

Teifi and North Ceredigion Management Catchment Summary

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1. Background to the management catchment summary

This management catchment summary supports the current consultation on the updated river basin management plans. Along with detailed information on the Water Watch Wales website, this summary will help to inform and support delivery of local environmental improvements.

Natural Resources Wales has adopted the ecosystem approach. This means being more joined up in how we manage the environment and its natural resources to deliver economic, social and environmental benefits for a healthier, more resilient Wales. It means considering and regulating the environment as a whole, rather than dealing with individual aspects separately; weighing up and setting priorities for the many competing demands on our natural resources in a more integrated way. Partnership working is essential to achieve our ambition. By working together in this management catchment we will:

- understand the issues in catchments and how they interact
- understand how the issues are affecting the current local benefits and future uses of water
- involve local people, communities, organisations and businesses in making decisions by sharing evidence
- identify which issues to tackle as a priority.

The Water Framework Directive provides a major overarching framework for river basin management. The Floods Directive sets out a strategic approach to flood risk management planning. A flood risk management plan has been produced for consultation in parallel to the river basin management plan and can also be found on our website. The flood risk management plan details how we propose to manage flood risk across the river basin district by prioritising those communities that are most at risk of flooding and detailing the measures we intend to take to manage their risk.

The flood risk management plan and the river basin management plan will shape important decisions, direct considerable investment and action, and deliver significant benefits to society and the environment.

As part of the consultation we are asking you for your input on priority opportunities and how we can make these summary documents as useful and relevant to the management catchment as possible. Within the river basin management plan consultation documents are a number of consultation questions; these will provide a useful starting point to gather your ideas in order to improve not only this document but partnership options to ensure that we work together to provide the best environmental options. We encourage you to look at the river basin management plans and respond to the consultation questions which you can find on our website.

2. The Teifi and North Ceredigion Management Catchment



Figure 1. Teifi and North Ceredigion Management Catchment

The area covered by this management catchment summary includes the catchment areas of the rivers Rheidol, Ystwyth, Clarach, Aeron and Teifi . The area stretches from Ceibwr Bay, west of Cardigan, in the south-west to the feeder streams of Nant-y-Moch Reservoir in the north, and encompasses the western fringes of the Cambrian Mountains. The larger urban areas are the coastal towns of Cardigan and Aberystwyth and Lampeter, 10 miles inland on the Teifi.

The river catchments are varied and quite distinctive. The Rheidol and Ystwyth rise in the Cambrian Mountains and descend through rocky valleys, tracts of coniferous forest and, in the case of the Rheidol, a series of mountain lakes and reservoirs, before meandering through the glacial gravels, deciduous woodland and low lying pasture of the floodplain to the sea. The Rheidol is a regulated, heavily modified river, as part of the Rheidol hydroelectric scheme, with a single major tributary, whereas the Ystwyth is flashy and has numerous small tributaries. The Aeron has its source at Llyn Eiddwen and flows for some 17km to the sea at Aberaeron. The Clarach has the typical features of an upland river with exposed boulders, rapids and waterfalls in the upper reaches while in the lower reaches the river is characterised by riffles and pools. The Teifi, at 122km, is one of the longest rivers in South West Wales. Its source is Llyn Teifi in the Cambrian Mountains at an altitude of 455m AOD from where it descends steeply through moorland and forestry to the geologically and ecologically important basin of Cors Caron. The river continues through rural areas largely supporting dairy and mixed stock farms. Rocky, tree-lined sections are a feature of the catchment and a number of impressive gorges, particularly at Maesycrugiau, Alltycafan, Henllan and Cilgerran, add significant environmental and landscape value. The falls on the Teifi at Cenarth are a spectacular attraction under high flows, and are famous as a location for watching salmon leaping and elvers migrating.

The area is generally sparsely populated, but much of the historic development has occurred on the flat land adjacent to watercourses and the coast. It is therefore at risk from flooding and has experienced flooding in the past. Flood defences have been constructed at a number of sites and these defences now form an important part of the urban infrastructure. The Teifi valley is mainly rural with agriculture and forestry accounting for the majority of land usage. Large dairy units predominate in the lower reaches of the Teifi, with mixed dairy and livestock rearing present in the middle reaches. In the upper area, the poorer soil conditions restrict agriculture to livestock rearing on rough grazing and improved pastures.

There is little significant industry in the area, as it is largely agricultural. Dairy farming predominates on the coastal plain, while the uplands favour sheep rearing and forestry. A large part of the area is susceptible to acidification of surface water due to local geology and soils having poor buffering capacity. Most industrial activity is situated around Aberystwyth and Aberaeron, such as small timber treatment plants, quarries and industrial estates. In the Teifi catchment there are number of small hydropower installations and several water bottling plants.

Historically, industrial activity was more extensive and included metal mine works which extracted lead, copper, zinc and silver. These abandoned metal mines are largely located in the north of the area and upper Teifi and these have left a legacy of spoil tips, contaminated land and metalliferous contamination of watercourses, which impacts ecological quality.

The Rheidol, Ystwyth and Aeron all support salmon, sea trout and brown trout, however the Teifi supports one of the most productive salmon and sea trout fisheries in Wales, and coracle netting is still practised. There are also a number of thriving still water fisheries that have developed for trout and coarse fish. Commercial fishing for sea fish such as herring and bass, takes place and crab and lobster potting is practised along the coast.

Angling and tourism are increasingly important sources of income to the area, with visitors being attracted by the high quality of the landscape and countryside and the 13 EU designated bathing waters dotted along the coastline of Cardigan Bay, where bottlenose dolphins, porpoises and grey seals may be spotted. According to the Ceredigion County Council STEAM report tourism was worth £298 million to the local communities in 2011. The Teifi is a particularly beautiful river and is designated as a Special Area of Conservation. It flows through Cors Caron, an upland raised bog with a distinctive plant community and aquatic invertebrates unique to the area.

In February 2014, a Teifi and North Ceredigion management catchment workshop was held at Aberystwyth University. During this event the benefits of the catchment were captured. These included:

- Tourism
- Hydropower opportunities
- Culture and heritage features
- Natural beauty and landscape
- Biodiversity, wildlife and habitats
- Recreation and leisure opportunities
- Internationally recognised conservation features

We continue to work in collaboration with a range of partners and sectors in innovative ways so that we can achieve even more together. A flavour of some of the projects that have been delivered within this management catchment over the last 3 years together with projects in development are included as case studies through this document.

Case study – Salmonid Habitat Restoration Project

Afonydd Cymru with Teifi Rivers Trust received funding from Natural Resources Wales' 2012/13 Living Wales Fund to deliver 5 Habitat Restoration schemes along the Cerdin, a tributary of Afon Teifi in the Llandysul area.

The Cerdin was identified as having a moderate classification under the Water Framework Directive because of low densities of salmonoids and issues with diffuse agricultural pollution. Along this stretch cattle access to the river contributed to poaching and increased sedimentation. By providing controlled stock access to keep the cattle to a defined area and reducing time spent in the river the project aimed to fence along identified sections, add crossing points, drinking bays and swing gates.

Since the instalment of the habitat schemes the river bank has had an opportunity to naturally regenerate reducing the likelihood of bank erosion during high flows and helping reduce sedimentation which will keep more of the river's gravel beds free of sediment and available to spawning fish and therefore increasing the chances for salmonid spawning success.

All of this was achieved with the help of Dr Ian Thomas and considerable effort from the Teifi Rivers Trust volunteers.



Fencing work on the Cerdin. Photo credit: John Morris

2.1 Key facts

We use the term water bodies to help understand and manage the water environment. A water body is part, or the whole, of a river, lake, estuary, ground water or coastal water. The number and type of water bodies in the management catchment is shown in the table below.

Number of water bodies	Natural	Artificial	Heavily Modified	Total
River*	60	0	2	62
Lake	4	0	3	7
Coastal	3	0	0	3
Estuarine	1	0	1	2
Groundwater	7	0	0	7
Total	75	0	6	81

Table 1. Number and type of water bodies in the catchment

*River water bodies includes canals and surface water transfers

There are areas in the catchment where the water environment is recognised as being of particular importance, including rare wildlife habitats, bathing waters or areas around drinking water sources. These areas are known collectively as protected areas and are detailed in the table below.

Table 2.. Protected areas in the management catchment

Protected Area	Number
Bathing Waters	10
Drinking Water Protected Areas	14
Natura 2000 and Ramsar sites	11
Nitrate Vulnerable Zones	0ha
Shellfish Waters	0
Urban Waste Water Treatment Directive - Sensitive areas	0

3. Current Status of the water environment

We assess the condition of water bodies through monitoring which produces an annual classification. The current status for each water body is shown in figure 2. Note, since 2009, we have updated some of the systems we use to classify water bodies, including changes to some standards and water body boundaries.



Figure 3. The current status of the Teifi and North Ceredigion Management Catchment

Case study – Lampeter Dulas Fish Easement Project

The Afon Dulas is a substantial tributary located on the Teifi catchment. The Teifi supports an internationally re-known rod fishery for migratory salmonids. The Dulas is an important spawning tributary, flowing into the main River Teifi at Lampeter. Prior to the works, a disused railway bridge on the Afon Dulas at Olmarch, posed an almost total barrier to salmon, sewin and eels seeking to ascend the Dulas. The culvert obstruction is likely to have been a factor contributing to the reach being classified as 'Poor' under the Water Framework Directive (WFD).

The fish easement works, involve raising the downstream water level by means of 3 block stone pre-barrages formed into an upstream crescent shape to centralise flow. Each weir has a dropped stone in the centre to provide an obvious route for fish passage.

The combined effect of the weirs was to raise the tail water by 750mm, allowing fish to pass upstream without hindrance. By improving connectivity to a network of smaller tribs, spawning and juvenile habitat of approximately 4km has been made more accessible above the culvert. This project will help towards the Natural Resources Wales meeting it's WFD objectives.



4. The main challenges

We have carried out a programme of investigations to better understand the causes as to why water bodies are failing to meet the required standards. The results of our findings are summarised in Figure 3.





Our investigations have identified 16 river water bodies that are failing because of **abandoned metal mines**, these include water bodies in the Teifi, Ystwyth, Rheidol and Clarach catchments and another 10 that are very likely to be failing. **Agriculture and rural land management** is a reason for failure on 10 water bodies including Teifi, Melindwr, Aeron and Carrog and is very likely to be a reason for failure on 12 others. **Artificial barriers** which prevent fish migrating and reaching their spawning grounds are the reason for failure in two rivers including the Clettwr and Piliau and are very likely to be a reason for failure in the Arberth, Dulas and Mydyr.

Acidification from air pollution is a reason for failure in The Teifi Pools and in eight river water bodies in the uplands of the Ystwyth and Rheidol. There are three water bodies in the Rheidol where coniferous forestry is a reason for failure because the plantations exacerbate acidification. **Discharges from wastewater treatment works** are identified as a reason for failure on four water bodies including the Drywi. Other rivers in the Teifi and Rheidol catchments are very likely to have this as a reason for failure. **Unsewered domestic wastewater** (septic tanks) have been identified on four water bodies including the Carrog, Camddwr and Ystwyth. This is a problem particular to this area of Wales where many villages and properties are not on the sewer network The Rheidol is a heavily modified water body and the surface water abstraction for hydropower is a confirmed reason for failure for the Castell and Hengwm.

4.1 Workshop feedback on challenges

We need to work together to ensure the overall aims of the Water Framework Directive are met, in order to work together effectively we need to agree on the issues and solutions.

The following section includes some of the issues that were raised as part of the catchment workshop; however it is not a full list. All of the comments received will be taken into account and the following is just a flavour of these comments:

- Flooding.
- Forestry acidification.
- Rural land management and diffuse pollution from agriculture.
- Pollution from abandoned mines.
- Diffuse pollution from urban areas.
- Re-introduction of the European Beaver, Castor fiber.

Case study – Himalayan Balsam eradication project on the Ystwyth.

A project to eradicate Himalayan Balsam from the upper and mid sections of the Ystwyth is now in its 6th year, and considerable success has been achieved thus safeguarding the habitat at Grogwynion SAC and SSSI sites as well as restoring native flora on the undesignated sections of river. The programme is gradually working downstream with a view to achieving total eradication of Himalayan Balsam on the Ystwyth in the future. In addition, since 2012 the control of Japanese Knotweed has also been included in the project.

In conjunction with the removal of Himalayan Balsam and Japanese Knotweed, the project also involves raising awareness of these plants and their adverse impacts by encouraging the local communities to look for it, report it and help control it. This is being progressed by the production of posters, leaflets and press releases.

5. Objectives and measures

This section outlines what we are aiming to achieve and the proposed new measures that need to be put in place. We aim to develop a single integrated programme of measures by 2021 that meets Water Framework Directive objectives:

• Prevent deterioration in status

Water body status will not be allowed to deteriorate from the current reported status.

• Achieve the objectives for protected areas

Achieve the standards set by the relevant directive under which they were designated. For water dependent Natura 2000 sites we will aim to achieve conservation objectives, achieving good status by 2021 is a milestone towards this objective.

• Aim to achieve good overall status for surface and ground waters

Implement measures to achieve good overall status where they are technically feasible and not disproportionately costly.

5.1 Measures

We have reviewed the reasons why water bodies are failing to achieve objectives and identified potential measures .Measures are divided into two groups. National measures apply to the whole of Wales, or the United Kingdom. In general these set the legislative, policy or strategic approach. Examples include a national ban on using a particular chemical or a national strategy for prioritising and funding the remediation of abandoned mines. Local measures are specific to the river basin district or a part of it. For example, the removal of invasive plants along a length of designated river or a local campaign targeting misconnections across an industrial estate. Many of the actions listed will also have multiple benefits. For example, sustainable urban drainage (SuDs) schemes help to reduce urban pollution, sewage pollution and changes to water levels.

A list of all national measures, both new and existing, and the local measures at the water body scale are detailed on Water Watch Wales. If you know about any others or want to suggest new measures, please tell us in your response to the consultation. The river basin management plan will become a statutory document hence the importance of ensuring that the correct measures are identified through this consultation.

The table below summarises the local measures for the management catchment, including those identified for protected areas. The high level categories describe the types of action required and broadly the options that are available, including voluntary and regulatory measures. At the local scale some of the options described might not be considered appropriate. There is overlap between some categories.

.Measure	Description	
Acidification restoration	Emissions controls and upland restoration: blocking drainage, restoring blanket bog, within forestry plantation blocking forest drains and establishing native trees within the riparian zone, liming options. Some overlap with "address air pollution".	3
Address air pollution	Emissions controls to reduce nitrogen and acidic depostion. Some overlap with	41

Table 4. Summary of local measures.

.Measure	Description	No. of water bodies
	"acidification restoration".	
Address point source pollution	Investigate and regulate pollution from point sources. Overlaps with "reduce pollution from sewage discharges" and "other waste water discharges".	36
Complete first cycle investigation	All ongoing WFD investigations from first cycle programme.	2
Drainage and water level management	Investigate and implement changes to land drainage regimes and structures to restore water levels.	3
Improve fish passage and habitat	Remove or modify barriers to fish passage	35
Improve flows and water levels	Reduce impacts of regulated flows and abstractions, restore more natural flow regimes, implement options to improve water levels, such as water efficiency and recycling measures, alternative sources and supplies.	36
Manage invasive non-native species	Eradication and/or management of invasive non-native species in line with current national invasive species Action Plans. Includes biosecurity good practice, such as "CHECK-CLEAN-DRY" and Be Plant Wise.	36
Mine water and contaminated land remediation	Coal and metal mine, and contaminated land remediation - including passive and active mine water treatment, capping of spoil, removal of wastes to landfill, and channel diversion	10
Mitigate impacts of flood and coastal defences	Reduce impacts of flood defence structures and operations - improve connectivity, habitat, and morphology by implementing options through capital and maintenance programmes, such as soft engineering, opening culverts, upgrading tidal flaps, changing dredging and vegetation management. Includes the national habitat creation programme to address coastal squeeze.	2
Mitigate impacts of shipping, navigation and dredging	Assess and implement options for adapting dredging regimes and reducing the impacts of physical modifications.	3
New Investigation	Includes investigations for all new failures, deterioration, and drinking water protected areas.	60
Other sustainable land and marine management practices	Includes measures to mitigate impacts from construction and maintenance of infrastructure, including within military training sites.	2

.Measure	Description	No. of water bodies
Reduce impacts of other physical modifications	Improve connectivity, habitat and morphology through soft engineering and restoration techniques.	1
Reduce pollution from other waste water discharges	Reduce pollution from other (non-sewage) point sources, both regulated and unregulated. Investigate and implement basic pollution prevention measures, including provision of up to date advice and guidance, such as correct handling and storage of chemicals and waste, management of trade effluent, and regulation.	1
Reduce pollution from septic tanks	Target actions to ensure septic tanks are maintained correctly. Where necessary issue formal works notices to owners to relocate or replace tanks and soakaways.	4
Reduce pollution from sewage discharges	Reducing pollution from continuous and intermittent discharges, includes additional treatment at sewage treatment works (e.g. phosphate stripping), investigating and tackling sewer blockages, and implementing sustainable drainage to reduce surface water drainage to sewers.	5
Specific habitat and feature works	Restoration and/or conservation of specific habitat and features, including natural (e.g. caves, geological outcrops) and human structures (e.g. bridges, ruins).	3
Sustainable access and recreation management	Reduce the impacts of erosion, disturbance and damage from both water-based and terrestrial access, including tackling illegal off- roading.	4
Sustainable agricultural practices	Implement basic and additional measures such as correct management of slurry, silage, fuel oil, and agricultural chemicals; clean and dirty water separation; nutrient management planning; buffer strips and riparian fencing; cover crops and soil management. In N2k sites changes to grazing regimes may be required, includes scrub management. Within NVZs comply with storage and spreading regulations.	49
Sustainable fisheries management	Includes meaures for both freshwater and marine fisheries to reduce and mitigate impacts	1
Sustainable woodland and forestry management	Restore the riparian zone, disconnect forest drains, monitor the effectiveness of the 5 principle risks associated with forestry and use forestry and woodland to reduce diffuse	12

.Measure	Description	No. of water bodies
	pollution.	
Tackle misconnections and urban diffuse pollution	Investigate and solve misconnections to surface water drains (at residential and commercial properties) and implement sustainable drainage schemes (SuDS) to reduce diffuse pollution.	1
Waste management	Includes appropriate management of spoil and sludge, illegal fly-tipping and litter	4
Total		365

Some examples of actions already under way include:

- Schemes to improve fish passage and habitat.
- We are reviewing discharge permits and abstraction licenses to reduce the impact on the water environment.
- Local authorities are working with us to find and resolve misconnections.
- Natural Resources Wales is improving forest management to reduce the impact of acidification and protect rivers from sediment and remove barriers to fish migration.
- Agricultural visits to provide advice and guidance. Our agricultural Catchment Officers work alongside landowners to improve land management for the benefit of the water environment.
- Minewater remediation schemes are, and will be key measures in the Teifi, Ystwyth, Rheidol and Clarach catchments.

5.2 Workshop feedback on solutions

Concerns on current status raised at the workshop have been highlighted in Section 3, solutions and priorities were also discussed. Solutions and priorities were also discussed. In respect of some of the issues raised on the day, the following solutions were flagged:

• Flooding.

Proposed solutions: Slow rate of upland drainage (e.g. Pumlumon 'living landscapes' project); embargo on further floodplain development; use floodplain for habitat creation and flood storage; dredging/debris removal.

- Forestry acidification.
 Proposed solutions: Liming of soil, upland lakes and rivers, as appropriate; more deciduous woodland planting.
- Rural land management / diffuse pollution.

Proposed solutions: Greater provision of suitable width buffer strips and green corridors; modelling run-off to identify beneficial tree-planting areas; improve policy relating to Glastir; illustrate financial savings of best practise where possible to incentivise; training volunteers for walkover surveys.

- Abandoned mine pollution.
 Proposed solutions: Pragmatic view by regulators of standards achievable, given funding available; further research to better understand water chemistry and conservation interests.
 Urban diffuse pollution
- Urban diffuse pollution. Proposed solutions: Reduction in impermeable surfacing; increased urban treeplanting; improve SUDS awareness and design integration; better regulatory tools.
- European Beaver re-introduction.

Proposed solutions: Controversial topic requiring solid evidence base to allay concerns over appropriate management.

5.3 Alternative objectives

We have identified a small number of water bodies where because of the nature of the problem or the required measures we propose an extended deadline or less stringent objective (less than good). In each case we have provided a justification.

Alternative objective	Justifications	Number of water bodies	Water body
Extended deadline	Natural conditions – recovery time from acidification	7	Berwyn/Brennig - headwaters to confluence with Teifi Teifi - conf Fflur to conf Brennig Mynach - headwaters to confluence with Rheidol Rheidol - conf with Llechwedd-mawr to conf with Castell Llechwedd Mawr - HW to Nant y Moch reservoir Hengwm - headwaters to Nant y Moch reservoir Cwmnewydion - headwaters to conf with Ystwyth
Less stringent objective	Technically infeasible - minewater scheme	2	Melindwr – headwaters to confluence with Rheidol Bow Street Brook – headwaters to confluence with Clarach

Table 5. Proposed alternative objectives and justifications

5.4 Opportunities for partnerships

There are several external funding opportunities, which could support projects that contribute towards Water Framework Directive outcomes. Each fund has its own priorities, budgetary allocation and application process. Types of funding for consideration include:

- European funds The EU provides funding from a broad range of programmes.– go to the Welsh European Funding Office website for more information.
- Lottery funding such as Heritage Lottery Fund, Postcode Lottery and BIG Lottery Fund which have a range of programmes from £5000 up to £millions.
- Charities, trusts & foundations there are many of these operating and they often have a specific focus – either geographically or topically and will support local charities and projects.
- Businesses and sponsorship opportunities including making the most of the Welsh carrier bag charge!
- Public bodies local authorities, Welsh Government, UK Government and NRW may have annual funding opportunities or one-off competitions for their priority areas.
- Crowd funding gathering support from a wide range and number of funders, often including individuals and usually using the internet to raise awareness for a specific project needing funds.
- Trading increasingly funders are looking to support organisations with longer term sustainability in mind so developing trading opportunities can be something to consider too.

Your local County Voluntary Council and Wales Council for Voluntary Action will have up to date information on opportunities such as these as well as a host of other support available.

6. What next?

This summary is intended to be a snap shot of the management catchment and should enable you to be able to access further detail using Water Watch Wales. We welcome your views on how we can improve how we do this.

The summary supports the current consultation on the updated river basin management plans. We encourage you to look at the river basin management plans and respond to the consultation questions which you can find on our website. If you have any questions, please e-mail:

ardalbasnafongorllewincymru@cyfoethnaturiolcymru.gov.uk / westernwalesrbd@naturalresourceswales.gov.uk

7. Water Watch Wales

During the implementation phase of the first river basin management plan many of our partners and stakeholders requested access to data and information to assist them in helping to deliver local environmental improvements. It was quite clear early on that the first plan was difficult to navigate and access at a local scale. Consequently with both the support and input from the river basin district liaison panels a web based tool has been developed. This tool is called Water Watch Wales. This is an interactive spatial web-based tool that provides supporting information and data layers which can assist partners.

We are continuing to develop this tool and see it as a critical link between the more strategic river basin management plan and local delivery. It should enable the user to access information on:

- classification data at the water body scale
- reasons for not achieving good status
- objectives
- measures/actions, including protected area information
- partnership projects

Data can be retrieved in a number of formats (spreadsheets and summary reports). A user guide together with frequently asked questions is included with the tool and can be accessed from a link on the home page.

Figure 5. Opening screen shot for Water Watch Wales

Water Watch Wales Map Gallery

The Natural Resources Wales Water Watch Map Gallery is a collection of web maps related to the Water Framework Directive in Wales. Find out more about the Water Framework Directive by viewing the gallery below. Content of the website will be developed and added to over time. Use the send feedback button on the right of this page to email us with comments and suggestions.



RBMP Consultation Map

A map providing information for the River Basin Management Plan Consultation for Cycle 2 of WFD.

22.

View map ゝ



WFD Comparison Map

This map shows Water Framework Directive river waterbody catchments in Wales, with overlap into neighbouring regions of England, symbolised according to the baseline classification in 2009 and the latest assessment classification.

View map >

WFD Projects Map

WFD projects added by partners and co-deliverers. Add project. View map >



WFD Rivers and water-bodies in Wales

Cycle 1 WFD Rivers and other water-bodies in Wales with classifications, reasons for failure and summary reports

View map >





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