up to 2 Canadian canoes; 5 kayaks and 1 paddleboard.</p> <p>Business use: Launching of a maximum of 22 Canadian canoes and 10 sit on kayaks/sit upons/ paddleboards from Right bank beside [REDACTED] a day</p>	Mixture of guided and non-guided groups or individuals.	Day time and evening use Business use is for during the day only, launching between 9.30-4. After 4pm, launching would be restricted to above the bridge only.	Consent is for above Glasbury Bridge with occasional downstream travel. Includes either school groups with guides or people who camp on the site, plus applicant's own family.
3	[Un named]	Instructed: 8 canoes, 12 Kayaks and 12 stand-up paddleboards	Instructed groups and private use	<p>Instructed: 10:00 and 16:00</p> <p>Private: 09:00 and 21:00.</p>	<p>Numbers are a daily maxima but may not be daily occurrences.</p> <p>Private use - for early evening travel and not likely to be start of a journey down below Glasbury late into the evening.</p>
4	100m upstream of Hay Bridge on left bank	One or two private canoes on an occasional basis	Private use		

**5.5.3** In addition, NRW is aware that there are occasional canoe launchings taking place halfway between Glasbury and Hay on Wye on the right bank downstream of the Digatedd Brook confluence. This activity is unconsented because the owners of the land do not own the riverbanks and are therefore not legally owner/occupiers of the land from which canoes are launched.

## 5.6 Step Four: Assessment of Likely Significant Effects

### 'Alone'

#### *Direct and indirect disturbance to the qualifying features of the SAC*

- 5.6.1 As detailed in Table 5-4, likely significant effects on the integrity of the qualifying features of the River Wye SAC cannot be ruled out for all features except transition mires and bog habitat, brook lamprey and WCC. Therefore, direct and indirect disturbance to the qualifying features of the SAC is screened in for further assessment.

#### *Water Pollution*

- 5.6.2 Given that the proposals involve the launching and navigation of canoes it is considered unlikely that any pollution events will occur which may result in a negative impact on the interest features of the SAC. Water pollution is therefore screened out of further assessment.

#### *Physical modification of the watercourse*

- 5.6.3 It cannot be reasonably concluded that there will be no likely significant effect on the interest features of the SAC as a result of physical modification. Therefore, physical modification is screened in for further assessment.

#### *Spread of Non-Native Invasive Species*

- 5.6.4 It cannot be reasonably concluded that there will be no likely significant effect on the interest features of the SAC as a result of the spread of non-native invasive species. Therefore, the spread of non-native invasive species is screened in for further assessment.

#### *Other European Sites*

- 5.6.5 The proposal is not expected to have any impacts on any of the other National Site Network sites located within 15km of the site due to a lack of impact pathways.

### 'In Combination'

#### *Renewal of consents to launch canoes at other sites*

- 5.6.6 The renewal of existing permits by canoe launching operators has the potential for in-combination effects. While the proposed launching times prevent significant disturbance in the morning and evening, canoes are unlikely to cause disturbance there but may be in-combination considerations, particularly with the request located on the opposite bank. Also, in combination risks with use of the [REDACTED] on the opposite bank by commercial canoe hire companies, and others, alongside private individuals.



## 6. Screening Assessment Conclusion

- 6.1.1** It cannot be objectively concluded that the proposed project either alone or in combination will not have a likely significant effect on the conservation condition of the qualifying features of the River Wye SAC, and the migratory fish assemblage of the Severn Estuary SAC and Ramsar site. In the absence of mitigation measures, the proposals have the potential to affect the qualifying features of the River Wye SAC, as it may cause the following:
- Direct and indirect disturbance to qualifying features, particularly during low flow conditions; and
  - Spread of non-native invasive species.
- 6.1.2** Likely significant effects as a result of water pollution have been screened out from further assessment.
- 6.1.3** Accordingly, an Appropriate Assessment should be undertaken.
- 6.1.4** Likely significant effects were screened out for transition mires and quaking bogs, brook lamprey and white-clawed crayfish. Transition mires and quaking bogs are absent from the study area. White-clawed crayfish are considered to be absent from the main stem of the river due to the presence of Signal crayfish, and if present in the catchment are restricted to minor tributary streams. Brook lamprey is screened out as spawning occurs only in small tributary streams and no likely significant effects are anticipated on juvenile or adult life stage for this species.

## 7. Appropriate Assessment Information

### 7.1 Step One: Information on Relevant Sites and Potential Effects on Conservation Objectives

7.1.1 The conservation objectives for the River Wye SAC are given in Section 5.3. In the absence of mitigation measures, the proposals have the potential to affect the qualifying features of the River Wye SAC, as it may cause the following:

- Direct and indirect disturbance to qualifying features, particularly during low flow conditions; and
- Spread of non-native invasive species.

7.1.2 Accordingly, an Appropriate Assessment is recommended in respect of the proposals on the interest features of the River Wye SAC. Details on the site, reasons for notification and condition of the sites and the qualifying features are provided in Section 5.3 and in Appendices 1-3.

### 7.2 Step Two, Part 1: Impact Prediction 'Alone'

*Direct and indirect disturbance to qualifying features, particularly during low flow conditions*

7.2.1 It has been concluded in the screening assessment that there is the potential for disturbance of and damage to aquatic vegetation, along with potential disturbance of breeding habitat during times of spawning for some fish species. An assessment of impacts upon specific interest features is presented below.

7.2.2 In this context direct disturbance is considered to be:

- Physical damage to bank and/or channel habitats from canoe launching and recovery, and from the grounding out of canoes in the channel particularly during low flow conditions. Resuspension of silt from canoe grounding and wading by canoeists in shallow marginal habitats is also considered in this context.
- Noise and human activity which may displace sensitive species or disrupt their access to key habitats

7.2.3 Indirect impacts are those which may not be a direct result of the project but could occur as a result of an interaction with another pressures, such as changes in water quality. In this assessment the indirect impact under consideration is the interaction of disturbance pressures with low water levels and increases in water temperatures during the summer months.

7.2.4 These impacts are considered alone for each of the features of interest below. Species with similar habitat preferences and risk of impact are dealt with together to avoid repetition. In combination impacts are dealt with in Section 7.3

Watercourse of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation

7.2.5 There is a risk of impacts to water crowfoot beds from canoe activity where craft are grounding out and directly uprooting plants. Abrasion of flowers, stems and leaves may occur from

repeated contact with canoe hulls (Mumma et al., 1996). However, water crowfoot beds are absent from the launch site and from the shallow gravel or 'shallowing sites' in the study reach. Information on the location of the shallowing sites has been provided by NRW based on surveys and a review of aerial imagery (Figure 3). The only small stands of *Ranunculus* vegetation occurring in the study reach occur below and beneath Hay Bridge (NRW, pers. comm.), although there is no information on their location or area. Given that this habitat is below the draft of a canoe impacts from direct disturbance are not considered likely to result in adverse effects on the integrity of this feature.

- 7.2.6** Localised increases in suspended solids from disturbance of the bed due to canoe grounding, launching and landing has the potential to redistribute silt which may settle out on gravel habitats and decrease suitability for future colonisation by *Ranunculus* vegetation. However, this is considered unlikely in the context of siltation from other catchment sources.

River lamprey, sea lamprey and twaite shad

- 7.2.7** The reach between Glasbury and Hay on Wye is known to support suitable spawning habitat for fish species which spawn in gravel habitats, including sea lamprey, river lamprey and twaite shad (Figure 2). Sea lamprey ammocoetes were recorded below Llyswen, approximately 2.5km upstream of the launch site (SO 15855 37887) and approximately 1km upstream of the southern end of the reach at Hay on Wye (SO 22183 42512) (Figure 2) during electrofishing surveys in 2010. Adult river lamprey were recorded at Llowes and Hay-on-Wye in 2005. Twaite shad eggs were recorded in suitable gravel habitats at Lower Glas-y-Bont during surveys in 2016 and 2019, undertaken by NRW and were absent in 2017. It was observed during the surveys that eggs tended to occur at the tail end of gravel bars/shoals.

- 7.2.8** In the absence of comprehensive survey data it has been assumed that spawning may occur in any of the shallowing sites which comprise gravel habitat throughout the study section (Figure 3). The sites where sea lamprey ammocoetes and twaite shad eggs were recorded during surveys by NRW correspond with several of the shallowing sites and so they are therefore considered to be a reasonable analogue for spawning habitat. A precautionary approach has been adopted such that all shallowing sites within the study reach have been assumed to have potential as spawning habitat.

- 7.2.9** Spawning occurs on the Wye in March and April for river lamprey, when water temperatures reach between 10 and 11°C and between May and June for sea lamprey (Table 5-4). For twaite shad spawning occurs between the beginning of May and end of June. Disturbance to shallowing sites during this 3 month period therefore has the potential to disrupt spawning behaviour, damage eggs and injure juvenile fish. There is no published empirical evidence regarding the impacts of physical disturbance of canoes on the spawning habitat of gravel or weed spawning species. Hendry and Tree (2000) collated literature and canvassed opinion from anglers and canoeists as well as professional fish experts on whether they considered that canoeing was harmful to salmonid and coarse fish stocks, including potential impacts on spawning. The study identified only one site where there had been degradation of river habitat due to canoe activity. Nevertheless, the consensus of the panel of experts was that the degree of disturbance was a function of river size and intensity of canoeing.

- 7.2.10** The risk of disturbance to shallowing sites is greatest where they coincide with launch locations since there will be direct contact with the bed under all flow conditions as canoeists wade to launch and recover their vessels. Figure 2 shows the location of known shallowing sites relative to launch points. The shallowing point at Fford-Fawr immediately downstream of the ox-bow lake section is the only one which coincides exactly with a launch point. There are no records of spawning for lamprey or shad in the vicinity of this site (Figures 2 and 3). Twaite shad eggs were recorded in gravels at Lower Glas-y-Bont by NRW during surveys in 2016, 2019 and 2022. Although this site lies in relatively close proximity (300m downstream) to the Glas y-Bont Common launch site there is no formal access here and assuming canoeists are following the code of conduct, the risk to this site should be no greater than for other shallowing sites which are more distant from launch points. Nevertheless, a precautionary approach has been adopted and it is assumed that the potential for damage and disturbance could occur at any of the shallowing sites. The potential in-combination impacts with other canoe operations which have launch points downstream of the bridge at Glasbury are considered in Section 7.3.
- 7.2.11** The risk of disturbance to fish spawning at other shallowing sites is greatest when water depths during the spring and early summer period drop to or below the draft depth of a canoe. Based on a review of manufacturer specifications (Hydropursuit, 2022) the maximum draft depth for Canadian canoes and kayaks is 30cm. However, in adopting a precautionary approach to the assessment a maximum draft of 60cm has been assumed. The risk of damage to spawning habitat is therefore greatest when water levels on the shallowing sites is at or below 60cm during the period between beginning of April and end of June. No water depth information is available for the shallowing sites. However, a review has been undertaken of the water level record for gauging stations at Glasbury and Hay on Wye to determine whether flow conditions which might lead to levels dropping below a threshold which may give rise to grounding out by canoes at the shallowing sites during the critical April to June period.
- 7.2.12** Level duration curves (i.e. the percentage of time that specified water levels were equalled or exceeded) were calculated for Glasbury and Hay on Wye for the five year period from 1st April 2017 to 30th March 2022 (Appendix 5). In the period between 1st April and 30th June levels were on average at less than 60cm 87% of the time for Hay, whereas at Glasbury levels dropped below this threshold for 22% of the time. For the April to June period over the same five years the average minimum water levels at Hay across the 5 year period was 29cm at Hay and 55.7cm in Glasbury (Table 7-1).

Table 7-1: Minimum and mean minimum water levels for spring/summer\* period for 2017 to 2022

Year	Minimum spring/summer* water levels	
	Glasbury	Hay
2017	0.575	0.314
2018	0.535	0.268
2019	0.612	0.31
2020	0.564	0.265
2021	0.54	0.284
2022	0.514	0.301
<b>Mean minimum spring/summer* water level</b>	<b>0.56</b>	<b>0.29</b>

\*Spring/summer = 1<sup>st</sup> April to 30<sup>th</sup> June;

- 7.2.13** The hydrological analysis is only a coarse indication since there is no reference datum for the gauged sites, or water level data for the shallowing sites. However, NRW have advised that grounding out by canoes has been observed at the Lower Sheephouse shallowing site during the summer months when the water levels were recorded as 0.52m at the Glasbury gauging station. Adopting a precautionary approach this data suggests that water levels at or around the depths where canoes could ground out occur for around 20% of spring spawning period.
- 7.2.14** The average minimum water levels for the April to June period suggest that without appropriate control measures in place grounding out on the shallowing sites is likely to occur during the spring and early summer period when sea lamprey, river lamprey, and twaite shad are spawning.
- 7.2.15** The risk of damage to eggs and juveniles is likely to depend on the position of egg laying sites relative to the points of contact of canoes, the depth of eggs and juveniles within the substrate in areas where contact occurs, and the number and intensity of contacts. Dislodgement of eggs could also occur due to gravel disturbance. Sea and river lamprey are thought to favour the upstream end of shallow gravel areas for egg laying (NRW, pers comm.). Incubation lasts for 15-30 days depending on prevailing water temperatures, with the larvae hatching and immediately start to drift downstream and burrow into suitable silt beds (Maitland, 2003). The laboratory study by Silva et al. (2014) suggests survivability of displaced lamprey eggs remains good, though reduced.
- 7.2.16** Twaite shad are thought to favour the tail end of gravel shallows (NRW, pers. comm.), although Maitland and Hatton-Ellis (2003) state that they favour 'the tail end of pools where shallow

gravels begin'. Spawning occurs in water depths of between 0.5 and 1.5m (Maitland and Hatton-Ellis, 2003). Eggs are laid to a gravel depth of between 0.2 and 0.7m, but most commonly between 0.2 and 0.3m (Pinder *et al.*, 2016). Based on this information, both shad and lamprey eggs are considered to be vulnerable to damage from grounding out by canoes.

- 7.2.17** Assuming that the majority of users observe the code of conduct, the occurrence of grounding out events is likely to be as a result of misjudgements by unguided novice canoeists. Nevertheless, based on survey data collected by the Environment Agency there could be over 470 canoes on the stretch of river between Glasbury and Hay on any one day during spring and summer, albeit across all canoe operations, rather than just the Common (Table 7-2). In a study of the effects of canoeing on fish stocks Hendry and Tree (2000) canvassed both anglers and fishery experts on the risk of damage to spawning habitat from canoeing. Most experts considered that there was no overall harm, although it was acknowledged that the risk was a function of canoe activity and river size. In combination effects are assessed in Section 7.3. Without control measures the potential for repeated grounding out events is therefore considered to be high. Based on a precautionary approach, any grounding out on gravels with eggs present is likely to have an adverse effect on juvenile survival rates. Shad generally spawn at night so risks to the adult fish from grounding out is considered to be low given that canoe activity is limited to daytime hours.
- 7.2.18** The silty sediments at the river's edge which offer potential burrowing habitat for ammocoetes are likely to be avoided by canoeists attempting to alight from the channel. However, disturbance could occur during periods of low water, when canoes may ground out on the river margins or canoeists alight and drag canoes through shallow sections. Grounding out of canoes at shallowing sites was observed during a site walkover (i.e. a visual observation of the river from public rights of way) for this study during April 2022 (Appendix 3). Ammocoetes are likely to be relatively resilient to some trampling of silt deposits and this impact will also occur with livestock entering the channel. However, repeated trampling by large numbers of canoeists could result in direct injury of ammocoetes and compaction of silt, leaving the habitat unsuitable for burrowing. Again, assuming that the majority of users observe the code of conduct and only launch and recover canoes from the published approved sites the only occurrence of trampling in marginal will be from unguided novice canoeists and guided canoeists in an emergency. Based on this assumption significant adverse effects are not anticipated on juvenile sea and river lamprey from this impact.
- 7.2.19** Once hatched juvenile shad spend a limited duration at the natal sites before moving to more suitable habitat in deeper water. This lifestage is also mobile enough to swim away from disturbances, The risks of disturbance to juvenile fish from canoe activity is therefore considered to be low and significant adverse effects are not anticipated.
- 7.2.20** Adults of lamprey and shad tend to migrate at night and are therefore at lower risk of disturbance from canoeing activity which is restricted to daylight hours. No adverse effects on adult migration are therefore anticipated as a result of disturbance from canoe activity.
- 7.2.21** Silt generated from grounding out and canoe launching and recovery has the potential to accrete on spawning gravels, thus limiting water flow and dissolved oxygen concentrations

around developing eggs. Silt resuspension and accretion is likely to be localised but effects could exacerbate low dissolved oxygen levels in spring due to poor water quality and/or increased water temperatures. The potential extent of effects on egg development is difficult to assess but may be a consideration in circumstances where canoe numbers are high during the critical spawning period. The overall risk of an adverse effect is considered to be low although has been assessed in combination with the risks from physical abrasion of eggs from grounding out, and higher water temperatures when considering mitigation (Sections 7.3 and 7.5).

#### Bullhead

- 7.2.22** Bullhead are crepuscular therefore will be most active between dusk and dawn, sheltering under stones during the day. Spawning occurs between March and April, with eggs laid underneath stones or in pits in the riverbed. Grounding out by canoes during periods of low in the spring therefore has similar risks to spawning success as for shad and lamprey species. However, bullhead are less dependent on gravel habitat for spawning, using stones overlying sand, as well as gravel (Mills and Mann, 1983). Given the wider range of substrate preferences and their crepuscular habitat disturbance due to canoeing activity is considered unlikely to have significant adverse effects on juvenile or adult life stages.

#### Atlantic salmon

- 7.2.23** Atlantic salmon spawn in shallow excavations called redds, found in shallow (typically <30cm) gravelly areas in clean rivers and streams where the water flows swiftly. Spawning takes place between November and January, with eggs and alevins remaining within the gravel until spring. Although spawning redds are believed to be absent from the study reach, the shallowing sites between Glasbury and Hay do offer nursery habitat for juvenile salmon.
- 7.2.24** During annual 5 minute electrofishing surveys of riffle habitats by the Wye and Usk Foundation fry (i.e. fish between 0 and 1 year (0+)), but no parr (i.e. fish between 1 and 2 years old (1+)) were recorded at a sampling site immediately adjacent to the Common (Maesllwch, SO179392). Eleven fry and three parr were recorded at the same site during 2014. By comparison, eight fry and no parr were recorded during surveys at a site immediately upstream of Glasbury (Glasbury, SO170389) during 2009. One fry and no parr were recorded in 2013 and three fry and two parr were recorded in 2014. The average number of juveniles recorded during 5 minute electrofishing surveys is calculated for all the Wye sub-catchments. The study site lies within the 'Main Welsh Wye - Llangurig to Hay on Wye' sub-catchment. The average number of juveniles caught during 5 minute riffle surveys in this sub-catchment ranged from a maximum of 28 in 2020 to a minimum of 2 in 2013. Surveys took place in 5 years (2009, 2013, 2014, 2020 and 2021) over that period (Wye and Usk Foundation, undated).
- 7.2.25** Clean gravel habitats provide nursery habitat for juvenile salmon where they feed on aquatic invertebrates including mayfly, stonefly and caddis fly larvae. Feeding activity is greatest during spring when parr move from deeper water onto riffle habitat (Hendry and Cragg-Hine, 2003). Physical disturbance to the habitat from the grounding out of canoes during low flow conditions has the potential to impact on the value of the habitat for juvenile salmon. However, to have a

significant effect on prey abundance on the shallowing sites it is considered that the disturbance would need to change the physical character of the substrate, either from compaction which would reduce the interstitial spaces between particles, or by the replacement of gravel particles with finer sediment. Both of these changes would likely give rise to a change in prey composition and density. Although occasional grounding out in any one location may cause some re-distribution of gravel particles it is unlikely to cause a significant level of change that may lead to a decline in prey density. Based on the principle that the risk of damage is a function of the intensity of canoe activity and river size (Hendry and Tree (2000); paragraph 7.2.17), impacts on habitat quality could occur if grounding out events occur repeatedly in the same location.

**7.2.26** Direct mortality is considered unlikely since fry and parr have the capacity to move away from physical disturbances. However, disturbance due to the physical presence of canoes and canoeists also has the potential to displace juvenile salmon into less disturbed foraging habitat resulting in competition for food resources in reaches up and downstream of the site. Salmon parr are territorial, defending areas of stream above their feeding stations (Kalleberg, 1958), and so individuals displaced from one riffle might be pushed into already occupied territories, but this effect is likely to be transitory. The relatively low number of fry and parr recorded on riffle sites within the study area suggests that resource availability (termed carrying capacity) is unlikely to be a limiting factor.

**7.2.27** Upstream migration of adult salmon to reach natal spawning grounds in the river headwaters occurs primarily during autumn as river flows increase, although migration during spring (February to April) may also occur. Based on rod return data (i.e. numbers of fish caught by anglers) provided by the Wye and Usk Foundation, the pool upstream of Glasbury within the reach known as 'Spreadeagle' is highly productive yielding a maximum annual catch of 132 adult fish (recorded in 2012) and an average of 33.2 fish per annum between 2009 and 2021 inclusive. Of the four beats between Glasbury and Hay (Maesllwch, Llanthomas, Sheephouse and Boatside) Boatside was the most productive with a maximum annual catch of eight in (recorded in 2013, 2016 and 2017) and an average of 3. However, these beats are less frequently fished in part due to anglers choosing to avoid these stretches because of canoe issues (██████████, pers. comm). Surveys using electrofishing were also carried out at Hay (SO229427) and Hay Bridge (SO227425). Hay Bridge was the most recently fished site of all four sites in the study stretch, with 9 parr recorded in 2020.

**7.2.28** Adult salmon are highly motivated to migrate upstream to spawn (Thorstad et al., 2003) and it is unlikely that canoe activity would interfere with migratory movements, particularly during the early morning and evenings when most movements take place. Furthermore, the number of canoeists using the site during the autumn migration season is likely to be significantly lower. There is slightly more potential for minor disturbance of spring-run salmon, and downstream migrating smolts, since canoeing activity is more likely to occur at this time of year. During the early part of the season smolts will be resting in deeper water during the day when most canoe activity takes place, but daytime surface migration increases as the season progresses into warmer temperatures, typically into June. (Haraldstat *et al.*, 2016).



**7.2.29** On the assumption that all or some of the shallowing sites downstream of Glasbury have potential to be used as nursery habitat by salmon, an increased risk of repeated grounding out events at these sites has the potential for significant adverse effects on juvenile development.

Otter

**7.2.30** Otters are known to forage and breed along this stretch of the river and it is reported that there is a natal site located at Llowes within a side stream. Although foraging otters are known to be fairly tolerant of daytime canoe activity, evening launching may have a greater risk of disturbance.

**7.2.31** Should canoeists travel down the river at dusk or dawn there is an increased risk of disturbance to otter feeding behaviours and nesting activity. Loss or degradation of vegetation from canoeists attempting to access or leave the water at locations where otters forage or rest. In the absence of mitigation it cannot be concluded that an adverse effect on site integrity can be ruled out.

*Spread of non-native invasive species*

**7.2.32** Along with angling and other recreational activities canoeing has the potential to cause the spread of non-native invasive species if biosecurity measures are not universally observed. For example, crayfish plague can potentially be spread through the movement of canoes, equipment and people. The disease is a highly infectious water mould that infects and causes mortality in all species of crayfish. The disease is readily spread by the non-native Signal Crayfish which are known to be present within the River Wye. The spread of crayfish plague is a key factor in the decline of the white-clawed crayfish and the proposals have the potential to impact this interest feature of the River Wye SAC.

**7.2.33** Additionally, the bullhead densities have been found to be negatively correlated with densities of non-native crayfish, suggesting competitive and/or predator-prey interactions.

**7.2.34** With the exception of the fish virus, spring viraemia, most of the bacteria and viruses which cause fish diseases are de-natured by exposure to ultra-violet light and therefore the adoption of strict biosecurity measures is adequate to prevent spread. The need to observe biosecurity measures, including ensuring that equipment transferred between rivers is clean and dry is covered in the code of conduct. Although it is not known whether biosecurity measures are universally observed, the risk of disease spread from canoe activity is considered to be less, and certainly no greater, than from other river uses, including angling.

**7.2.35** The non-native invasive plant species Japanese knotweed and Himalayan balsam known to be widespread in the catchment, particularly the Irfon sub-catchment. Movement of canoes and people have the potential to increase the spread of these species within the catchment. Measures to mitigate the increased risk of spread of invasive species are described in Section 7.5.

### 7.3 Step Two, Part 2: Impact Prediction 'In Combination'

7.3.1 Four other canoeing schemes with applications pending consent by NRW were considered to have potential for significant adverse effects in combination with the Upper Glas-y-Bont Common canoe operation. The four schemes are described in Table 5-5. The following section considers the potential for significant adverse effects from direct and indirect disturbance to qualifying features, particularly during low flow conditions; and the spread of non-native invasive species.

#### *Direct and indirect disturbance to qualifying features, particularly during low flow conditions*

7.3.2 The potential in combination effects of the various canoeing schemes relate primarily to the increased numbers of users at launch and recovery locations as well as the potential for grounding events at shallowing sites during periods of low flows. Although most of the consents have daily time restrictions imposed on them the in combination assessment also needs to consider the risk of increased disturbance during early morning and evening periods from a greater number of users. NRW highlighted the potential impacts of trampling and boat dragging at the launch site and further downstream on fish spawning habitat and water crowfoot and provided recommendations from paddle boat users, particularly in the spawning season. The imposition of a close season, along with management measures to ensure that users are complying with sustainable paddling practices and observing the voluntary code of conduct (Appendix 1) was also included in their advice (Appendix 7)

**7.3.3**

**7.3.4** After the public canoe facility at the Common the second most significant scheme in terms of numbers of vessels is the consent issued by NRW for 40 Canadian canoes, 20 kayaks and 5 paddleboards also located in Glasbury (Table 5-5), but from a private site likely to be below the bridge. This and another consent for up to 22 Canadian canoes and 10 sit on kayaks at [REDACTED] and one site for 8 canoes, 12 Kayaks and 12 stand-up paddleboards, is for guided and unguided canoe hire groups. There is one additional scheme for 2 or 3 canoes for private use.

**7.3.5** Since there are no accurate numbers for the use of the public canoe facility it is difficult to assess the proportion of the canoes within the study site that the additional schemes represent. However, the Environment Agency undertake periodic counts of canoes and canoeists in Glasbury and Hay. Data was collated from surveys undertaken on 14 separate days between 2011 and 2016 (Table 7-2). Of these 14 days 7 were in July and August 2016. A peak number of 118 canoes is believed to have coincided with the August bank holiday, with most believed to have originated upstream. Excluding that peak, which the average daily number of canoes recorded on the river between June and August was 42.7.

**Table 7-2: Summary Environment Agency Canoe Survey Data**

Day	Date	Month	Year	Am or pm	Location	Total Boats	Total Canoeists
Wed	1	June	2011	pm	Glasbury	63	99
Fri	17	August	2012	am	Glasbury	19	33
Fri	17	August	2012	late am / early pm	Hay-on-Wye	0	0
Wed	21	August	2013	pm	Hay-on-Wye	54	95
Mon	21	July	2014	am	Hay-on-Wye	27	51
Wed	13	August	2014	am	Glasbury	18	28
Wed	13	August	2014	pm	Hay-on-Wye	21	38
Wed	8	July	2015	am	Hay-on-Wye u/s	3	6
Fri	21	August	2015	pm	Hay-on-Wye u/s	36	72
Tues	5	Jul	2016	pm	Hay-on-Wye u/s	40	67
Wed	13	Jul	2016	am	Hay-on-Wye u/s	3	4
Sat	6	Aug	2016	pm	Hay-on-Wye u/s	118	218
Sun	7	Aug	2016	pm	Hay-on-Wye u/s	58	121
Sun	21	Aug	2016	pm	Hay-on-Wye u/s	9	14
Tue	23	Aug	2016	am	Hay-on-Wye u/s	9	18
Monday b/h	29	Aug	2016	am	Hay-on-Wye u/s	67	136

**7.3.6** The greatest density of canoes is likely to be immediately downstream of Glasbury since canoeists launching from the Common and the private facility immediately downstream of the bridge are likely to start downstream trips to Hay within a relatively narrow window of time. The risk of damage to bank and bed habitat from collisions as canoeists seek to avoid each other is likely to be greatest in this area. The shallowing site at Lower Glas-y-Bont is considered to be at the greatest risk due to its proximity to the launch sites at the Common and below the bridge at Glasbury. The river narrows at this point as it branches into two channels thereby increasing the density of canoeists and the risks of grounding out during periods when water levels are low. The risks of damage due to an increased density of canoes is considered to be lower for the

intermediate shallowing sites (Fford-fawr, Upper Sheephouse and Llowes Court on Figure 3) since there is likely to be a greater separation of canoes by these points in the route.

River lamprey, sea lamprey and twaite shad

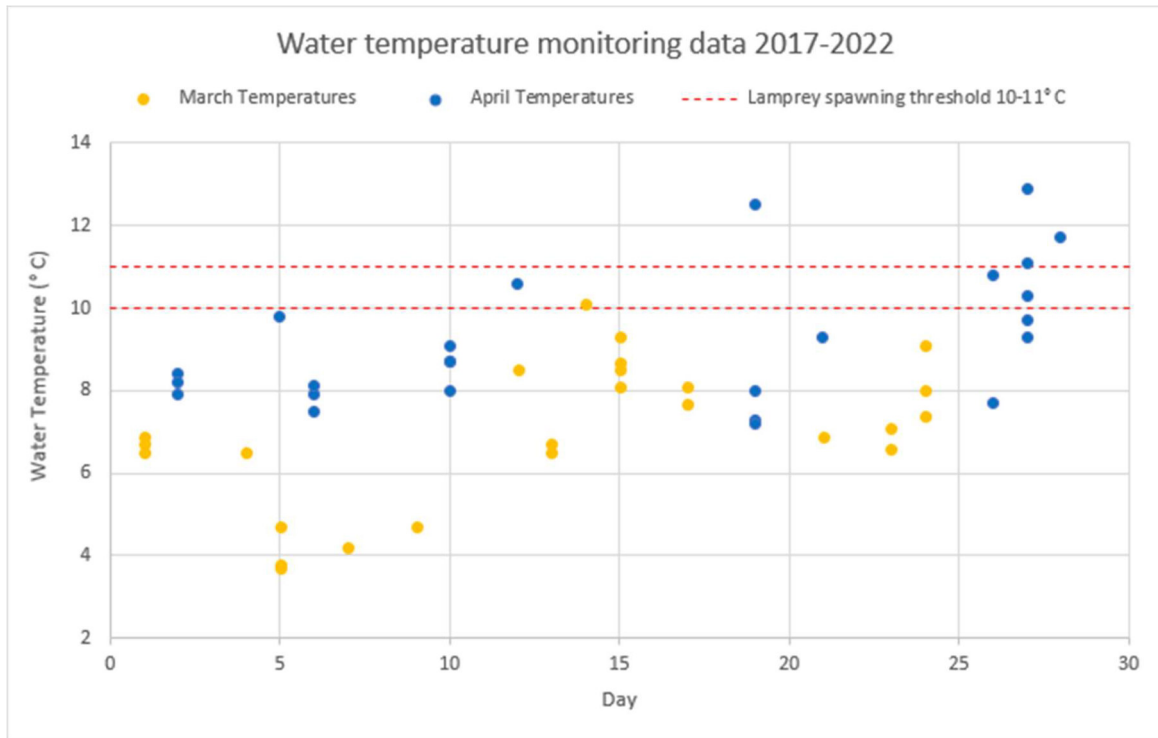
- 7.3.7** The greatest potential for in combination impacts on gravel spawning species is considered to be from grounding out of canoes during the early spring period since this has the potential for effects on egg development and therefore reproductive success (paragraph 7.2.17). If water levels are sufficiently low that canoes are grounding out, the impacts of physical disturbance are likely to be exacerbated by higher water temperatures and low dissolved oxygen concentrations should these occur.
- 7.3.8** Natural Resources Wales monitor water temperatures in Wye as part of a wider water quality monitoring programme. Data from the monitoring station at Glasbury Bridge is available for the period between 2017 and 2022 although recording during 2020 and 2021 was disrupted due to the Covid-19 lock down. The range of water temperatures recorded in March and April during these years is presented in Table 7-3 and Figure 4. The threshold temperature range for spawning in river lamprey of 10 to 11°C (Table 5-4) is also shown in Figure 4. The full water temperature data set for the five year period is presented in Appendix 6.

Year	March		April	
	Min	Max	Min	Max
2017	6.9	10.1	7.7	10.8
2018	3.8	6.7	8.7	8.7
2019	6.5	8.5	7.9	9.1
2020	6.5*		No measurements	
2021	No measurements		7.3	12.5
2022	6.5	9.1	9.3	12.9

\*One measurement available only.

**Table 7-3: Minimum and maximum water temperatures in March and April between 2017 and 2022 from Glasbury bridge monitoring station<sup>5</sup>.**

<sup>5</sup> Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved



**Figure 4: Range of water temperatures in March and April at Glasbury Bridge and threshold temperature for spawning in river lamprey.**

- 7.3.9** For the period between 2017 and 2022 water temperatures in March remained below 10°C except for on one occasion during 2017 (14/03/207) when temperatures rose to 10.1°C. The mean water temperature in March over the five year period was 7°C. April temperatures range from 7.3°C to 12.9°C with a mean of 9.2°C. Temperatures rose above the 10°C river lamprey spawning threshold on 7 occasions and exceeded 11°C on 4 occasions.
- 7.3.10** Based on the five year temperature data it is considered that river lamprey spawning at the site occurs after the end of March when water temperatures consistently exceed the 10°C threshold. The potential for damage to eggs and ammocoetes for this species from canoe grounding is therefore considered to occur from April onwards.
- 7.3.11** Spawning in river and sea lamprey, and twaite shad tends to occur at night whilst juvenile development occurs either in deeper water, in the case of shad, or in silty habitats at the channel margins (lamprey species). Although marginal habitats are at risk from higher levels of trampling when considering canoe operations in combination, the habitat is more widespread, and ammocoetes are likely to burrow to a depth where they are less vulnerable. Adult foraging and migration occurs in deeper water and individuals will move away from sources of disturbance.
- 7.3.12** Although there remains uncertainty regarding the vulnerability of shad and lamprey eggs to physical abrasion from canoe grounding out, a precautionary approach has been adopted. It is

therefore assumed that reproductive success could be more affected by grounding out when the canoe operations are considered in combination.

### 7.3.13

#### Bullhead

- 7.3.14** Given their crepuscular habit and lower dependence on gravel habitats for spawning bullhead is not considered at greater risk from in combination effects than those described for the canoe operation alone. No likely significant effects are therefore anticipated when the canoe operations are considered in combination.

#### Atlantic salmon

- 7.3.15** The increased risk of damage to gravel habitats from repeated grounding out events when the canoe operations are considered in combination to have the potential for impacts on nursery habitat for fry and parr. In combination effects are not considered likely for the Glasbury shallowing site (Figure 3) and the Maesllwch beat (Appendix 2) since they are upstream of the other sizeable canoe operation (as detailed in Table 5-5). However, assuming that all of the shallowing sites downstream of Glasbury have potential as nursery habitat, an increased risk of repeated grounding out events at these sites has the potential for significant adverse effects on juvenile development.

## 7.4 Conclusions on alone and in combination impacts

- 7.4.1** There is potential for adverse effects on fish species which spawn on gravel habitats within the study section, including sea, and river lamprey and twaite shad, from repeated grounding out events which may impact on egg development through physical abrasion and reduced water quality around spawning gravels (paragraphs 7.2.17 and 7.2.21). Uncertainty exists on the number of grounding out events, and hence the level of damage to gravel habitats which may represent a threat to shad and lamprey eggs. However, the risk of adverse effects is increased when considered with other pressures such as low flow conditions and high spring temperatures which may result in lower dissolved oxygen concentrations.
- 7.4.2** Similarly, grounding out events also represent a threat to similar gravel habitats used for foraging by Atlantic salmon and sea trout fry and parr, specifically if this occurs during the sensitive spawning season at a level where physical changes in the composition and structure of the habitat occur.
- 7.4.3** The risk of repeated grounding out events increases with the number of canoes using the river, and thus in combination effects are predicted for lamprey and shad species which spawn on the shallowing sites and for juvenile Atlantic salmon which use the shallowing sites for feeding.
- 7.4.4** The spread of invasive non-native species is not considered to be any greater from canoe activity than other river uses including angling provided canoeists observe check clean dry protocols. Although biosecurity measures are referred to in the code of conduct document this issue may merit a higher profile and the dissemination of more guidance to all recreational user groups.



## 7.5 Step three: Mitigation Measures

7.5.1 This section presents measures to mitigate for potentially adverse effects from:

- Damage and disturbance to spawning habitat, physical abrasion of fish eggs and reduced water quality around spawning gravels from increased grounding out by canoes and other paddle craft alone and in combination with other canoe operations.
- The increased risk of spread of invasive species

7.5.2 For the purposes of this assessment it has been assumed that the existing voluntary code of conduct, as set out in Appendix 1 is fully implemented and disseminated to all users. Measures in the code of conduct relevant to this assessment are summarised in paragraph 5.3.3.

### *Damage to spawning and nursery habitat due to grounding out by canoes*

7.5.3 On 25/03/22 NRW advised Powys Council to impose a close season for canoeing from 1st May to 30th June annually. They suggested that this restriction would apply to unguided hire groups only since they are considered to represent the greatest risk in terms of canoe grounding. The close season restriction would not apply to groups that are led by professional, accredited guides; guided education groups; and private owner/occupiers using their personal kayaks/canoes. This advice replaces previous directions by NRW to ‘*impose a minimum water level below which boats may not be launched.*’

7.5.4 A close season during May and June is considered to reduce the risk of damage to the sensitive shallowing sites from accidental grounding events during the late spring/early summer period. Nevertheless, water levels at or below 0.6m, which are considered here as a precautionary minimum, have been recorded at Glasbury during April in recent years (0.61m on 27<sup>th</sup> April 2020; 0.54m on 29<sup>th</sup> April 2021; 0.59m on 19<sup>th</sup> April 2022) (Appendix 5). To reduce the risks of damage to shad and lamprey spawning sites, and salmon and sea trout nursery habitat it is recommended that the close season is extended to include April. Given that water temperatures have been found to regularly reach the threshold for spawning in river lamprey during April, this extension to the close season will also provide further protection for this species (paragraph 7.3.8; Table 7-3 and Appendix 6).

7.5.5 The concordat developed by South Wales Outdoor Activity Providers Group (SWOAPG) for groups using the Sychryd Gorge provides a potential model for the enforcement of management measures. In that case groups wishing to use the Gorge must become members of SWOAPG and opt in to the terms of the Concordat including its code of conduct and rules. Groups which repeatedly break the rules can be excluded from the Concordat and prevented from accessing the site. A similar model is currently under discussion with Powys Council and SWOAPG.

7.5.6 Clarity around enforcement mechanisms to support a concordat management scheme is crucial to ensuring that environmental mitigation is observed and to maintaining stakeholder confidence in the scheme. PCC, working with NRW, has been able to ascertain that this can be enforced through civil action. An alternative route is available under the WCA where it is a criminal

offence for any third party to intentionally or recklessly destroy; damage; or disturb the notified features of the SSSI.

- 7.5.7** To provide additional protection for the shallowing site at Lower Glas-y-Bont where shad eggs have been recorded, there should be co-ordination of canoe groups entering that section by the various canoe operators in Glasbury. The aim would be prevent bunching of canoes and users grounding out as they take avoiding action.
- 7.5.8** Shad egg surveys and lamprey electrofishing surveys are currently undertaken on an annual basis. Data from these surveys should continue to be collated annually to determine presence of the species within the study reach. The aim of the surveys will be to provide further information on the use of the shallowing sites by key fish species in the longer term.

*Increased risk of spread of invasive species*

- 7.5.9** Section 12 of the voluntary code of conduct (Appendix ) includes measures to ensure that boats and others equipment are clean and dry before use on the stretch between Glasbury and Hay. Check Clean Dry procedures should be highlighted through verbal briefings to users by commercial canoe operating companies.
- 7.5.10** In accordance with NRW advice signage should be erected at the entrance to the site advising users on the sensitivity of the site and the downstream river environment; restrictions on landing; and the Check Clean Dry procedures.

**7.6 Conclusions on Site Integrity**

- 7.6.1** In the absence of mitigation measures, the public canoe operation at Glasbury Common could impact and undermine the conservation objectives of the River Wye SAC. This conclusion is specifically in relation to physical disturbance to gravel habitats within the reach between Glasbury and Hay on Wye which are used as for spawning by fish species including twaite shad, river lamprey, sea lamprey and brook lamprey and for juvenile foraging habitat by Atlantic salmon and sea trout. Low flow conditions in the spring and early summer period between April and June result in accidental grounding out of canoes, particularly by unguided novice users.
- 7.6.2** Assuming the mitigation measures provided within this report, are followed, the risk of an adverse effect which would contravene the conservation objectives of the Relevant Site is considered negligible. Mitigation measures include the imposition of a close season for unguided users between 1<sup>st</sup> April and 30<sup>th</sup> June for unguided users.
- 7.6.3** No impacts on the conservation objectives relating to brook lamprey, white clawed crayfish and otter are anticipated.
- 7.6.4** The risk of an adverse effect on the integrity of the migratory fish assemblage for which the Severn Estuary is designated as a Ramsar site is also considered negligible.

- 7.6.5** It is concluded that, following the implementation of mitigation measures, the public canoe operation is unlikely to result in an adverse effect on the integrity of the River Wye SAC.

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## Appendix 1 - Voluntary code of conduct

## **Code of conduct for commercial operators launching canoes from Upper Glas-y-Bont common, from 1<sup>st</sup> April 2017 – 30<sup>th</sup> March 2018 inclusive:**

### **Introduction:**

Upper Glas-y-bont Common is owned by Powys County Council. Arrangements for canoe access have been made in liaison with the owners of the land downstream and fishing rights. They relate only to the section of the river Wye from Glasbury to Hay-on-Wye; there is no confirmed public right of navigation along this stretch of the river.

The Council's permission to launch and Natural Resources Wales consent require that commercial operators sign up and adhere to this formal Code of Conduct.

The Council permits launching of canoes (including kayaks) from the common, **between the hours of 10am and 4pm**. Operators should ensure that journeys are planned to make sure that their clients are off the section of the river Wye between Glasbury and Hay **no later than 5pm**.

The River Wye and most of its tributaries have been designated a Site of Special Scientific Interest (SSSI) and also a Special Area of Conservation (SAC.) These sites are strictly protected by European law and are environmentally important.

This Code of Conduct is about safety, protection of wildlife and the environment and respect for landowners and other river users. You could find yourself in breach of European environmental law if you do not abide by these arrangements.

### **Code of conduct:**

#### 1. Membership of a quality assurance scheme:

Operators launching from Upper Glas-y-bont Common must be a member of a quality assurance scheme; acceptable schemes are:

- Licenced to provide paddlesports by the Adventure Activities Licensing Authority (AALA);
- British Canoeing Quality Mark scheme;
- Adventuremark.

At the time when the operator signs up to the Code of Conduct, they must be able to provide evidence (e.g. a certificate) that they either:

- Have current accreditation / are licensed by the scheme;
- Are registered with AALS / British Canoeing / Adventuremark to work towards accreditation.
- Independent freelance guides should provide evidence of their British Canoeing coach qualification and up to date re-validation, with evidence of current Canoe Wales or British Canoeing membership.

**NB.** Operators who are working towards accreditation are expected to have achieved their accreditation or licence within one year of first signing the Code of Conduct. Permission to launch will be withdrawn from operators who do not achieve accreditation after that period, until such time accreditation is in place.

AALA guidance note 6.17 offers some Top Tips and Handy Hints for canoe hire operators. A copy is attached to this Code of Conduct.

## 2. Identification:

All operators must make sure that the name of the company or centre and a contact telephone number are clearly marked on both sides of all canoes, together with a number by which individual canoes can be identified.

The name of the company, canoe identification number and contact phone number must be clearly readable at a distance of 10 metres away from the canoe.

Please ensure that the contact phone number on each canoe is one that will be answered at all times when your clients are likely to be on the river – it can then be used to contact and inform you if there is an emergency involving your clients.

## 3. Launching and landing points and points for planned landing on the journey:

These are shown on the map (appendix 1) and marked on the riverbank with the following symbol:



Place where you can land

Place where you must not land (oxbow lake)

Unless there is an emergency (i.e. capsize and rescue), please do not:

- Use other launching or landing points without the prior consent of the owner,
- Land at the oxbow lake site that is highlighted on the map under any circumstance, between 15<sup>th</sup> March and 15<sup>th</sup> August each year. Landing during this period may disturb protected species of birds when nesting.

## 4. Rubbish:

Operators must:

- Provide clients with a suitable container for rubbish, which can be secured into their canoe.
- Ensure that clients are aware that no glass bottles should be carried when on the river. Other containers should be secured into the boat, not loose.
- Ensure that clients are aware of where they can dispose of, or recycle waste.

## 5. Alcohol:

Operators must ensure that clients are aware that:

- They must not canoe whilst under the influence of alcohol or drugs;
- No alcohol is to be carried in canoes down the river.

It is the operator's responsibility to assess whether clients are, or appear to be under the influence of alcohol and decide whether to permit use of their canoes or not.

**Please note** that in the event that canoeists are observed on the river under the influence of alcohol, the police can take action under welfare powers, as this is considered to be a serious safety issue.



## 6. Safety:

Operators must ensure that their clients are aware of:

- Commonly encountered hazards on the river, including trees;
- Correct use of their canoe and other safety equipment;
- The relevant emergency contact telephone numbers;
- Known phone signal 'blackspots.'

Operators must remind their clients that they take part in canoeing at their own risk. The owners and occupiers of land and fishing rights along the river accept no responsibility for the safety of canoeists.

## 7. Awareness of other river users:

So that anglers and others can enjoy their time on the river too, operators must:

- Make sure that clients are aware that anglers and others, including swimmers and walkers, may be present in the water or on the river banks;
- Stress the need for respectful behaviour – including changing out of public view, keeping noise levels to a minimum, ensuring that language is not offensive and trying to avoid collisions where possible.
- Make clients aware of the need to observe and avoid fishing lines and take care to avoid collisions where swimmers or anglers are present in the water.
- Remind their clients to keep noise to the level of normal conversation at all times. There may be an angler just around the corner; excessive noise and shouting when approaching or passing them will disturb them.
- Remind their clients to keep water disturbance to a minimum by not loitering, splashing or paddling upstream near anglers.
- Make their clients aware that they must follow directions from anglers who will signal how, which side and when they want canoeists to pass them, as this does vary.

Canoeists should take special care not to disturb beds of waterweed and gravel beds, particularly by trampling and launching / landing on gravel beds when the water levels are low.

## 8. Camping and open fires:

Other than at formal camp sites, lighting of open fires and camping are not permitted on Upper Glas-y-Bont common, or on the banks of the River Wye between Upper Glas-y-Bont common and Hay-on-Wye.

## 9. Types of craft to be used:

Use of improvised, or motorised craft is not permitted on the river between Upper Glas-y-Bont common and Hay-on-Wye. Permission to launch from Upper Glas-y-Bont common is for recognisable canoes and kayaks only.

## 10. Hygiene:

Please ensure that clients are aware of the location of toilet facilities (i.e. at Glasbury and at Hay-on-Wye) and the need to use these, as far as reasonably possible.

#### 11. Fishing from canoes:

Fishing from canoes is not permitted, without a valid Environment Agency rod licence, landowner consents and the relevant fishing permits for the stretch of river concerned.

#### 12. Equipment:

Invasive species, which can cause harm to the river environment, can be transferred on canoes and other equipment. Operators must ensure that canoes and equipment that have been used at other sites are clean and dry, before use on the stretch of the River Wye between Glasbury and Hay.

#### 13. Canoeing in large groups:

If large groups (i.e. more than 3 canoes) are travelling downriver together, operators should encourage their clients to keep together as a group and not spread out more than necessary. That is important both for ensuring that all group members are safe and to minimise disturbance to other river users.

#### 14. Protection of river banks, plants and other wildlife:

The river environment and wildlife are part of the enjoyment of the river journey and need to be looked after. Operators must remind their clients:

- To use agreed landing points only;
- To take care not when landing and launching to minimise erosion and other damage to river banks and vegetation;
- Not to go into the fields adjoining the river;
- Not to pick plants.

A (waterproof) camera is a great way to remember the journey and enjoy the wildlife, without causing disturbance or damage!

#### 15. Parking and unloading of vehicles and trailers at Upper Glas-y-Bont common:

Parking space in the car park beside the common at Glasbury is very limited and is shared with other members of the public, so respect is needed.

The gateway onto the common must kept clear, as it is needed for private access and importantly, for access to the riverside in an emergency. If a member of the public on the common needs emergency assistance, an ambulance or other emergency vehicle will need to be able to get to, or through the gate.

Because of that, operators are asked to ensure that:

- Vehicles and trailers are only parked in the car park for the minimum time necessary to unload canoes and ensure that clients are on the river safely;
- If pre-trip briefings need to be given at the riverside, the vehicle and trailer are moved and parked at another location during the briefing;
- Vehicles and trailers are not left unattended in front of the access gate, or in front of the toilet block, for more than the absolute minimum amount of time needed to unload or load canoes;
- Trailers are not unhitched from vehicles and left unattended in the car park at any time.

#### **Activities outside this code of conduct:**

Nothing in this code of conduct prevents individual owners of land or fishing rights from granting express permission for activities outside of this code of conduct, as long as they have the legal power to grant that permission and are not in breach of the law.

However, permission must be obtained by the operator in advance of carrying out that activity and it is the operator's responsibility to be able to provide proof that all relevant permissions or consents have been granted. In particular, please note that as the river is designated as a SSSI and SAC, Natural Resources' Wales consent may be required in addition to that of the owner of land or fishing rights.

Specific permission for activities that are outside this code of conduct and taking place on, or in front of Upper Glas-y-Bont common can be sought from Powys County Council. To seek permission, please contact Powys County Council's Countryside Services team, during office hours, on 01597 827500 or by email at [cefngwlad@powys.gov.uk](mailto:cefngwlad@powys.gov.uk)

However, this does not include canoeing downstream of Glasbury Bridge or above the Afon Llynfi confluence, outside of the launch times of 10am-4pm.

The Council's consent must be sought no less than 2 weeks in advance of the activity taking place, to allow time for officers to consider the request and seek additional information if needed. If the Council is content to grant permission, then it will be provided in writing. Again, it is the operator's responsibility to be able to provide proof that consent has been both sought and obtained before activities are carried out.

**Agreement to abide by the code of conduct for commercial operators for launching of canoes from Upper Glas-y-Bont common, from 31<sup>st</sup> March 2018– 31<sup>st</sup> March 2019:**

**Name of company:**

**Address of company:**

**Contact person:**

**Contact phone number:**

*(If emergency contact details are different to the normal contact number, please give both and advise which should be used in an emergency e.g. by the police)*

**Contact email address:**

I (name) \_\_\_\_\_ agree, on behalf of (company name)

\_\_\_\_\_ to abide by this Code of Conduct in

respect of launching canoes from Upper Glas-y-Bont common, Glasbury. I understand that if there is a breach of the Code of Conduct involving this company or its clients, then the Council's consent to launch from the common may be withdrawn.

I understand that launching from the common without the Council's consent is in breach of the Natural Resources' Wales consent for launching and as such, legal action may be taken.

**Signature:**

**Print name:**

**Position in the company:**

**Date:**

**Data Protection Act 1998**

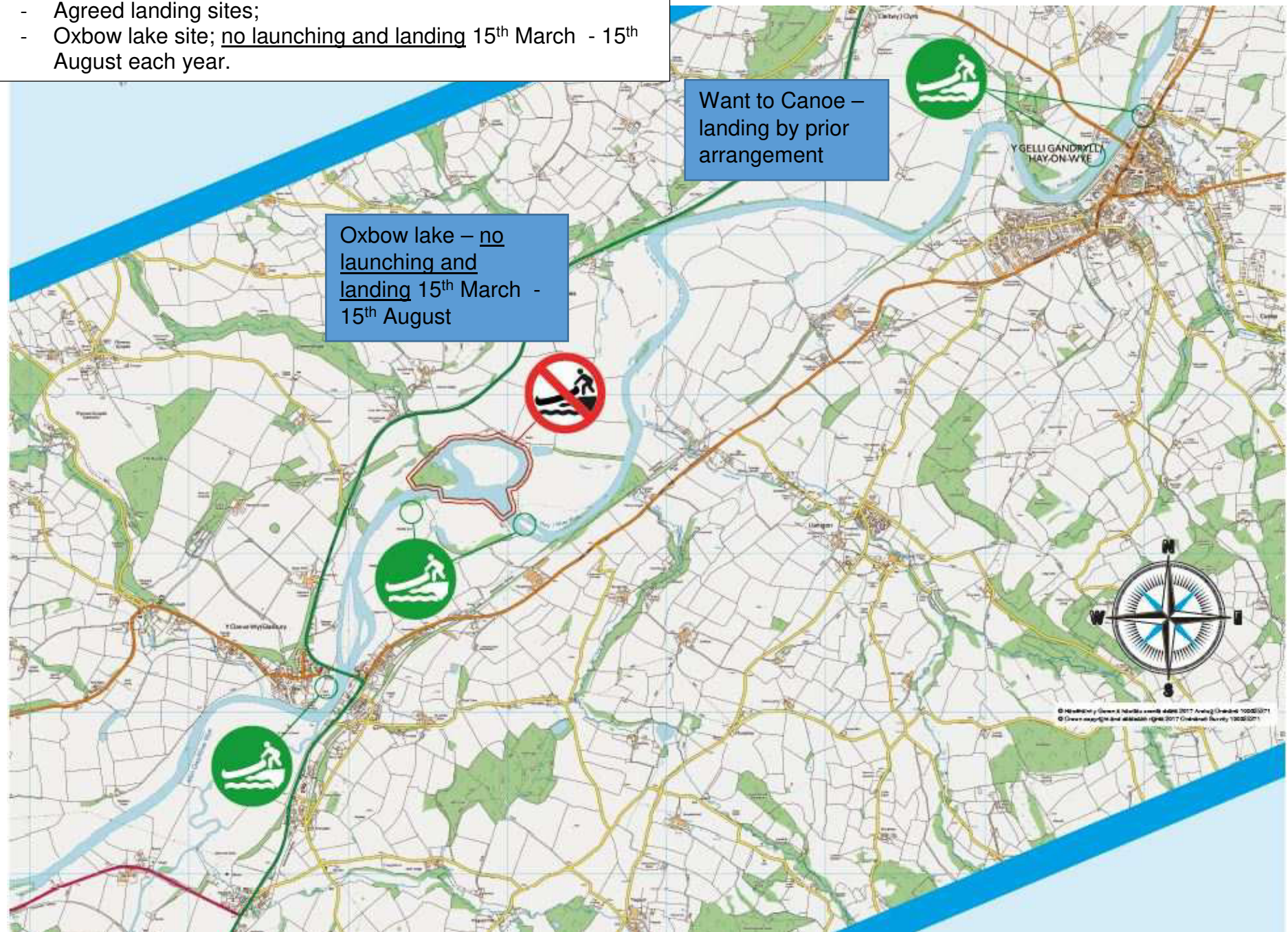
Information about commercial operators who have entered into the Code of Conduct will be used in the following ways:

- A list of the names of the operators who have signed up to the Code of Conduct each year will be made available to the public and to Natural Resources Wales. If the operator wishes, a phone number and / or website address can also be included;
- Emergency contact details for each operator will be provided to the police, so that they can make contact with the relevant operator quickly if needed.
- This signed agreement will be held by Powys County Council.

**Launching and landing arrangements map:**

Locations of:

- Agreed landing sites;
- Oxbow lake site; no launching and landing 15<sup>th</sup> March - 15<sup>th</sup> August each year.



## Appendix 2 - Fish data tables

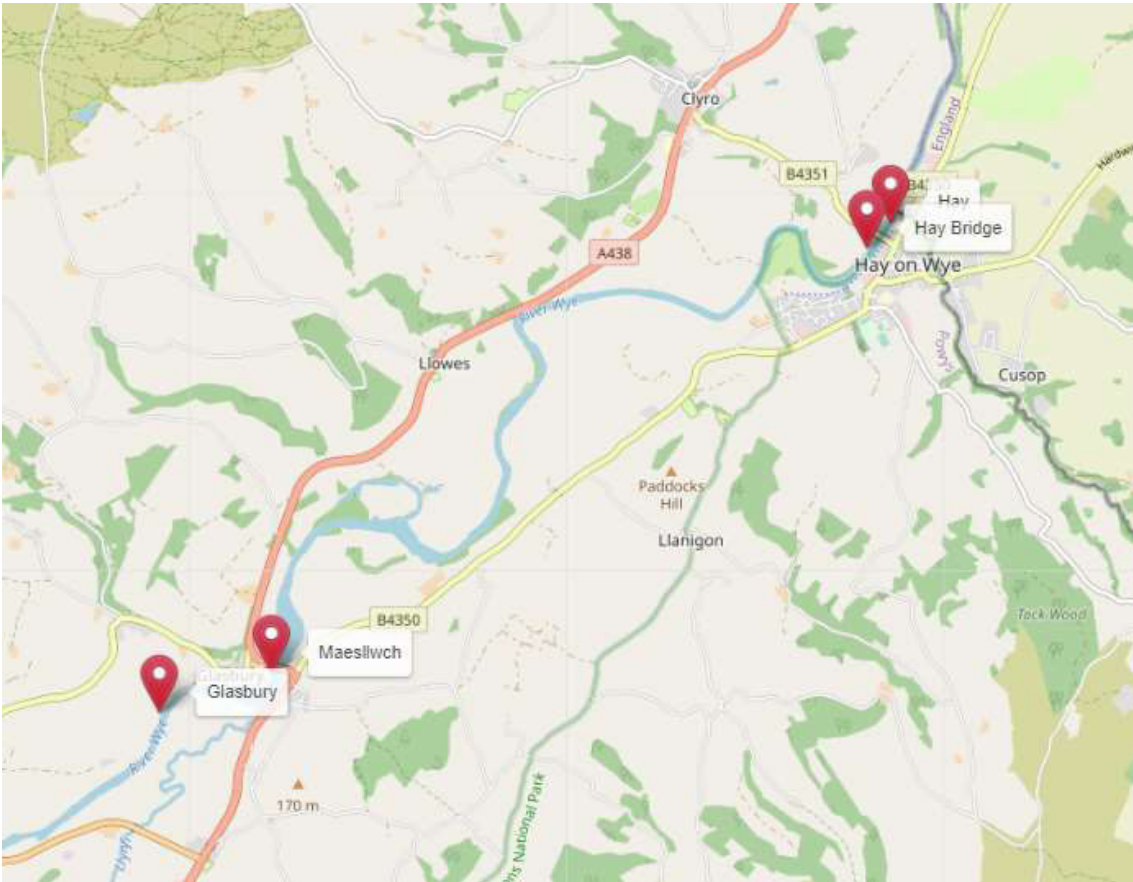
### Salmon rod catch data provided by Wye and Usk Foundation

Site	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Spreadeagle	22	32	4	7	54	73	33	22	17	132	17	18	6
Maesllwch	0	0	0	0	0	0	0	0	0	1	0	0	0
Llanthomas	0	0	0	1	2	3	1	1	3	0	1	0	0
Sheephouse	0	0	0	0	2	0	1	0	0	0	2	0	0
Boatside	1	1	1	0	8	8	2	0	8	1			
Hay Glanwye	0	0	0	0	0	0	0	0	0	2			
Caemawr	1	0	2	1	10	30	9	6	6	10	2	7	0
Spreadeagle	22	32	4	7	54	73	33	22	17	132	17	18	6
Maesllwch	0	0	0	0	0	0	0	0	0	1	0	0	0
Llanthomas	0	0	0	1	2	3	1	1	3	0	1	0	0

5min riffle surveys with the number of juvenile salmon fry and parr caught recorded by Wye and Usk Foundation

Site	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		
	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	0+	1+	
Glasbury					8	0							1	0	3	2													
Maesllwch	0	0			2	0									11	3	0	0											
Hay	0	0			9	0																							
Hay Bridge					7	0							0	0													0	9	

Location of 5 minute riffle survey sites





**NRW Shad egg survey data**

Wye sites	NGR	Surveyed 2015	Surveyed 2016	Surveyed 2017	Surveyed 2019	Surveyed 2022	Depth range (cm)
W1 Monmouth School Fields	SO5137412059	YES - 10 eggs	YES - Plenty of eggs			YES - plenty of eggs	30-40
W2 Boatside B	SO2330044549	YES - 10 eggs	YES - Plenty of eggs		YES - 10+ eggs	YES - plenty of eggs	15-45
W3 Maesllwch _Ffordd Fawr	SO1896040347		YES - Plenty of eggs		Access issues	YES - plenty of eggs	10 - 40
W4 Spread Eagle	SO1589637925	YES - plenty of eggs	YES - Plenty of eggs		YES - plenty of eggs	YES - plenty of eggs	25-40
W6 The Nyth - Gauging Station	SO0740744832		YES - 2 eggs		YES - 10+ eggs	YES - no eggs	
W7 Tircelyn Fishing Hut	SO0746345399		YES - Plenty of eggs		YES - plenty of eggs	Not Surveyed	
W8 Abernant	SO0744846525		YES - no eggs		YES - plenty of eggs	YES - 10+ eggs	20-70
W9 Builth Bridge	SO0436351251		YES - 2 eggs	YES - no eggs	YES - plenty of eggs	YES - 10+ eggs	20-50
W10 Afon Irfon, Gro Park	SO0333451493	YES - plenty of eggs	YES - Plenty of eggs	YES - no eggs	YES - plenty of eggs	YES - 10+ eggs	15-40
W11 Glasbury Lower Glas y Bont	SO1803539837		YES - Plenty of eggs	YES - no eggs	YES - plenty of eggs	Not Surveyed	



W12 Brynwern Bridge	SO0105456657	YES - 3 eggs	YES - no eggs		YES - no eggs	YES - no eggs	25-35
W13 Builth Gro, D/S Irfon Confluence	SO0363851489		YES - 5 eggs	YES - 10 eggs	YES - plenty of eggs	YES - plenty of eggs	25-45

**NRW River and Sea lamprey baseline survey data (2005)**

Catchment	River	Site_num	Site_name	Date	NGR	Easting	Northing	Optimal_a	Suboptima	Lampetra	Lampetra	Lampetra	Lampetra	Petromyzc	Petromyzc	Petromyzc	Petromyzc	Lampetra	Petromyzc	FCS_Compliance	Summary
Wye	Wye	10a	Rhayader		20051126	SN967685	296700	268500	0	3	0.0	21.5	0.0	0.4	0.0	0.4	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		10 Rhayader		20051123	SN968679	296800	267900	0	3	0.0	52.2	0.0	1.2	0.0	0.4	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		11 Rhayader		20051123	SN969675	296900	267500	0	3	0.0	52.6	0.0	0.4	0.0	0.4	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		19 Yr Allt		20051124	SO002617	300200	261700	1	0	44.7	0.0	1.2	0.0	23.2	0.0	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		20 Cefncoed		20051124	SO010604	301000	260400	0	3.75	0.0	20.9	0.0	0.0	0.0	2.6	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		22 Brynwern I		20051124	SO011566	301100	256600	0	1.05	0.0	10.6	0.0	0.0	0.0	0.0	0.0	0.0	Yes	No	Lampetra
Wye	Afon Ithon		23 Disserth		20051125	SO035585	303500	258500	0	2	0.0	5.6	0.0	0.0	0.0	7.9	0.0	0.0	No	Yes	Petromyzon
Wye	Afon Ithon		24 Llanyre		20051125	SO052622	305200	262200	0	3	0.0	14.1	0.0	0.0	0.0	11.0	0.0	0.0	Yes	No	Lampetra
Wye	Afon Ithon		27 Crossgates		20051123	SO086641	308600	264100	0	2.25	0.0	14.4	0.0	1.1	0.0	0.0	0.0	0.0	Yes	No	Lampetra
Wye	Irfon		32 Garth (a)		20051125	SN955494	295500	249400	1	2	18.6	35.4	1.2	3.1	2.4	6.7	0.0	0.0	Yes	Yes	Petromyzon
Wye	Afon Ithon		48 Brynthoma		20051123	SO106622	310600	262200	0	2.5	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	No	Yes	Petromyzon
Wye	Afon Ithon		53 Llanbister		20051125	SO102728	310200	272800	1.5	0.75	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Yes	No	Lampetra
Wye	Afon Ithon		54 Llananno		20051125	SO095744	309500	274400	0	2	0.0	60.2	0.0	1.9	0.0	0.0	0.0	0.0	Yes	No	Lampetra
Wye	Afon Ithon		55 Llananno		20051122	SO092748	309200	274800	0	1	0.0	75.8	0.0	0.0	0.0	0.0	0.0	0.0	Yes	No	Lampetra
Wye	Wye		67 Llowes		20051125	SO200421	320000	242100	0	3.5	0.0	32.3	0.0	0.0	0.0	10.1	0.0	0.0	Yes	Yes	Lampetra & Petromyzon
Wye	Wye		68 Hay-on-W		20051125	SO228426	322800	242600	5	3	30.1	50.9	0.0	0.0	31.0	74.4	0.0	0.0	Yes	Yes	Lampetra & Petromyzon

**NRW River and Sea lamprey baseline survey data (2015)**

River	Sampling	NGR	Sample Date	Survey length	Survey width	Survey area (m	Survey strategy	Survey sta	Survey m	Species	Characteristic	Fish coun	Density/100m <sup>2</sup>
Wye	147780	SO1585537887	08/10/2015	1	35	35	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	5	14.29
Wye	147781	SO1585537887	08/10/2015	1	35	35	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	1	2.86
Wye	147739	SO0747946559	08/10/2015	1	35	35	CATCH DEPLETION SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	2	5.71
Wye	147739	SO0747946559	08/10/2015	1	35	35	CATCH DEPLETION SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	1	2.86
Wye	147773	SO2218342512	19/10/2015	1	50	50	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	1	2
Wye	147775	SO2218342512	19/10/2015	1	50	50	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	2	4
Wye	147777	SO2218342512	19/10/2015	1	50	50	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	3	6
Wye	147774	SO2218342512	19/10/2015	1	50	50	CATCH DEPLETION SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	3	6
Wye	147774	SO2218342512	19/10/2015	1	50	50	CATCH DEPLETION SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	2	4
Wye	147745	SO5131212106	21/10/2015	1	50	50	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	1	2
Wye	147748	SO0137058281	22/10/2015	1	30	30	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	2	6.67
Wye	147763	SO0021561720	22/10/2015	1	25	25	SINGLE CATCH SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	2	8
Wye	147758	SO0266252574	22/10/2015	1	30	30	CATCH DEPLETION SAMPLE (TIMED QUADRAT)	Completec	ELECTRIC	Sea lamprey/Petromyzon	Ammocoete	1	3.33

## Biological Record Centre Records

Species	Record Date	NGR	Location
<i>Cottus gobio</i>	1997	SO170389	NA
<i>Salmo salar</i>	1997	SO170389	NA
<i>Cottus gobio</i>	1997	SO228438	Hay-on-Wye
<i>Salmo salar</i>	1997	SO228437	Hay-on-Wye
<i>Salmo salar</i>	1995	SO170389	NA
<i>Salmo salar</i>	1995	SO228436	Hay-on-Wye
<i>Salmo salar</i>	1995	SO170389	NA
<i>Salmo salar</i>	10/08/1995	SO170389	NA
<i>Salmo salar</i>	10/08/1989	SO170389	NA
<i>Salmo salar</i>	10/08/1990	SO170389	NA
<i>Salmo salar</i>	10/08/1991	SO170389	NA
<i>Salmo salar</i>	11/08/1992	SO170389	NA
<i>Salmo salar</i>	20/08/1993	SO170389	NA
<i>Salmo salar</i>	10/08/1995	SO170389	NA
<i>Salmo salar</i>	13/08/1997	SO170389	NA
<i>Salmo salar</i>	10/08/1989	SO228435	Hay-on-Wye
<i>Salmo salar</i>	10/08/1990	SO228434	Hay-on-Wye
<i>Salmo salar</i>	10/08/1991	SO228433	Hay-on-Wye
<i>Salmo salar</i>	11/08/1991	SO228432	Hay-on-Wye
<i>Salmo salar</i>	19/08/1993	SO228431	Hay-on-Wye
<i>Salmo salar</i>	10/08/1995	SO228430	Hay-on-Wye
<i>Salmo salar</i>	13/08/1997	SO228427	Hay-on-Wye
<i>Salmo salar</i>	1984-09-04 (Day)	SO171389	NA
<i>Cottus gobio</i>	10/08/1995	SO170389	NA
<i>Cottus gobio</i>	13/08/1997	SO170389	NA
<i>Cottus gobio</i>	10/08/1995	SO228429	Hay-on-Wye
<i>Cottus gobio</i>	13/08/1997	SO228428	Hay-on-Wye
<i>Alosa</i>	19/05/1999	SO180393	The Common at Glasbury
<i>Alosa</i>	20/05/1999	SO185404	Glasbury Shingles
<i>Alosa</i>	20/05/1999	SO198408	Conf with Digedi Brook
<i>Alosa</i>	22/05/1999	SO199413	Raised shingle bar off right bank near Llowes
<i>Twaite shad</i>	19/05/1999	SO180393	The Common at Glasbury
<i>Twaite Shad</i>	20/05/1999	SO185404	Glasbury Shingles

<i>Twaite shad</i>	20/05/1999	SO198408	Conf with Digated Brook
<i>Twaite shad</i>	22/05/1999	SO199413	Raised shingle bar off right bank near Llowes
<i>Salmo salar</i>	1984-09-04 (Day)	SO171389	NA
<i>Cottus gobio</i>	1 9 9 7	SO170389	NA

## Appendix 3 - Photos from walkover



Plate A5.1  
Launch site at Glasbury




Plate A5.2  
Typical shallow gravel habitats



Plate A5.3:  
Canoeists landing on shallowing site



Plate A5.4  
Example of shallowing site

Client	Powys County Council		Drawing Ref	POW001/001/001/001	
Figure Number	Appendix 5		Drawn	AC	Checked JS
Figure Title	Photographs From Walkover		Date	08/07/2022	
					

## Appendix 4 Wye Navigation Authority data

Survey Date	day	month	year	Am or pm	Location	Total Boats	Total Canoeists	total hours	air temp
Wednesday	1	June	2011	pm	Glasbury	63	99	2.5	
Friday	17	August	2012	am	Glasbury	19	33	1.6	
Friday	17	August	2012	late am / early pm	Hay-on-Wye	0	0	1.25	
Wednesday	21	August	2013	pm	Hay-on-Wye	54	95	3.75	23
Monday	21	July	2014	am	Hay-on-Wye	27	51	4	20
Wednesday	13	August	2014	am	Glasbury	18	28	2	18
Wednesday	13	August	2014	pm	Hay-on-Wye	21	38	1.75	18
Wednesday	8	July	2015	am	Hay-on-Wye u/s	3	6	4	14
Friday	21	August	2015	pm	Hay-on-Wye u/s	36	72	4	20
Tuesday	5	Jul	2016	pm	Hay-on-Wye u/s	40	67	4	20
Wednesday	13	Jul	2016	am	Hay-on-Wye u/s	3	4	4	15
Saturday	6	Aug	2016	pm	Hay-on-Wye u/s	118	218	4	23
Sunday	7	Aug	2016	pm	Hay-on-Wye u/s	58	121	4	22
Sunday	21	Aug	2016	pm	Hay-on-Wye u/s	9	14	4	18
Tuesday	23	Aug	2016	am	Hay-on-Wye u/s	9	18	4	17
Monday b/h	29	Aug	2016	am	Hay-on-Wye u/s	67	136	4	16



## Appendix 5 Hydrology data

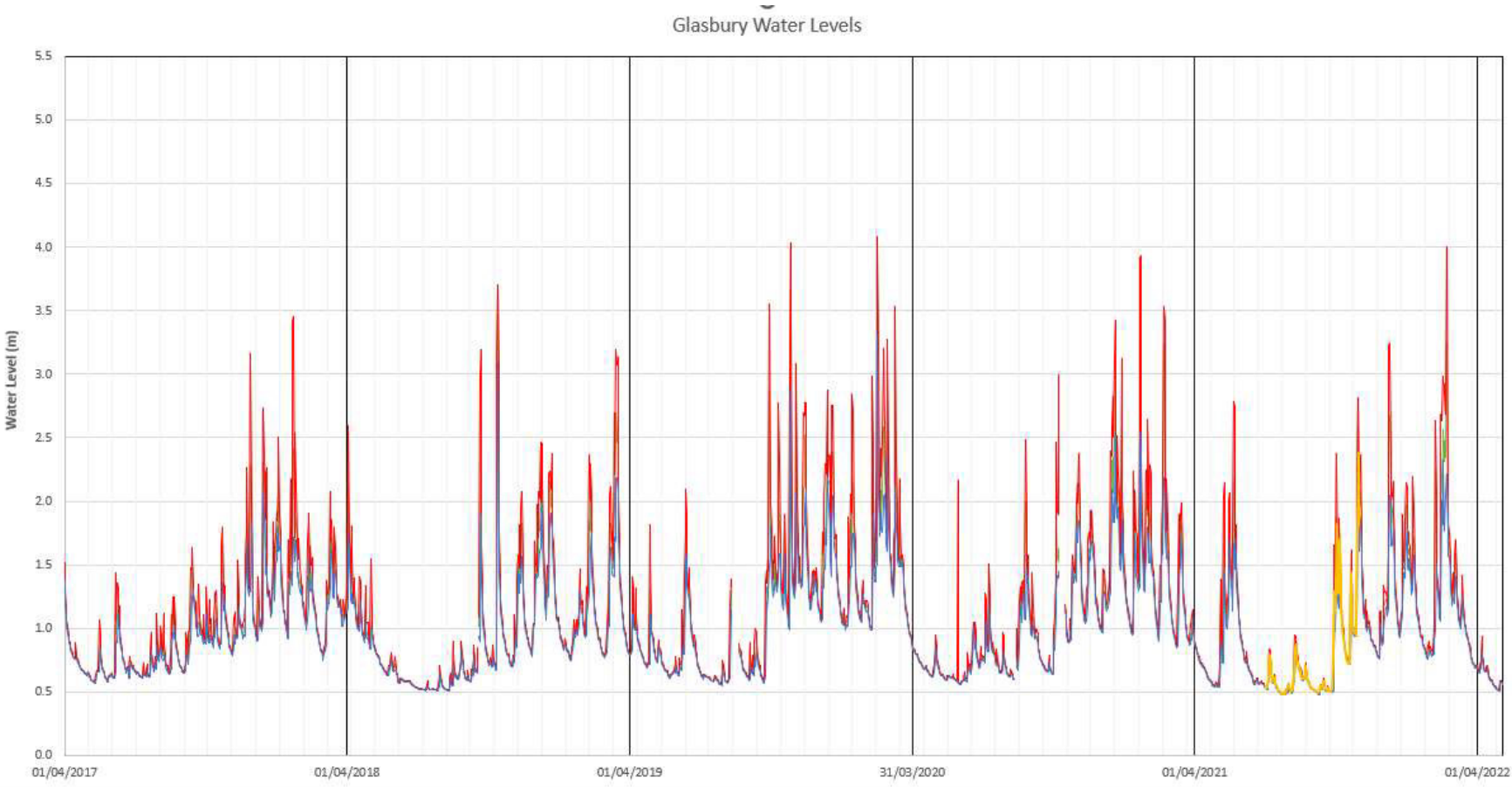


Figure A7.1: Water level record at Glasbury (01/04/2017 to 05/05/2022)

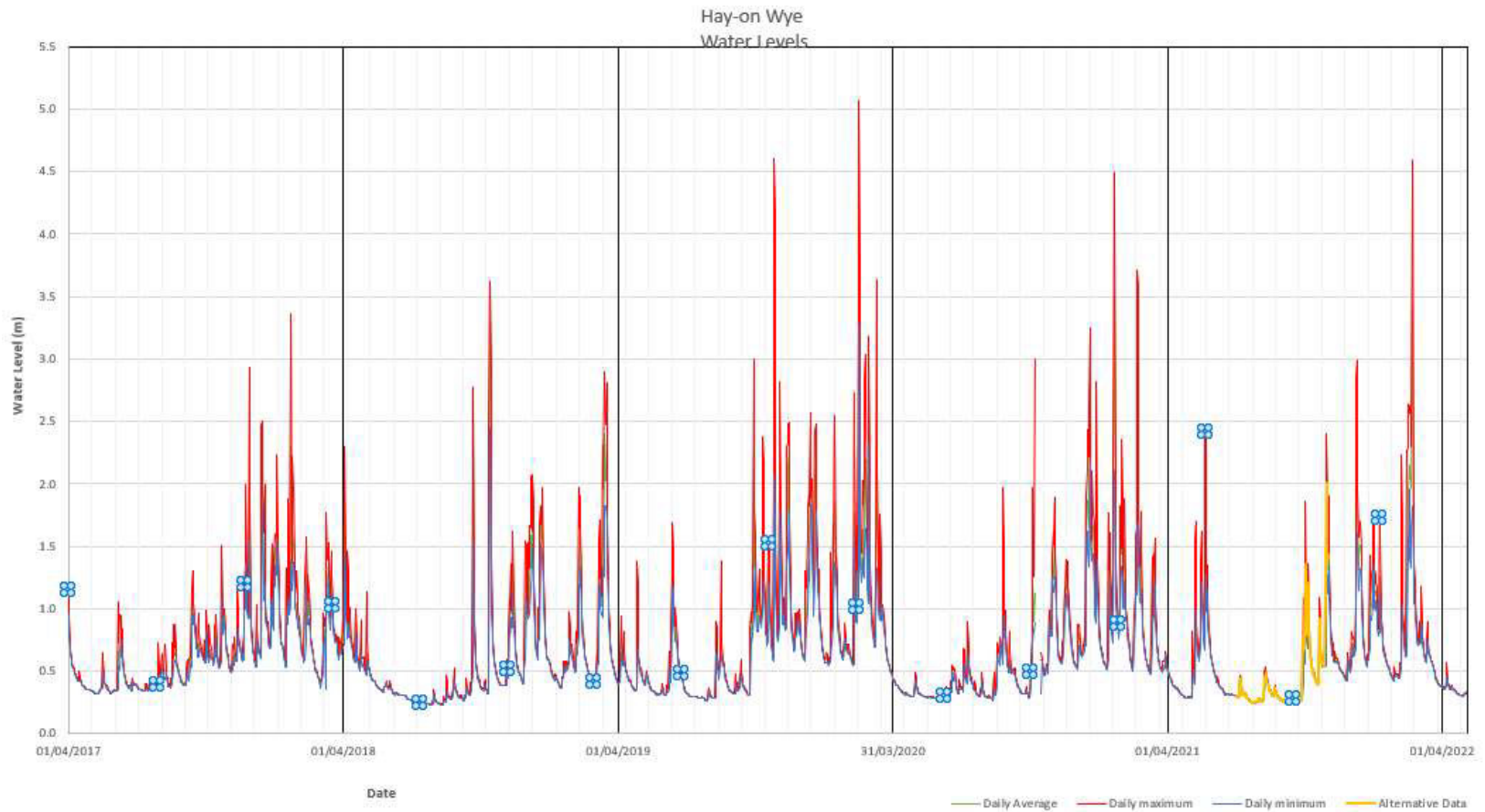


Figure A7.2: Water level record at Hay on Wye (01/04/2017 to 05/05/2022)

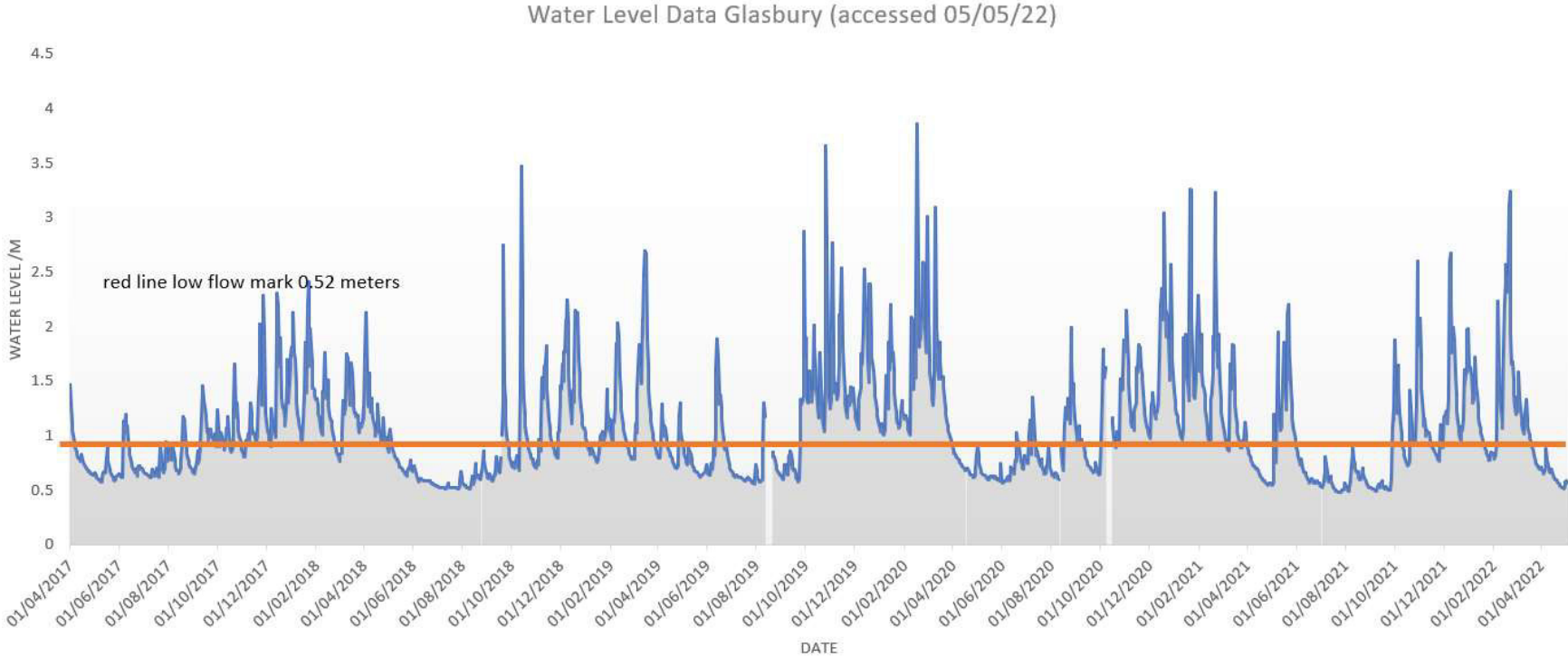


Figure A7.3: Water level data at Glasbury showing minimum water level of 0.52m

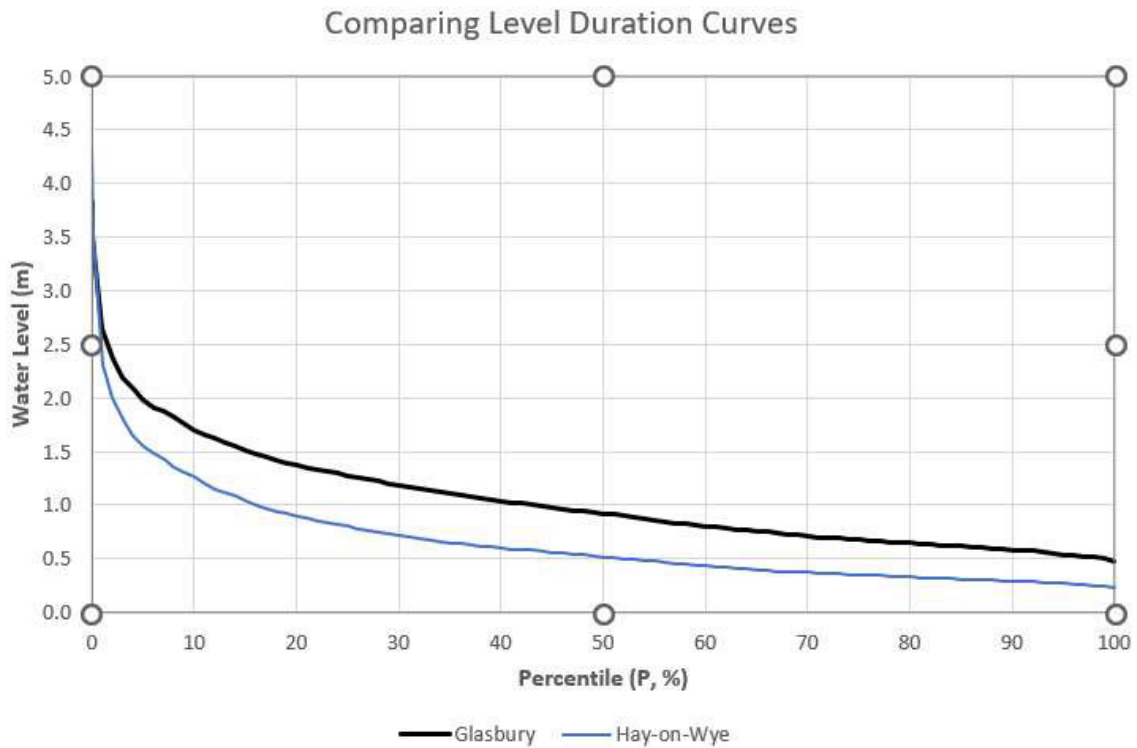


Figure A7.4: Level duration curves for Glasbury and Hay on Wye between April 2017 and May 2022

### Glasbury

Min of Level	Column Labels		Grand
Row Labels	SUMMER	WINTER	Total
2017	0.575	0.612	0.575
2018	0.535	0.515	0.515
2019	0.612	0.556	0.556
2020	0.564	0.597	0.564
2021	0.54	0.478	0.478
2022	0.514	0.693	0.514
<b>Grand Total</b>	<b>0.514</b>	<b>0.478</b>	<b>0.478</b>

0.556666667

Table A7.1: Average minimum water level at Glasbury during the April to June periods from 2017 to 2022.

### Hay

Min of Level	Column Labels		Grand
Row Labels	SUMMER	WINTER	Total
2017	0.314	0.34	0.314
2018	0.268	0.23	0.23
2019	0.31	0.263	0.263
2020	0.265	0.271	0.265
2021	0.284	0.242	0.242
2022	0.301	0.381	0.301
<b>Grand Total</b>	<b>0.265</b>	<b>0.23</b>	<b>0.23</b>

0.290333333

Table A7.2: Average minimum water level at Hay on Wye during the April to June periods from 2017 to 2022.

## Appendix 6 NRW water temperature data - Glasbury Bridge monitoring station

NRW Water temperature data<sup>1</sup>

Sampling DateTime	Day of year	Method Name	Parameter Shortname	Parameter Name	Sign	Sample Value	Unit Name	Unit Symbol
14/03/2017 13:08	74	Field	76	Temperature of Water	---	10.1	degree Celsius	°C
15/03/2017 12:26	75	Field	76	Temperature of Water	---	9.3	degree Celsius	°C
15/03/2017 12:45	75	Field	76	Temperature of Water	---	8.5	degree Celsius	°C
15/03/2017 12:58	75	Field	76	Temperature of Water	---	8.7	degree Celsius	°C
17/03/2017 11:30	76	Field	76	Temperature of Water	---	8.1	degree Celsius	°C
21/03/2017 15:22	81	Field	76	Temperature of Water	---	6.9	degree Celsius	°C
06/04/2017 11:24	96	Field	76	Temperature of Water	---	7.9	degree Celsius	°C
06/04/2017 11:43	96	Field	76	Temperature of Water	---	7.5	degree Celsius	°C
06/04/2017 12:47	97	Field	76	Temperature of Water	---	8.1	degree Celsius	°C
12/04/2017 12:00	103	Field	76	Temperature of Water	---	10.6	degree Celsius	°C
26/04/2017 11:01	116	Field	76	Temperature of Water	---	7.7	degree Celsius	°C
26/04/2017 11:03	116	Field	76	Temperature of Water	---	10.8	degree Celsius	°C
05/03/2018 13:06	65	Field	76	Temperature of Water	---	4.7	degree Celsius	°C

<sup>1</sup> Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved



Sampling DateTime	Day of year	Method Name	Parameter Shortname	Parameter Name	Sign	Sample Value	Unit Name	Unit Symbol
14/03/2017 13:08	74	Field	76	Temperature of Water	---	10.1	degree Celsius	°C
05/03/2018 13:28	65	Field	76	Temperature of Water	---	3.7	degree Celsius	°C
05/03/2018 14:14	65	Field	76	Temperature of Water	---	3.8	degree Celsius	°C
07/03/2018 12:45	67	Field	76	Temperature of Water	---	4.2	degree Celsius	°C
09/03/2018 10:56	68	Field	76	Temperature of Water	---	4.7	degree Celsius	°C
13/03/2018 12:20	73	Field	76	Temperature of Water	---	6.7	degree Celsius	°C
10/04/2018 10:35	100	Field	76	Temperature of Water	---	8.7	degree Celsius	°C
10/04/2018 12:15	101	Field	76	Temperature of Water	---	8.7	degree Celsius	°C
12/03/2019 13:24	72	Field	76	Temperature of Water	---	8.5	degree Celsius	°C
13/03/2019 10:50	72	Field	76	Temperature of Water	---	6.5	degree Celsius	°C
15/03/2019 10:11	74	Field	76	Temperature of Water	---	8.1	degree Celsius	°C
02/04/2019 11:41	92	Field	76	Temperature of Water	---	8.4	degree Celsius	°C
02/04/2019 12:45	93	Field	76	Temperature of Water	---	8.2	degree Celsius	°C
02/04/2019 13:08	93	Field	76	Temperature of Water	---	7.9	degree Celsius	°C
10/04/2019 11:28	100	Field	76	Temperature of Water	---	9.1	degree Celsius	°C

Sampling DateTime	Day of year	Method Name	Parameter Shortname	Parameter Name	Sign	Sample Value	Unit Name	Unit Symbol
14/03/2017 13:08	74	Field	76	Temperature of Water	---	10.1	degree Celsius	°C
10/04/2019 11:54	100	Field	76	Temperature of Water	---	8	degree Celsius	°C
04/03/2020 13:00	65	Field	76	Temperature of Water	---	6.5	degree Celsius	°C
19/04/2021 10:45	109	Field	76	Temperature of Water	---	7.3	degree Celsius	°C
19/04/2021 11:10	109	Field	76	Temperature of Water	---	7.2	degree Celsius	°C
19/04/2021 11:35	109	Field	76	Temperature of Water	---	8	degree Celsius	°C
19/04/2021 12:05	110	Field	76	Temperature of Water	---	12.5	degree Celsius	°C
21/04/2021 10:10	111	Field	76	Temperature of Water	---	9.3	degree Celsius	°C
28/04/2021 11:33	118	Field	76	Temperature of Water	---	11.7	degree Celsius	°C
01/03/2022 11:28	60	Field	76	Temperature of Water	---	6.9	degree Celsius	°C
01/03/2022 11:48	60	Field	76	Temperature of Water	---	6.7	degree Celsius	°C
01/03/2022 12:10	61	Field	76	Temperature of Water	---	6.5	degree Celsius	°C
17/03/2022 09:55	76	Field	76	Temperature of Water	---	7.7	degree Celsius	°C
23/03/2022 10:30	82	Field	76	Temperature of Water	---	6.6	degree Celsius	°C
23/03/2022 11:05	82	Field	76	Temperature of Water	---	7.1	degree Celsius	°C

Sampling DateTime	Day of year	Method Name	Parameter Shortname	Parameter Name	Sign	Sample Value	Unit Name	Unit Symbol
14/03/2017 13:08	74	Field	76	Temperature of Water	---	10.1	degree Celsius	°C
24/03/2022 10:43	83	Field	76	Temperature of Water	---	8	degree Celsius	°C
24/03/2022 11:47	83	Field	76	Temperature of Water	---	9.1	degree Celsius	°C
24/03/2022 12:00	84	Field	76	Temperature of Water	---	7.4	degree Celsius	°C
05/04/2022 11:20	95	Field	76	Temperature of Water	---	9.8	degree Celsius	°C
27/04/2022 11:47	117	Field	76	Temperature of Water	---	10.3	degree Celsius	°C
27/04/2022 12:10	118	Field	76	Temperature of Water	---	9.3	degree Celsius	°C
27/04/2022 12:29	118	Field	76	Temperature of Water	---	9.7	degree Celsius	°C
27/04/2022 13:17	118	Field	76	Temperature of Water	---	12.9	degree Celsius	°C
27/04/2022 14:06	118	Field	76	Temperature of Water	---	11.1	degree Celsius	°C

**Key**

	March
	April

## Appendix 7 Correspondence with Natural Resources Wales



**Cyfoeth  
Naturiol**  
Cymru  
**Natural  
Resources**  
Wales

Sian Barnes  
Professional Lead  
Countryside Access and Recreation  
Countryside Services  
Powys County Council

Advice Ref No: AD001144/1  
15/04/2021

Dear Sian

**ADVICE UNDER SECTION 28I OF THE WILDLIFE AND COUNTRYSIDE ACT 1981**

**Site of Special Scientific Interest:  
River Wye (Upper Wye) / Afon Gwy (Gwy Uchaf)**

Having considered the likely impact of the operation(s) described in your notice dated 22/03/2021 on the special features of the site(s) listed above, we advise that; in carrying out your role as a section 28G authority:

You should permit the operation(s) only if the following conditions are attached:

Condition	Condition Reason
When permitting use by commercial companies and groups, the Council must put in place an appropriate scheme that limits the total number of boats launched from the Bont each day. The nature of these arrangements must be notified to NRW before any permitted launching recommences. The Council must also undertake monitoring and enforcement as necessary in order to ensure compliance with the scheme and conditions placed on permitted users.	To prevent intensive use of the launch site to the detriment of small fish, including bullheads, lampreys and bottom dwelling invertebrates in the shallow water at the launch site and downstream.

Contact Officer Details:

Ffôn /Tel: [REDACTED]  
Epost/Email [REDACTED]

[www.cyfoethnaturiolcymru.gov.uk](http://www.cyfoethnaturiolcymru.gov.uk) [www.naturalresourceswales.gov.uk](http://www.naturalresourceswales.gov.uk)

Croesewir gohebiaeth yn y Gymraeg a'r Saesneg  
Correspondence welcomed in Welsh and English

<p>The Council must impose a minimum water level below which boats may not be launched. This should be defined with reference to the NRW water level gauge situated on the right-hand side of river just downstream of the bridge. The level set must be agreed with NRW before any permitted launching re-commences and the Council must post notices on the entrance gate when the launch site is closed.</p>	<p>To avoid impacts from trampling and boat dragging at the launch site, which are more likely when oxygen levels are low, and to prevent damage to the river bed downstream arising from excessive grounding and trampling, that could impact on spawning fish in May and June and cause damage to water crowfoot beds.</p>
<p>Before allowing launching by commercial companies and groups, the Council must provide them with appropriate information on sustainable paddling. In particular, such users must give an undertaking to the Council that their customers and members will be instructed to only land in permitted areas (except in emergencies) and avoid walking on shingle banks and islands. The Council may restrict use by commercial companies to guided groups only. In this circumstance, guides must receive the sustainable paddling advice and agree to abide with the landing restrictions. A suitable notice must be erected at the site entrance to advise casual users in relation to environmental sensitivities and landing restrictions. Details of advice and lists of companies and groups permitted to launch for any given year must be submitted to NRW before the main paddling season commences.</p>	<p>To protect breeding waders using the shingle from disturbance and shingle dwelling beetles, that are sensitive to trampling damage.</p>

An assessment in relation to the Habitats Regulations (HRA) must be undertaken by the Council and any necessary mitigation arising from this assessment must be implemented before permitted launching re-commences.

When making this assessment, the Council should take account of the fact that most boats launched from the Bont will travel downstream to Hay-on-Wye and also bear in mind that NRW have so issued consent to [REDACTED] to launch up to 40 Canadian canoes 20 kayaks and 5 paddle boards per day from their private site in Glasbury. NRW will keep the Council informed regarding details of this consent and any other launching requests received for this part of the River Wye.

Once you have received this advice, you may make your decision before the expiry of the 28 day period required under section 281(4) but you must take our advice into account in deciding whether or not to permit the proposed operations, and if you do so, in deciding what (if any) conditions you attach to that permission.

For the purposes of assessing the potential impact of this activity on any European sites, your authority is a competent authority under regulation 63 of The Conservation of Habitats and

Species Regulations 2017. You should ensure that you have fulfilled your responsibilities under these regulations before issuing any permission.

If you do not intend to follow our advice, you must give notice to us in accordance with section 28I(6) and must not grant a permission that would allow the operation to be carried out before the end of 21 days starting with the date of that notice.

Written notice is required if it is intended to alter permitted activities in any way or to permit any further activities.

Note that this advice only relates to the above legislation – other authorisations may be required.

Yours sincerely

A solid black rectangular box used to redact the signature of the sender.

On behalf of Caroline Moscrop, Team Leader, South Powys Environment Team

Sian Barnes  
Countryside Access and Recreation  
Powys County Council  
County Hall  
Llandrindod Wells  
LD1 5LG

25 March 2022 by email

Dear Sian

**ADDITIONAL ADVICE UNDER SECTION 28I OF THE WILDLIFE AND COUNTRYSIDE ACT 1981**

**Site of Special Scientific Interest: River Wye (Upper Wye) / Afon Gwy (Gwy Uchaf)**

Thank you for your email of 22 March 2022 requesting an update on our considerations in respect of water levels advice from Natural Resources Wales (NRW) provided in our advice AD001144 dated 15 April 2021.

As you have been aware NRW has been deliberating on this matter since previous discussions [REDACTED] had with you over recent months. [REDACTED] and [REDACTED] from NRW had an audio teams meeting with yourself and Hay Town Council on 22 March 2022 to update you on our thinking in respect of how best to manage canoes on the River Wye. Following that meeting we now attach as Annex 1 our revised advice. This advice supercedes any previous advice provided in respect of PCC identifying a minimum water level below which canoes cannot be launched.

If you have any further queries on the contents of this letter then please contact [REDACTED] in the first instance.

Yours sincerely

[REDACTED]

Arweinydd Tîm Amgylchedd-De Powys/South Powys Environment Team Leader

Cyfeiriad/Address: Cyfoeth Naturiol Cymru/Natural Resources Wales, Tŷ Cambria, 29 Heol Casnewydd, Caerdydd CF24 0TP/ Cambria House, 29 Newport Road, Cardiff CF24 0TP

Ffôn/Tel [REDACTED]  
Direct e-mail: [REDACTED]



### **Annex 1: Advice to Powys County Council and Hay Town Council as Section 28G Authorities under the Wildlife and Countryside Act**

A review of the risks to SAC/SSSI features of the River Wye between Glasbury and Hay on Wye has identified Shad and Sea Lamprey to be at potential risk during their spawning/hatching season, between the 1<sup>st</sup> May and the 30<sup>th</sup> June annually.

NRW is applying a precautionary approach; we are advocating an environmental protective opportunity measure. This is embodied in the requirements developed through practice and case law on application of the Habitat Regulations.

It is advised that a season for canoe use should be implemented from 1<sup>st</sup> July through to the 30<sup>th</sup> April, with a closed season between the 1<sup>st</sup> May to the 30 June annually.

This seasonal restriction will not apply to:

- Groups, who are led by professional, accredited guides.
- Guided education groups.
- private owner occupiers using their personal kayak / canoes.

As with any precautionary protective intervention, monitoring over the affected period will be undertaken to inform and provide data for any subsequent considerations or review.

In exceptional circumstances such as pollution, extreme drought with resultant very low water levels or raised water temperature, any of which could cause concerning habitat stressors NRW would need to consider other mechanisms to restrict or reduce the use of the river.

#### **Advice considerations**

##### **Canoe grounding.**

The key locations of likely grounding are largely recognised, however potential changes in gauge site riverbed morphology and potential increases / decreases in gravel bed heights, combined with channel shift throughout the winter season, requires that any water level would need to be calibrated on an annual basis to be meaningful. This would require assessment during April and a rapid turnaround of consents or a two-month notification window for longer term consents needing modification, which would not achieve the desired protection. For this reason, the season approach is adopted over a water level consideration.

## The broad demographic split of paddle sport.

### 1. The rented boat experience sector.

This sector is cited in the majority of complaints with regard to groundings and other issues. This is an adventure / tourism sector broadly classified as inexperienced paddlers, with limited local knowledge, presenting the highest risk factor to the features of the SSSI.

### 2. Professionally guided groups, including educational groups.

Benefitting from professional guidance and support, this sector presents a reduced risk to the features of the SSSI.

### 3. Individual owner occupiers and third parties owing their own kayak / canoe accessing the river.

Individuals using the public launch sites with their own personal canoes are outside of the conditions of consent to launch under the Wildlife and Countryside Act 1981, save that they are third parties under the provision of the Act where there is a need to prove that they are intentionally or recklessly causing harm to any of the features of the SSSI.