Critical analysis of the Draft River Basin Management plans for the Wye and/or Usk catchments

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For the Royal Society for the Protection of Birds

Fig. 1 The River Garren (WB 29690) A ‘good status’ water body
Severely impacted by sediment run off from adverse arable farming practice
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APPENDICIES
Summary

The WFD is a very ambitious piece of legislation reflecting the pressing need to provide a framework for the protection of inland and coastal water in order to arrest deterioration in aquatic ecosystems, promote sustainable use, enhance protection, support efforts to make improvements and ensure the progressive reduction of water pollution. It provides the UK with the opportunity to adopt a holistic and inclusive approach to water management and deliver real improvements on a catchment scale. In response to concerns over how effectively it was being delivered at a local level, RSPB supported by WWF(UK) asked the Wye and Usk Foundation (WUF) to review critically, part of the Draft Severn River Basin Management Plan from a local perspective.

The plan and its construction has been assessed in a sequential manner, commencing with the delineation of water bodies and monitoring network before analysing the classifications of the 202 water bodies, the pressures and associated actions and finally looking in greater depth at selected case studies that reflect the implementation of the water framework directive at a water body level.

We have the following principal criticisms of the DRBMP with associated recommendations. Other specific recommendations are listed within the report.

1) Limitations to the biological monitoring network create an unrealistically positive picture of the current state of the water bodies.
**Recommendation:** In the absence of appropriate assessment data, increased emphasis needs to be placed on adjacent biological classification and less on physio-chemical indicators which may necessitate grouping of water body classifications.

2) There are widespread flaws in the classification with the majority of fish classifications appearing questionable, creating a very misleading picture.
**Recommendation:** Locally proof the results and revise methodology accordingly, prior to final plan publication.

3) Data used in classification is dated and from a single temporal point, negating the ability to predict the likely status in 2015.
Recommendation: For water bodies where restoration activities are known to have taken place use at least two data points to establish trends.

4) Some relevant data has been inexplicably excluded
Recommendation: Review data provided and highlight by consultation process. Where relevant adapt plan accordingly.

5) Justifications for non attainment of GES by 2015 requires further explanation and appears in a number of cases not to reflect the real situation
Recommendation: Ensure all obvious causes for failure have been investigated and a site visit conducted before technically unfeasible-cause unknown is used.

6) We are not satisfied with the treatment of water bodies listed under the Habitats Directive within the plan
Recommendation: Justification of non attainment as disproportionately expensive is incompatible with requirements the WFD places on the Habitats Directive objectives and is likely to generate infraction. The plan should be a mechanism for all SAC water bodies to be in GES by 2015. The plan should reflect this and have appropriately funded measures.

7) The plan does not include the outcomes of the recently completed Habitats Directive review of consents for the rivers Wye and Usk.
Recommendation: The review of consents is of fundamental importance to the plan so it should be immediately up-dated and consultees should be given the opportunity to respond again before the RBMP is finalised.

8) We agree with the identified pressures and risks, but believe that the included measures lack ambition and place too much emphasis on the water companies whilst allowing other sectors which are having a greater impact to ‘get off the hook’.
Recommendation: Where other sectors are limiting attainment of GES, the full suite of realistic measures needs to be included. A lack of data on sediment has been used to justify a programme of research during the first cycle. The problem is known to be limiting GES if not yet fully quantified and targeted measures to reduce overland flow at a water body level are required.

9) The timeliness of actions appears not to have been given sufficient emphasis.
Recommendation: Where a known problem is only going to get worse (e.g. invasive weeds) it is imperative that effective measures are implemented in the first cycle.

10) Pressures and actions are not made clear at water body level
Recommendation: The final plan should be published at a catchment level. The River Basin should be reserved as a European reporting unit. Each WB sheet should include the primary pressures causing failures and the planned actions to make it good if they have been determined.

11) The plan does not adhere to the Ecosystem approach, of which the UK government is a signatory, which necessitates appropriately scaled actions and management devolved to the lowest appropriate level.
Recommendation: Whilst the WFD’s basic unit, the water body fits within the Ecosystem approach, the top down management and construction of the plan does not. Future planning cycles need to adhere to the principles of that approach

12) Although the Directive does allow for extensions beyond 2015 under certain circumstances, we think it unlikely that the European Commission will regard the very modest improvements in compliance rates as fulfilling the Directive’s basic requirements.
Recommendation: Target action and research at pressures affecting SAC designated WB’s in the 1st cycle to reduce risk for infraction. Use them as proving ground to ensure efficacies are established for use in the 2nd and 3rd cycles.

These issues and more are discussed and evidenced within this report and its annexes, and demonstrated via representative cases studies.
1. Introduction

1.1 Catchment description

The Wye and Usk are major UK catchments and management units in themselves with a combined surface area of 6,081km$^2$, which forms less than 28% of the Severn RBD.

Draining the mountains of mid and south Wales before emptying into the Severn estuary, the rivers show a wide range of issues and pressures in a predominately rural context.

The catchments can be separated using aquatic invertebrates into three main regions, which reflect a variety of pressure as shown in fig 1.

The upper Wye catchment arises from heavily afforested areas with poorly buffered geology and around 1700mm of precipitation per year. This section is susceptible to the effects of acid rain. The drainage system common within the forestry has increased the delivery of coarse sediments and the flashiness of flow. Invertebrate, phytobenthos and fish communities are suppressed whilst acid and metal levels are elevated.

Through the middle Wye catchment the effect of the acidity is ameliorated as streams join from well-buffered geologies. The upper Usk, lying outside the acid affected area is included here. Water quality throughout this area is generally good, with the exception of an elevated risk of sheep dip pollution and localised problems with farmyard effluents. High livestock densities together with the historic inclusion of the river banks and beds within a landowner’s grazeable area under the previous round of the Common Agricultural Policy has led to degradation in the quality of the in-stream and riparian habitat. Additionally barriers to migration impact negatively on fish populations. This part of the catchment is a net exporter of water (but within the RBD) for both potable supply and a canal resulting in many water bodies being impacted by low and/or regulated flows.

The third area which comprises the south eastern part of the Wye and lower Usk catchments provide one of the greatest challenges for the WFD. This is shown clearly within the Lugg subcatchment (1,021km$^2$, 30 WB’s) where agricultural practices ensure no biological elements are currently attaining GES. Over 30% of the elemental failures for the Wye are found in the 14% of water bodies that make up this subcatchment. Intensive agriculture with its associated diffuse pollution of sediments, nutrients, pesticides and herbicides
combined with high levels of unlicensed abstraction is the primary source pressure. Within this area we also have a very ‘enthusiastic’ internal drainage board (IDB) who have channelised 10’s of kms of water courses presenting another set of challenges.

Extensive reaches, split into 88 WB’s, of both the Usk and Wye catchments are Natura 2000 SAC’s and as such are required to be in favourable condition by 2015.

Fig.1. Principle Characteristics and problems affecting the Wye and Usk catchments (after Ormerod and Clews 2005)
1.2 WUF’s approach

The RSPB has approached the Wye and Usk Foundation with a view to ground truthing and providing a detailed critique of the approach being taken to river basin planning by the Environment Agency.

The Wye and Usk Foundation has conducted its operations on a catchment-wide scale since 1996 and during this time has built up knowledge of the rivers and the variety of pressures affecting them. We have developed and implemented cost effective techniques for making good degraded watercourses, remedial work in respect of water quality including acid waters; rectification of barriers to migration, and developed socio-economic mechanisms to ensure sustainability. We are a key stakeholder and a proven delivery method for 3rd sector actions within the catchment. From this position we think we are well placed to critically review the RBMP.

We started at the field level using our existing knowledge of the catchments supported by the well tested ‘intraocular’ method and worked up through the plan process looking in turn at:

- Delineation of water bodies and associated monitoring network
- Classification
- Justification for non attainment
- Identification and quantification of pressures
- Appropriateness of identified measures
- Other possible measures
- And finally as a third sector organisation attempting to respond to the consultation.

RSPB’s brief provides an excellent framework for the work and we are very pleased to be involved in a study that encompasses our own concerns.

1.3 Scope of study

A comprehensive critique with fully costed alternatives would take the years it has taken to draft the plan. This study was briefed to ground truth the delivery of the plan in the context of the aims of the WFD, so limited detailed study to the main document, Annexes A-H and field surveys of selective sites. The rest of the plan was referred to as and when required.
Due to question marks over the process by which conclusions presented in the plan had been reached, it was necessary to request additional information on the inclusion and monitoring process especially within fish and flow classifications.

1.4 Data acquisition

It was quickly apparent that despite extending to an impressive 2,555 pages the Severn RBDMP did not contain enough information for us to effectively comment on the plans.

Principle areas lacking explanatory information were
- Classification
- Justification for non attainment
- Justification of choice of measures

In light of this, an information request was compiled and submitted on the 13th Feb 2009 (included in Annex). A meeting with EA’s Severn River Basin Panel staff followed on the 16th Feb. Approximately 35% of the queries were answered. Despite a promised 3 week response period, the outstanding information did not arrive until the 9th April.

Additional meetings with the Countryside Council for Wales, English Nature and the local Catchment Sensitive Farming Officers and the two other NGO’s undertaking this exercise helped formulate the scope of the response.

1.5 Expectations of Plan

The Water Framework Directive (WFD) is very ambitious. It aims to deliver a water environment that deviates only slightly from that normally associated with undisturbed conditions, putting a particular emphasis on ecology. These are aims embraced by WUF.

The deadline to deliver the required outcomes is generally 2015, and although this deadline may be extended, any extension can only be used as an alternative to a reduction in ambition. Other important provisions of the WFD include preventing deterioration of the water environment, protecting drinking water sources and reducing or eliminating emissions of specific substances. By virtue of its Protected Area provisions, the WFD sets a deadline of 2015 for the delivery of Favourable Conservation Status/GES, whichever is
more stringent, in Natura 2000 sites designated under the EU’s Habitats and Birds Directives.

The WFD is also intended to encourage a much greater engagement of all sections of the community in shaping and delivering real improvements to their local environment.

1.6 Accessibility of plan and consultation process

The summary document provides limited opportunity to critically review the draft plan beyond its ambition, necessitating the reading and assimilation of the 2,555 page annexes.

The plan operates at a scale beyond the scope of most parties. We acknowledge that this is a reporting unit, rather than a management unit as it is beyond the remit of delivery organisations such as devolved Regional Agencies, Assemblies Water Companies and NGO’s such as ourselves.

The consultation does in part recognise this with separate summaries for 9 catchments shown in the reproduced map below.

Fig 2. The division of Severn RBD into appropriate management units- taken from main consultation document
WB’s, classification, a qualitative assessment of pressures at catchment level, actions and Natura 2000 actions are grouped roughly within the plan in an attempt to make it more accessible.

Ordering of data within plans appears nonsensical making it unduly challenging to locate your item of interest. This was accepted by EA staff and they hoped the final plan will be simpler to navigate. For example, we have so far located relevant Wye actions in the following locations:

- Summary document Page 32
- Annex B Page 823-833
- Annex C Page 5-137 (mixed in with all other catchments actions)
- Annex D Page 64, 71-77 and 92-93,

Locating a specific water body in Annex B necessitates trawling through 257 pages, as they appear to be been collated in no particular order or navigating back to the hyperlinked page and repeating the exercise for each WB. We have collated them by catchment in the annex and suggest this might be a suitable way to order them in the final plan.

Assuming the classification is correct; identifying the main reasons why the majority of water bodies are not achieving good status is the first step to developing a plan to solve problems. Including summaries at catchment level would have made the draft plans much more accessible and thus would have helped public consultation. Once the most common reasons for failure have been identified, the programmes of measures targeted at them can be assessed.

We believe it is beyond the ability of most NGO’s to respond to this plan. In its current form, it might even be a disincentive to the achievement of the WFD’s aims of wider community involvement in delivery.

There has been much made of the fact that this is rectified via the “What’s in my back yard” section of the EA’s website. We have not found this to be the case and were unable to determine the pressures or actions in the draft plan via the site. We imagine that the lack of improvement planned for Chemical or Ecological status in any of the 5 local water bodies tested would act as a disengaging feature and does not fit with the aims of the Directive as detailed in Article 14.
2. Delineation of water bodies and monitoring network

2.1 Delineation of water bodies

Water bodies are defined in the directive under Article 2 (10) as a ‘discrete and significant element of surface water’. Within the Wye and Usk they generally reflect the pressures on and designations of the water bodies and are mostly at an appropriate scale to provide management units for measures to be implemented effectively. Annex J lists the changes to water bodies included within the Severn RBD. There are only 2, both in the South East Valleys region and both involve the separation of large water bodies into 2 units. We believe there is scope for further refinement and resolution of some unexplained inconsistencies within the Wye and Usk. A summary of these is shown below.

2.1.1 Size

We can find no justification for the separate classification of the 3 water bodies shown in table 1 under selection methodology and they are not listed as a unique entity within any of the protected area designations. We suggest they should be merged with the parent water body to simplify management and allow monitoring to be directed elsewhere.

Table 1. Water bodies for which we can see no reasonable justification

<table>
<thead>
<tr>
<th>WB</th>
<th>Status</th>
<th>Name</th>
<th>Justification for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>33060</td>
<td>Good</td>
<td>Lower Senni</td>
<td>1,020m long, no chemical data, no physio-chemical data. Rest of Senni catchment already split into 2 sensible management units.</td>
</tr>
<tr>
<td>29610</td>
<td>Good</td>
<td>Norton Brook</td>
<td>Minor tributary of middle Monnow, No apparent designations, no biological data</td>
</tr>
<tr>
<td>37130</td>
<td>Moderate</td>
<td>Clas</td>
<td>&lt;10km2 catchment no apparent designations, no biological data</td>
</tr>
</tbody>
</table>

Other water bodies are of a scale that different status are existing within them and markedly different levels of pressures operating, as such we do not believe they function as management units and should be split accordingly.

Table 2. Waterbodies where splitting is justified and would assist management

<table>
<thead>
<tr>
<th>WB</th>
<th>Status</th>
<th>Name</th>
<th>Justification for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>42250</td>
<td>Good</td>
<td>Wye (Elan-Ithon)</td>
<td>Separate Llanwthwl brook, Mid sized (c. 30km2 catchment) SAC and Freshwater fish directive listed watercourse</td>
</tr>
<tr>
<td>29720</td>
<td>N/A</td>
<td>Monnow (Hondu-Wye)</td>
<td>41km long water body, with Dore, a major 4th order (3 WB) tributary joining midway. Suggest split at this point into an upper 4th order 11km water body with a lower 5th order 30km water body. Whilst the lower one would still be big,</td>
</tr>
</tbody>
</table>
there are no more major tributaries, and land use and pressures are constant making it the logical management unit

<table>
<thead>
<tr>
<th>Code</th>
<th>Status</th>
<th>Tributary/Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>42110</td>
<td>Poor</td>
<td>Aran</td>
<td>Large WB’s with a pronounced change in land use roughly at the midpoint. Intensive existing monitoring network would allow for good data for each new waterbody. Data suggests new upper WB would be good status whilst lower one would remain poor in both cases.</td>
</tr>
<tr>
<td>42030</td>
<td>Poor</td>
<td>Lugg (Norton to Arrow)</td>
<td></td>
</tr>
</tbody>
</table>

### 2.1.2 Mis-allocation/nomenclature

When looking through the water bodies in Annex B, at times it was at times tempting to say that an Ordnance survey map should have been checked.

- WB36970 is listed as an unnamed stream and a tributary of the Wye (WB 37114). It commonly named the Triffwyd and drains into the Llynfi Dulas (WB36920).
- The Cibi is a tributary of the Gavenny (WB32990), but has been included with the Usk Crawnon – Gavenny (WB40062)
- The Treweryn (WB33040) is listed as an unnamed stream.
- An Upper Usk water body appeared in the annexes and EAW accepted it was a relict water body that should no longer be included.

![Fig. 3 Location of above issues within the Wye](image-url)
2.2 Monitoring network

2.2.1 Chemical monitoring network

The physio-chemical elements are retained from the previous RCS program. As such the network is comprehensive and extends to 97% of water bodies.

The chemical elements network is much more limited with an extensive range of parameters only tested in the lower reaches of both rivers where abstractions for drinking water occur. By monitoring in this way an ecological pressure can be identified but there is no spatial guidance for the targeting of remedial action.

2.2.2 Biological monitoring network

The biological network is more limited

Of the 4 principle elements, % coverage across the 202 WB’s is respectively:

<table>
<thead>
<tr>
<th>Element</th>
<th>No of WB’s with data</th>
<th>% of WB’s with data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>107</td>
<td>53%</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>101</td>
<td>50%</td>
</tr>
<tr>
<td>Phytoplankton/benthos</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>Macrophytes</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>Any biological element</td>
<td>121</td>
<td>60%</td>
</tr>
</tbody>
</table>

Table 3. Biological monitoring coverage

40% of water bodies are lacking any biological element in their assessment. In these cases status has been modelled from adjacent water bodies as explained in a quote from the EA detailed in the text below:

“Because we don’t monitor the biology of all rivers we sometimes have to use water quality measurements to predict current ecological status. The standards for substances such as ammonia, phosphorus and dissolved oxygen are designed to protect the aquatic life. There are also safety factors built into the standards. So, if these measurements end up as good status we can assume that biology is also good. Over time our biological monitoring will move to cover water bodies that currently lack data. We will move biological monitoring as a matter of priority if you, or the EA, come to the conclusion that there are problems in these water bodies that are not being noted.”
There is notable difference in the rate of attainment of good status between the Physio-chemical standards of ammonia, dissolved oxygen, phosphate and pH with those for the biological elements.

<table>
<thead>
<tr>
<th>Biological data (lowest determinant)</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physio-chemical data (lowest determinant)</td>
<td>74%</td>
</tr>
</tbody>
</table>

**Table 4.** % Attainment of good status for classified WB’s within Wye and Usk

This assumption has created a marked difference in the classification of contiguous water bodies depending on whether or not biological data has been used. We suggest the emboldened statement in the quote above cannot be substantiated.

One likely explanation for this inconsistency is that biological data is the only current way of assessing the pressure of elevated sediment levels and degraded morphology. The discrepancies caused by taking this approach are discussed further in section 3 and case study 5.2.

The offer to increase biological monitoring is welcome but must be done with the awareness that it raises future issues of apparent deterioration which are also discussed in 3. It is surely preferable that something remained unclassified with a date set for classification that being falsely assumed good.

### 2.2.3 Hydrometric gauging

Generally, the Wye and Usk are well served by flow gauging stations. The exception concerns the monitoring of abstractions to supply and discharges from the Brecon and Monmouth canal. Historically, the flows supplying the canal through leats from the Usk at Brecon and from the Afon Crawnon and three other small Usk tributaries have not been measured, except through very occasional spot gaugings. An informal operating agreement between the EA and British Waterways in 1999 required flows to be monitored, but this was not done until the Review of consents process started in 2008. Continuous flow recorders were only installed last year in the leat supplying the canal at Brecon and repairs to the instrument on the Crawnon have just been completed. Records obtained were too late to assess the impact of the abstraction for the RBMP.

In our opinion, the WFD measures should include continuous monitoring of all significant abstractions to supply the canal, including the Afon Crawnon to manage abstraction much more efficiently than is the current situation. (Please see 5.1).

### 2.2.4 Pressure specific monitoring
Collection of biological data from 2007-2009 has been designed to cover water bodies at risk from the following pressures: organic enrichment, nutrient enrichment, abstraction and chemical pollution. In Wales we also regard acidification and minewater discharge as priority pressures. So, as yet, we don’t have monitoring in the right places to pick up impacts from sedimentation. Once we’ve dealt with the priority pressures in the first cycle we can then move on to prove and then manage the impacts of sedimentation.”
We found this response equally confusing as firstly the physio-chemical determinants would seem suitable to determine the pressures of organic enrichment; through DO and Ammonia, and acidification; through pH. In the Severn RBDP pH classification has clearly identified the affected water bodies without the need for biological data,

Secondly neither minewater nor acidification are listed as a priority SWMI’s within the Severn RBD.

We believe the ‘smoking gun’ causing many of the failures to be elevated levels of fine sediment, (with associated phosphate and pesticides) which numerous surveys (Chambers 1999, Walling 2001) have shown to have more than doubled in the previous 20 years. Given the derisory measures in response to this pressure within the plan it can only be reversed by targeted additional measures identified through biological monitoring combined with landuse mapping.

We know that wet weather surveys conducted by EAW in the Lugg and lower Wye have clearly identified the sediment pressure, and leaving the quantification of the extent until the first cycle misses an opportunity for wide scale improvements by 2015. This is discussed further in 4.3.
3. Classification

Classification underpins the assessment process and informs the delivery of the Water Framework Directive. Through classification, progress is measured and actions targeted. It is imperative that classifications allocated in 2009 are accurate and realistic.

In order to assess this within the Severn RBMP we studied the classification of 176 of the 202 WB’s that make up the Wye and Usk.

The 26 we have ignored are either impoundment reservoirs or sections of river that, not having detailed knowledge of, we feel we are unable to comment on effectively.

Of the 167 that have been allocated ecological status we have concerns relating to 77% (129) of them.

With classification causing unjustified failures/passes of this scale it is almost impossible to be confident when developing and implement appropriate measures to make good pressures.

3.1 Overall Summary Biological

The use of biological data is one of the potential strengths of the WFD, allowing for ecological problems to be identified and made good.

As shown in fig.5. The principal cause of failures is fish, which is also solely responsible for 93% of the Poor and Bad status classifications. Further investigation of which sites passed and which sites failed raised severe...
concerns with streams known to be severely impacted by acidity, or barriers to migration attaining good status whilst other streams known to have healthy fisheries were classified as moderate or poor.

The current rates of attainment of good status by biological element are shown in figure 6. Total population 202 water bodies.

Each biological indicator reflects different pressures, phytobenthos failures correlate strongly with P failures whilst fish are affected by morphology, access and sedimentation and invertebrates, organic enrichment and pesticides. This limits comparable classification, when, as in the majority of cases only one biological element has been used.

Additionally, as already mentioned, 38% of the water bodies do not have any biological data at all and a further 2% have biological data that has not been used for reasons unbeknown to us.

Of the 44 that are good status 22 do not include biological data and we do not believe any of these would achieve good status if it were included. A detailed example of this is highlighted in section 6.2.

Of the 95 that are currently moderate 52 have no biological data. We believe 40 of these would be poor or bad if biological data were available.

Our estimation of the state of the catchments had biological data been more widely available is shown against the state as shown in the draft plan in figure 7. The evidence used to compile this graph is detailed in the annex.
This has serious ramifications for the risk of infraction given the extreme lack of ambition of the plan. Unless these problems are reconciled prior to the publication of the plan, it is certain that as the monitoring network improves during the first cycle, without prompt and effectively targeted actions a number of water bodies achieving good or moderate status are likely to fail. This goes directly against the directives stated aim of preventing deterioration of status.

3.1.1 Fish

The classifications on the basis of fish has caused our greatest concern.

There are cases where natural streams supporting very healthy numbers of the quantitively assessed species listed in the UKTAG type, have been allocated poor status, whilst those with very low numbers of these species due to known diffuse pollution and/or acidity issues and/or barriers to migration were often achieving good or high status.

As well as providing a readily assessable marker, the use of fish as a determinant creates a unique set of problems, for example salmon fry numbers can naturally vary by factors of 5 or more between years depending on whether adults spawned in the direct locality, prevailing conditions and local variations in geomorphology can create major differences in fish communities. Fishery classification scheme 2 (FCS2) developed for the WFD was supposed to address these issues and the EA’s briefing note on the use of fish suggested as much. We believe these problems could be overcome, however.

We tried and failed to explain the anomolies via the UKTAG guidelines, and raised them with regional EA who were equally confused. In an attempt to allay our concerns we requested a breakdown of source data and methodology leading to the classification of 10 sites with particularly inexplicable resultss. We received a reassurance from the EA that they were aware there was a problem and that the classification was to have been re-run imminently (available by mid March), so there was no point reviewing the classification until them. We finally
received explanation of the methodology in April and detailed results breakdown for the initial classification run of 4 of the 10 requested water bodies. These were 2 perceived good streams that had been allocated poor status and 2 near fishless streams that had been allocated good status.

We also received the final classification on its own, and in all 4 cases the re-run had changed the classification to moderate, but the methodology of the re-run was not available. We remain unconvinced of the process as the source data would suggest that the Afon Menasign WB 33010 which had been attributed good status should be poor, and the Afon Tarell (WB 33070), after natural water falls had been taken into account, should be expected to be good status.

As a result of only having the breakdown of 4 sites, the following critique is based on an uncomfortably small no of sites.

The basic premise of the assessment is that the ecological quality of a fish community is assessed by comparing the numbers and species found with what would be expected to have been found at a similar natural location that does not have adverse environmental influences.

This relies on an expected generated result (EGR) to be generated against which the results can be compared. This expected was generated from:

- Catchment
- Parent water body,
- Distance to tidal limit,
- Altitude
- Mean wetted width
- Type of water body.

The notable omissions from this are barriers to migration (which have been included where known in the re-run), flow conditions (which affect sampling efficacy) and either a requirement for consistent selection of similar habitat types nationwide or an assessment of the basic geomorphology at each site.

The EGR appears to have limited basis in reality as for example, the expectation of an 80% chance of salmon, let alone having an expected probability value of greater than >0 for lowland coarse fish species such as Barbel, Rudd, Beak, Bream, Carp, Perch in the upper reaches of Nant Cwm Ilynch (WB33070), a
mountain stream at the foot of Pen-y-Fan, Brecon Beacons, upstream of the 20ft waterfall shown here, has inevitably generated a unique elemental failure for fish. This has hopefully been corrected in part in the re-run of the data but as it is not a licensed waterfall we are tempted to reserve judgement!

The analysis also appears to combine presence/absence, log scale occurrence, single pass semi quantative, and 3 pass quantative data on an equal footing without explanation.

Presence absence min estimates should either be excluded from the analysis or the EGR should reflect their use.

In the 4 cases where we have been able to see what data has been included we have further concerns. For example;

- On at least 1 occasion data from a different water body has been included in the analysis.

- Data is for a single point per site but different years are lumped together. For example in the case of the Senni WB33050 as shown in table 5, the selection of 2005’s data for U004 requires explanation as does the discounting of the results for U017b, U092 and U086.

<table>
<thead>
<tr>
<th>Table 5. Available fisheries data for the Senni WB 33050.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red=excluded data points, green = included data points</td>
</tr>
<tr>
<td>Main Stem</td>
</tr>
<tr>
<td>U017 Tyle-garw SN 925 207</td>
</tr>
<tr>
<td>U017 Heol-Senni SN 925 234</td>
</tr>
<tr>
<td>U017a Brynch goed SN 925 245</td>
</tr>
<tr>
<td>U004 Aber-senni SN 930 268</td>
</tr>
<tr>
<td>Cwm Clydach</td>
</tr>
<tr>
<td>u092 Tredomen SN 919 272</td>
</tr>
<tr>
<td>Brynich</td>
</tr>
<tr>
<td>u086 Gwernlertai SN 946 243</td>
</tr>
<tr>
<td>u017j Cefnbrynich SN 935 257</td>
</tr>
<tr>
<td>u097 Pont ar Frynych SN 932 259</td>
</tr>
<tr>
<td>Nant Cwm du</td>
</tr>
<tr>
<td>u017c Usk SN 932 219</td>
</tr>
</tbody>
</table>

- Data used is generally outdated with most coming from 2002 and 2005. Since 2002 over £5m has been invested in the Wye and Usk making good limiting factors and improving fish stocks by the Foundation.

- By using only 1 data point, temporal trends are not available which negates the ability to either forecast sites likely to be in good status by 2015 or to use
ecological recovery time as a valid justification for non-attainment for the first cycle.

The UK tag guidelines include a caveat that “The current classification scheme (FCS2) is a draft methodology not yet intercalibrated and the following parameters may be subject to change”. We agree with this statement and propose that local knowledge takes an increased role in refining the EGR in future.

### 3.2 Overall Summary Chemical

The basic determinants of the Riverine ecosystem classification are understandably good both in terms of coverage and rigour. They clearly identify the farm waste problems in the water bodies that make up the Olway brook and Lugg and demonstrate the extent of the acid waters problems with the Upper Wye and Irfon.

The physio-chemical data cannot be expected to pick up the additional pressures identified by biological elements that are expected to be made good by the WFD.

The Drinking water directive monitoring is appropriately rigorous but limited in extent as shown in 2.2.3. This limits targeting of measures and has undoubtedly led to an unrealistically high classification being given to some water courses.

### 3.3 Characterisation of pressures

Assuming the classification is correct; identifying the main reasons why the majority of water bodies are not achieving good status is the first step to developing a plan to solve the problems. Including this information in a form that can guide respondents would have made the Draft Plans much more intelligible and thus would have helped public consultation. Once the most common reasons for failure have been identified, the programmes of measures should be targeted at them. This would ensure that the highest priorities are dealt with as early as possible in the WFD planning cycles, delivering the most extensive improvements.

“All waters (fresh, ground, coastal and transitional) are divided into units called “water bodies”. Characterisation is the process of identifying the type, and all significant pressures on every water body. The impact of these pressures on the ecological, chemical and hydrological quality of each water body are assessed.” DEFRA WFD planning advice
The highlighted text in the boxed quote above has not been heeded in full. Pressures are identified at a catchment and river basin level, but the sheer scale of the Severn RBD as a reporting unit makes it very difficult to report at a water body level.

3.4 Justification for non attainment

The extreme lack of ambition for improvement demonstrated by the plan requires further explanation. In light of this, we have analysed the justifications given for there being no planned improvement to ecological status.

Roughly half of the water bodies (in Usk and Wye) are SAC designated. The directives states, they should be in both Favourable Conservation Status and Good Ecological Status by 2015.

"4.1(c) for protected areas
Member states shall achieve compliance with and standards and objectives at the latest 15 years after the date of entry into force of this directive, unless otherwise specified in the community legislation under which the individual protected areas have been established”
And 4.2
“where more than one of the objectives under paragraph 1 relates to a given body of water, the most stringent shall apply”

If Favourable Conservation Status (FCS) can be achieved without GES, then by definition, GES is the more stringent test and should be applied to protected areas. This is a major issue for the plan and we believe it to be the most significant oversight. We requested further clarification which came as follows:

"Where a water body overlaps with a WFD protected area, such a N2k protected area, the most stringent requirement on the water within that overlap applies. In the draft RBMPs the WFD water body objectives are shown in Annex B and the protected area objectives in Annex D. It is necessary to refer to both Annexes to understand which is the most stringent obligation. We are looking to improve the cross-referencing in the final RBMP. It is worth noting that in some cases FCS may be met in an N2K site but GES might not. For example if action to improve salmonids is a requirement to reach FCS in a particular n2k protected area, this may not satisfy the full requirements of 'good fish' under GES which takes into consideration a much broader range of fish species (and therefore an alternative objective for that water body may be set if justified even though the site is at FCS)."

This apparently reassuring statement needs to be married with the fact that there is no forecast improvements in status for any of the 88 failing elements on SAC designated water bodies within the Wye and Usk!
In many cases, the environmental objective in the plan for an SAC water body, contradicts or conflicts with the requirements for the Natura 2000 areas as described in UK TAG Guidance and appears to undermine efforts already being made on these sites through the EA’s own Review of Consents. This is elaborated further in section 6.1

As an example, water body 37030 (Afon Edw) is a part of the River Wye SAC. Its current status is given as "bad" and the predicted status in 2015 is also "bad". The justifications for not achieving good status in 2015 are given as "Technically infeasible - Cause unknown". The reasons given for the failure are that the fish quality element is at "bad" status. Fish are one of the primary reasons for the SAC designation. FCS cannot be met with fish remaining at bad status.

This information clearly contradicts with the requirements of Article 4 to achieve any standard and objective before 2015 and also undermines the aspirations in Annex D to put in place appropriate measures to achieve conservation objectives before 2012. There is no clear explanation provided for extending the deadline, and no indication of how the relevant conditions in Article 4.4a have been assessed or met. We are confident that the EA does not aspire to maintain SAC waters at "Bad status" for a further 6 years, but the plans appear to suggest that this is the case.

![Fig. 9](image)

Justifications given for non-attainment of GES by 2015 for studied waterbodies
“Technically unfeasible-Cause unknown” is by far the most prevalent opt out being used in the plan as is shown in figure 9.

It is tempting to say that it’s hard to believe that after 7 years in preparation so little is known about the pressures on the water bodies. Its use when tested commonly does not adhere to Article 4.4 of the directive. This is demonstrated in the case studies detailed in 6.1 and 6.3.

4 Pressures and measures

Below is a summary of the issues relating to the way pressures and measures have been dealt with in the plan. There is further explanation via the detailed case studies in section 5.

4.1 Overview of pressures

Supported by maps that provide spatial detail to water body level, Annex G is one of the clearest in the plan. However, it remains limited in its ability to guide recommendations for appropriate measures.

Three examples demonstrate this. Firstly, in the case of flows; despite abstraction being one of the most regulated activities, abstractions that have not been including in the CAMS process have been excluded from the plan (see 5.1.1).

Additionally within the middle and lower rich agricultural catchment, extensive areas are put down to water intensive crops such as potatoes, vegetables and soft fruits, the estimate of 15 licensed abstractions working on the Wye that was used for the ROC, undoubtedly underestimates the pressure during late spring and summer low rainfall periods.

Secondly, damagingly elevated levels of fine sediments is a major issue the plan will have to deal with for GES or GEP to be achieved. Changing cropping regimes, increasing horse power of tractors, cost efficiencies from pooling of machinery reducing timeliness of action, increasing field size and doubling of stock densities, are some of the reasons why studies (e.g. figure 10) repeatedly show a doubling or more of sediment budgets in water courses since the 70’.
In the mid 1990’s sediment was removed as a measured parameter within the old national RCS monitoring scheme as a response to the wide spread failures that were occurring. At the time it was justified on the basis that spot sampling methods were creating false results due the extremely temporal nature of the releases. In retrospect this has allowed a major problem deleteriously affecting both our watercourses and the long term sustainability of our agriculture to be largely ignored.

By measuring biota, especially fish, the WFD allows for the impacts of sedimentation to be quantified through a classification scheme, but the pressure has not been assessed at an appropriate scale within the draft plan. The lack of data at a waterbody level has led to catchments being subjectively ranked. The scale of this ranking is disproportionate. The whole of the Lugg is deemed a single ‘at risk’ unit which fails to reflect the field/slope level variability which is characteristic of this pressure. Including upper Lugg WB’s such as the Bleddfa (WB42050) and Cascob (WB41990) on an equal basis to the ones draining the Leominster plain such as the lower Stretford (WB36640) or Honeylake (WB36610) is neither realistic nor justified, and paints an unduly bleak picture of the state of our knowledge about this pressure, in part justifying inaction within the first cycle.

Finally at RBD level, the maps are a valiant attempt to show a finer resolution of pressures but identifying your local WB from the 602 that make up the Severn RBD presents a significant challenge for the average consultee.
Recommendation: In the final plan and in future cycles to guide action, all pressures should be assessed and detailed on a waterbody level.

The listed SWMI’s (alphabetically) are:

- abstraction and other artificial flow pressures
- invasive non-native species
- nitrates
- pesticides
- phosphorus
- physical modification (estuaries and coasts)
- physical modification (rivers and lakes)
- sediment (rivers and lakes)
- urban and transport pollution.

We broadly agree with these on a RBD level but at catchment level, physical modification (estuaries and coasts) and urban and transport pollution are less significant than both acidification and organic pollution which together these are resulting in 15% of the failures to achieve GES within the Wye and Usk. Both these pressures can be cost-effectively solved with proven measures such as waste minimisation and liming. The later is included within scenario A and the former merely eluded to within the generic advice programmes for farmers.

Together they represent an opportunity to bring the water bodies shown in table 5 into GES by 2015.

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Limiting factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>42330, 42240, 42210, 42290, 42230, 42220, 42310, 42350, 42340, 41910, 36760.</td>
<td>Acid waters</td>
</tr>
<tr>
<td>26950, 32920, 26940, 26930, 32930, 41930, 42000, 37020,</td>
<td>Farm ‘waste’</td>
</tr>
</tbody>
</table>

**Table 5.** Waterbodies that could be brought in GES by either farm waste minimisation or liming.

4.2 Overview of measures

We have considerable concerns over whether the draft measures identified to correct the principle issues of abstraction, sedimentation, enriched nutrient status, pesticides and hydro morphology, are suitable for the timeline necessitated by the SAC status. Further the scale at which they are being applied
and their projected scope does largely explain the lack of improvement predicted by the plan.

Many of the measures included within a plan for 2010-2015 have already taken place or will have by the end of the year. For example within annex C section 3, of the 26 Angling, fisheries and conservation measures within scenarios A and B that have relevance to the Wye or Usk, the following will have already taken place by the time of the plans publication.

- Modification of abstraction licenses to ensure no adverse impact on SAC’s
- Investigate screening measures to limit entrainment within SAC’s
- Permanent closure of Goldcliff putcher rank
- Renewal of Wye specific bylaws to ban bait fishing

A further 13 are continuations of existing programmes, leaving just 9 new actions, one of which is part of the marine bill and will or will not happen regardless of the plan.

There is also a notable variation in the type of action by sector which is shown in table 6. Whilst water industry and conservation measures are a summary of existing and proposed direct actions being taken by those sectors in response to legal obligations or economic imperatives, agriculture measures seem to be a continuation of failing policies and are couched in terms such as: ‘Provide advice to farmers on complying with regulations’ and ‘Voluntary initiative promoting best practice in use of pesticides’.

There is no direct mention of using a legal stick to ensure this advice will be acted upon, such as increased enforcement of existing legislation that requires soils to be kept in Good Agricultural and Environmental Condition (GAEC).

<table>
<thead>
<tr>
<th></th>
<th>Angling &amp; Conservation</th>
<th>Water industry</th>
<th>Agriculture</th>
<th>Mining</th>
<th>Urban</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Direct Action</td>
<td>8</td>
<td>18</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Guidance &amp; advice</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 6.** Review of the type of action with Annex B, Scenario A and B for the Wye.
Finally, scope is often difficult to determine. For example one typical scenario B measure shown below.

<table>
<thead>
<tr>
<th>Pressure</th>
<th>What</th>
<th>Where</th>
<th>Catchment</th>
<th>When by</th>
<th>Means of Delivery</th>
<th>Lead Organisation</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biota removal</td>
<td>Improve habitat for spawning and juvenile production</td>
<td>Ebbw, Sirhowy, Rhymney, Llwyd, Taff, Monnow</td>
<td>SE valleys, Wye</td>
<td>2014</td>
<td>EU funds, SFP</td>
<td>EAW</td>
<td>SAP, SFP</td>
</tr>
</tbody>
</table>

This in itself begs the question, how much?

**Recommendation:** the measures proposed are lacking in clear and measurable targets. They need to be made more specific, measurable, achievable, relevant and time-bound.

### 4.3 Relevance of identified measures

This is a very difficult assessment to make for several reasons. Firstly the scope is often undescribed, secondly the classifications that have guided measures are uncertain and thirdly the success or otherwise of existing initiatives that are being continued has not been reported.

This measure in annex C scenario B, is typical of how the Habitats Directive has been treated within the plan.

<table>
<thead>
<tr>
<th>Pressure</th>
<th>What</th>
<th>Where</th>
<th>Catchment</th>
<th>When by</th>
<th>Means of Delivery</th>
<th>Lead Organisation</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrients, organic pollutants, Sediments, Abstraction, Priority substances, Specific pollutants, non-native species, physical modification</td>
<td>Bring N2k sites into FCS by delivering measures identified by NE and CCW as being necessary to prevent deterioration and secure conservation objectives of the sites. More information is given in Annex D</td>
<td>All N2k sites in Severn RBD</td>
<td>Severn RBD</td>
<td>2012</td>
<td>Habitats directive</td>
<td>Environmental NGO’s</td>
<td>Favourable conservation status</td>
</tr>
</tbody>
</table>
Annex D for the Wye, Usk and Llangorse lake SAC’s includes a comprehensive list of un-funded actions including the setting up Nitrate Vunerable Zones, Review of consents, revoking waste management licenses, targeted agricultural support scheme’s etc. How Environmental NGO’s can help to deliver these is beyond us.

**Recommendation: Incorporate Annex D actions within Annex C and allocate to Statutory bodies where it is beyond the remit of ENGO’s to deliver the action.**

Rather than a comprehensive trawl through the estimated 1,000 measures (including annex D), we have limited this response to the sectors responsible for 5 of the 10 SWMI’s and which are in our opinion most responsible for wide scale non attainment of GES.

4.3.1 **Water industry**

Water companies are expected to fund £1,432m of the £1,560m total cost of scenarios A and B for the Severn RBD.

PR09 had resulted in a fairly comprehensive improvement programme for STW’s and groundwater abstraction which has been included in scenario A. If the recommendation of this response (see section 5.1) that Habitat Directive driven review of consents recommendations are incorporated within the plan, it would be fair to say that the water companies will have played their role in the communal effort to achieve GES.

4.3.2 **Agriculture**

The measures for agriculture are at the opposite end of the spectrum to those for the water industry. Table 6 demonstrates the reliance that has been placed on advice and guidance to address the pressures responsible for the majority of the failures to attain GES within the Wye and Usk.

WUF (and many farmers) despair at the farming practices we see every day. We have not seen a single field this spring that has been ploughed with the contour. A recent walk in the lower Usk which is subject to a catchment sensitive farming initiative resulted in the following pictures. These are but two of numerous case studies that could have been displayed.
The measures in the plan relating to agriculture are intrinsically more of the same, some research, voluntary guidance and grants through Axis II of the CAP. The principle direct action which will have the most impact on farmers, is the Nitrates directive driven implementation of NVZ’s. This will only have a limited impact on the SWMI’s and surface water pressures.

4.4 Other measures

Due to time commitments we have focussed on one issue we believe will address many of the agricultural sourced pressures and is essential for most lower and middle catchment WB’s to attain GES. Other options such as the raising of the threshold for ‘hands off’ flow for abstractions in low flow catchments, to encourage uptake of grants for winter-fill reservoirs have been investigated and will be submitted to the EA. Further specific actions are detailed in section 5.

Water bodies such as those shown in figure 1 and the evidence shown in 4.1 lead us to believe the pressure causing many of the failures is elevated levels of fine sediment, (with associated phosphate and pesticides). Whilst its extent may yet to be fully determined across a given catchment, most waterbodies will not reach GES’s aim of only a slight deviation from that associated with undisturbed conditions without action now.

The measures listed in the plan are unlikely to have a major impact on this pressure. It can only be reversed by additional measures identified through biological monitoring and targeted by land use mapping with a modelling
system such as SCIMAP and supported by a big stick to ensure practices change!

Wet weather surveys conducted by EAW in the Lugg and lower Wye have identified the sediment pressure, and using the first cycle to quantify further the extent misses an opportunity for wide scale improvements by 2015.

Starting to control poor/illegal land use practices surely fits better with the aims if the WFD, rather than to invest all resources in the first cycle into guiding and supporting the good (Catchment Sensitive Farming) and further research into quantifying the damage that the bad are doing.

The tool that would ensure wide-scale uptake of advice is already in existence: Cross compliance legislation which requires soils to be kept in good agricultural and environment condition is currently chronically underused.

The below text is taken from cross compliance handbook and details what is required of all farmers receiving single farm payment for them to be paid. The key sections are highlighted:

8. Good soil management means better productivity as well as improved environmental standards; it is vital to achieving good agricultural practice on your farm. Preventing soil eroding from fields and maintaining soil organic matter and a good soil structure are central to your responsibility for meeting the soil standards of GAEC....

...10. Before 1 September 2006, prepare a simple risk-based soil management plan, which we have called the Soil Protection Review, selecting measures that will help avoid any problems you have observed on your farm, and, for future years, the actions you will take to help remedy the problems if your measures do not work. This Guidance will help in drawing up your Soil Protection Review.

11. The Soil Protection Review must be put into practice on your land from 1 January 2007 onwards and reviewed annually.

This approach has a number of advantages. Firstly management, costs and ownership of the problem is devolved to the lowest level, the landowner. This is both practical and adheres to the ecosystem approach. Secondly a few cross compliance enforcements will encourage uptake and improve efficacy of the existing advice schemes, and thirdly the system is already in existence and just needs ramping up.

There is currently one cross compliance officer for approximately 1,000 farmers, meaning that on average each farmer will be visited once every 20 years. Further, consultations with farmers who have received visits suggest that RPA inspectors are currently more concerned with ear tags than soils at present.
It is important that for this legislation to be used. Farmers soil management plans must be updated, implemented and in the event of continued overland flow and soil loss, cross compliance enforced. This requires as a minimum, annual repeat visits to high risk farms.

Recommendation: introduce and fund a measure to increase 10 fold the number of cross-compliance officers in SAC catchments and retarget their attention at non-compliant activities to ensure FCS is attained and act as a trial for later cycles.

The Wye and Usk would require a further 5 officers at a cost of around £300-400k p/a.
5 Waterbody case studies

5.1 Abstraction Impact on selected WB’s

Water supplies from the Wye and Usk

The Wye and Usk are extensively used for public water supplies. The figures below show simplified maps of the supply system and approximate average current abstractions.

**Fig. 13 The Wye/Usk Public Water Supply System**

- Water supplies from the Wye and Usk
  - The Wye and Usk are extensively used for public water supplies. The figures below show simplified maps of the supply system and approximate average current abstractions.
In addition to the abstractions for public water supplies, there are also abstractions to supply the Monmouthshire and Brecon canal as illustrated below:

**Fig. 14 - Monmouthshire & Brecon Canal Water Supply**

**Assessment of flows in the RBMP**

The Wye and Usk have been subject to a long-running review of consents for the Habitats Directive, starting in 2001. This has identified damaging practices and solutions that are not apparent within the plan. The review has included computer modelling of river flows by consultants Halcrow, determination of flow regimes needed to attain favourable status and assessment of options to achieve the required flow regimes.

We understand that the review of consents has been completed and Site Action Plans prepared for both the Wye and the Usk. We have been told that there will be significant changes to abstraction licences. However, details of these changes have not been released because they have not yet been “QA’d and signed off”. Furthermore EA have refused to provide details of the consultants’ reports and technical assessments on which the revised consents have been based.
Therefore, it is difficult for WUF to comment objectively on how abstraction is dealt with in the RBMP, either for this report to RSPB or for WUF’s own response to the consultation. In WUF’s opinion, the EA’s refusal to supply the technical reports leading to the review of consents contravenes Article 14 Clause 1 of the EU Water Framework Directive which requires that background information should be made available on request.

For this report, we have selected four water bodies to provide some comment on how abstraction issues are dealt with in the plan, as shown in Table 7:

<table>
<thead>
<tr>
<th>Water Body</th>
<th>Name</th>
<th>Status</th>
<th>Flows</th>
<th>Failing Element</th>
<th>Justification for non-attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>32970</td>
<td>Afon Crawnon</td>
<td>Bad</td>
<td>Support good</td>
<td>Fish</td>
<td>Technically unfeasible-cause unknown</td>
</tr>
<tr>
<td>40061</td>
<td>Usk (Senni to Crawnon)</td>
<td>Moderate</td>
<td>Quantity and dynamics of flow undetermined</td>
<td>Fish</td>
<td>Still to be determined - assessment insufficiently advanced</td>
</tr>
<tr>
<td>26890</td>
<td>Usk (Olway-Newbridge)</td>
<td>Good</td>
<td>Support good</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>37112</td>
<td>Wye (Hampton Bishop to conf. Kerne Brook)</td>
<td>Moderate</td>
<td>Quantity and dynamics of flow undetermined</td>
<td>Phyto-benthos</td>
<td>Still to be determined - assessment insufficiently advanced</td>
</tr>
</tbody>
</table>

Table 7 – Assessment of flows in four selected water bodies

For both the Wye and Usk catchments, there are just two identically worded measures to deal with abstraction:

- Under scenario B for the water industry (ie not applying to the canal abstractions) - “Assess the impact of abstraction on SAC Features, including salmon informing licensing”. The stated date of delivery is 2012. The means of delivery is abstraction licence modifications. It is not clear whether the 2012 date refers to the completion of the impact assessment or the implementation of the licence modifications.

- Under scenario C for industry, manufacturing and other business (ie including British Waterways) – “WAG to adopt the code for sustainable homes”. The stated delivery date is 2010.

In the following sections, we have provided some commentary on the flow assessments and associated measures for these water bodies, using such data and technical reports that we have been able to acquire to inform our own view of the problems and measures required.
5.1.1 Flows in the Afon Crawnon

The lowest 1km of the Afon Crawnon, which includes the biological monitoring sites, is almost completely de watered, due to the uncontrolled and unregulated ‘licence of right abstraction’ to the Monmouthshire & Brecon canal shown in Figure 15:

![Figure 15 – Diversion of flows from the Afon Crawnon to the canal](image)

The abstraction affects the section that contains the biological monitoring sites for the waterbody and is an obvious explanation for fish being correctly classified poor, whilst every other element is high status.

This abstraction having ruined a prime spawning and nursery stream for salmon, is one of the most damaging to the Usk SAC and is limiting attainment of FCS.

The classification of flows as “support good” and justification for non attainment as “technically unfeasible-cause unknown” caused us to raise this with the EA. Their response shown below was both reassuring and disconcerting in equal measure.

“The Afon Crawnon GB109056032970 has been mis-classified for hydrology because the licence-exempt abstractions for Brecon & Monmouth Canal were omitted from the GIS model. This is an oversight and the result will be corrected for the final RBMP........SE Area did not include this abstraction in their HD RoC or CAMS assessments as they could not obtain any information from BW on the volumes being abstracted. As it wasn’t included in CAMS the impact was not considered in the initial GIS model.

“SW Flow Compliance Method Summary 150208” includes in the assumptions and uncertainties that “Information on currently exempt activities is still being gathered and when included may change some of the results“.
We welcome the inclusion of this abstraction in the final plan but wonder whether other agricultural licenses of right will also be included.

The canal abstraction (5 sites in all) is an example of an intractable problem:

- British Waterways is a “competent authority” under the Habitats Directive.

- Despite there being an informal agreement with EAW to restrict abstraction to 25ML/day from Brecon, up to an estimated 20ML/day is taken out elsewhere but mainly from Afon Crawnon (up to 12ML/day approx). This had not been accounted for in the informal agreement.

- The measures in the plan under the scenario for damaging abstraction licences affecting SAC’s are to revoke or amend them by 2012.

- Our FOI investigations reveal that up to 65ML/day have been taken out at Brecon in low water periods - sometimes more than 50% of the entire Usk flow as shown in the photograph in Figure 11. This has been challenged by BW despite themselves being the source of the data!

- The canal suffers from continuous leaks and has breached three times in the last 6 years.

- The change of regulation to bring this licence of right into the current process is long past its deadline and we understand the issue of compensation may be behind the delay.

- That this was not included in the CAMS assessment is disconcerting as WUF was represented on the CAMS liaison panel and made a point of raising this particular abstraction at every meeting. The canal is a considerable recreation resource and BW is exerting undue political pressure to continue with what amounts to a level of abstraction that brings the whole Usk into Unfavourable Conservation status.

**Recommendation:** the final plan for the Afon Crawnon should include a measure to remove the diversion weir and cease abstraction by 2012. This would enable good ecological status to be attained by 2015.
5.1.2 Flows in the Usk from Senni to Crawnon

Flows in the Usk from Senni to Crawnon are affected by Usk, Crai and Talybont reservoirs, and by the abstractions to supply the canal at Brecon and from the Afon Crawnon. The RBMP states that the effect of these abstractions on river flows from Senni to Crawnon is undetermined because the assessment is insufficiently advanced (having started eight years ago).

In WUF’s opinion, abstraction from Usk, Crai and Talybont reservoirs has relatively little impact on flows in the main river Usk, because during dry weather compensation releases from the dams are greater than natural flows would have been, thereby slightly increasing flows in the main river. However, there are concerns about the temperature of the released water having an adverse effect on the streams which are important spawning and nursery areas for trout and salmon.

It is of some concern that abstraction from Usk reservoir is used to supply another non SAC catchment when that amount might be better used to offset the canal abstraction.

Abstraction to supply water to the Brecon canal is however a major concern. BW have a licence of right which allows them to abstract as much water as they think necessary to operate the canal. Ten years ago BW signed an informal operating agreement with the Environment Agency limiting their abstraction at Brecon to 25 ML/d at times of low river flows. However, until recently there has been no reliable means of measuring flows into the canal, so it has been impossible to monitor the effectiveness of the agreement. In late 2006 a new
flow gauge was installed and records show that abstraction in 2007 was typically about 50 Ml/d, double the agreed amount as shown in Figure 17 below:

![Fig. 17 - Gauged abstraction to supply the canal at Brecon](image)

It is clear from Figure 17 that there was no reduction in abstraction to 25 Ml/d at times of low river flow (the periods shaded in red on Figure 17). Furthermore, abstractions continued from the Afon Crawnon throughout the low and high river flow periods, causing localised flooding on occasions.

EA have refused to release details of their modelling of river flows, so we have undertaken some simple modelling which suggests that the impact of the canal abstractions in a moderately dry year at Llandetty, about 2km above the Crawnon confluence, is substantial, as shown in Figure 18:

![Flow into Canal](image)

At times of drought, more than half the river flow at Brecon is diverted to the canal, severely depleting the flow in the Usk downstream, as shown in Figure 16.
In the opinion of WUF, Figures 17, 18 and 19 provide ample evidence that the abstraction to the canal is having an unacceptable impact on river flows. It is worth noting that the amount of water needed to operate the canal locks is only about 10 Ml/d at the peak of the boating season, so the vast majority of water currently supplied is either lost through leakage or returned some distance downstream. If the abstraction at Brecon was rigorously restricted to a maximum of 25 Ml/d at all times, an adequate supply to enable the canal to continue operating could be achieved by reduction in leakage.

**Recommendation:** the RBMP should include a measure to reduce abstraction to the canal at Brecon to 25 Ml/d by 2012 and to maintain continuous monitoring of the amount abstracted.
5.1.3 Flows in the Usk from Olway to Newbridge

The Usk from Olway to Newbridge is affected by the lower Usk abstractions for public water supplies as well as the abstractions for the Brecon canal mentioned earlier. The RBMP assesses the river flows as supporting good ecological status and the overall ecological status of the waterbody as good.

The abstractions from the lower river take an average of about 175 Ml/d at present, but this will rise to about 265 Ml/d when DCWW take their full licensed entitlement. This could have a substantial impact on fish migration, and river ecology.

The EA have refused to release details of the modelling which they undertook to assess the impacts on flows, so we have undertaken our own modelling of the moderately dry year of 2006. We have allowed for releases of up to 26 Ml/d from the upper Usk dams during droughts, abstraction of 50 Ml/d to the canal at Brecon and up to 12 Ml/d from the Afon Crawnon. We have modelled two scenarios:

- Annual abstractions for public water supplies in 2006, as supplied by Welsh Water. These show that summer flows were reduced by up to about 30% and the recession of minor spates were also reduced by up to 35%.
Abstractions of the fully licensed amounts. The impact of this on flows downstream of Llantrisant are shown in Figure 21:

Figure 21 – Modelled flows downstream of Llantrisant in 2006 with full licensed abstractions

In WUF’s opinion, abstractions of the amounts illustrated in Figure 18 are likely to have a significant detrimental effect on migratory fish and the general river ecology. The effect would be more marked in an extreme drought. Therefore, we are surprised and concerned that EA have concluded in the draft RBMP that flows are at present sufficient to support good ecological status.

From the brief summary details that EA have given us of the outcome of their Habitats Directive review of consents, we are aware that the EA have deviated from their standard requirement of flows to meet Habitats Directive requirements on the grounds that salmon are already considered to be at favourable conservation status under the existing flow regime. Details of proposed changes to licences are said by EA to have been included in “the site action plan and associated technical reports”, but these have not been made available to WUF.

The required flow improvements are covered by a single measure in the draft RBMP – “Assess the impact of abstractions on SAC features, including salmon informing licensing”. This is to be completed by 2012. The steps needed to achieve actual improvements in river flows would probably be:

- Obtain government approval of review of consents
• Issue review of consents to Welsh Water and British Waterways advising them of pending licence changes and setting a time table for achieving them

• Welsh Water to revise their Water Resource Management Plan to accommodate required licence changes

• Welsh Water to revise their AMP5 business plan to accommodate licence changes

• Welsh Water to undertake design studies of replacement sources to allow licence modifications to take place whilst enabling public water supplies to be maintained

• Welsh Water to obtain consents for replacement sources

• Construct and commission replacement sources

• Finally, reduce existing abstractions to new licensed amounts

• Hands off requirements for all abstractions??

We think it unlikely that all of the above can be achieved by the date of 2012 given in the draft RBMP (unless the proposed licence changes are trivial). Therefore, we think that the achievement of acceptable flows should be broken down into several measures in the draft RBMP, with separate completion dates for each stage.

**Recommendation: the draft RBMP should provide details of the sequence of measures need to achieve good flows in the Usk, with separate completion dates for each stage.**

Without access to the details of the proposed abstraction licence changes, programmes for their achievement, site action plans and associated technical reports, we do not feel that there is sufficient information to respond to the RBMP consultation, noting the importance of flows and the doubts we have expressed above using the evidence of Figure 21. Therefore, we propose that the full background information should be made available, as provided for in Article 14 of the EU Water Framework Directive, and that the date for receipt of consultation responses should be put back to allow consultees to respond to the latest available information.

**Recommendation: the draft RBMP should be up-dated now to include the outcomes of the Habitats Directive review of consents for the Usk. Full details of site action plans, associated technical reports and supporting modelling should be made available to consultees on request. The date for receipt of**
consultation responses on this topic should be put back to allow consultees at least 6 weeks to assess the newly available information and respond.

5.1.4 The River Wye from Hampton Bishop to confluence with Kerne Brook

This water body stretches about 30 km above and below Ross-on-Wye and is affected by the abstraction for the Wye/Usk transfer. In the draft DBMP the ecological status is assessed as moderate on the grounds of phytobenthos. The status of river flows is “still to be determined – assessment insufficiently advanced”.

Since publication of the draft RBMP, the Habitats Directive Review of consents has been completed. From a summary of the outcomes that EA have provided, it appears that substantial abstraction licence changes are proposed. However, no details of the licence changes have been provided and we have not seen the site action plans or associated technical reports. WUF welcomes the news that substantial changes are to be made to abstraction licences. However, we think that the draft RBMP should now be up-dated to allow for this very important late information.

As for the river Usk in section 5.1.5, we think that the draft RBMP should include a sequence of measures needed to achieve acceptable flows with separate target dates for each.

As for the lower Usk, we propose that the full background information should be made available, as provided for in Article 14 of the EU Water Framework Directive, and that the date for receipt of consultation responses should be put back to allow consultees to respond to the latest available information.

**Recommendation:** the draft RBMP should be up-dated now to include the outcomes of the Habitats Directive review of consents for the Wye. Full details of site action plans, programmes for their achievement, associated technical reports and supporting modelling should be made available to consultees on request. The date for receipt of consultation responses on this topic should be put back to allow consultees at least 6 weeks to assess the newly available information and respond.
5.2 Classification, subsequent identification of measures and the cost effectiveness and confidence levels of alternative local measures in the Humber catchment.

Draining the eastern flank of the Herefordshire plain the Humber is a tributary of the Lugg, that is severely impacted by chronic ‘diffuse’ sediment pollution from 3 large soft fruit growers and extensive winter planted arable on sloping friable soils.

The catchment is split into 3 water bodies and classification is shown in table 8:

<table>
<thead>
<tr>
<th>Water body</th>
<th>Name</th>
<th>Status</th>
<th>Biological data</th>
<th>Failing elements</th>
<th>Justification for non-attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>36800</td>
<td>Holly brook</td>
<td>Moderate</td>
<td>Fish</td>
<td>Fish (mod)</td>
<td>Technically infeasible-cause unknown</td>
</tr>
<tr>
<td>41920</td>
<td>Humber (source-Holly)</td>
<td>Bad</td>
<td>Fish</td>
<td>Fish (bad)</td>
<td>Technically infeasible-cause unknown</td>
</tr>
<tr>
<td>36770</td>
<td>Humber (Holly conf. to Lugg)</td>
<td>Good</td>
<td>N/a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The classification of 36770 excludes biological data. Given that the two upstream catchments are both failing for biology alone, on the assumptions provided for contiguous classification, 36770 has been misclassified and should be moderate.

The catchments are relatively small with a limited number of landowners.

A walk around the footpaths criss-crossing the Holly brook was illuminating. The poor agricultural practices such as shown in figure X could be easily be attributed to 4 of the 10 holdings. The landowners in the upper reaches either had well buffered watercourses and appeared to be in Higher level Scheme or had fields left as a rough stubbles that had yet to be made into a seedbed. On the southern flank the catchment appears to be used for race horses and is mostly down to permanent pasture having no impact on the...
watercourse. Whilst this provides a great opportunity to target action for maximum benefit, it is not unique and a walk around almost any waterbodies would reveal similar situations.

**Recommendation: local information should be utilised to target action at waterbodies where improvements during the first cycle are feasible and likely.**

The impacting farms are clearly defined and are all receiving Single Farm Payment, which means they will have completed a soil management plan intended to raise awareness of the dangers of compaction and capping and their payment is dependent on its implementation.

Catchment sensitive farming has been running for 2 years within the Lugg and whilst it has had some successes it would seem time for cross compliance legislation to be used to encourage uptake of the catchment sensitive farming ideal.

We believe that within the first cycle of the WFD it would be possible to bring these three water-bodies into either GES or as the failing element is fish, moderate, but with a revised justification of non-attainment of natural conditions-ecological recovery time.

**Recommendation: existing GAEC legislation should be used to ensure all farmers receiving SFP are farming in a complaint and sustainable manner.**
5.3 Incorporation of SAC legislation and existing monitoring data within the plan through the treatment of Llangorse Lake and the out flowing river Llynfi.

Llangorse Lake is a SAC designated eutrophic mid Altitude Lake on the western edge of the Wye catchment. Flanked by the Eppynt Massif to the West and the Black Mountains to the south it forms a natural pass between the Wye and Usk catchments.

The outflowing river Llynfi is part of the Wye SAC and split into 2 WB’s. With two tributary WB’s (WB 36920 and 36970) which are both are in GES.

In this case we believe the classification and the failing elements clearly define the pressure. Excessive nutrient levels are raising the trophic status of the lake creating temporal algal blooms which in turn reduce oxygen levels in the outflowing streams affecting invertebrates and fish numbers. In the case of WB36900 this is exacerbated by the outflow of Bwlch STW which was rerouted to discharge downstream of the lake 6 years ago. All water bodies are forecast to remain moderate status by 2015. The SAC features of water bodies are currently in unfavourable conservation status.

<table>
<thead>
<tr>
<th>Water body</th>
<th>Name</th>
<th>Ecological status</th>
<th>Failing elements</th>
<th>Justification for non attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>40067</td>
<td>Llangorse Lake</td>
<td>Moderate</td>
<td>Invertebrates</td>
<td>Technically unfeasible-cause unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phytobenthos</td>
<td>Technically unfeasible-cause unknown</td>
</tr>
<tr>
<td>36900</td>
<td>Llynfi (source to Dulas)</td>
<td>Moderate</td>
<td>DO (bad)</td>
<td>Objective still to be determined – Assessment insufficiently advanced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fish (Mod)</td>
<td>Technically unfeasible-cause unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Invertebrates</td>
<td>None given</td>
</tr>
<tr>
<td>36950</td>
<td>Llynfi Dulas</td>
<td>Moderate</td>
<td>Fish</td>
<td>None given</td>
</tr>
</tbody>
</table>

Table 9. summary of classification for the Llynfi system. Chemical status was not assessed in any of these three WB’s
The justifications for non attainment is unsatisfactory on a number of levels. Firstly in two cases, no justification has been given for SAC WB’s.

Secondly all three WB’s are designated Natura 2000 sites and so should achieve GES by 2015 under Article 4 (2) of the WFD and the plans stated aims as shown in section 3.4

Thirdly a detailed study by CCW which reported last year to the EAW, has quantified the size and main sources of the nutrient and sediment loads. This study is included in the annex.

The most important findings from this report were:

- The rerouting of Bwlch STW has reduced by P loadings by 30% and provides an opportunity for recovery of the ecology of the lake
- The lake is nitrogen limited for 6 months of the year.
- Phosphorus loads to the lake need to be reduced by about 15 per cent, and nitrate loads need to be maintained at or below the current level, for the lake to achieve GES.
- Nutrient export co-efficients varied considerably between the 7 sub-catchment areas providing an opportunity for spatial targeting of measures as shown in table 10.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Min (kg/ha/year)</th>
<th>Max (kg/ha/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble Reactive Phosphorus</td>
<td>0.19</td>
<td>1.34</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>0.37</td>
<td>1.65</td>
</tr>
<tr>
<td>Total N</td>
<td>21</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 10. Range of variation in nutrient contribution between catchments draining into Llangorse lake

- More than 80 per cent of the nutrients are delivered to the lake by 2 of the 7 inflowing streams.
- Sub-surface flow may significantly influence stream flow and nutrient delivery to the lake; if so, the water and nutrients may enter the lake from a catchment area wider than that defined on the basis of surface topography.
- The lake appears to have a much shorter retention time than previously calculated.
- Nutrient levels in the sediments are not likely to slow the recovery of the lake once appropriate management is in place.

The report concluded that Llangorse Lake is “worth investing in as the prospects for recovery are good if appropriate measures are taken to reduce nutrient delivery from the catchment” thus making the given justification for non-
attainment of “Technically unfeasible-cause unknown” invalid and its use here unacceptable.

Recommendation: use the finding of the CCW report to develop a firm but fair targeted farm campaign which includes the use of cross compliance legislation to eliminate non GAEC complaint practices
6 Conclusion

6.1 Classification

Identifying the main reasons why the majority of water bodies are not achieving good status is a key first step to developing a plan to solve the problems.

Whilst the plan states clearly that classification is a merely ‘one part of the base of evidence that will help us to focus our efforts on those water bodies where we need to make a difference’, it provides the measure by which the success of failure of the plan will be judged and guides action.

We have some serious concerns over classification and the monitoring network that has been used, which question the basic efficacy of the plan.

At sub catchment level the classification process has identified the principal pressures, but at a water body level many pressures appear to have been missed by the classification process.

The process of using UK TAG guidelines to set a baseline by river type makes sense and is a welcome improvement on previous assessment methods but relies on the inputting data being up to date and relevant.

Recommendation: Classification must be correct before the production of the final plan and in the event of uncertainty a date for classification submitted instead.

6.2 Ambition

To plan for no additional WBs to attain good ecological status in 2 Natura 2000 designated sites for 12 years is something that needs correcting in the final plan.

This is emphasised by the fact that at a local level if the measures detailed in the plan are enacted many water bodies will be likely to reach GES and we believe that the lack of ambition is a factor of the need to be 95% certain to make a decision. This is a very difficult test to achieve prior to the event in ecological terms.

Likely candidates for improvement include
- WB’s failing due to barriers for fish that have had fish passage improved or are scheduled to.
WB’s affected by acidity but are treated by liming
- WB’s failing due to chemicals that have already been withdrawn from sale such as Cypermethrin.

In the case of the Wye and Usk this extends to the 18 listed in table 8 below

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Name</th>
<th>Current status</th>
<th>Failing element</th>
<th>Reason for change (date action completed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>33020</td>
<td>Cynrig</td>
<td>Poor</td>
<td>Fish</td>
<td>Fish pass (2006)</td>
</tr>
<tr>
<td>39990</td>
<td>Rhiangoll</td>
<td>Poor</td>
<td>Fish</td>
<td>Fish pass (2005) Habitat restoration (2006)</td>
</tr>
<tr>
<td>40020</td>
<td>Ysgir</td>
<td>Poor</td>
<td>Fish</td>
<td>Misclassification? Habitat restoration (2006)</td>
</tr>
<tr>
<td>40040</td>
<td>Bran</td>
<td>Mod</td>
<td>Fish</td>
<td>Habitat restoration (2007)</td>
</tr>
<tr>
<td>33070</td>
<td>Tarell</td>
<td>Poor</td>
<td>Sheep dips</td>
<td>Inverts now high, historic problem</td>
</tr>
<tr>
<td>40060</td>
<td>Honddu</td>
<td>Mod</td>
<td>Cypermethin</td>
<td>Withdrawn from sale (2008)</td>
</tr>
<tr>
<td>42230</td>
<td>Wye (Tarennig-bidno)</td>
<td>Poor</td>
<td>pH, Fish, Zinc</td>
<td>Action in scenario A on Zinc, Liming</td>
</tr>
<tr>
<td>42250</td>
<td>Wye (Elan-Ithon)</td>
<td>Poor</td>
<td>Fish, Zinc</td>
<td>Misclassification? Action in scenario A, recovery in salmon population</td>
</tr>
<tr>
<td>42350</td>
<td>Tarennig</td>
<td>Poor</td>
<td>pH</td>
<td>Liming (2003-)</td>
</tr>
<tr>
<td>42330</td>
<td>Bidno</td>
<td>Poor</td>
<td>Fish</td>
<td>Liming (2003-2008)</td>
</tr>
<tr>
<td>42160</td>
<td>Llaethddy</td>
<td>Mod</td>
<td>Fish</td>
<td>Habitat restoration (2009)</td>
</tr>
<tr>
<td>41901</td>
<td>Irfon (Source-gwesyn)</td>
<td>Poor</td>
<td>pH, Fish</td>
<td>Liming (2006-)</td>
</tr>
<tr>
<td>36760</td>
<td>Irfon (gwesyn to Cledan)</td>
<td>Good*</td>
<td>pH, Fish</td>
<td>Liming (2006-)</td>
</tr>
<tr>
<td>36960</td>
<td>Digedi</td>
<td>Mod</td>
<td>Fish</td>
<td>Fish pass (2008)</td>
</tr>
<tr>
<td>42020</td>
<td>Lugg (Beddfa to cascob)</td>
<td>Mod</td>
<td>Fish</td>
<td>Fish passes (2006-2012)</td>
</tr>
<tr>
<td>42010</td>
<td>Lugg (Cascob to Norton)</td>
<td>Mod</td>
<td>Fish</td>
<td>Fish passes (2006-2012)</td>
</tr>
<tr>
<td>36620</td>
<td>Arrow (Gladestry to Gilwern)</td>
<td>Poor</td>
<td>Fish</td>
<td>Fish passes (2006-2012) Upstream Habitat works on gladestry</td>
</tr>
</tbody>
</table>

*mis-classification

These would represent a 43% increase in the number of water bodies attaining good status across the two catchments. Is the plan and its ambition is being hamstrung by unrealistic confidence levels?
Further the plans lack ambition within the key area of land management, despite the creation of the Catchment Sensitive Farming initiatives as a forerunner to the WFD. We are very concerned that the plans appear to lack any real ambition to tackle agricultural ‘diffuse’ pollution issues.

Investing a fraction of what is being required of the water companies into a mix of supportive, targeted grants and additional cross compliance inspectors, would bring major improvements to ecological status and considerable cost savings in water treatment. It should be the cornerstone of the plan.

A significant number of Natura 2000 protected areas require the control of diffuse pollution to reduce enrichment and sedimentation to attain FCS. These have deadlines for achieving the objectives before 2015. This will clearly be unachievable without more action on diffuse pollution and within the rest of the RBMP. We expected the plans to make a significant contribution to the case for further diffuse pollution control, but this does not appear to have happened.

**Recommendation: Focus limited resources on SAC designated Water bodies during the first cycle to comply with the WFD reduce risk of infraction**

**Recommendation: We suggest higher aspiration first cycle improvements based on variety of confidence levels**

**6.3 Identification and targeting of measures**

The costs of improved ES are huge and prohibitive in current climate, but we are left with a requirement to reach GES in 88 of the Wye and Usk’s waterbodies by 2015 due to the designations on those watercourses.

There is an imperative to make decisions on current and relevant data and where obviously lacking, undertake the necessary investments to ensure that measures are as targeted and cost-effective as possible.

A failure to adequately understand pressures on freshwater systems poses risks to all parties: to affected sectors, who may have to bear unnecessarily high costs; to ecosystems, that ultimately cannot be restored to good status unless the cause of failure is identified; and to government, with infraction risks if progress to good status objectives cannot be achieved.
WUF believe that effort is concentrated on selected ‘easy’ WB’s and SAC’s to ensure that progress to 100% GES or GEP is made within the first cycle. Ideally these should be headwaters.

Measures need to be more specific and targeted at the appropriate level: the measures proposed are lacking in clear and measurable targets. They need to be made more specific, measurable, achievable, relevant and time limited.

Ideally the primary limiting factor to the attainment of GES should be targeted, but this should not stop work on factors that will prevent the attainment of GES taking place.

**Recommendation:** Measures need to be tightened up and their scope and scale define to provide reportable outputs.

6.4 As a consultation document

The RBMPs are difficult documents to respond to, due in large part to their considerable size and the area that they cover. Their complexity and the sheer volume of information they contain mean that to make meaningful comments, a significant level of resource is required. Whilst a statutory agency is able to find the resource to do this, we believe that other organisations and the general public will struggle to comment or contribute to the level of detail they would like to.

**Recommendation:** for future planning rounds, the EA commit to smaller catchment based plans that allow stakeholders to contribute in a meaningful way at both pre- and post publication stages. The RBMPs are a statutory requirement, and consultation on them is of course required, but our view is that detailed working and planning should adhere to the ecosystem approach and be undertaken at the appropriate scale.

7. Last word

The water framework directive offers the greatest opportunity we could have dreamt of to improve the lot for our rivers. Our hopes depend in part on the accuracy, ambition and subsequent implementation of these plans. We are extremely grateful to the RSPB and WWF for the opportunity to assess in depth the Severn River Basin plan and hope this report will go some way to assisting the delivery of our mutual aims.
APPENDICIES

- Reference list
- Acronyms used
- Terms of reference
- Catchment map showing locations referred to in report
- Information received from EA in response to questions

References list


- SN Lane, SC Reid, V Tayefi, D Yu and RJ Hardy (2006) “Climate change, land management and dealing with coarse sediment delivery problems as catchment-scale and diffuse” Department of Geography, University of Durham

- Ormorod S, and Clews E. (2005) pers comm


With thanks to John Lawson of ARK for assistance on the abstraction issues.
Acronyms and abbreviations used

BW – British Waterways
CCW – Countryside Council for Wales
DCWW – Dwr Cymru Welsh Water
EAW – Environment Agency Wales
GAEC – Good Agricultural and Environmental Condition
FCS – Fisheries classification scheme
RCS – River classification scheme
RBD – River Basin District
RBDMP - River Basin District Management Plan
RSPB – Royal Society for the Protection of Birds
SAC – Special Area of conservation
SFP – Single Farm Payment
SRP – Soluble Reactive Phosphorus
STW- Sewage Treatment Works
SWMI- Significant Water Management Issue
TP- Total Phosphorous
WFD – Water Framework Directive
WB – Water body
WUF – Wye and Usk Foundation
WWF – Worldwide fund for nature
Catchment map showing locations and rivers referred to in text.
Terms of reference

**Aim of project:** To ‘ground-truth’ and critique in detail the approach taken to river basin planning by the Environment Agency.

**Outline of proposal:** Within a clearly defined catchment area to consider in detail:

- The delineation of water bodies. Do you agree with the water bodies identified? Are any missing? Do you consider any should be disaggregated or aggregated? (given WFD rules on this)
- Monitoring network and risk assessments. The classification is made based on information from monitoring and on assessment of risk from a variety of pressures. Is the monitoring network adequate to pick up all the threats to water status, or is it failing to identify some? What additional monitoring, if any, is recommended?
- The proposed classification of water bodies into different status classes. Using EA data and any additional data available, do you agree with the classification made, and the levels of confidence associated with each status label? Is there any evidence of mis-classifications?
- The proposed measures. Do you agree with the proposed measures to bring the water body up to good status? Are there any other measures we would suggest, that we do not think are disproportionately costly or technically infeasible?

**Timescale:** Revised to complete on 18th May 2009

**Final product:** A comprehensive document, including summary and recommendations, data and analyses. The information should be sufficient that it can be used to form two key documents. Firstly it should be adequate to be used for submission as a response to the RBMP consultation, and secondly it would form the basis of national lobbying document, combined with another similar report from a different catchment.

**Management:** Ralph Underhill and Sarah Oppenheimer at the RSPB would manage and oversee this work. Ralph will serve as the first point of contact.
Questions in normal font, *EA response in Italics*

1. **Introduction**

The Wye & Usk Foundation is requesting information to help with their response to the Severn region WFD consultation and to assist RSPB as one of a small number of case studies to support their response at the national level. The information will help WUF to formulate their views on:

- the adequacy of existing monitoring and proposals for future monitoring
- the appropriateness of the classification of water bodies (both overall ecological classification and individual ecological parameters)
- the extent of risks
- the adequacy of measures

in order to provide a constructive response as early in the consultation window as possible.

1. **General points across the plan.**

1.1 Please can we see the justification that allows for no improvement in SAC listed water bodies currently in moderate or bad ecological status by 2015. We understand, as is listed in annex D, that member states are required to achieve compliance with the SAC standards and objectives by December 2015 and that “where a protected area also has a surface water objective the most stringent objective applies”.

*Where a water body overlaps with a WFD protected area, such a WFD n2k protected area, the most stringent requirement on the water within that overlap applies. In the draft RBMPs the WFD water body objectives are shown in Annex B and the protected area objectives in Annex D. It is necessary to refer to both Annexes to understand which is the most stringent obligation. We are looking to improve the cross-referencing in the final RBMP. It is worth noting that in some cases FCS may be met in an N2K site but GES might not. For example if action to improve salmonids is a requirement to reach FCS in a particular n2k protected area, this may not satisfy the full requirements of ‘good fish’ under GES which takes into consideration a much broader range of fish species (and therefore an alternative objective for that water body may be set if justified even though the site is at FCS). We continue to work with Natural England and CCW to establish any additional measures that are required to meet the 2015 deadline that the WFD introduces for WFD n2k protected areas. Details on these will be included in the final RBMPs and will be factored where appropriate into the predicted improvements within associated water bodies.*
1.2 Is it the intention for the final plan to have all the measures in one document such as is the case for the Solway RBDP, rather than currently splitting them across 3 locations (Summary, Annex B, Annex D)?

*During meeting: Not at present*

1.3 We are unable to determine any order to the listing of water bodies within annex B, is there one?

*During meeting: No*

1.4 Please can you show us where in the annexes is shown the monitoring network for invertebrates and sheep dips.

*During meeting: Sheep dip is not included in plan, this is mostly historic data from previous one off surveys to identify scope of problem and target remedial action.*

1.5 Is there any intention to update any of the information and justifications, or to include any additional monitoring within the plan before the end of the consultation period?

*During meeting: The intention is that HMWB assessment and re-categorisation of fish will both be updated during the consultation process*

2. Selected queries relating to the monitoring network

2.1 What monitoring is proposed for abstractions to supply the Brecon and Monmouth canal (the main abstraction at Brecon and the abstractions from the Afon Crawnon and other tributaries)?

*There is no specific monitoring being proposed by the EA, however BW have installed acoustic flow measuring equipment on the River Usk at Brecon intake to monitor their abstraction. From discussions with BW during the past few years, we understand that they do not monitor the abstraction on the Crawnon and therefore have very little understanding of the amounts being abstracted at this site.*

*We would be expecting BW to monitor this site (as well as their other smaller sources) as they are likely to have to provide a justification of need when they apply for an abstraction licence, although it is still unclear exactly how and when this process will take place.*

2.2 What extra monitoring is proposed that will allow for the guiding of action where as in case of the Edw (WB’s 37060, 37130, 42200, 37140, 42370) the lower reaches fail for sheep dip but none of the upstream bodies have been tested?
During meeting: None at this stage

2.3 Is there anywhere in the plan where obvious extra monitoring requirements to guide action such as this is detailed?

During meeting: No

3. Queries relating to classification of status:

3.1 In the case of WB3679 Lugg (Arrow to conf. with Wye) please can we have an explanation why the EAs monitoring data which shows failures for a wide suite of agricultural pesticides appears not been used in the classification of status?

Where you thinking a failure is anything above 0.1ug/l as this is the standard benchmark concentration that people routinely use when looking at pesticide concentrations. It has no relevance to WFD surface water good status / ecosystem risk - it’s regulatory relevance is in relation to WFD Article 7 drinking water objectives. The draft RBMPs only looked at EQS limit (i.e. ecosystem) failures for the annex 8 and 10 substances. Article 7 was not addressed, although it will be in the final plans.

3.2 Please can we see the monitoring data and subsequent analysis to explain the attributing of the following status and confidence levels?

WB 33030 Afon Hydfer – Fish (Good, Medium)
WB 32990 Afon Gavenny – Fish (Good, Medium)
WB 33010 Afon Menasgin - Fish (Good, Medium)
WB 26940 Olway Brk – Fish (Good, High)
And,
WB 33020 Afon Cynrig - Fish (Poor, High)
WB 32960 Afon Clesifer – Fish (Poor, High)
WB 33070 Afon Tarell – Fish (Poor, Medium)
WB 40040 Afon Ysci – Fish (Poor, High)
WB 33050 Afon Senni – Fish (Poor, High)

During meeting: problems with fish acknowledged and a re-categorisation process is underway. Analysis and breakdown to follow after re categorisation complete

3.2 Over half of the water bodies attributed good status within the Wye and Usk are lacking any biological elements. To help us understand, please explain the modelling and subsequent rationale that has been used to classify WB 36770 Lower Humber as good in the absence of any biological data when the upstream section WB 41920 (and every other stream in the English part of the Lugg catchment) is classified moderate or poor when fish have been included.
Because we don’t monitor the biology of all rivers we sometimes have to use water quality measurements to predict current ecological status. The standards for substances such as ammonia, phosphorus and dissolved oxygen are designed to protect the aquatic life. There are also safety factors built into the standards. So, if these measurements end up as good status we can assume that biology is also good. Over time our biological monitoring will move to cover water bodies that currently lack data. We will move biological monitoring as a matter of priority if you, or the EA, come to the conclusion that there are problems in these water bodies that are not being noted.

3.3 We are concerned that the elements included in classification often do not reflect the pressures on the waterbody. A case to point is WB 36890 Wriggle brook which drains the Ross sands in the middle of the potato farming zone and as such has elevated levels of fine sediments. Please explain how it has been attributed good status in the absence of an element (Fish or Invertebrates) that would reflect the degree of impact of the probable principle issue?

Collection of biological data from 2007-2009 has been designed to cover water bodies at risk from the following pressures: organic enrichment, nutrient enrichment, abstraction and chemical pollution. In Wales we also regard acidification and minewater discharge as priority pressures. So, as yet, we don’t have monitoring in the right places to pick up impacts from sedimentation. Once we’ve dealt with the priority pressures in the first cycle we can then move on to prove and then manage the impacts of sedimentation.

3.4 Please can we see the data and reasoning used to classify the quality and dynamics of flow in the Usk from the Olway Brook confluence to Newbridge (reference 26890) as “support good”, including the methodology used in the classification (eg the appropriate section of a UKTAG guideline), the detailed calculation and reasoning, and the detailed data used in the assessment? Why is the confidence in the assessment low? What investigations are planned to improve the quality of the assessment?

The assessment method is described in the attached document “SW Flow Compliance Method Summary 150208”. Net flow impacts in each water body have been compared with the Environmental Flow Indicator at Q95 which is the same threshold as UKTAG flow condition limits. The natural low flow (QN95) at the downstream point of water body GB109056026890 is estimated to be 449.6Mld and the EFI flow threshold is 90% of this = 404.6Mld. The recent actual modelled low flow at Q95 is considerably higher than 404.6Mld. The assessment was carried out using the Environment Agency water resources GIS model and is subject to the limitations described in section 4, therefore flow compliance results have only been assigned high confidence if flows are far above (or below) the relevant EFI threshold. We have already made improvements to the GIS model since the publication of draft RBMPs and further improvements will be made over the next 3 years which will give more confidence in future assessments.

4. Queries relating to classification of flows:
4.1 We fail to understand how the quantity and dynamics of flow remain undetermined for the main Usk water bodies from the Senni confluence to the Olway Brook confluence and for the Caerfanell (water bodies 40081, 40082, 40083 and 33000) despite being under assessment for the Habitats Directive review of consents for several years? Further why will flows remain undetermined by 2015? Please can we see a detailed programme for investigations for assessing the quantity and dynamics of flow, with planned interim and final completion dates?

In the main Usk water bodies from the Senni confluence to the Olway Brook confluence, and for the Caerfanell, flows are considerably influenced by releases from the reservoirs upstream and are not well characterised in the GIS model as it stands. For such water bodies with ‘managed flows’ instead of the GIS assessment we will rely on the ecological potential assessments which have been completed recently. The results for these reaches are ‘moderate or worse’ ecological potential because appropriate mitigation measures are not in place. We are in the early stages of designing a national programme of work to investigate the ecological impacts of managed flows. This will build on the knowledge we have already gained from studies relating to HD RoC. At the same time we will improve the representation of managed flows in GIS and in the CAMS ledgers.

4.2 Please can we see full details of the current state of the assessment of flows in the Usk from the Senni confluence to the estuary for the Habitats Directive review of consents? We would like to see details of

The Stage 3 documentation and the Stage 4 Environmental Outcomes document (both of which were been provided to WUF in March 2008), summarise the HD RoC impacts in the River Usk.

It should be noted that the RoC results are based on the fully licensed scenario, compared to the recent actual scenario being used in the WFD. Both differ significantly, especially in the lower River Usk, where the uptake of abstraction is significantly less than the licensed volumes. The data provided to the WUF in March 2008 (River Usk AP RAM Results) indicated this difference.

This difference is important when comparing the flow statuses quoted in the HD documentation compared with that in the WFD documentation.

- the method used to determine target flows (eg references to appropriate sections of UKTAG guidelines)

We provided the WUF with a report which outlines the derivation of the recommended river flow objective for SAC rivers (HD ERF) in May 2008

In terms of the WFD flow standards (Ecological Flow Indicators or EFIs), there are several reports on the O drive that make reference to the relevant UK TAG guidance notes and
reports. The “UK Environmental Standards and Conditions, Phase 1 (August 2006) and Phase 2 (June 2007) can be downloaded from www.wfduk.org

- detailed specification of the hydrological model used including schematic maps, imbedded control rules, input data for flows and demands

This relates to a previous request following a meeting between EAW and WUF in April 2008: “EAW to send a table showing the impact of options modelled by Halcrow on deployable output from the Wye/Usk system, plus a description of each option”.

We explained then that we could not provide them with exact details of the preferred abstraction review option(s) nor of the resulting impact upon DCWW’s Deployable Output, as these were still being discussed with DCWW.

We also explained that we expected DCWW to include details of the implications of the Review of Consents in their draft WR Plans and suggested that the consultation phase of the draft WR Plans would be an appropriate time and opportunity to express their views and suggest possible alternative solutions to any reductions in resources arising from the Review of Consents.

- sample output data and hydrographs of natural flows at key locations in critical years, flows after historic abstraction and flows after abstraction under proposed new abstraction rules

We provided the WUF with spreadsheets containing a comparison of the fully licensed scenario, the historic actual scenario and the proposed new conditions from the WR modelling for both the Usk and Wye in May 2008

- the latest reports on the output from these investigations, including consultants’ reports and internal Environment Agency reports.

We have not yet provided the WUF with the Site Action Plans for the Wye and Usk, although we did provide them with a brief summary of the proposed changes in a presentation following a meeting held in April 2008.

Until the Site Action Plans are finally QA’d and signed off, we cannot provide these.

4.3 Please can we see the data and reasoning supporting the classification of hydrology in the Afon Crawnon (reference 32970) as high and the classification of quantity and dynamics of flow as good, including the methodology used in the classifications (eg the appropriate section of a UKTAG guideline), the detailed calculation and reasoning, and the detailed data used in the assessments? Why is the confidence in this assessment high despite the absence of reliable monitoring of flows in the stream or abstractions to the Brecon to Monmouth canal?
The Afon Crawnon GB109056032970 has been mis-classified for hydrology because the licence-exempt abstractions for Brecon & Monmouth Canal were omitted from the GIS model. This is an oversight and the result will be corrected for the final RBMP. Some exempt abstractions are already in the GIS model and when we licence others according to timescales set by Defra, they will be entered in CAMS ledgers and loaded onto the GIS.

SE Area did not include this abstraction in their HD RoC or CAMS assessments as they could not obtain any information from BW on the volumes being abstracted. As it wasn’t included in CAMS the impact was not considered in the initial GIS model.

“SW Flow Compliance Method Summary 150208” includes in the assumptions and uncertainties that “Information on currently exempt activities is still being gathered and when included may change some of the results”.

5. Queries relating to justification for not achieving good status:

5.1 Please explain the rationale that led to ‘cause unknown’ being given as a justification for WB 40067 Llangorse lake not attaining good status by 2015 despite the existence of extensive monitoring by CCW which appears to have identified the cause.

5.2 Please explain why the recent recovery of the fishery on the Cynrig (WB33020) following construction of a fish pass in its lower reaches appears not to have been taken into account in both the predicted status (poor by 2015) and justification given for non attainment technically infeasible – cause unknown.

Meeting response: data used in assessment taken up to 2002-06, data showing recovery since them will not have been included.

5.3 What are the disproportionally expensive measures in the case on the Duhonw (WB 37050) for P, Tarell (WB 33070) for Cypermethrin and Diazonon? What if any cheaper alternatives have been investigated?

5.4 Why has no justification been given for WB 36950 Afon Llynfi failing to achieve good status by 2015?

6 Queries relating to measures:

6.1 Please can we see full details of the measure on Page 823 of Annex B described “Assess the impact of abstractions upon SAC features...”? Whilst we acknowledge that the Natura 2000 requirements are to have the measures in place by 2012 should the investigations not be at least partially completed for the final RBMP this year, so that a start on measures for actual flow improvements can be made in the first cycle RBMP?
6.2 Why are there no planned measures for follow up actions by Welsh Water after completion of the assessment of the impact of abstractions? What investigations are planned to be carried out under their AMP5 business plan? Please can we see a full programme of measures to achieve good quality and dynamics of flow by 2015? If this is not considered possible, please can we see the justification and a programme for investigations and projects to achieve good flow status?

A generic action “Natura 2000 sites Modification of Abstraction licences to ensure no adverse effect on site integrity” appeared in the Water Industry table in Annex C of draft RBMPs. At that time the PR09 programme had not been signed off so we did not specify the location of these sites. In final RBMPs we intend to list sites agreed for action in PR09.

The initial assessment of impacts on flows identified levels of non-compliance with the EFI. Water bodies that were identified as Band 3 non-compliant were put forward for investigation in the water company AMP5/PR09 period. There are no recent actual Band 3 non-compliant water bodies in the river catchments of the Usk and Wye and hence no WFD AMP5 investigations. Water body GB109056023840 Bettws/Malpas Brook has been flagged as being non-compliant in the Agency’s latest WRGIS model but this site is currently not being used by DCWW. The Agency needs to assess the flow and abstraction information that was used to determine the Band 3 non-compliance status for this waterbody.

We have however, included in the AMP5/NEP an abstraction impact investigation for the River Dore at Vowchurch, the details of which are currently being discussed with DCWW. The River Dore water body is Band 1 non-compliant and as such the investigation is being undertaken under the Restoring Sustainable Abstraction Program as a local driver site – i.e. no designation.

6.3 Why have no measures been included to address the recognised problem of high abstraction from the Usk, Crawnon and other tributaries to supply the Brecon to Monmouth Canal?

Meeting: Awaiting report of ROC process

As set out in response to 2.1, British Waterways have installed monitoring of their abstraction from the river Usk which will provide more information about the quantities abstracted. The final plan will include a measure associated with the licensing of currently exempt purposes (including navigation). The timescales for this process will be set by Defra (in association with the Welsh Assembly Government) and have not yet been set.

6.4 Repeat of 6.2

6.5 Why have EA/WUF partnership projects such as the SITA funded LARA project and the LIFE + ISAC project and others, not been included with A and C measure respectively?
6.6 Whilst there are catchment sensitive farming initiatives in place on the Lugg, Ithon, and Lower Wye, there does not seem to be any improvements in the water bodies in these targeted catchments. Please can explain why this is the case?

Wye & Usk Foundation
Submitted Feb 10 2009
Initial meeting 13th Feb 2009
First response