Cyfoeth Naturiol Cymru
Natural Resources Wales

Llywodraeth Cymru
Welsh Government

# River Basin Planning Progress Report for Wales 2009 – 2015

## Updated December 2015

# Contents

# 1. Introduction to this document

The European Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. At its heart is an ecosystem approach that requires measures to be taken to encourage the sustainable use of water and to protect and improve inland surface waters, ground waters and coastal waters, with the aim of achieving good status. It recognises that interested groups need to work together to design and implement improvements, taking a holistic and integrated approach to managing the water environment.

Under the WFD, a management plan must be developed for each River Basin District (RBD). Environment Agency Wales (now Natural Resources Wales), as competent authority for implementing the WFD in Wales, first published these in December 2009. The River Basin Management Plans (RBMPs) outlined the actions needed to be taken in each RBD so that more waters are at good status by 2015 and investigations needed to test whether all waters could justifiably achieve this by 2027.

The plans, and the objectives and measures contained within them, must be reviewed and updated every six years. This report provides information on the progress made throughout the first cycle from 2009 and 2015. To assess compliance with the WFD objective of preventing deterioration, **data from the 2015 classification (which includes data up to the end of 2014) has been compared with the same standards, classification tools and water body network used in 2009[1].** This is referred to as 'Old Building Blocks' with further information available in the **RBMP Overview Annex**.

Rivers, lakes, estuaries and coastal waters play a very important role in our quality of life and provide ecosystem services which support our health, wellbeing, wildlife and the sustainable growth of our economy. Sustainable management of the many ways we use water is a key principle of the river basin planning process. Underpinning the whole process is the need to understand where our waters are most under threat, in order to target improvement and protection measures effectively.

**Supporting information**

Data available on **Water Watch Wales** includes:

- Classification results
- Reasons for not achieving good status
- Water body objectives
- Reasons for alternative status objectives
- Monitoring networks
- Measures required to improve water bodies to good status

[1] There may be slight differences in the number of water bodies and/or classification results reported in the RBMPs published in 2009 and those presented in this report from 2009. This difference is due to changes in catchment boundaries during the first cycle and/or ecological data being classed as overall data in the 2009 RBMP document.

## 1.1 What this document covers

This report will fulfil some of the reporting needs of Annex VII of the WFD. It is formally a part of the RBMP but presented as a separate document. The report includes a review of where we were in 2009, where we said we were going to be and where we are now, including a summary of the changes or updates since the previous RBMP. The report is split into four sections – an all Wales summary, Western Wales RBD, Dee RBD and the Welsh part of the Severn RBD. The full Severn RBD will be covered by the Environment Agency **Severn River Basin District River Basin Management Plan**.

The report includes the following sub-sections;

- An assessment of progress in Wales towards delivering actions, including preventing deterioration, improving evidence, completed actions as part of the programme of measures and additional new measures since the publication of the 2009 RBMP.
- Identification of deterioration.
- Progress in achieving environmental objectives over the first cycle of the river basin management planning process.
- Status of water bodies summarised for rivers, lakes, estuarine & coastal and groundwater bodies using first cycle classification tools.
- Protected Area compliance.

The document is a progress report on the first cycle outcomes and current classification to allow comparison between 2009 and 2015 classification data at water body and element level. Changes that have been made for the second RBMP cycle to the water body network and the way water bodies are monitored can be found in the **RBMP Overview Annex**.

Our knowledge of the water environment has steadily improved since the first plan was published in 2009. Increasing the amount of environmental data on which our assessments are based and developing and refining the models used to interpret data has significantly advanced our understanding of water bodies' status. This increased knowledge is important as it informs where efforts to protect and improve the water environment are best targeted.

# 2. All Wales Progress 2009 – 2015 summary

## 2.1 Introduction

This section contains a summary of what has been achieved in Wales since the publication of the first plans in 2009. It includes a section on the measures implemented and how the water environment has changed in the last 6 years (based on comparing data up to the end of 2014 and the same standards and classification tools used in 2009).

Since the 2009 plans were published there have been many improvements including increased evidence, changes in the way we monitor and collect information; for example the Heavily Modified water body review. Further information can be found in the **RBMP Overview Annex**. The number and type of water bodies in Wales are shown in table 1 below.

Table 1. Number and type of water bodies in Wales

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River*** | 863 | 28 | 110 | 1001 |
| **Lake** | 29 | 3 | 90 | 122 |
| **Coastal** | 18 | n/a | 6 | 24 |
| **Estuarine** | 17 | n/a | 14 | 31 |
| **Groundwater** | 38 | n/a | n/a | 38 |
| **Total** | 965 | 31 | 220 | 1216 |

*River water bodies includes canals and surface water transfers

Since the first RBMP was published in 2009 we have undertaken a review of those water bodies listed as Heavily Modified Water Bodies (HMWB) with some HMWBs being de-designated. This means that thirteen river water bodies which were classed as HMWBs in 2009 have been de-designated and now have an objective to meet good ecological status rather than good ecological potential in the second cycle. Therefore the number and type of water bodies in table 1 above represents this updated information and may differ slightly to those presented in the 2009 plan.

## 2.2 Delivery of actions from first cycle

The action taken during the first cycle can be divided into the groups set out below. The combination of all these actions contribute to the protection and improvement of the water environment. The actions relate to all types of water bodies, rivers, lakes, groundwater, estuaries and coastal waters including those in protected areas. These include the Programme of Measures which were set out to achieve the statutory objectives, including using existing mechanisms, statutory and voluntary actions. The updated Programme of Measures is set out in Section 3 of the 2015 updated **RBMP Summary** together with more local detail provided in **Water Watch Wales**.

**Preventing deterioration**

All measures and many of the day to day activities of Natural Resources Wales and many of our partners contribute to preventing deterioration of the water environment.

For example Natural Resources Wales activities include:

- Work with the developers on large and or complicated construction sites such as wind farms, housing etc. this includes Pollution Prevention visits to prevent incidents as well as commenting on method statements, visiting the site during construction and incident follow up if required.
- Work with forestry industry on difficult harvesting sites
- Misconnections investigation work
- Advising on road scheme developments
- Farm visits as part of a targeted catchment campaign
- Awareness raising workshops on soil management and farm infrastructure
- Discrete projects such as Clear Streams
- SSSI management agreements and monitoring
- Permit issues and compliance checks
- New forestry methods and planting regime to include broadleaf species and riparian buffer strips.
- Habitat restoration projects
- Managing land owned or managed by Natural Resources Wales
- Species and habitats licencing and advice
- Environmental Incidents - There have been 4,900 substantiated Environment Management incidents since Natural Resources Wales was created on the 01/04/2013, with 1,814 impacting on water (Category 1/2/3). On average Natural Resources Wales receives 10,000 calls each year across different types of incidents, e.g. 300 agricultural incidents, of which 89 involved slurry.

Other planned programmes or projects have also contributed to preventing deterioration. This includes the agri-environment scheme Glastir Advanced water quality scheme. Natural Resources Wales undertake assessments at farms selected by the Welsh Government to identify opportunities to improve, conserve or make more efficient use of water and soils. Our findings are provided in a Water Management Plan and, where required, a Storage Report and Nutrient Management Plan. Since our work began in 2011, we have assessed over 600 farms in Welsh Government's priority areas for water quality and freshwater pearl mussel. These priority areas are based on WFD and Natura 2000 commitments. These assessments led to us identifying over 6,500 issues as having a negative impact on water quality. The accumulative effect of these yard and field issues can have a huge impact on the receiving environment at a catchment scale.

**Partnership actions**

We are currently working on a saltmarsh creation programme, in partnership with Local Authorities, third sector organisations and major landowners, to reduce the impacts of coastal squeeze.

Local authorities are working with us through the development planning process to encourage removal of culverts to restore a more natural river environment in urban and rural areas. We encourage Sustainable Urban Drainage Systems (SUDS) and green infrastructure in new developments to manage water naturally.

*Afonydd Cymru*

Afonydd Cymru is an umbrella organisation that represents nine Rivers Trusts across Wales. The Trusts have been delivering projects throughout the first cycle which contribute to achieving the WFD objectives; including preventing deterioration and achieving good overall status. Some examples of the activities include fencing, habitat improvements, tree planting, river monitoring and surveying and improving fish passage by removing obstructions such as bridge footings and weirs. The tables below give the summary totals for all the projects and length of improvement that has been achieved by Afonydd Cymru through its Environmental Improvements to Sustain Welsh Fisheries Project (EISWF) from its start date in November 2009 to the end of capital project delivery in July 2015. This project was funded through the European Fisheries Fund (EFF) and Welsh Government. The projects included in these figures were delivered in the following Rivers Trust areas: Clwyd, Conwy and Gwynedd, Welsh Dee, Pembrokeshire, Teifi and South East Wales. Carmarthen Rivers Trust had its own European Fisheries Fund project and outputs are shown in table 3.

Table 2. Afonydd Cymru EISWF project outputs

| Target | Accumulated total Final Project Achievement (at end of July 2015) |
|---|---|
| No. of fish easements completed | 63 |
| No. of liming schemes implemented | 3 |
| No. of habitat restoration schemes completed | 74 |
| Stream with improved access | 342.1km |
| Streams with improved water quality | 51.7km |
| Streams with restored habitat | 42.3km |

The physical on the ground benefits and improvements to watercourses and fisheries across the project area, in terms of the targets for length of improved access, water quality and streams with restored habitat, have all been over achieved by significant distances (>70km in total).

Table 3. Total for Carmarthen Rivers Trust (CRT) EFF outputs

| Targets | Final project achievement |
|---|---|
| River opened up for migratory fish | 212.6km |
| Buffer strip fencing | 71.0km |
| Coppicing | 56.6km |
| Soft bank revetment | 850m |

Additionally Carmarthen Rivers Trust completed a high number of fish easements using European Fisheries Funding & CRT volunteers.

*Dŵr Cymru/Welsh Water (DCWW) AMP programme*

Every 5 years, Dŵr Cymru/Welsh Water (DCWW) produce a programme of environmental improvements linked to their assets such as sewage treatment works and sewer overflows. The process that produces this programme is called the Periodic Review and the programme is called the Asset Management Plan (AMP), of which environmental improvements are a part.

At the start of the AMP5 period in 2010, there were 74 schemes identified on the programme representing a cost of approximately £100 million of investment for the environment. By the end of AMP5 in 2015, the number of schemes had increased to 548 schemes. The majority of these additional schemes were for the provision of event and duration monitoring on combined sewer overflows. This work is continuing into AMP6 (2015-2020) and will provide intelligence on what DCWW assets are potentially impacting on the environment / water body status. This will allow DCWW to target investment at those overflows that are potentially problematic.

Savings made on the AMP5 programme were also targeted at other areas of environmental priority that were not originally added to the programme. For example, Swansea Bay in the Western Wales RBD where recent monitoring data indicated a high chance of being classified as poor under the revised Bathing Water Directive. Following investigations, investment was secured to ensure that most of the problematic discharges were improved by 2015 and this work is continuing into AMP6. Another example is the addition of four sewage treatment works in the Carmarthen Bay and Estuaries Special Area of Conservation (SAC). These were added into the programme for improvements to protect habitats where investigations indicated that the works were impacting on the SAC. The AMP5 programme also included improvements to assets to protect shellfish waters and groundwater bodies.

**The Programme of Measures**

In the 2009 RBMP the Programme of Measures were set out in Annex C and D (for the Protected Area actions). They included national and local measures, across sectors and all water body types. This was the first programme of statutory measures specifically developed to meet the requirements of the WFD. They include actions to prevent deterioration and improvements in water body status. Progress with these are formally reported to Europe through the Water Information System for Europe (WISE).

81% measures identified in the first plan have been completed in Wales. Some measures have not been completed for the following reasons;

- 30 measures have been reassessed are no longer needed or considered effective
- 39 were not funded (funding withdrawn)
- 16 there was no mechanism to implement the measure
- 92 are ongoing

**Investigations**

The Programme of Measures also includes investigations, for example investigations into the impacts of metal mines through the Metal Mine Strategy for Wales. In addition to these specific types of investigations there is also a rolling programme which addresses the reasons for not achieving good status not including those to ensure ‘no deterioration’. This rolling programme included over 1000 investigations across Wales between 2009 and 2015. The outcomes of these enable us to identify solutions and measures to undertake the required improvements. The outcome of this work directly feeds into the updated Programme of Measures set out in Section 3 of the 2015 updated **RBMP Summary** for each RBD.

**Improved evidence**

Over the last 6 years much has been done to improve the understanding of the water environment. The quantity and quality of the evidence available has grown because of significant investment.

- In Wales additional funds have been invested in a new ecological monitoring programme for rivers and additional investment in chemical monitoring technology.
- In Wales, more than 1000 investigations have been carried out to identify the reasons (pressures, and the sources of the pressures) why good status and Protected Area objectives have not been achieved.
- The actions that would be needed to achieve good status and Protected Area objectives have been identified.
- Through detailed economic appraisal, there is an improved understanding of the benefits the water environment can provide and the cost of the measures needed to realise the benefits.
- The latest generation of environmental assessment criteria has been introduced in collaboration with a range of partners and leading scientists as part of the UK WFD Technical Advisory Group. These improvements to methods mean that the classification results are now a better interpretation of the general health of the water environment and will be implemented in the 2015 updated plan. These changes include:
  - new standards for additional chemical substances
  - updated standards for existing physio-chemical elements
  - new and improved biological assessment tools and new intercalibrated biological classification boundary values.
- Improvements have been made in mapping of the water body network.
- Improved risk assessments have been introduced to help target future monitoring programmes, and predict and help prevent potential deterioration in the water environment.

**Additional new measures**

In the 2009 RBMPs, measures were assigned to water bodies based on current local knowledge. As part of the rolling programme of investigations and improved evidence the programme of measures were regularly reviewed to ensure the right actions were being delivered in the right place. During the first cycle it was clear that new priorities and/or opportunities meant that some actions were reviewed to reflect the current need of the environment. These included;

- Existing measures were applied in a new place.
- New opportunities to work with partners in a different way using existing resources and funding, such as the river walk programme that formed a key part of the local investigations work.
- New funds to tackle WFD improvements becoming available. Some examples are given below. With these funds and other resources from across Natural Resources Wales, partnerships have been developed with over 100 partners including landowners, farming unions, rivers trusts, wildlife trusts, wildlife charities and educational trusts. Between 2011 and 2013 those partnerships delivered projects worth £4.4million which contributed to improvements in 152 water bodies; created or restored 400ha of habitat and enhanced or restored 370km of river.

*Welsh Government funding*

Welsh Government initiated a fund across Wales to support voluntary partnership projects which delivered improvements to the water environment. During the first cycle, Natural Resources Wales received £850k over 3 years from Welsh Government (£450k in 2012/13, £150k in 2013/14 and £250k in 2014/15) to support delivery of WFD projects. These funds have been able to draw in match funding from other sources increasing their value. It is estimated that the £140,000 Welsh Government fund in 2013/2014 generated an additional £450,000 in match funding realising much greater benefit to the water environment. A wide range of third sector projects were supported including activities such as fencing, tree planting and barrier removal as well as a number of community engagement and awareness raising projects.

Table 4. All Wales Welsh Government WFD projects

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2014-15 | Abandoned Metal Mines Biochar trial | Cambrian Mines Trust |
| 2014-15 | River Restoration Qualification Trial | WTSWW*, Agored Cymru, SEWRT**, Groundwork Caerphilly. |

*Wildlife Trust of South West Wales
**South East Wales Rivers Trust

In 2014/15 the WFD fund was channelled to join the £750k Transition Fund to support WFD projects within the three Natural Resource Management Trials in the Rhondda, Tawe and Dyfi catchments.

This supported 20 partnership projects across Wales. Many of the projects also directly or indirectly addressed WFD issues.

Welsh Government is also supporting 20 projects to tackle declining biodiversity and deliver benefits to communities through the Nature Fund. The focus of investment is on delivering 5 key priorities in 7 Nature Action Zones across Wales. The 7 geographical areas are:

- Brecon Beacons
- Cambrian Mountains
- Conwy Valley
- Pembrokeshire coast
- South Wales Valleys
- Berwyn and Migneint
- Llyn Peninsula

The 5 key activities are:

- action to improve river catchments
- action on marine ecosystems
- action for local environment
- action to realise the potential in our upland areas
- action to stimulate innovation

Projects range from work to improve river catchments and marine ecosystems, to peatlands restoration and a community project managing woodland.

Through the Salmon for Tomorrow project Natural Resources Wales has received over £2million from Welsh Government and European Fisheries Fund for projects that have removed barriers preventing fish from migrating, including building 13 formal fish passes and 49 technical fish easements in the last the last five years and restoring in stream and riverside habitats. Leading to a total figure of 732km of improved fish access.

*Dŵr Cymru/Welsh Water funding*

Partners such as Dŵr Cymru/Welsh Water have taken a proactive lead to improve the water environment and matched the Welsh Government fund in 2012 and 2013 for projects which contributed to improvements in the water environment particularly where that related to the company's assets.

The initial £400,000 scheme was launched in July 2012 and was created to match a fund operated by Natural Resources Wales. Recognising the benefit of the scheme, Dŵr Cymru added a further £150,000 in July 2013. The funding scheme aims to help implement the WFD within Dŵr Cymru's operational area.

*Examples of partnership working*

- ***Clear Streams Swansea***. An initiative to make sure that the streams, rivers and sea in and around Swansea are clean, healthy and free from pollution. The initiative involves a range of organisations including private, public and third sectors. Using money from the DCWW WFD fund, two partners have employed staff to work on the Clear Streams initiative. Swansea Environmental Forum has employed a member of staff to co-ordinate the response to the water environment as well as provide information to businesses on how to help to protect and improve the water environment.
- ***Alun & Chwiler Living Landscape Project*** (within Denbighshire and Flintshire) funded by Waste Recycling Environmental Limited (WREN), DCWW and North Wales Wildlife Trust donations. The project began in November 2014 and will run for 3 years and aims to re-generate habitats along the banks of the Alun and Chwiler.
- ***Glamorgan Rivers Trust*** ran a project supported and funded by Environment Wales to tackle invasive species along the Nant lechyd. The trust successfully cleared Himalayan Balsam from 9km of river bank, 2km from neighbouring paths and 2 hectares from surrounding land. 24 volunteers spent over 300 hours removing balsam.
- ***The Welsh Dee Trust*** have trained volunteers and purchased cutting equipment through the Keep Wales Tidy Towns funding to tackle Himalayan Balsam in the Dee Catchment. The project now involves Angling Clubs stretching from Corwen to Bangor.

**Alternative objectives**

In some instances there are known reasons as to why water bodies could not achieve good status by 2015. For the first cycle there were 588 water bodies in the two RBDs that Natural Resources Wales is responsible for (71 in the Dee RBD and 517 in Western Wales RBD) that fell into this category where an alternative objective was set to meet good status by 2027. Many of these were included as the cause of the adverse effect was unknown, investigations carried out during the first cycle have increased our understanding. Details

of the alternative objectives for the next six years are set out in Section 4 of each 2015 updated **RBMP Summary**.

## 2.3 Deterioration

One of the main objectives of the WFD is to prevent deterioration of a water body from the 2009 baseline. Where there is shown to be a deterioration in status from 2009 to 2015 based on available data the reasons for this must be assessed and explained.

Some deterioration may not actually mean that the quality of the environment is worse, it is just that we have monitored elements in that water body in the first cycle which were not previously monitored. It is important that all the relevant data is reviewed to determine what actions need to be taken where and in some cases no follow up action will be required.

To assess compliance with the WFD objective of preventing deterioration, the 2015 classifications results (based on data up to the end of 2014 and the same standards and classification tools used in 2009), were compared with the 2009 classification baseline. The assessment considered whether each element has deteriorated from one status class in 2009 to a lower one in 2015. This includes sites where an element has deteriorated but it hasn't caused a deterioration in the overall classification due to the classification of the other elements. Confidence has been measured in terms of certainty. Natural Resources Wales has included those sites where we are 'quite certain' to 'highly certain' that the element has failed. The results of this assessment are summarised in table 5.

Table 5. Water bodies that have element level deteriorations (at >75% confidence)

| Water bodies | Number | % |
|---|---|---|
| Surface water ecological status | 41 | 3% |
| Surface water chemical status | 6 | 0.5% |
| Groundwater quantitative status | 0 | 0% |
| Groundwater chemical status | 0 | 0% |

In Wales the total number of water bodies that have deteriorated in overall water body classification status from the 2009 baseline is 12.

**Reasons for Deterioration**

The reasons for the deteriorations outlined in table 5 above are summarised in table format under each RBD section. Throughout the first cycle we have increased our understanding of the water bodies. Part of improving this knowledge is increased monitoring to gain further data. Where we have new information regarding a water body from increased monitoring data which then causes the water body to drop in classification then is not listed as a deterioration in status. A real deterioration is a decline in status of an element where data is available to compare from 2009 to 2015.

## 2.4 Progress in achieving first cycle objectives

Many improvements have been undertaken in addition to these measures by many organisations and individuals. In 2009 32% of water bodies in Wales achieved good or better overall water body status. Natural Resources Wales predicted that 40% would be at good or better in 2015. The 2015 classification results indicate that 39% of all water bodies now achieve good or better overall status.

Although many of the measures completed over the last 6 years are providing benefits for the local environment, there has been limited improvement in the number of water bodies at good status. However, during that period 683 water body elements[2] improved by one or more class across Wales.

Table 6. Comparison of 2009 baseline with 2015 predicted and actual results

| Percentage of water bodies at good or better status | 2009 | 2015 predicted | 2015 actual |
|---|---|---|---|
| Surface water ecological status | 31% | 39% | 39% |
| Surface water chemical status | 6% | 6% | 16% |
| Groundwater quantitative status | 97% | 97% | 100% |
| Groundwater chemical status | 68% | 68% | 58% |
| **Overall status** | **32%** | **40%** | **39%** |

Chemical status: In 2009 6% of waterbodies were at good status, 2% failed and 92% were not assessed due to not being at risk. In 2015 16% were at good status, 5% failed and 79% were not assessed due to not being at risk. However, although there appears to be an increase of 10% for water bodies at good status and also by 3% failing this is due to an additional 156 water bodies being assessed for chemical status in the 2015 classification. Thus the results reflects the increased number of water bodies monitored rather than an actual improvement in overall chemical status, further information can be found in section 2.3.1 figure 3.

Improvement in overall status is limited by the current understanding of pressures on the water environment, their sources, the action required to tackle them together with the resources to deliver the programme (both people and budget). In addition the one out all out rules of WFD classification can result in a failure of one element monitored to drive the overall status.

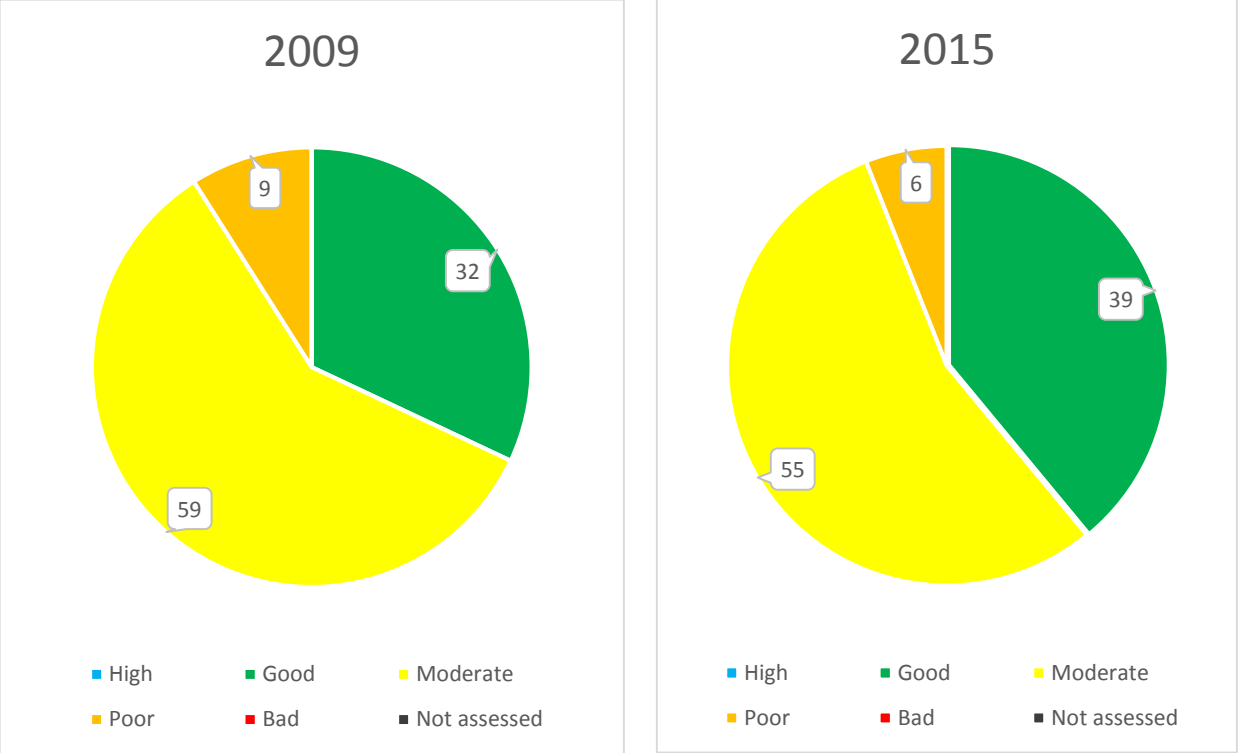
### 2.4.1 Overall water body classification status for Wales

In 2009 9% of all water bodies were in poor condition, 59% were in moderate condition and 32% were in good condition. Since then, many improvements have been made both in monitoring and data collection and assessment. The 2015 classification shows that the

[2] Note 'Water body elements' includes ecological (biological, physio-chemical, other substances and specific pollutant elements excluding BOD and Dissolved Oxygen in canals) and chemical elements (Other Pollutants, Priority Substances and Priority Hazardouse Sunstances) only in surface waters and quantitative and chemical (GW) elements only for groundwater bodies. Excludes supporting elements. Assessed elements only.

percentage of water bodies achieving good or better status has increased to 39%. As shown in figure 1 below the number of water bodies at poor status has reduced to 6% with a resulting increase in the number of water bodies at moderate status. We expect to see further improvements as the environment responds, realising the benefits of actions.

Figure 1. Percentage comparison of the overall status of water bodies in Wales between 2009 and 2015 classifications.




Some of this change reflects the number of sites monitored by the WFD monitoring programme. Since 2009, to fill gaps in our understanding, we have increased our monitoring to better understand the pressures on the water environment, especially in some estuarine and coastal water bodies. For example, in 2009 across Wales we monitored seven lakes for macrophytes, in 2015 that increased to 41, of which 23 met the required standard. Therefore much of the change in the data indicates a better understanding of the pressures affecting the environment rather than an actual change in quality.

**Surface waters**

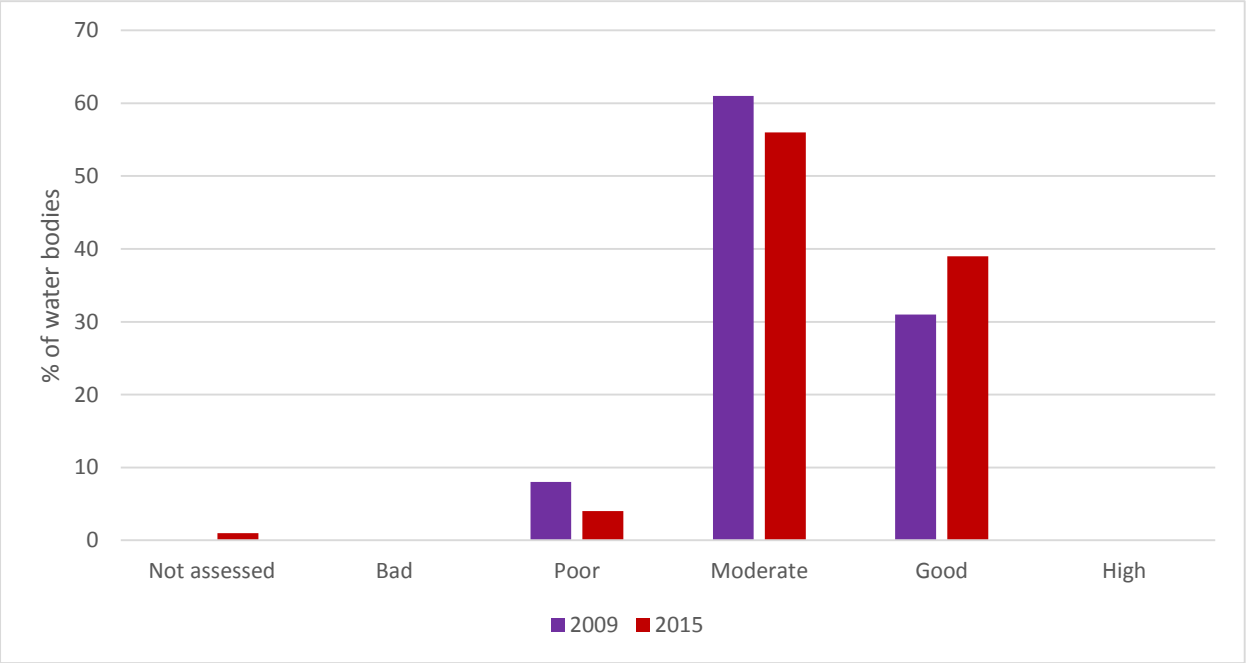
In the first cycle there are 1,178 surface water bodies in Wales, including rivers, canals, lakes, coastal and transitional water bodies.

For surface waters, good status is a statement of 'overall status', and has an ecological and a chemical component. Ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail. Further information on how the classification status is calculated in the **RBMP Overview Annex**.

Ecological classification

In 2009 31% of surface water bodies in Wales achieved good or better ecological status. The 2015 classification results indicate that 39% of surface water bodies achieved good or better status. Improvement in status is limited by the current understanding of pressures on the water environment, their sources, and the action required to tackle them.

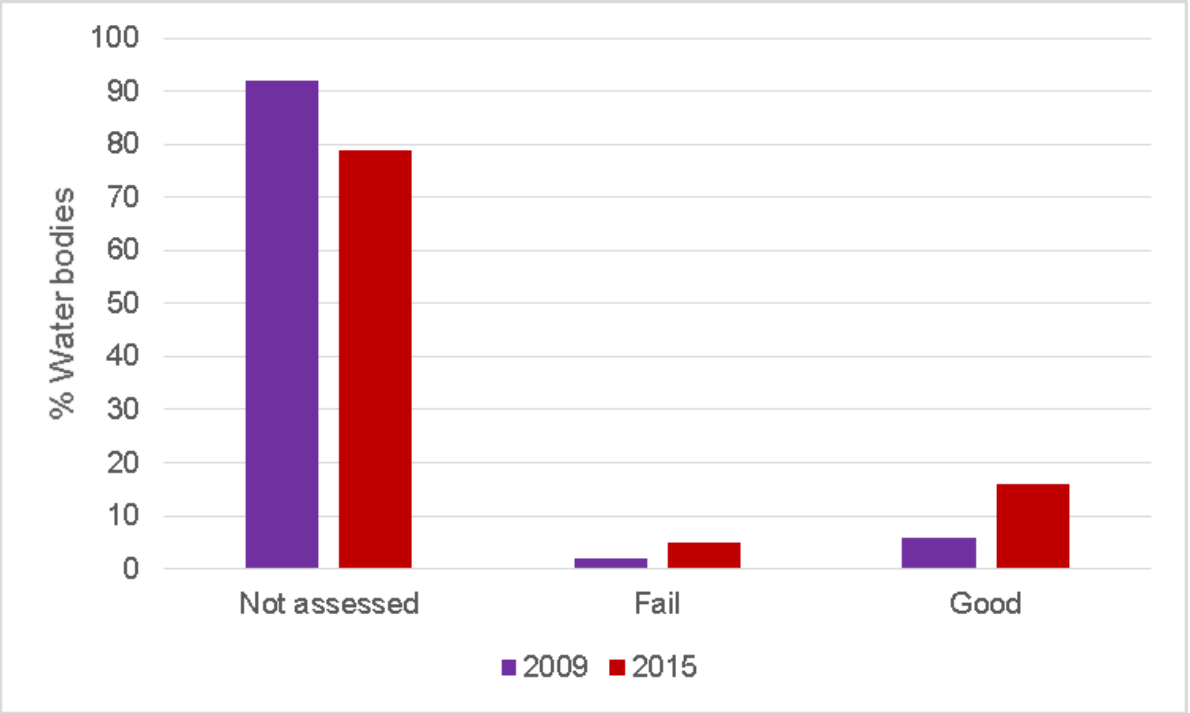
Figure 2. Percentage comparison between ecological classification for surface water between 2009 and 2015.




Chemical classification and reporting

Monitoring for chemicals is based on those that are discharged in significant quantities and at locations which are considered to be at risk of failing objectives. Over twice the number of water bodies have been reported in 2015 to that in 2009, however the proportion of water bodies failing has remained broadly similar. The chemicals causing most failures are metals related to abandoned mine discharges.

Figure 3. Percentage comparison between chemical classification for surface water between 2009 and 2015.




**Groundwater bodies**

In the first cycle there are 38 water bodies classed as groundwater in Wales. The status of groundwater bodies is assessed by the quantitative status and chemical status.

Quantitative Status

In 2009 37 groundwater bodies met good quantitative status. In 2015 38 groundwater bodies achieved good quantitative status.

Chemical Status

For chemical status in 2009 26 groundwater bodies met good chemical status Wales. In 2015 22 are in good chemical status. This increase in the number of groundwater bodies at poor status and apparent deterioration in groundwater quality is for the following main reasons:

- Additional surface water investigations have confirmed the link between discharges of contaminated minewaters (groundwater) and adjacent poor surface water quality.

- Additional hydrogeological investigations into significant groundwater dependent terrestrial ecosystems (GWDTEs, groundwater fed wetlands) have confirmed that nutrient rich groundwater discharging into some important GWDTEs is contributing to significant ecological damage.

Further detail is included within each RBD section of this report. A summary is shown in table 7.

Table 7. Summary of the number of assessed groundwater water bodies and their status in Wales in 2009 and 2015

| Water body category | Quantitative Status | | | | Chemical Status | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | Poor | | Good | |
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Groundwater | 1 | 0 | 37 | 38 | 12 | 16 | 26 | 22 |

For all monitoring networks please visit **Water Watch Wales** for interactive maps.

## 2.4.2 Ecological Classification Results for Water body Types

**Rivers**

There are 1,001 water bodies classed as rivers, including canals and surface water transfers in Wales. 28 of these are designated as artificial and 110 as heavily modified water bodies. A summary is shown in table 8.

Table 8. Summary of the river water bodies in Wales

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| River | 863 | 8 | 110 | 981 |
| Canals | 0 | 9 | 0 | 9 |
| Surface water transfers | 0 | 11 | 0 | 11 |
| Total | 863 | 28 | 110 | 1,001 |

In 2009 290 river water bodies were classed in good or better ecological status (289 as good and 1 as high) in Wales. In 2015 this has increased to 395 water bodies which equates to a 10% increase from 29% to 39%. A summary is shown in table 9.

Table 9. Summary of the number of assessed river water bodies and their status in Wales in 2009 and 2015

| Water body category | Bad | | Poor | | Moderate | | Good | | High | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| River | 3 | 3 | 79 | 35 | 626 | 561 | 272 | 376 | 1 | 0 | 6 |
| Canal | 0 | 0 | 0 | 0 | 3 | 1 | 6 | 8 | 0 | 0 | 0 |
| Surface water transfers | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 |
| Total | 3 | 3 | 79 | 35 | 629 | 562 | 289 | 395 | 1 | 0 | 6 |

In the 2009 RBMPs published for the Dee and the Western Wales RBDs it was noted that for rivers, which comprise the majority of water bodies in the RBD; the main elements indicating that good ecological status or potential not being achieved were specific pollutants and fish. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are fish, specific pollutants, phytobenthos, phosphate and pH.

While we now have a much better understanding of the Welsh water environment and the pressures acting upon it, we still require further evidence to fully understand how to manage these pressures to allow sustainable use of our waters and secure a safe future for both the local economy and biodiversity.

**Lakes**

In the first cycle there are 122 water bodies classed as lakes in Wales, 3 of these are designated as artificial and 90 as heavily modified water bodies.

In 2009 48 lake water bodies were classed in good ecological status in Wales. In 2015 this decreased by 19 to 29 water bodies which equates to a 15% decrease (from 39% to 24%). However, in 2009 we reported that for many estuaries, coasts and lakes it would be unlikely that an improvement in the number of water bodies at 'good' status/potential could be achieved by 2015. The biological tools and monitoring data needed to classify these types of water bodies had only recently been developed in 2009. Therefore for many water bodies there was little or no monitoring information and classification was based on either modelling information or expert judgement. Our additional monitoring and investigations over the last 6 years have helped to increase our knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. However many of these water bodies are very complex and we require further evidence to understand not only the pressures but also how to adequately deal with them in a sustainable way to ensure that both our economy and our water environment can flourish and provide a safe, clean and biodiverse environment for all. A summary is shown in table 10.

Table 10. Summary of the number of assessed lake water bodies and their status in Wales in 2009 and 2015

| | Poor | | Moderate | | Good | |
|---|---|---|---|---|---|---|
| **Water body category** | **2009** | **2015** | **2009** | **2015** | **2009** | **2015** |
| **Lakes** | 12 | 15 | 62 | 78 | 48 | 29 |

In the 2009 RBMPs for Wales it was noted that for lakes the main elements indicating that good ecological status or potential is not being achieved are total phosphorus, littoral invertebrates and chironomids. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are total phosphorus, littoral invertebrates, macrophytes and phytoplankton blooms.

During the 20th Century, acid rain caused by acid gases emitted by heavy industry and coal fired power stations caused serious acidification to many of our upland lakes and streams. Air pollution regulations have successfully reduced the amount of acid deposition to much lower levels, but the chemical environment has been slow to recover, and acid sensitive animals and plants need to recolonise formerly polluted waters. However, monitoring data indicate that many of our acid sensitive upland waters are now showing clear improving trends.

Many of our lakes are heavily modified and have pressures from historic uses. Finding ways to mitigate for these impacts is challenging. Natural Resources Wales, along with our stakeholders, are continually striving to find new innovative solutions to these issues to

create the right balance in order to provide safe clean drinking water, recreation, biodiversity and where possible hydro power.

**Estuarine (transitional) and Coastal Water bodies**
In the first cycle there are 55 water bodies classed as coastal and estuarine in Wales. There are no water bodies designated as artificial, however 6 coastal water bodies and 14 transitional are designated as heavily modified water bodies.

In 2009, 24 coastal and estuarine water bodies were classed in good or better ecological status in Wales. In 2015 this has increased by 1 water body to 25 which equates to a 3% improvement. However, in 2009 we reported that for many estuaries, coasts and lakes it would be unlikely that an improvement in the number of water bodies at 'good' status/potential could be achieved by the end of the cycle. The biological tools and monitoring data needed to classify these types of water bodies had only recently been developed in 2009. Therefore for many water bodies there was little or no monitoring information and classification was based on either modelling information or expert judgement. Our investigations over the last 6 years have helped to increase our knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. However, many of these water bodies are very complex and we require further evidence to understand not only the pressures but also how to adequately deal with them in a sustainable way to ensure that both our economy and our water environment can flourish and provide a safe, clean and biodiverse environment for all. A summary is shown in table 11.

Table 11. Summary of the number of assessed coastal and estuarine water bodies and their status in Wales in 2009 and 2015

| | Bad | | Poor | | Moderate | | Good | | High | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Water body category** | **2009** | **2015** | **2009** | **2015** | **2009** | **2015** | **2009** | **2015** | **2009** | **2015** |
| **Coastal** | 1 | 0 | 0 | 1 | 7 | 10 | 16 | 12 | 0 | 1 |
| **Estuarine** | 0 | 1 | 0 | 0 | 23 | 18 | 8 | 12 | 0 | 0 |
| **Total** | **1** | **1** | **0** | **1** | **30** | **28** | **24** | **24** | **0** | **1** |

In the 2009 RBMPs for Wales it was noted that for coastal and estuarine water bodies the main element indicating that good ecological status or potential is not being achieved is Dissolved Inorganic Nitrogen. This remains the case for the most recent classification, however it is notable that some mitigation measures for hydromorphology are also not in place and there are a number of ecological and chemical status failures.

## 2.5 Protected Area compliance

There are many areas where the water environment is especially valued. These areas include rare wildlife habitats or species, bathing waters and areas where drinking water is abstracted. These areas have been designated as 'Protected Areas'. These are priority for action to make sure they achieve their objectives and protect the benefits they provide.

Protected Areas need to meet standards that are relevant to their particular use. These are often more stringent than the standards used to assess ecological or chemical status

under WFD. The delivery of actions during the first cycle described above will also have benefited the Protected Areas in achieving compliance.

**Drinking water protected areas**
The Drinking Water Inspectorate is the competent authority for the Drinking Water Directive. They publish an annual report detailing compliance with the Directive's water quality requirements.

Natural Resources Wales has established a groundwater safeguard zone and produced associated action plans for all relevant drinking water protected areas to manage the risk of water quality deteriorating.
As more chemical samples have been taken from rivers, lakes and groundwater and new abstractions have come about, the number of drinking water protected areas classified as at risk of water quality deterioration or at poor chemical status (for groundwater only) has increased. This change, as highlighted by the improved understanding of the water environment, could be due to:

- new abstractions being developed or identified
- real deteriorations in water quality
- changes in the location of the monitoring so new or different influences on water quality are being picked up
- additional sampling data being provided by the abstractor
- the number of samples increasing providing more evidence of deterioration
- the risks having been incorrectly identified previously
- new risks have emerging that previously weren't monitored

Measures, such as providing advice and guidance to stakeholders in catchments, capital grants for infrastructure improvements (for example biobeds) and payment for ecosystem services have been used to protect water quality. The baseline for 2015 is presented in the **RBMP Summary**.

**Economically significant species (freshwater fish)**
The Freshwater Fish Directive was repealed in December 2013. Environmental objectives for freshwater fish protected areas ceased to have effect from that date. An equivalent level of protection is provided by the water body objectives in the **RBMP Summary**.

**Economically significant species (shellfish waters)**
Since 2013 the requirements for Shellfish Water Protected Areas (SWPAs) have transferred to the WFD. Natural Resources Wales has put in place a wide range of measures to endeavour to achieve the microbial standard in flesh in the 22 SWPAs in Wales. This has resulted in statistically significant improvements in E.Coli concentrations in Shellfish Flesh in the Dee, Menai Straight East and Burry Inlet North which contains approximately 90% of the value of the Shellfish Industry in Wales. In 2014, the microbial standard was achieved in 14% of Shellfish Waters. Highest compliance with microbial was achieved in 2013 at 37% of SWPAs in Wales, however, no SWPAs have complied with the microbial standard for more than 8 out of the last 10 years. There is a significant amount more understanding of the behaviour of microbial pathogens in the estuarine and coastal environment and interactions with Shellfish required before we can be confident of achieving and maintaining the microbial standard in all SWPAs.

**Recreational waters (bathing waters)**
A revised Bathing Water Directive introduced new water quality objectives for bathing water protected areas from 2015. 2015 is the first year of the new Directive that imposes tighter standards on bathing water qualify classifications aimed at achieving higher standards than the past Directive. Standards now have tougher water quality targets to achieve, the new standards are approximately twice as strict as previous.

Projected classification of bathing waters against the new standards is summarised in the **RBMP Summary**. Compliance with the water quality standards of the old Bathing Water Directive was assessed for the final time in 2014. These results are summarised in Table 12. A slight decline in compliance with the guideline standard is shown. However, this is due to 21 additional sites being designated as Bathing Waters during the first cycle and hence the percentage is not a direct comparison with the 2009 percentage. Table 13 shows a direct comparison for the same Bathing Wales designated in 2009, this table show an increase in the number of Bathing Waters which meet the guideline standard.

Table 12. Bathing water compliance with old (1976) Bathing Water Directive objectives:

| Year | Number of bathing waters | % compliant with mandatory standards | % compliant with guideline standards |
|---|---|---|---|
| 2009 | 81 | 100% | 88.9% |
| 2014 | 102 | 100% | 88.2% |

Table 13. Comparison of the same designated Bathing Beaches in 2009 to 2015

| Year | Number of bathing waters | % compliant with guideline standards |
|---|---|---|
| 2009 | 81 | 88.8% |
| 2014 | 81 | 93% |

**Natura 2000 sites: Water dependent Special Areas of Conservation or Special Protection Areas**
In Wales the condition of designated habitats and species features in SAC and SPAs for the Habitats and Birds Directives are reported over 6 year cycles. This reporting approach differs between England and Wales. In England condition is reported on a unit basis and Wales on a designated habitat or species feature basis. In addition there are slight differences to some of the categories used for reporting. Table 14 summarises the data for all Wales based on the number of designated habitats and species features in each category. The most recent data available has been used. There are some gaps in the data due to the differences in the requirements in which the status of some designated features are reported. For example, SPA features are reported at a UK level and not at a site level. So in table 14 the condition of individual features are reflected as unknown.

Also the boundary of some of the SACs and SPAs cross more than one RBD. In these cases the relevant SAC or SPA has been considered in each RBD where the boundaries overlap. Hence the total for Wales will be less than the total if summed for RBDs in Wales.

Table 14. Natura 2000 water protected areas current condition in Wales

| **Current condition**<br>**Number of Natura 2000 designated habitats and species** | |
|---|---|
| Favourable: Maintained | 33 |
| Favourable: Recovered | 7 |
| Favourable: Un-classified | 30 |
| Unfavourable: Recovering | 23 |
| Unfavourable: No change | 42 |
| Unfavourable: Declining | 32 |
| Unfavourable: Un-classified | 130 |
| Destroyed: Partially | 0 |
| Destroyed: Completely | 0 |
| Not assessed | 124 |
| **Total** | 421 |

* note that this includes the Rivers Dee and Wye (Wales) only

During the first RBMP cycle many actions have been completed for Natura 2000 sites. A table listing these actions is presented within each RBD section of this report and gives information on the approximate number of actions completed for the Natural 2000 sites in each RBD. It includes actions completed in the first RBMP cycle captured in the Natural Resources Wales actions database for Special Area of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites in the RBD. The table does not include the additional measures under WFD undertaken at the sites.

For more detail on the location of protected areas visit **Water Watch Wales** for interactive maps.

# 3. Dee River Basin District Progress 2009 - 2015

## 3.1 Introduction

This section contains an assessment of what has been achieved in the Dee RBD since the publication of the 2009 RBMP. It includes a report on the measures implemented and how the water environment has changed in the last 6 years (based on comparing data up to the end of 2014 and the same standards and classification tools used in 2009).

Since the 2009 plan was published there have been many improvements including increased evidence, changes to the way we monitor and collect information; for example the Heavily Modified Water Body review. Further information can be found in the **RBMP Overview Annex**. The number and type of water bodies for the Dee are shown in table 15 below.

Table 15. Number and type of water bodies in the Dee RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River*** | **58** | **1** | **28** | **87** |
| **Lake** | **4** | **0** | **17** | **21** |
| **Coastal** | **0** | **0** | **0** | **0** |
| **Estuarine** | **0** | **0** | **1** | **1** |
| **Groundwater** | **6** | **n/a** | **n/a** | **6** |
| **Total** | **68** | **1** | **46** | **115** |

*River water bodies includes canals and surface water transfers

Two river water bodies which were classed as HMWBs in 2009 have been de-designated and now have an objective to meet good ecological status rather than good ecological potential. The number and type of water bodies in table 15 above represents this updated information and may differ slightly to those presented in the 2009 plan.

## 3.2 Delivery of actions from the first cycle

The action taken during the first cycle can be divided into the groups set out below. The combination of all these actions collectively contribute to the protection and improvement of the water environment. The actions relate to all types of water bodies, rivers, lakes, wetland, groundwater, estuaries and coastal waters including those in protected areas. These include the programme of measures which were set out to achieve the statutory objectives, including using existing mechanisms, statutory and voluntary actions. The updated programme of measures is set out in Section 3 of the 2015 **RBMP Summary** together with more local detail provided in **Water Watch Wales.**

**Preventing deterioration** – all measures and many of the day to day activities of Natural Resources Wales and many of our partners contribute to preventing deterioration of the water environment.

- For further information see the equivalent section for Wales (section 2 of this report).

**Case study**

A “muddy boots” catchment event was organised in March 2014 by the Middle and Tidal Dee Partnerships which are hosted by the Welsh Dee Trust and Cheshire Wildlife Trust. The event was part of work to advance the newly formed catchment partnership project following an initial workshop in December 2013. Stakeholders within the Tidal and Middle Dee area were invited to find out more about current Dee catchment projects and potential future project ideas. It was a chance for people who hadn’t attended a catchment event to find out more and was aimed at those people who own or work on land within the catchments to provide their opinion, those with Muddy Boots!

**The Programme of Measures**

The 2009 RBMP Programme of Measures included national and more local measures, across sectors and all water body types. This was the first programme of statutory measures specifically developed to meet the requirements of the WFD. They include actions to prevent deterioration and improvements in water body status. Progress with these are formally reported to Europe through the Water Information System for Europe (WISE).

Data for the first cycle shows that 81% of measures in the 2009 RBMP have been completed in the Dee RBD. Some measures have not been completed for the following reasons;

- 9 measures have been reassessed are no longer needed or considered effective
- 11 were not funded (funding withdrawn)
- 5 there was no mechanism to implement the measure
- 32 reviewed and updated as a new measures for this plan (are ongoing)

The 2009 RBMP put in place a Programme of Measures to improve the water environment from the 2009 baseline classification. A lot of improvements have been undertaken by many organisations and individuals. Many organisations have worked together across the RBD on a range of projects. Catchment partnerships have been established for the lower and middle Dee. These are groups of organisations with an interest in improving the environment in their local area. The partnerships work on a wide range of issues, including

the water environment but also to address wider issues that are not directly related to river basin planning.

**Partnership actions**
The Dee has benefited from significant Welsh Government and European funding for projects, including over £300,000 of the £2.1 million Salmon for Tomorrow project. These have restored 33km of in-stream and riverside habitats by removing barriers to fish migration. On the Alyn and Dee good progress has been made, with fish passes completed on Rossett, Caergwrle and Pont Y Capel weirs. Local authorities are working with us through the development planning process to ensure culverts are removed where possible to help restore a more natural river environment.

The Natural England, Environment Agency and Countryside Council for Wales (now Natural Resources Wales) River Dee Restoration Project assessed the physical condition of the Dee and proposed improvements to enhance river habitat. It recommended that modifications are removed where possible or their impact reduced to restore to its near natural state.

**Case study: Finchetts Gutter water quality improvements**
Finchetts Gutter runs through the 29Ha Countess of Chester Community Country Park. Approximately 30,000 people (10% of Chester's population) live and work in the surrounding area. With the Countess of Chester Hospital NHS Foundation Trust, the Environment Agency have reduced diffuse pollution issues affecting Finchetts Gutter. This is part of a wider project to enhance the Community Park. The vision for the park is to improve wildlife habitat, its ecology and for the local communities to enjoy it.

In 2011/12 the Environment Agency and partners created a reedbed and improved the channel flow. In 2012/13 a further 130m of its old course was excavated and an additional reedbed created to improve water quality. Volunteers helped plant up the bed with phragmites reeds and iris. Once embedded, the improvements will have created space for water, reduced flood risk downstream and improved habitats.

Before  After 

**Investigations**
Since the 2009 plans were published, Natural Resources Wales and the Environment Agency have carried out an extensive investigations programme in the Dee RBD to find out why many water bodies are not in good condition. This has included over 150 investigations not including those to ensure 'no deterioration'. Our knowledge and understanding of the issues affecting water bodies has increased significantly. As a result, we are now in a better position to work with our partners to identify where the greatest environmental improvements can be made, which will provide the most benefit to everyone. Our investigations confirmed that the main reasons why water bodies are not in a good condition relate to issues such as, physical modifications and diffuse pollution from rural areas.
We have carried out:

- **35** investigations to confirm if a water body is not in good condition, where we had doubt in 2009.
- **85** investigations to find out why a water body is not in good condition. The second cycle RBMP includes the findings of these investigations.
- **31** further investigations are underway or planned to decide what actions could be taken to deal with the problem.

**Additional new measures**
The Programme of Measures requires regular review to ensure the right actions are being delivered in the right place. During the first cycle it was clear that new priorities and/or opportunities meant that some actions were reviewed to reflect the current need of the environment, this included;

- Existing measures were applied in a new place.
- The Catchment Based Approach (CaBA), a Defra funded initiative for local partnerships through catchment hosts. This has provided support and funding to the Tidal and Middle Dee catchment partnerships.
- The Water Companies (Dŵr Cymru, Dee Valley Water and United Utilities), co-fund an intensive monitoring programme of river water quality, working closely with Natural Resources Wales.

*Welsh Government funding*
Welsh Government initiated a fund across Wales to support voluntary partnership projects which delivered improvements to the water environment. During the first cycle, Natural Resources Wales received £850k over 3 years from Welsh Government (£450k in 2012/13, £150k in 2013/14 and £250k in 2014/15) to support delivery of WFD projects. A wide range of third sector projects were supported including activities such as fencing, tree planting and barrier removal as well as a number of community engagement and awareness raising projects.

Table 16. Welsh Government WFD projects

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2012-13 | Survey of fish population & habitat improvement. | Rossett and Gresford Flyfishers Club |
| 2012-13 | Control of Himalayan balsam with River Dee Catchment | Welsh Dee Trust |
| 2012-13 | Habitat Restoration on Camddwr | Afonydd Cymru |

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2013-14 | Afon Alwen | Afonydd Cymru |
| 2013-14 | Afon Camddwr | Afonydd Cymru |
| 2013-14 | Ansy Organic Farm, Dee Main stem | Afonydd Cymru, North Wales Wildlife Trust |
| 2013-14 | Afon Eitha | Afonydd Cymru |
| 2013-14 | Afon Meloch | Afonydd Cymru |

**Alternative objectives**
In some instances there are known reasons as to why water bodies could not achieve good status by 2015. For the first cycle there were 71 water bodies that fell into this category where an alternative objective was set to meet good status by 2027. Many (65 water bodies) of these were included as the cause of the adverse effect was unknown. Investigations carried out during the first cycle have increased our understanding. Details of the alternative objectives for the next six years are set out in Section 4 of the **RBMP Summary.**

## 3.3 Deterioration

One of the main objectives of the WFD is to prevent deterioration of a water body from the 2009 baseline. Where there is shown to be a deterioration in status from 2009 to 2015 these the reasons for this must be assessed and explained.

Some deterioration may not actually mean that the quality of the environment is worse, it is just that we have monitored elements in that water body in the first cycle which were not previously monitored. It is important that all the relevant data is reviewed to determine what actions need to be taken where and in some cases no follow up action will be required.

To assess compliance with the WFD objective of preventing deterioration, the 2015 classifications results (based on data up to the end of 2014 and the same standards and classification tools used in 2009), were compared with the 2009 classification baseline. The assessment considered whether each element has deteriorated from one status class in 2009 to a lower one in 2015. This includes sites where an element has deteriorated but it hasn't caused a deterioration in the overall classification due to the classification of the other elements.
Confidence has been measured in terms of certainty. Natural Resources Wales has included those sites where we are 'quite certain' to 'highly certain' that the element has failed.
The results of this assessment are summarised in table 17.

Table 17. Water bodies that have element level deteriorations (at >75% confidence)

| Water bodies | Number of water bodies | % of water bodies |
|---|---|---|
| Surface water ecological status | 2 | 2% |
| Surface water chemical status | 1 | 1% |
| Groundwater quantitative status | 0 | 0 |
| Groundwater chemical status | 0 | 0 |

In the Dee RBD; there are no water bodies that have deteriorated in overall water body classification from the 2009 baseline.

**Reasons for Deterioration**

The reasons for the deteriorations outlined in table 17 above are summarised in table 18 below. In total 3 elements deteriorated in 3 different water bodies.

Table 18. Water bodies that have element level deteriorations from the 2009 baseline.

| Water body name | Water body ID | Reason for deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Alyn - Rhydymwyn to Leadmill | GB111067052171 | Organic pollution, point and diffuse | Invertebrates | Diffuse rural pollution & point source sewage measures required |
| Alyn - Leadmill to Hope | GB111067052172 | Suspected intermittent sewage discharge and possibly groundwater source | Ammonia | Ongoing investigation |
| Dee - Chester Weir to Ceiriog | GB111067057080 | Ubiquitous, persistent, bio accumulative and toxic substance (uPBT). Assume deterioration result of variability in spot samples. | Tributyltin Compounds | Data Review/ Identifying local source not feasible. Measures taken at national or international level |

Throughout the first cycle we have increased our understanding of the water bodies in the Dee RBD. Part of improving this knowledge is increased monitoring to gain additional data.

Where deterioration of status occurs, the cause needs to be identified and measures to restore the water body to its previous status put in place as soon as possible. The water bodies listed in the table 18 above have deteriorated in element level classification from 2009 to 2015 for the reasons mentioned above.

Under certain and specific circumstances deterioration of status is permitted. No cases that meet these requirements have been identified in this RBD.

## 3.4 Progress in achieving first cycle objectives

Many improvements have been undertaken in addition to these measures by many organisations and individuals. Table 19 shows a summary of the progress towards good or better status between 2009 and 2015. Data from the 2015 classification (which includes data up to the end of 2014) has been compared with the same standards and classification tools used in 2009.

In 2009 30% of water bodies in the Dee RBD achieved good or better status. We predicted that this would rise to 38% by 2015. The 2015 classification results indicate that 31% of all water bodies now achieved good or better status. While there has been a net improvement of 5 river water bodies and 1 groundwater body that achieved good status in 2015; this has largely been offset by more detailed monitoring of lakes. These lakes are now classified by more elements, and some of these elements have been classified as moderate. This additional more detailed monitoring resulted in 5 additional lakes being classified as moderate in 2015 compared with 2009, although in reality there is unlikely to have been any environmental change.

Although many of the measures completed over the last 6 years are providing benefits for the local environment, there has been little improvement in the number of water bodies at good status. However, during that period 90 water body elements[3] improved by one or more class.

Table 19. Comparison of 2009 baseline with 2015 predicted and actual results

| Percentage of water bodies at good or better status | 2009 | 2015 Predicted | 2015 Actual |
|---|---|---|---|
| Surface water ecological status | 28% | 38% | 29% |
| Surface water chemical status | 8% | 8% | 17% |
| Groundwater quantative status | 83% | 83% | 100% |
| Groundwater chemical status | 83% | 83% | 83% |
| **Overall status** | **30%** | **38%** | **31%** |

Chemical status: In 2009 8% of waterbodies were at good status, 3% failed and 89% were not assessed due to not being at risk. In 2015 17% were at good status, 6% failed and 76% were not assessed due to not being at risk. However, although there appears to be an increase of 9% for water bodies at good status and also by 3% failing this is due to an additional 14 water bodies being assessed for chemical status in the 2015 classification. Thus the results reflects the increased number of water bodies monitored rather than an actual improvement in overall chemical status, further information can be found in section 3.3.1 figure 6.

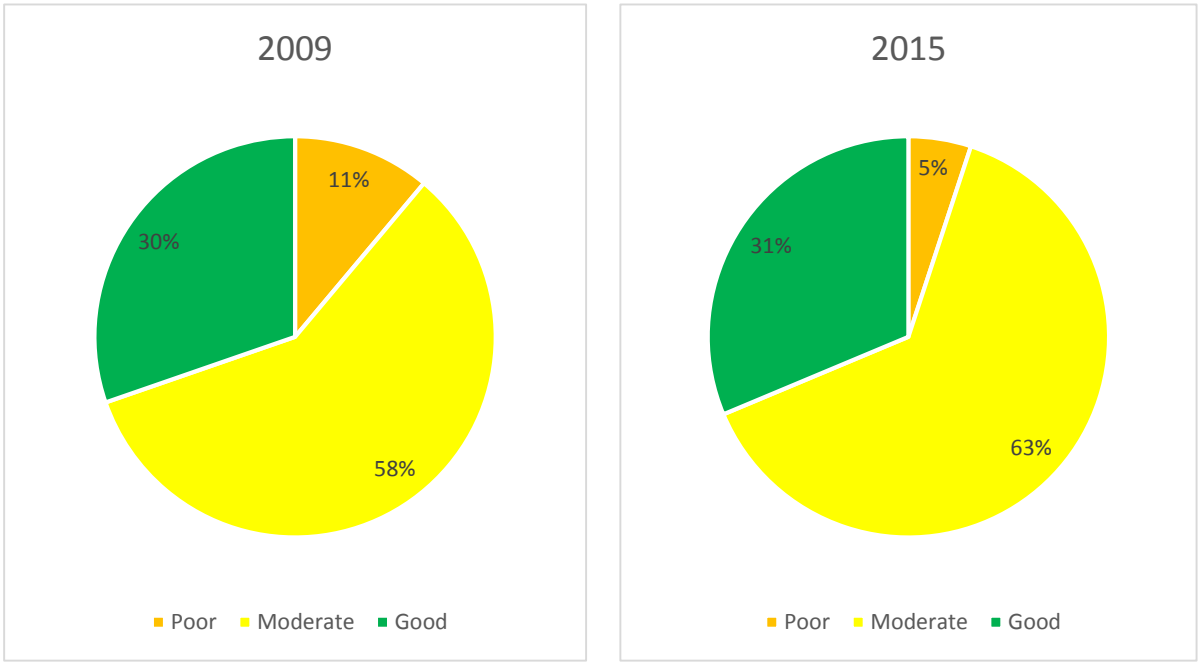
Improvement in status is limited by the current understanding of pressures on the water environment, their sources, the action required to tackle them together with the resources to deliver the programme (both people and budget). In addition the one out all out rules of WFD classification can result in a failure of one element monitored to drive the overall status.

[3] Note 'Water body elements' includes ecological (biological, physio-chemical, other substances and specific pollutant elements excluding BOD and Dissolved Oxygen in canals) and chemical elements (Other Pollutants, Priority Substances and Priority Hazardouse Sunstances) only in surface waters and quantitative and chemical (GW) elements only for groundwater bodies. Excludes supporting elements. Assessed elements only.

### 3.4.1 Overall water body classification status

In 2009 11% of all water bodies were in poor condition, 58% were in moderate condition and 30% were in good condition. Since then, although many improvements have been made both in monitoring and data collection and assessment; the 2015 classification shows that the percentage of water bodies achieving good or better status has only increased to 31%. However, it can be seen from figure 4 below that the number of water bodies at poor status has reduced to 5% with a resulting increase in the number of water bodies at moderate status by 5%. We expect to see further improvements as the environment responds, realising the benefits of actions. The Dee estuary has remained at moderate ecological potential between 2009 and 2015.

Figure 4. Percentage comparison of the overall status of water bodies in the Dee RBD between 2009 and 2015 classification




***** Pie chart figures have been rounded down where they are <0.5; for both 2009 and 2015 this means the total figures add up to 99%

Some of this change reflects the number of sites monitored by the WFD monitoring programme. Since 2009, to fill gaps in our understanding, we have increased our monitoring to better understand the pressures on the water environment, especially in some estuarine and coastal water bodies. Therefore much of the change in the data indicates a better understanding of the pressures affecting the environment rather than an actual change in quality. Apparent deterioration will continue to be investigated to understand if it is due to a real change in quality of the environment or the reasons explained above.

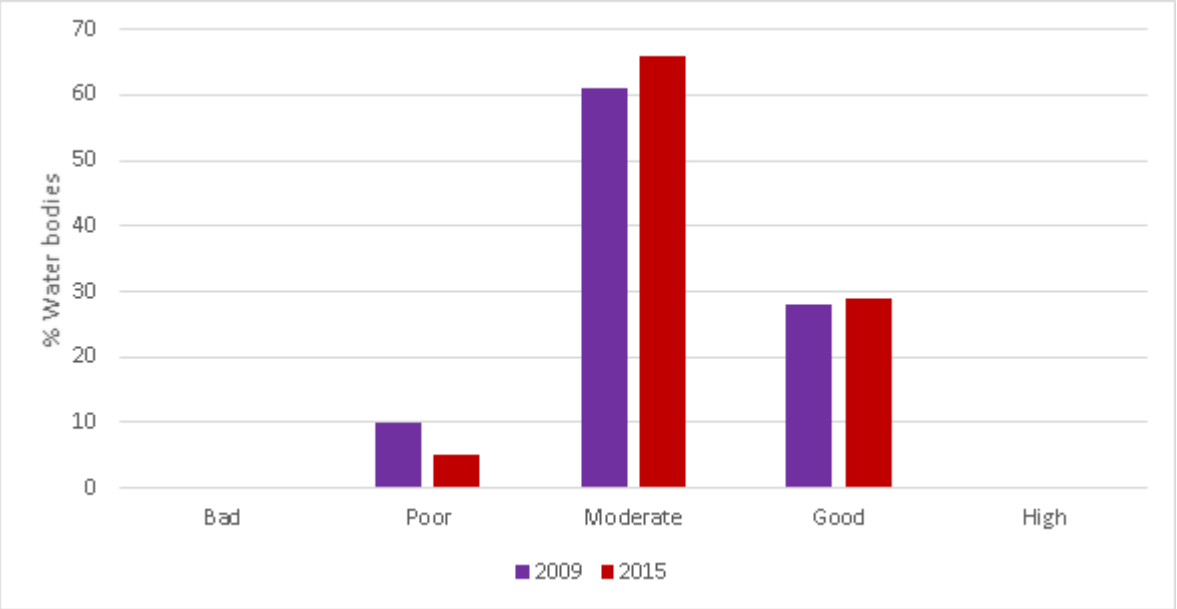
It is important to understand the number of water bodies implicated in the change in overall status. The Dee RBD is the smallest in Europe and contains only 115 water bodies, therefore only a small number have to change to be reflected as a significant change in percentages.

**Surface waters**
In the first cycle there are 109 surface water bodies in the Dee RBD, including rivers, canals, lakes and one estuary.

For surface waters, overall status has an ecological and a chemical component. Ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail. Further information on how the classification status is calculated in the **RBMP Overview Annex**.

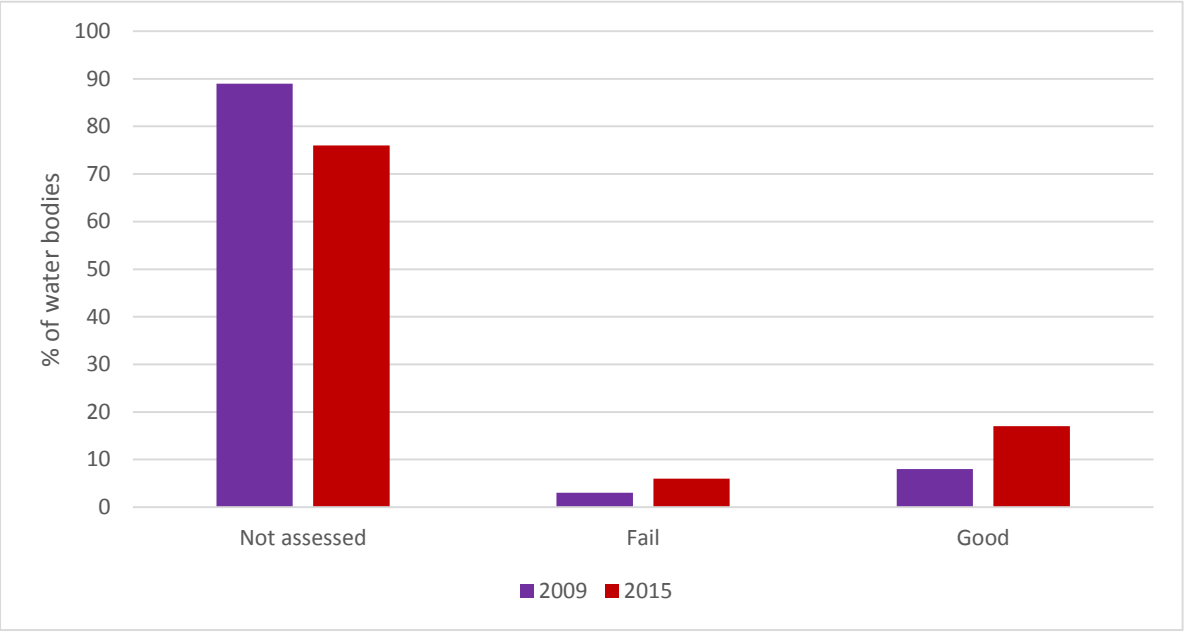
Ecological classification
In 2009 28% of surface water bodies in the Dee RBD achieved good or better status. We predicted that this would rise to 38% by 2015. The 2015 classification results indicate that 29% of surface water bodies achieved good or better status. In intervening years the annual classifications had shown an improvement on the 2009 baseline, achieving 31% in 2012.

Figure 5. Graph showing percentage comparison between ecological classification for surface water between 2009 and 2015.




Chemical classification and reporting
Monitoring for chemicals is based on those that are discharged in significant quantities and at locations which are considered to be at risk of failing objectives. Over twice the number of water bodies have been reported in 2015 to that in 2009, however the proportion of water bodies failing has remained broadly similar. The chemicals causing most failures are metals related to abandoned mine discharges.

Figure 6. Graph showing comparison between chemical classification for surface water between 2009 and 2015.




## Groundwater bodies

Quantitative status

All six groundwater bodies in the Dee RBD remain at good quantitative status. A poor status attributed to one groundwater body in 2009 has now been changed to good status following further data analysis and review of data (including new monitoring data up to 2013).

Chemical status

Of the six groundwater bodies in the Dee RBD five achieve good chemical status, which is the same as in the 2009 baseline. The *Dee Carboniferous Coal Measures* groundwater body is continuing to be at poor status due to the discharge of contaminated minewater (groundwater) into nearby surface waters in some areas.

A summary is shown in table 20.

Table 20. Summary of the number of assessed groundwater bodies and their status in the Dee RBD in 2009 and 2015

| Water body category | Quantitative Status | | | | Chemical Status | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | Poor | | Good | |
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Groundwater | 1 | 0 | 5 | 6 | 1 | 1 | 5 | 5 |

For all monitoring networks please visit **Water Watch Wales** for interactive maps.

## 3.4.2. Ecological Classification Results for Water body Types

**Rivers**
In the first cycle there are 87 water bodies classed as rivers, including canals and surface water transfers in the Dee RBD. Two of these are designated as artificial and 28 as heavily modified water bodies. A summary is shown in table 21.

Table 21. Summary of the river water bodies in the Dee RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River** | 58 | 0 | 28 | **86** |
| **Canals** | 0 | 1 | 0 | **1** |
| **Surface water transfers** | 0 | 0 | 0 | **0** |
| **Total** | **58** | **1** | **28** | **87** |

In 2009 22 river water bodies were classed in good ecological status in the Dee RBD. In 2015 this increased by 2 water bodies to 27 which equates to a 6% increase (from 25 to 31%). A summary is shown in table 22.

Table 22. Summary of the number of assessed river water bodies and their ecological status in the Dee RBD in 2009 and 2015

| Water body category | Poor | | Moderate | | Good | |
|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| **River** | 10 | 4 | 55 | 55 | 21 | 27 |
| **Canal** | 0 | 0 | 0 | 0 | 1 | 1 |
| **Surface water transfers** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **10** | **4** | **55** | **55** | **22** | **28** |

In the 2009 RBMP it was noted that for rivers, which comprise the majority of water bodies in the RBD, the main elements indicating that good ecological status or potential is not being achieved are specific pollutants, fish, phosphate and invertebrates. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are phosphate, phytobenthos, invertebrates, macrophytes and specific pollutants.

**Lakes**
In the first cycle there are 21 water bodies classed as lakes in the Dee RBD. Seventeen of these are designated as heavily modified water bodies.

In 2009 9 lake water bodies were classed in good ecological status in the Dee RBD. In 2015 this decreased by 5 to 4 water bodies which equates to a 24 % decrease (from 43 to

19%). However, in 2009 we reported that for many estuaries, coasts and lakes it would be unlikely that an improvement in the number of water bodies at 'good' status/potential could be achieved by 2015. The biological tools and monitoring data needed to classify these types of water bodies had only recently been developed in 2009. Therefore for many water bodies there was little or no monitoring information and classification was based on either modelling information or expert judgement. Our investigations over the last 6 years have helped to increase our knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. However many of these water bodies are very complex and we require further evidence to understand not only the pressures but also how to adequately deal with them in a sustainable way to ensure that both our economy and our water environment can flourish and provide a safe, clean and biodiverse environment for all. A summary is shown in table 23.

Table 23. Summary of the number of assessed lake water bodies and their ecological status in the Dee RBD in 2009 and 2015

| Water body category | Poor | | Moderate | | Good | |
|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Lakes | 1 | 1 | 11 | 16 | 9 | 4 |

In the 2009 RBMP it was noted that for lakes the main elements indicating that good ecological status or potential is not being achieved are Total Phosphorus and Chironomids. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are littoral invertebrates, total phosphorus, and macrophytes.

The additional monitoring resulted in 5 more lakes being classified as moderate in 2015 than in 2009, although in reality there was unlikely to have been any environmental change. Lakes including Llyn Arenig Fawr, Llyn Arenig Fach and Llyn Tryweryn which were classified only by expert judgement or one or two elements such as marcophytes and dissolved oxygen in 2009 have since had more detailed water quality and biological monitoring. These lakes are now classified by more elements, including physio-chemical elements and biology such as littoral invertebrates and phytoplankton. Some of these elements are at moderate (e.g. littoral invertebrate, acid neutralising capacity) resulting in the whole water body being classified as moderate. This change in monitoring accounts for most of the changes in status from good to moderate in lakes in the Dee RBD.

During the 20th Century, acid rain caused by acid gases emitted by heavy industry and coal fired power stations caused serious acidification to many of our upland lakes and streams. Air pollution regulations have successfully reduced the amount of acid deposition to much lower levels, but the chemical environment has been slow to recover, and acid sensitive animals and plants need to recolonise formerly polluted waters. However, monitoring data indicate that many of our acid sensitive upland waters are now showing clear improving trends.

Many of our lakes are heavily modified and have pressures from historic uses. Finding ways to mitigate for these impacts is challenging. Natural Resources Wales, along with our stakeholders, are continually striving to find new innovative solutions to these issues to create the right balance in order to provide safe clean drinking water, recreation, biodiversity and where possible hydro power.

**Estuarine (transitional) and Coastal Water bodies**
The Dee estuary is the only estuarine and coastal water body in the Dee RBD and is classed as a heavily modified water body. There has been no change to the ecological status of the Dee estuary throughout the first cycle. Dissolved Inorganic Nitrogen has remained at moderate status, however the majority of other elements remain at good or high status. Natural Resources Wales will continue to work with the Environment Agency in the next cycle to identify the impacts of dissolved inorganic nitrogen on the ecology and continue to put in place necessary measures.

## 3.5 Protected area compliance

There are many areas where the water environment is especially valued. These areas include rare wildlife habitats or species, bathing waters and areas where drinking water is abstracted. These areas have been designated as 'Protected Areas'. These are priority for action to make sure they achieve their objectives and protect the benefits they provide.

Protected Areas need to meet standards that are relevant to their particular use. These are often more stringent than the standards used to assess ecological or chemical status under WFD. The delivery of actions during the first cycle described above will also have benefited the Protected Areas in achieving compliance.

**Drinking water protected areas**
The Drinking Water Inspectorate is the competent authority for the Drinking Water Directive. They publish an annual report detailing compliance with the Directive's water quality requirements.

Natural Resources Wales has produced associated action plans for all relevant drinking water protected areas to manage the risk of water quality deteriorating.

As more chemical samples have been taken from rivers, lakes and groundwater and new abstractions have come about, the number of drinking water protected areas classified as at risk of water quality deterioration or at poor chemical status (for groundwater only) has increased. This change, as highlighted by the improved understanding of the water environment, could be due to:

- new abstractions being developed or identified
- real deteriorations in water quality
- changes in the location of the monitoring so new or different influences on water quality are being picked up
- additional sampling data being provided by the abstractor
- the number of samples increasing providing more evidence of deterioration
- the risks having been incorrectly identified previously
- new risks have emerging that previously weren't monitored

Measures, such as providing advice and guidance to stakeholders in catchments, capital grants for infrastructure improvements (for example biobeds) and payment for ecosystem services have been used to protect water quality.

The baseline for 2015 is presented in the **RBMP Summary**.

**Economically significant species (freshwater fish)**
The Freshwater Fish Directive was repealed in December 2013. Environmental objectives for freshwater fish protected areas ceased to have effect from that date. An equivalent level of protection is provided by the water body objectives in the **RBMP Summary**.

**Economically significant species (shellfish waters)**
Since 2013 the requirements for Shellfish Water Protected Areas (SWPAs) transferred to the WFD. There are 2 SWPAs in the Dee RBD. Natural Resources Wales and the Environment Agency have put in place a wide range of measures to endeavour to achieve the microbial standard in shellfish flesh. This has resulted in statistically significant improvements in E.coli concentrations in Shellfish Flesh in the Dee. Dee West Shellfish Water has complied with microbial standard in 6 out of the last 10 years.

**Recreational waters (bathing waters)**
A revised Bathing Water Directive introduced new water quality objectives for bathing water protected areas from 2015. 2015 is the first year of the new Directive that imposes tighter standards on bathing water qualify classifications aimed at achieving higher standards than the past Directive. Standards now have tougher water quality targets to achieve, the new standards are approximately twice as strict as previous.

Projected classification of bathing waters against the new standards is summarised in the **RBMP Summary**. Compliance with the water quality standards of the old Bathing Water Directive was assessed for the final time in 2014 (see table 24).

Table 24. Bathing water compliance with old (1976) Bathing Water Directive objectives:

| Year | Number of bathing waters | % compliant with mandatory standards | % compliant with guideline standards |
|---|---|---|---|
| 2009 | 1 | 100% | 100% |
| 2014 | 1 | 100% | 100% |

**Natura 2000 sites: Water dependent Special Areas of Conservation or Special Protection Areas**
In Wales the condition of designated habitats and species features in SAC and SPAs for the Habitats and Birds Directives are reported over 6 year cycles. This reporting approach differs between England and Wales. In England condition is reported on a unit basis and Wales on a designated habitat or species feature basis. In addition there are slight differences to some of the categories used for reporting. Table 25 summarises the data for the Welsh section of the Dee RBD based on the number of designated habitats and species features in each category. The most recent data available has been used. There are some gaps in the data due to the differences in the requirements in which the status of some designated features are reported. For example, SPA features are reported at a UK level and not at a site level. So in table 25 the condition of individual features are reflected as unknown. Also the boundary of some of the SACs and SPAs cross more than one

RBD. In these cases the relevant SAC or SPA has been considered in each RBD where the boundaries overlap.

Table 25. Natura 2000 water protected areas current condition in the Welsh section of the Dee RBD only

| **Current condition<br>Number of Natura 2000 designated habitats and species** | |
|---|---|
| Favourable: Maintained | 0 |
| Favourable: Recovered | 1 |
| Favourable: Un-classified | 5 |
| Unfavourable: Recovering | 1 |
| Unfavourable: No change | 10 |
| Unfavourable: Declining | 3 |
| Unfavourable: Un-classified | 16 |
| Destroyed: Partially | 0 |
| Destroyed: Completely | 0 |
| Not assessed | 20 |
| Total | 56 |

* note that this includes the River Dee (Wales) only

In England the data is recorded by area (Ha) of the SSSI unit which underpins the Natura 2000 designation. The boundary of some of the SACs and SPAs cross more than one RBD, e.g. the Dee Estuary SAC forms part of the Dee RBD and North West RBD. In these cases the relevant sites have been considered in each RBD where the boundaries overlap. Table 26 summarises the data for the English section of the Dee RBD only.

Table 26. Natura 2000 water protected areas current condition in the English section of the Dee RBD only

| **Current condition<br>Area of SSSI underpinning Natura 2000 sites (Ha)** | |
|---|---|
| WFD - favourable | 2,623 |
| WFD - unfavourable recovering | 0 |
| WFD - unfavourable no change | 137 |
| WFD - unfavourable declining | 0 |
| WFD - destroyed/partially destroyed | 0 |
| Total areas | **2,760** |

During the first RBMP cycle many actions have been completed for Natura 2000 sites. Table 27 gives information on the approximate number of actions completed for the Natural 2000 sites in the Dee RBD. In Wales it includes actions completed in the first RBMP cycle captured in the Natural Resources Wales actions database for Special Area of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites in the Dee RBD. For England it includes actions reported as underway/ completed. Actions are recorded at a Management Unit level and some actions can affect more than one unit. It should be noted that a Natura 2000 site boundary can overlap more than one RBD and have been included for each RBD. The table do not include the additional measures under WFD undertaken at the sites.

Table 27. Actions undertaken at Natura 2000 Protected Areas in the Dee RBD

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Alyn Valley Woods/ Coedwigoedd Dyffryn Alun | SAC | 13 | Management Agreement; Direct Management; licences revoked or amended | Natural Resources Wales; Welsh Government |
| Berwyn | SPA | 101 | Management Agreement; Direct Management; Grazing licence; Glastir; Investigations | Natural Resources Wales; Welsh Government; RSBP |
| Berwyn a Mynyddoedd de Clwyd/ Berwyn and South Clwyd Mountains | SAC | 106 | Management Agreement; Direct Management; Grazing licence; Glastir; Investigations | Natural Resources Wales; Welsh Government; RSBP |
| Dee Estuary (Wales) | SPA | 0 | n/a | n/a |
| Dee Estuary/Aber Dyfrdwy (Wales) | SAC | 2 | Management Agreement | Natural Resources Wales |
| Deeside and Buckley Newt Sites | SAC | 44 | Management Agreement; Direct Management; Planning Permission - | Natural Resources Wales; Flintshire County Council; North |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| | | | enforce conditions | East Wales Wildlife |
| Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses | SAC | 13 | Direct Management; Investigation | Natural Resources Wales |
| Halkyn Mountain/ Mynydd Helygain | SAC | 9 | Management Agreement; Planning Permission - enforce conditions | Natural Resources Wales; Flintshire County Council |
| Johnstown Newt Sites | SAC | 12 | Management Agreement; Direct management | Natural Resources Wales; North East Wales Wildlife |
| Migneint–Arenig–Ddualllt | SAC | 19 | Management Agreement; Direct management; Glastir | Natural Resources Wales; Welsh Government; National Trust; RSPB |
| Migneint–Arenig–Ddualllt | SPA | 25 | Management Agreement; Direct management; Glastir | Natural Resources Wales; Welsh Government; National Trust; RSPB |
| River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid (Wales) | SAC | 15 | Investigation; Net Limitation Order; Management Agreement; Direct Management; licences revoked or amended | Natural Resources Wales; Afonydd Cymru |
| Llyn Tegid | Ramsar | 3 | Management Agreement; Felling licence | Natural Resources Wales |
| Dee Estuary (Wales) | Ramsar | 12 | Management Agreement | Natural Resources Wales |
| Midland Meres and Mosses Phase 2 (Wales) | Ramsar | 14 | Direct Management; Investigation | Natural Resources Wales |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| River Dee and Bala Lake (England) | SAC | 4 | Diffuse Water Pollution Plan; AMP schemes; Invasive species control | Environment Agency, Natural England, United Utilities |
| Dee Estuary (England) | SAC | 3 | Investigation | Natural England |
| Dee Estuary (England) | SPA | 0 | - | - |

For more detail on the location of protected areas visit **Water Watch Wales** for interactive maps.

# 4. Western Wales River Basin District Progress 2009 - 2015

## 4.1 Introduction

This section contains an assessment of what has been achieved in the Western Wales RBD since the publication of the 2009 RBMP. It includes a report on the measures implemented and how the water environment has changed in the last 6 years (based on comparing data up to the end of 2014 and the same standards and classification tools used in 2009).

Since the 2009 plan was published there have been many improvements including increased evidence, changes in the way we monitor and collect information; for example the Heavily Modified Water Body review. Further information can be found in the **RBMP Overview Annex.**

The number and type of water bodies for the Western Wales RBD are shown in table 28 below.

Table 28. Number and type of water bodies in the Western Wales RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River*** | 607 | 8 | 61 | 676 |
| **Lake** | 21 | 2 | 39 | 62 |
| **Coastal** | 18 | 0 | 6 | 24 |
| **Estuarine** | 16 | 0 | 11 | 27 |
| **Groundwater** | 25 | n/a | n/a | 25 |
| **Total** | 687 | 10 | 117 | 814 |

*River water bodies includes canals and surface water transfers

Five river water bodies which were classed as HMWBs in 2009 have been de-designated and now have the objective to meet good ecological status rather than good ecological potential. The number and types of water bodies in table 28 above represents this updated information and may differ slightly to those presented in the 2009 plan.

## 4.2 Delivery of actions from the first cycle

The action taken during the first cycle can be divided into the groups set out below. The combination of all these actions collectively contribute to the protection and improvement of the water environment. The actions relate to all types of water bodies, rivers, lakes, wetland, groundwater, estuaries and coastal waters including those in Protected Areas. These include the programme of measures which were set out to achieve the statutory objectives, including using existing mechanisms, statutory and voluntary actions. The updated programme of measures is set out in Section 3 of the **RBMP Summary** together with more local detail provided in **Water Watch Wales**.

**Preventing deterioration**

All measures and many of the day to day activities of Natural Resources Wales and many of our partners contribute to preventing deterioration of the water environment.

- For further information see the equivalent section for Wales (section 2 of this report).

**Case study**
An innovative ecosystems approach to regulation has helped the dairy industry in West Wales and will help protect the local environment.

The First Milk Cheese Company Ltd operates a milk processing and cheese production facility at Haverfordwest Creamery. Milk from approximately 300 local farms is pasteurised and processed at the installation. As of 2014 the installation operates its own on-site effluent treatment plant which receives and treats foul water and effluent from the installation. The final treated effluent is discharged to the Western Cleddau, a protected area due to its wide range of species, habitats and aquatic plants.

The new effluent treatment plant will meet strict environmental standards and is being operated by First Milk Cheese in partnership with Severn Trent Services (STS), but the discharge will still add nutrients to the river. So in order to offset the extra nutrients getting into the water, Natural Resources Wales and First Milk Cheese are developing a nutrient off-set scheme to mitigate the potential impact of the discharge through a programme of environmental improvements at its member farms. A number of farms which supply the creamery with milk have committed to take part in the scheme. Final farm packs are currently being scoped and agreed with Natural Resources Wales.

**The Programme of Measures**
The 2009 RBMP included national and more local measures, across sectors and all water body types. This was the first programme of statutory measures specifically developed to meet the requirements of the WFD. They include actions to prevent deterioration and improvements in water body status. Progress with these are formally reported to Europe through the Water Information System for Europe (WISE).

Data for the entire first cycle shows that 81% of measures in the first plan have been completed in the Western Wales RBD. Some measures have not been completed for the following reasons;

- 8 measures have been reassessed are no longer needed or considered effective
- 18 were not funded (funding withdrawn)
- 9 there was no mechanism to implement the measure
- 34 reviewed and updated as a new measures for this plan (ongoing)

The 2009 RBMP put in place a Programme of Measures to improve the water environment from the 2009 baseline classification. A lot of improvements have been undertaken in addition to these measures by many organisations and individuals. Many organisations have worked together across the RBD on a range of projects.

**Partnership actions**
Rainscapes, Greener Grangetown and the Wildlife Trusts community Sustainable Drainage Systems (SuDS) projects are good examples where we are working with local councils, DCWW and third sector organisations in order to encourage the use of SuDS. Natural flow buffering features such as green belts, rain gardens and wetlands increase infiltration and remove sediments and pollutants. Further work is required to ensure SuDS are included into urban renewal and development planning.
Local communities and local authorities are working with us to find and rectify misconnections in urban areas (for example the Clear Streams Swansea initiative) and with Keep Wales Tidy's Yellow Fish Campaign is raising awareness of urban diffuse pollution. Dŵr Cymru/Welsh Water encourage SuDS by providing rebates to customers who install water storage and redirect roof gutter water from combined sewerage systems to their gardens. On Industrial Estates we encourage voluntary action through communicating good practice guidance Business Link Wales and take regulatory action when pollution incidents occur[4].

**Investigations**
The Programme of Measures also includes investigations, for example investigations into the impacts of metal mines through the Metal Mine Strategy for Wales. In addition to these specific types of investigations there is also a rolling programme which addresses the reasons for not achieving good status. Most investigations took place before 2013 so that the results are known in time for the formal review of the 2009 RBMP.

As part of the Metal Mine Strategy for Wales we have focused on those abandoned metal mines causing the greatest impact on the environment. For this RBD , this includes Parys Mountain copper mine and several gold, lead and zinc mines in Mid and North Wales.

**Case study - Frongoch Mine Remediation Project**
The second and final phase of the Frongoch Mine Remediation Project was successfully completed in June 2015.

In this phase, the contaminated waste dumps were re-shaped and capped with clay and soils to prevent water ingress and to encourage re-vegetation. We also built channels to carry the clean surface water into a series of ponds, creating a wetland habitat. The works were designed to be sympathetic to the extensive archaeological remains present at the mine, to preserve its heritage value for future generations. Dyfed Archaeological Trust carried out investigations and recorded the features discovered during excavation of the mine waste.

The £1.15 million project was partly funded by the European Regional Development Fund, provided through the Welsh Government, and was delivered with technical support from the Coal Authority. The aim was to prevent rain and surface water from coming into contact with the contaminated mine waste, thus reducing the amount of metals being mobilised and entering the Frongoch Stream. Monitoring is ongoing to assess the effectiveness of the scheme.

[4] Western Wales Challenges and Choices 2013

Since the 2009 RBMP was published, Natural Resources Wales has carried out an extensive investigation programme in the Western Wales RBD to find out why many water bodies are not in good condition. This has included over 600 investigations not including those to ensure 'no deterioration'. Our knowledge and understanding of the issues affecting water bodies has increased significantly. As a result, we are now in a better position to work with our partners to identify where the greatest environmental improvements can be made, which will provide the most benefit to everyone. Our investigations confirmed that the main reasons why water bodies are not in a good condition relate to issues such as, diffuse pollution from rural areas and physical modifications. Natural Resources Wales has carried out:

- **101** investigations to confirm if a water body is not in good condition, where we had doubt in 2009.
- **388** investigations to find out why a water body is not in good condition. The findings of these investigations are discussed in the second cycle RBMP Summary.
- **116** further investigations are underway or planned to decide what actions could be taken to deal with the problem.

We have used the outputs from these investigations to update the 'Reason for Failure' database. Through analysis of this data we have improved our understanding of the cause of failures and subsequently identified what we think are the big issues in the Western Wales RBD. These issues are discussed further in the **RBMP Summary**.

**Additional new measures**

The Programme of Measures requires regular review to ensure the right actions are being delivered in the right place. During the first cycle it was clear that new priorities and/or opportunities meant that some actions were reviewed to reflect the current need of the environment, this included;

- Existing measures were applied in a new place.
- New opportunities to work with partners in a different way using existing resources and funding, such as the river walk programme that formed a key part of the local investigations work.

*Welsh Government funding*

Welsh Government initiated a fund across Wales to support voluntary partnership projects which delivered improvements to the water environment. During the first cycle, Natural Resources Wales received £850k over 3 years from Welsh Government (£450k in 2012/13, £150k in 2013/14 and £250k in 2014/15) to support delivery of WFD projects. A wide range of third sector projects were supported including activities such as fencing, tree planting and barrier removal as well as a number of community engagement and awareness raising projects.

Table 29. Welsh Government WFD projects

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2012-13 | A Snowdon Stream - the Gwyrfai | Antur Waunfawr |
| 2012-13 | Habitat Restoration on the Afon Corris | Afonydd Cymru |
| 2012-13 | Habitat Restoration on the Afon Iwrch | Afonydd Cymru |
| 2012-13 | Map and Eradicate Invasive Weeds | Prince Albert Angling Society |

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2012-13 | Community led water quality improvement Llyn Padarn | Snowdonia Active |
| 2012-13 | Dyfi Living Rivers Project. | Montgomeryshire Wildlife Trust |
| 2012-13 | Eifionydd Fens and Harlech Scoping Study | Pori Natur a Threftadaeth Ltd (PONT) |
| 2012-13 | Habitat Restoration on Camddwr | Afonydd Cymru |
| 2012-13 | Swansea People and Wildlife Officer | The Wildlife Trust of South and West Wales |
| 2012-13 | Nant Cynon Fish Easements to address WFD | Afan Valley Angling Club |
| 2012-13 | OAA Tributary Restoration Project | Ogmore Angling Association Ltd. (OAA) |
| 2012-13 | River Habitat and Water Quality Improvement in Carmarthenshire | Carmarthenshire River Trust |
| 2012-13 | Salmonid Habitat Restoration in West Wales Rivers - the Afon Fflur | Afonydd Cymru |
| 2012-13 | Salmonid Habitat Restoration in West Wales Rivers – Westfield Pill (Rosemarket Stream) | Afonydd Cymru |
| 2012-13 | Salmonid Habitat Restoration in West Wales Rivers – Afon Cerdin, Teifi catchment | Afonydd Cymru |
| 2013-14 | Development of River Restoration NVQ | Learn and Grow |
| 2013-14 | TSO Funding Fairs July 2013 | Various |
| 2013-14 | Afon Alwen | Afonydd Cymru |
| 2013-14 | Afon Camddwr | Afonydd Cymru |
| 2013-14 | Afon Wybrnant | Afonydd Cymru |
| 2013-14 | Glanfyddion Cut, Rhuddlan | Afonydd Cymru |
| 2013-14 | Afon Eitha | Afonydd Cymru |
| 2013-14 | Llechwedd Llwyd Restoration | Montgomeryshire Wildlife Trust |
| 2013-14 | Clear Stream Llynfi | Keep Wales Tidy, DCWW, Bridgend County Borough Council, Llynfi River Care |
| 2013-14 | Llys y Fran Project | Afonydd Cymru, Pembs Rivers Trust |
| 2013-14 | Dulais River Restoration | Carmarthenshire RiversTrust |
| 2013-14 | Brooklands Farm, Pembrey | WTSWW |
| 2013-14 | Elwy Habitat Project | Coed Cymru, Conwy Borough Council |
| 2013-14 | Afon Meloch | Afonydd Cymru |
| 2013-14 | Nant y Gwyryd | Afonydd Cymru |
| 2014-15 | Improving fish migration | New Dyfi Anglers, Price Albert Fishing Club, Landowners, |
| 2014-15 | Improving fish migration | Montgomeryshire Wildlife Trust |
| 2014-15 | Tawe SuDS Project | DCWW, Natural Resources Wales, Communities First, City |

| Year | Project Title | Lead Partner/s |
|---|---|---|
| | | and county of Swansea (amongst others) |
| 2014-15 | Accessibility and user study of Tawe Catchment | Swansea Environment Forum plus partnership with Swansea University |
| 2014-15 | Swansea Bay Marine Opportunities Symposium | Swansea University and many others |
| 2014-15 | Pontardulais, management of past mining spoil | Commons Vision Ltd., Swansea University |
| 2014-15 | Dyfi Abandoned Mines - Catchment Assessment study | Aberystwyth University and Coal authority |

**Alternative objectives**
In some instances there are known reasons as to why water bodies could not achieve good status by 2015. For the first cycle there were 517 water bodies that fell into this category where an alternative objective was set to meet good status by 2027. This does not mean that actions were not undertaken in these water bodies. We need to work with our partners, including the scientific community to find technically feasible cost beneficial solutions or new ways of doing things, for example in the first plan we reported that a total of 64% of surface waters (65% of rivers, canals and SWT's had alternative objectives (good status 2021 or 2027), 68% of lakes and SSSI ditches, 70% of estuaries and 33% of coastal) and 40% of groundwater's all had alternative objectives (good status by 2021, 2027). Details of the alternative objectives for the next six years are set out in Section 4 of the **RBMP Summary.**

## 4.3 Deterioration

One of the main objectives of the WFD is to prevent deterioration of a water body from the 2009 baseline. Where there is shown to be a deterioration in status from 2009 to 2015 these the reasons for this must be assessed and explained.

Some deterioration may not actually mean that the quality of the environment is worse, it is just that we have monitored elements in that water body in the first cycle which were not previously monitored. It is important that all the relevant data is reviewed to determine what actions need to be taken where and in some cases no follow up action will be required.

To assess compliance with the WFD objective of preventing deterioration, the 2015 classifications results (based on data up to the end of 2014 and the same standards and classification tools used in 2009), were compared with the 2009 classification baseline. The assessment considered whether each element has deteriorated from one status class in 2009 to a lower one in 2015. This includes sites where an element has deteriorated but it hasn't caused a deterioration in the overall classification due to the classification of the other elements. Confidence has been measured in terms of certainty. Natural Resources Wales has included those sites where we are 'quite certain' to 'highly certain' that the element has failed. The results of this assessment are summarised in table 30.

Table 30. Water bodies that have element level deteriorations (at >75% confidence)

| Water bodies | Number of water bodies | % of water bodies |
|---|---|---|
| Surface water ecological status | 16 | 2% |
| Surface water chemical status | 9 | 1% |
| Groundwater quantitative status | 0 | 0% |
| Groundwater chemical status | 0 | 0% |

In the Western Wales RBD; the total number of water bodies that have deteriorated in overall water body classification status from the 2009 baseline is 7.

**Reasons for Deterioration**

The reasons for the deteriorations outlined in table 30 above are summarised in table 31 below. In total 29 elements deteriorated over 28 water bodies. The results of this assessment are summarised in tables 31.

Table 31. Water bodies that have element level deteriorations from the 2009 baseline.

| Water body name | Water body ID | Reason for deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Cadoxton - headwaters to tidal limit | GB110058026420 | Not known – new failure. | Dissolved oxygen | New investigation. |
| Hepste - headwaters to confluence with Mellte | GB110058032390 | Suspect data. | Copper<br>Zinc | Data review required. |
| Neath - conf with Nedd Fechan and Mellte to TL | GB110058032430 | Ubiquitous, persistent, bio accumulative and toxic substance (uPBT). Assume deterioration result of variability in spot samples. | Tributyltin Compounds | Data Review/ Identifying local source not feasible. Measures taken at national or international level |
| Nant y Fendrod - headwaters to conf with Tawe | GB110059025710 | Suspect data. | Macrophytes | None – data review indicated classification anomaly due to in-cycle changes to monitoring sites. |
| Tywi - confluence with Cothi to spring tidal limit | GB110060029290 | Not known – new failure. Eutrophication suspected. | Phytobentho s | New investigation. |
| Alltwalis - headwaters to confluence with Gwili | GB110060036130 | Not known – new failure. | Zinc | New investigation. |
| Dewi Fawr - headwaters to confluence with Cynin | GB110060036150 | Not known – new failure. | Phosphate | New investigation. |
| Dulais - headwaters to confluence with Tywi | GB110060036330 | Not known – new failure. | Zinc | New investigation. |

| Water body name | Water body ID | Reason for deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Nyfer - headwaters to confluence with Brynberian | GB110061038510 | Not known – new failure. | Phosphate | New investigation. |
| Arberth - headwaters to confluence with Teifi | GB110062039170 | Agriculture and/or rural land management issues. | Phosphate | Diffuse rural pollution measures required. |
| Teifi - conf with Meurig to conf with Camddwr | GB110062043520 | Agriculture and/or rural land management probable. | Cypermethrin | New investigation. |
| Teifi - headwaters to confluence with Meurig | GB110062043540 | Agriculture and/or rural land management probable. | Cypermethrin | New investigation. |
| Einion | GB110064043610 | Monitoring site changed. | Macrophytes | None – in-cycle changes to monitoring sites. |
| Llyfnant | GB110064048250 | Atmospheric deposition - suspected | pH | Manage impact of acidification/further investigation to improve certainty |
| Fathew | GB110064048410 | Atmospheric deposition - suspected | pH | Manage impact of acidification/further investigation to improve certainty |
| Dysynni - lower | GB110064048440 | Atmospheric deposition - suspected | pH | Manage impact of acidification/further investigation to improve certainty |
| Cadair | GB110064048520 | Atmospheric deposition - suspected | pH | Manage impact of acidification/further investigation to improve certainty |
| Cerist | GB110064048610 | Atmospheric deposition - probable | pH | Manage impact of acidification |
| Cywarch | GB110064048620 | Atmospheric deposition - suspected | pH | Manage impact of acidification and further investigation to improve certainty |
| Machno | GB110066054810 | Atmospheric deposition - probable | pH | Manage impact of acidification |
| Ganol | GB110066054810 | Monitoring site changed | Dissolved oxygen | New investigation. |
| Gele | GB110066059980 | Monitoring site changed | Phosphate | New investigation. |
| Conwy - tidal limit to Merddwr | GB110066060030 | Ubiquitous, persistent, bio accumulative and toxic substance (uPBT). Assume deterioration result of variability in spot samples. | Tributyltin Compounds | Identifying local source not feasible. Measures taken at national or international level |
| Llyn Dinam | GB31032948 | Agriculture and/or rural land management issues, including unsewered domestic sewage | Phytoplankton blooms | Diffuse rural pollution measures required |

| Water body name | Water body ID | Reason for deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Llynnau Gamallt | GB31034511 | Natural conditions | Phytoplankton blooms | Expert judgement is that no measures are required |
| Llyn Trawsfynydd | GB31034870 | Agriculture and/or rural land management issues, point source sewage discharges | Phytoplankton blooms | Diffuse rural pollution & point source sewage measures required |
| Nant-y-moch Reservoir | GB31037596 | Not known – new failure. | Phytoplankton blooms | New investigation. |

Throughout the first cycle we have increased our understanding of the water bodies in the Western Wales RBD. Part of improving this knowledge is increased monitoring to gain additional data.

Where deterioration of status occurs, the cause needs to be identified and measures to restore the water body to its previous status put in place as soon as possible. The water bodies listed in the table 31 above have deteriorated in element level classification from 2009 to 2015 for the reasons mentioned above.

Under certain and specific circumstances deterioration of status is permitted. No cases that meet these requirements have been identified in this RBD.

## 4.4 Progress in achieving first cycle objectives

In 2009 the aim was to get 36% of water bodies in the Western Wales RBD to good status by 2015. In 2009, 30% of all water bodies were in good condition. The 2015 classification results indicate that 38% of all water bodies achieved good or better status. We expect to see further improvements as the environment responds realising the benefits of actions.

Although many of the measures completed over the last 6 years are providing benefits for the local environment, there has been limited improvement in the number of water bodies at good status. However, during that period 426 water body elements[5] improved by one or more class.

[5] Note 'Water body elements' includes ecological (biological, physio-chemical, other substances and specific pollutant elements excluding BOD and Dissolved Oxygen in canals) and chemical elements (Other Pollutants, Priority Substances and Priority Hazardouse Sunstances) only in surface waters and quantitative and chemical (GW) elements only for groundwater bodies. Excludes supporting elements. Assessed elements only.

Table 32. Comparison of 2009 baseline with 2015 predicted and actual results

| Percentage of water bodies at good or better status | 2009 | 2015 Predicted | 2015 Actual |
|---|---|---|---|
| Surface water ecological status | 29% | 36% | 39% |
| Surface water chemical status | 6% | 6% | 17% |
| Groundwater quantitative status | 96% | 96% | 100% |
| Groundwater chemical status | 64% | 64% | 52% |
| **Overall status** | **30%** | **36%** | **38%** |

Chemical status: In 2009 6% of waterbodies were at good status, 1% failed and 93% were not assessed due to not being at risk. In 2015 17% were at good status, 6% failed and 77% were not assessed due to not being at risk. There is an increase of 11% of water bodies at good status and 5% failing, due to an additional 123 water bodies being assessed for chemical status in the 2015 classification. Thus the results reflects the increased number of water bodies monitored rather than an actual improvement in overall chemical status, further information can be found in section 4.3.1 figure 9.

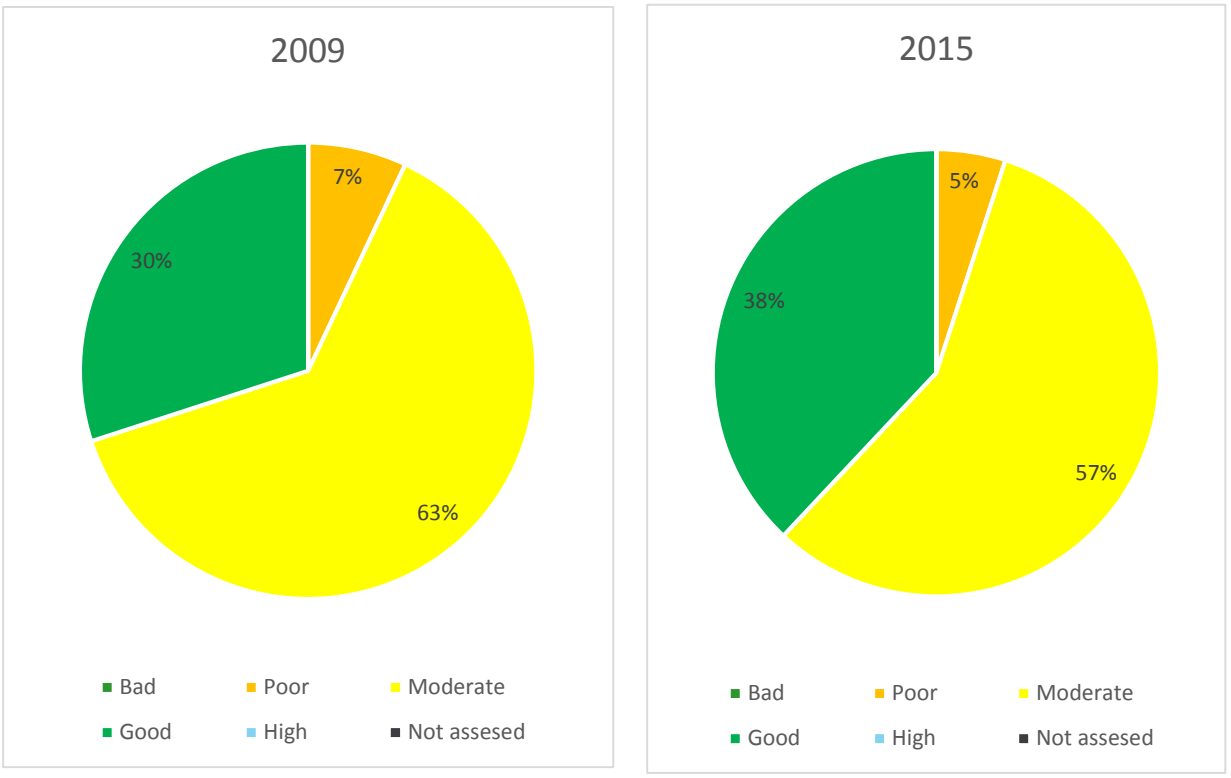
Improvement in status is limited by the current understanding of pressures on the water environment, their sources, and the action required to tackle them. Further information on our understanding of the current pressures are detailed in section 4 of the **RBMP Summary**.

Some of the change reflects the number of sites monitored. In 2009 not all water bodies were monitored for every element. We suspected that in some cases, water bodies that were classed as good were actually at lower status. We have put in place additional monitoring. For example in 2009 we only monitored 7 lakes for macrophytes, in 2014 (for the 2015 classification) that increased to 31, of which 19 meet the required standard. Thus much of the change indicates a better understanding of the pressures affecting the environment rather than an actual change in quality. The list of water bodies that have deteriorated since the 2009 baseline are discussed in the section above under reasons for deterioration.

### 4.4.1Overall water body classification status

In 2009 7% of all water bodies were in poor condition, 63% were in moderate condition and 30% were in good condition. Since then, many improvements have been made both in monitoring and data collection and assessment. The 2015 classification shows that the percentage of water bodies achieving good or better status has increased to 38%. It can be seen in figure 7 below that the number of water bodies at poor status has reduced from 7% to 5% with a resulting increase in the number of water bodies at moderate status. We expect to see further improvements as the environment responds, realising the benefits of actions.

Figure 7. Percentage comparison of the overall status of water bodies in the Western Wales RBD between 2009 and 2015 classification




**Surface waters**

For surface waters, overall status has an ecological and a chemical component. Ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail. Further information on how the classification status is calculated in the **RBMP Overview Annex**.

Ecological classification

The health of the water bodies in the Western Wales RBD has improved since the first river basin management plan was published. In the first cycle there are 789 surface water bodies in the RBD and 39% of surface water bodies are in good condition compared to 29% in 2009.

Figure 8. Percentage comparison between ecological classification for surface water between 2009 and 2015.

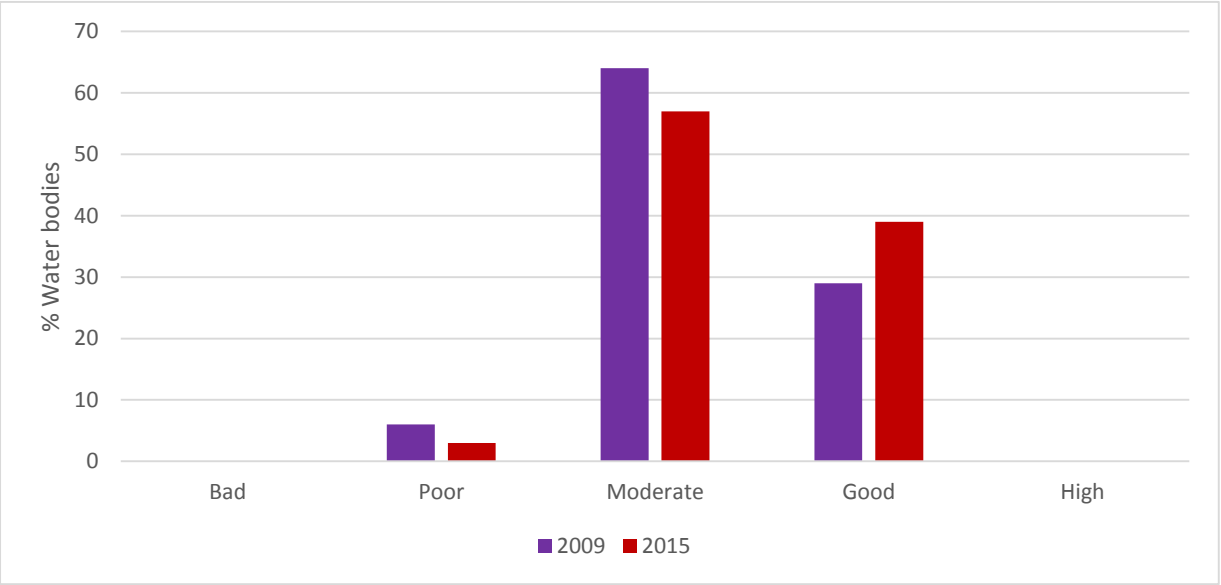
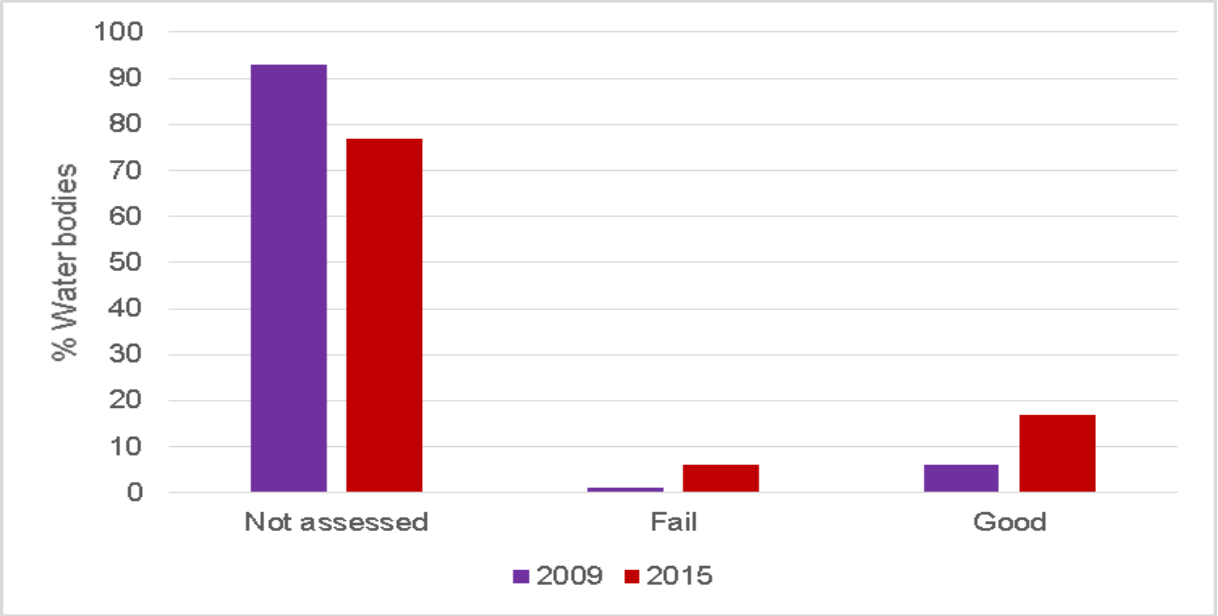



Figure 9. Comparison of 2009 and 2015 chemical classification




Chemical classification and reporting

Monitoring for chemicals is based on those that are discharged in significant quantities and at locations which are considered to be at risk of failing objectives. Over twice the number of water bodies have been reported in 2015 to that in 2009, however the proportion of water bodies failing has remained broadly similar. The chemicals causing most failures are metals related to abandoned mine discharges.

**Groundwater bodies**

Quantitative status

In the first cycle all 25 groundwater bodies are now at good quantitative status. A poor status attributed to one groundwater body in 2009 has now been changed to good status following further data analysis.

Chemical status

Of the 25 groundwater bodies in Western Wales 13 are at good chemical status compared to 16 in 2009. This means that 12 are at poor status compared to only 9 in 2009. This increase in the number of groundwater bodies at poor status and apparent deterioration in groundwater quality is for three reasons:

- Additional surface water investigations have confirmed the link between discharges of contaminated minewaters (groundwater) and adjacent poor surface water quality.

- Additional hydrogeological investigations into significant Groundwater Dependent Terrestrial Ecosystems (GWDTEs, groundwater fed wetlands) have confirmed that nutrient rich groundwater discharging into some important GWDTEs is contributing to significant ecological damage.

- An unconfirmed upward trend in concentrations of Cu and Zn at one sampling point in the Swansea Carboniferous Coal Measures groundwater body. Investigations are planned to determine if this represents a real upward trend for these metals in groundwater or if sampling and analysis issues are contributing to poor data quality. The possible dissolution of metals from the supply network into the water supply and hence causing these high Cu and Zn levels is one of a number of possibilities that will be investigated.

A summary is shown in table 33.

Table 33. Summary of the number of assessed groundwater bodies and their status in the Western Wales RBD in 2009 and 2015

| Water body category | Quantitative Status | | | | Chemical Status | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | Poor | | Good | |
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Groundwater | 1 | 0 | 24 | 25 | 9 | 12 | 16 | 13 |

For all monitoring networks please visit **Water Watch Wales** for interactive maps.

## 4.4.2 Ecological Classification Results for Water body Types

**Rivers**
In the first cycle there are 676 water bodies classed as rivers, including canals and surface water transfers in the Western Wales RBD. Eight of these are designated as artificial and 61 as heavily modified water bodies. A summary is shown in table 34.

Table 34. Summary of the river water bodies in the Western Wales RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River** | 607 | 0 | 61 | **668** |
| **Canals** | 0 | 2 | 0 | **2** |
| **Surface water transfers** | 0 | 6 | 0 | **6** |
| **Total** | **607** | **8** | **61** | **676** |

In 2009 187 river water bodies were classed in good ecological status (186 as good and 1 as high) in the Western Wales RBD. In 2015 this increased by 80 water bodies to 267 which equates to a 12% increase (from 28 to 40%). A summary is shown in table 35.

Table 35. Summary of the number of assessed river water bodies and their ecological status in the Western Wales RBD in 2009 and 2015

| Water body category | Bad | | Poor | | Moderate | | Good | | High | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| **River** | 1 | 1 | 40 | 14 | 448 | 391 | 178 | 259 | 1 | 0 | 3 |
| **Canal** | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| **Surface water transfers** | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 |
| **Total** | **1** | **1** | **40** | **14** | **448** | **391** | **186** | **267** | **1** | **0** | **3** |

In the 2009 RBMP it was noted that for rivers, which comprise the majority of water bodies in the RBD, the main elements indicating that good ecological status or potential is not being achieved are fish and specific pollutants. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are specific pollutants, fish, phytobenthos, phosphate and pH.

While we have a much better understanding of the Welsh water environment and the pressures acting upon it, we still require further evidence to fully understand how to manage these pressures to allow sustainable use of our waters and secure a safe future for both the local economy and biodiversity.

**Lakes**
In the first cycle there are 62 water bodies classed as lakes in the Western Wales RBD. Two of these are designated as artificial and 39 as heavily modified water bodies.

In 2009 20 lake water bodies were classed in good ecological status in the Western Wales RBD. In 2015 this decreased by 8 water bodies to 12 which equates to a 13% decrease (from 32 to 19%). However, in 2009 we reported that for many estuaries, coasts and lakes it would be unlikely that an improvement in the number of water bodies at ‘good’

status/potential could be achieved by 2015. The biological tools and monitoring data needed to classify these types of water bodies had only recently been developed in 2009. Therefore for many water bodies there was little or no monitoring information and classification was based on either modelling information or expert judgement. Our investigations over the last 6 years have helped to increase our knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. However many of these water bodies are very complex and we require further evidence to understand not only the pressures but also how to adequately deal with them in a sustainable way to ensure that both our economy and our water environment can flourish and provide a safe, clean and biodiverse environment for all. A summary is shown in table 36.

Table 36. Summary of the number of assessed lake water bodies and their status in the Western Wales RBD in 2009 and 2015

| | Poor | | Moderate | | Good | |
|---|---|---|---|---|---|---|
| **Water body category** | **2009** | **2015** | **2009** | **2015** | **2009** | **2015** |
| **Lakes** | 9 | 12 | 33 | 38 | 20 | 12 |

In the 2009 RBMP it was noted that for lakes the main elements indicating that good ecological status or potential is not being achieved are littoral invertebrates, macrophytes, acid neutralising capacity and total phosphorus. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are littoral invertebrates, total phosphorus, phytoplankton blooms and macrophytes.

During the 20th Century, acid rain caused by acid gases emitted by heavy industry and coal fired power stations caused serious acidification to many of our upland lakes and streams. Air pollution regulations have successfully reduced the amount of acid deposition to much lower levels, but the chemical environment has been slow to recover, and acid sensitive animals and plants need to recolonise formerly polluted waters. However, monitoring data indicate that many of our acid sensitive upland waters are now showing clear improving trends.

Many of our lakes are heavily modified and have pressures from historic uses. Finding ways to mitigate for these impacts is challenging. Natural Resources Wales, along with our stakeholders, are continually striving to find new innovative solutions to these issues to create the right balance in order to provide safe clean drinking water, recreation, biodiversity and where possible hydro power.

**Estuarine (transitional) and Coastal Water bodies**

In the first cycle there are 51 water bodies classed as coastal (24 water bodies) and estuarine (27 water bodies) in the Western Wales RBD. Seventeen of these are designated as heavily modified water bodies (6 coastal and 11 estuarine water bodies).

In 2009, 24 coastal and estuarine water bodies were classed in good or better ecological status in the Western Wales RBD. In 2015 this has increased by 2 water bodies to 26 (25 good and 1 high ecological status) which equates to a 4% improvement. However, in the 2009 plan we reported that for many estuaries and coastal waters it is unlikely that an improvement in the numbers of water bodies at ‘good’ status/potential can be achieved by 2015. The biological tools and monitoring data needed to classify these types of water

bodies have only recently been developed. There is limited knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. The number of elements and water bodies monitored in estuarine and coastal waters within the 1st cycle has significantly improved, however this has lead in some instances to a greater number of elements identified as failing objectives which has driven a reduction in the number of water bodies achieving good status. This is particularly evident for the greater number of failures for Dissolved Inorganic Nitrogen which has driven deterioration in a number of water bodies, however further ecological monitoring has shown that the elements that would be expected to respond to increased nutrient concentrations are primarily at good status. We have completed investigations into a number of these failures and put in place measures where appropriate in the wider catchment such as the nutrient offsetting scheme in Western Cleddau and improvements to the sewerage and drainage network discharging to the Burry Inlet.

Table 37. Summary of the number of assessed coastal and estuarine water bodies and their ecological status in the Western Wales RBD in 2009 and 2015

| Water body category | Bad | | Poor | | Moderate | | Good | | High | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Coastal | 1 | 0 | 0 | 1 | 7 | 9 | 16 | 13 | 0 | 1 |
| Estuarine | 0 | 1 | 0 | 0 | 19 | 14 | 8 | 12 | 0 | 0 |
| **Total** | **1** | **1** | **0** | **1** | **26** | **23** | **24** | **25** | **0** | **1** |

In the 2009 RBMP it was noted that for coastal and estuarine water bodies the main elements indicating that good ecological status or potential is not being achieved is Dissolved Inorganic Nitrogen. The main element in the 2015 classification indicating that good ecological status or potential is not being achieved remains Dissolved Inorganic Nitrogen, however other failures for Chemical and Ecological Status are also evident.

## 4.5 Protected area compliance

There are many areas where the water environment is especially valued. These areas include rare wildlife habitats or species, bathing waters and areas where drinking water is abstracted. These areas have been designated as 'Protected Areas'. These are priority for action to make sure they achieve their objectives and protect the benefits they provide.

Protected Areas need to meet standards that are relevant to their particular use. These are often more stringent than the standards used to assess ecological or chemical status under WFD. The delivery of actions during the first cycle described above will also have benefited the Protected Areas in achieving compliance.

**Drinking water protected areas**

The Drinking Water Inspectorate is the competent authority for the Drinking Water Directive. They publish an annual report detailing compliance with the Directive's water quality requirements.

Natural Resources Wales has established a groundwater safeguard zone and produced associated action plans for all relevant drinking water protected areas to manage the risk of water quality deteriorating.

As more chemical samples have been taken from rivers, lakes and groundwater and new abstractions have come about, the number of drinking water protected areas classified as at risk of water quality deterioration or at poor chemical status (for groundwater only) has increased. This change, as highlighted by the improved understanding of the water environment, could be due to:

- new abstractions being developed or identified
- real deteriorations in water quality
- changes in the location of the monitoring so new or different influences on water quality are being picked up
- additional sampling data being provided by the abstractor
- the number of samples increasing providing more evidence of deterioration
- the risks having been incorrectly identified previously
- new risks have emerging that previously weren't monitored

Measures, such as providing advice and guidance to stakeholders in catchments, capital grants for infrastructure improvements (for example biobeds) and payment for ecosystem services have been used to protect water quality.

The baseline for 2015 is presented in the **RBMP Summary**.

**Economically significant species (freshwater fish)**
The Freshwater Fish Directive was repealed in December 2013. Environmental objectives for freshwater fish protected areas ceased to have effect from that date. An equivalent level of protection is provided by the water body objectives in the RBMP Summary.

**Economically significant species (shellfish waters)**
Since 2013 the requirements for Shellfish Water Protected Areas (SWPAs) have transferred to the WFD. Natural Resources Wales has put in place a wide range of measures to endeavour to achieve the microbial standard in flesh in the 21 SWPAs in this river basin. This has resulted in statistically significant improvements in E.Coli concentrations in shellfish flesh in the Menai Straight East and Burry Inlet North which combined host approximately 80% of the value of the shellfish industry in Wales. In 2014, the microbial standard was achieved in 14% of SWPAs. Highest compliance with microbial standard was achieved in 2013 at 33% of SWPAs in Wales however, no SWPAs have complied with the microbial standard for more than 8 out of the last 10 years. There is a significant amount more understanding of the behaviour of microbial pathogens in the estuarine and coastal environment and interactions with shellfish required before we can be confident of achieving and maintaining the microbial standard.

**Recreational waters (bathing waters)**
A revised Bathing Water Directive introduced new water quality objectives for bathing water protected areas from 2015. 2015 is the first year of the new Directive that imposes tighter standards on bathing water qualify classifications aimed at achieving higher standards than the past Directive. Standards now have tougher water quality targets to achieve, the new standards are approximately twice as strict as previous.

Projected classification of bathing waters against the new standards is summarised in the **RBMP Summary**. Compliance with the water quality standards of the old Bathing Water Directive was assessed for the final time in 2014. These results are summarised in Table 38. A slight decline in compliance with the guideline standard is shown. However, this is due to 21 additional sites being designated as Bathing Waters during the first cycle and hence the percentage is not a direct comparison with the 2009 percentage. Table 39 shows a direct comparison for the same Bathing Wales designated in 2009, this table show an increase in the number of Bathing Waters which meet the guideline standard.

Table 38. Bathing water compliance with old (1976) Bathing Water Directive objectives:

| Year | Number of bathing waters | % compliant with mandatory standards | % compliant with guideline standards |
|---|---|---|---|
| 2009 | 81 | 100% | 88.9% |
| 2014 | 102 | 100% | 88.2% |

Table 39. Comparison of the same designated Bathing Beaches in 2009 to 2015

| Year | Number of bathing waters | % compliant with guideline standards |
|---|---|---|
| 2009 | 81 | 88.8% |
| 2014 | 81 | 93% |

**Natura 2000 sites: Water dependent Special Areas of Conservation or Special Protection Areas**

In Wales the condition of designated habitats and species features in SAC and SPAs for the Habitats and Birds Directives are reported over 6 year cycles. Table 40 summarises the data for the Western Wales RBD based on the number of designated habitats and species features in each category. The most recent data available has been used. There are some gaps in the data due to the differences in the requirements in which the status of some designated features are reported. For example, SPA features are reported at a UK level and not at a site level. So in table 40 the condition of individual features are reflected as unknown. Also the boundary of some of the SACs and SPAs cross more than one RBD. In these cases the relevant SAC or SPA has been considered in each RBD where the boundaries overlap.

Table 40. Natura 2000 water protected areas current condition in the Western Wales RBD

| Current condition<br>Number of Natura 2000 designated habitats and species | |
|---|---|
| Favourable: Maintained | 29 |
| Favourable: Recovered | 4 |
| Favourable: Un-classified | 24 |
| Unfavourable: Recovering | 21 |
| Unfavourable: No change | 37 |
| Unfavourable: Declining | 29 |
| Unfavourable: Un-classified | 94 |
| Destroyed: Partially/ Completely | 0 |
| Not assessed | 114 |
| Total | 352 |

**Case study -** Working to improve the fish and pearl mussel population in the Afon Eden

Afon Eden SAC is one of the 21 rivers which forms the EU LIFE+ 'Pearls in Peril project'. Diffuse pollution is known to be having a negative effect on the SAC. The project has implemented many measures to assist achieving good status under WFD and achieving favourable conservation status. Conservation measures have consisted of;

- Removal of 54ha of conifers and unintended regeneration
- 430 grips blocks in a former commercial 88ha forestry site.
- 2.1km of river restoration (boulder & gravel restoration)
- 13 constructed wetlands
- 6.9km of fencing erected.

All these measures should have a long term beneficial effect in the catchment. Further measures are still to be implemented as part of the ongoing project.

During the first RBMP cycle many actions have been completed for Natura 2000 sites. Table 41 gives information on the approximate number of actions completed for the Natural 2000 sites in the Western Wales RBD. It includes actions completed in the first RBMP cycle captured in the Natural Resources Wales actions database for Special Area of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites in the Western Wales RBD. The table does not include the additional measures under WFD undertaken at the sites.

Table 41. Actions undertaken at Natura 2000 Protected Areas in the Western Wales RBD

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Afon Eden – Cors Goch Trawsfynydd | SAC | 8 | Management Agreement; Direct Management; Flood risk management operational work | Natural Resources Wales; Welsh Government |
| Afon Gwyrfai a Llyn Cwellyn | SAC | 11 | Direct Management; Investigation; Licences revoked or amended | Natural Resources Wales; Dwr Cymru/Welsh Water |
| Afon Teifi/ River Teifi | SAC | 17 | Licences revoked or amended; Bylaws; Corss compliance checks | Natural Resources Wales; Welsh Government |
| Afon Tywi/ River Tywi | SAC | 11 | Flood risk management - capital/ improvement scheme; Licences revoked or amended; Investigation | Natural Resources Wales; Carmarthenshire County Council |
| Afonydd Cleddau/ Cleddau Rivers | SAC | 13 | Direct Management; Investigation; Management agreement | Natural Resources Wales |
| Bae Caerfyrddin/ Carmarthen Bay | SPA | 5 | Revoke or amend licence; Investigation | Natural Resources Wales |
| Bae Cemlyn/ Cemlyn Bay | SAC | 3 | Glastir; Tenency negotiation or buy out | Cyngor Sir Ynys Mon; National Trust; Welsh Government |
| Berwyn | SPA | 113 | Management Agreement; Direct management; Investigation | Natural Resources Wales; Welsh Government; RSPB |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Berwyn a Mynyddoedd de Clwyd/ Berwyn and South Clwyd Mountains | SAC | 113 | Management Agreement; Direct Management; Better Woodlands for Wales | Natural Resources Wales; RSPB; Welsh Government |
| Blackmill Woodlands | SAC | 2 | Management Agreement; Better Woodlands for Wales | Natural Resources Wales |
| Blaen Cynon | SAC | 15 | Management Agreement; Direct Management; Investigation | Natural Resources Wales |
| Burry Inlet | SPA | 10 | Revoke or amend licence; Investigation; Direct Management | Carmarthenshire County Council; Natural Resources Wales; City & County of Swansea |
| Cadair Idris | SAC | 2 | Direct Management; Investigation | Natural Resources Wales |
| Caeau Mynydd Mawr | SAC | 5 | Direct Management; Investigation | Natural Resources Wales |
| Cardigan Bay/ Bae Ceredigion | SAC | 4 | Management Agreement; Investigation | Natural Resources Wales |
| Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd | SAC | 72 | Direct Management; Investigation; Licences revoked or amended | Carmarthenshire County Council; Pembrokeshire County Council; City & County of Swansea |
| Carmarthen Bay Dunes/ Twyni Bae Caerfyrddin | SAC | 18 | Direct Management; Investigation; Licences revoked or amended | Natural Resources Wales; Welsh Government; Defence Estates |
| Castlemartin Coast | SPA | 6 | Direct management | Natural Resources Wales; National Trust |
| Cernydd Carmel | SAC | 8 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Wildlife Trust of South & West Wales |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Clogwyni Pen Llyn/ Seacliffs of Lleyn | SAC | 69 | Direct Management; Investigation; Glastir | RSBP; National Trust; Welsh Government |
| Coedydd a Cheunant Rheidol/ Rheidol Woods and Gorge | SAC | 13 | Management agreement; Investigation | Natural Resources Wales |
| Coedydd Aber | SAC | 9 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Welsh Government |
| Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat Sites | SAC | 54 | Direct Management; Investigation; Management agreement | Snowdonia National Park; National Trust; The Woodland Trust (Coed Cadw) |
| Coedydd Nedd a Mellte | SAC | 5 | Direct management; Investigation | Natural Resources Wales |
| Cors Caron | SAC | - | - | - |
| Cors Fochno | SAC | - | - | - |
| Corsydd Eifionydd | SAC | 12 | Direct Management; Investigation; Management agreement | Natural Resources Wales |
| Corsydd Llyn/ Lleyn Fens | SAC | 22 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Welsh Government |
| Corsydd Môn/ Anglesey Fens | SAC | 90 | Direct Management; Investigation; Management agreement | North Wales Wildlife Trust; Welsh Government; Cyngor Sir Ynys Mon |
| Craig yr Aderyn (Bird`s Rock) | SPA | 1 | Glastir | Welsh Government |
| Crymlyn Bog/ Cors Crymlyn | SAC | 9 | Direct management; Investigation | Natural Resources Wales |
| Cwm Doethie – Mynydd Mallaen | SAC | 14 | Direct management; Investigation | RSPB; Welsh Government; Wildlife Trust of South & West Wales |
| Dee Estuary | SPA | - | - | - |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Dee Estuary/Aber Dyfrdwy | SAC | 2 | Management agreement | Natural Resources Wales |
| Dunraven Bay | SAC | 2 | Investigation | Natural Resources Wales |
| Dyfi Estuary / Aber Dyfi | SPA | 1 | Management Agreement | Natural Resources Wales |
| Elenydd | SAC | 29 | Investigation; Glastir | North Wales Wildlife Trust; Welsh Government |
| Elenydd – Mallaen | SPA | 205 | Better Woodlands for Wales; Glastir; Direct management | Wildlife Trust of South & West Wales; RSPB; Welsh Government |
| Eryri/ Snowdonia | SAC | 80 | Investigation; Licences revoked or amended; Glastir | Dwr Cymru; North Wales Police; Snowdonia National Park |
| Glannau Aberdaron and Ynys Enlli/ Aberdaron Coast and Bardsey Island | SPA | 11 | Management Agreement; Direct management; Investigation | Natural Resources Wales; National Trust; RSPB |
| Glannau Môn: Cors heli / Anglesey Coast: Saltmarsh | SAC | 2 | Implementation of appropriate coastal management | Cyngor Sir Ynys Mon |
| Glannau Ynys Gybi/ Holy Island Coast | SAC | 14 | Direct Management; Investigation; Management agreement | Cyngor Sir Ynys Mon; National Trust; United Utilities |
| Glan-traeth | SAC | - | - | - |
| Glaswelltiroedd Cefn Cribwr/ Cefn Cribwr Grasslands | SAC | 2 | Investigation; Management agreement | Natural Resources Wales |
| Gower Ash Woods/ Coedydd Ynn Gwyr | SAC | 2 | Management agreement; Investigation | Natural Resources Wales |
| Gower Commons/ Tiroedd Comin Gwyr | SAC | 6 | Direct Management; Investigation; Management agreement | Wildlife Trust of South & West Wales; Natural |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| | | | | Resources Wales |
| Grassholm | SPA | - | - | - |
| Great Orme`s Head/ Pen y Gogarth | SAC | 14 | Management agreement; Investigation | Conwy County Borough Council; Natural Resources Wales |
| Grogwynion | SAC | 5 | Direct Management | Natural Resources Wales |
| Gweunydd Blaencleddau | SAC | 9 | Management Agreement; Direct Management; Investigation | Natural Resources Wales |
| Halkyn Mountain/ Mynydd Helygain | SAC | 7 | Management Agreement | Flintshire County Council; Natural Resources Wales |
| Kenfig/ Cynffig | SAC | 5 | Glastir; Investigation; Licences revoked or amended | Natural Resources Wales; Welsh Government |
| Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru | SAC | 26 | Direct Management; Investigation; Management agreement | Pembrokeshire Coast National Park; National Trust; Defence Estates |
| Llwyn | SAC | 19 | Glastir; Investigation; Licences revoked or amended | Natural Resources Wales; Welsh Government |
| Llyn Dinam | SAC | | | |
| Migneint–Arenig–Dduallt | SAC | 20 | Direct Management; Investigation; Management agreement | National Trust; RSPB; Welsh Government |
| Migneint–Arenig–Dduallt | SPA | 20 | Management Agreement; Direct management; Investigation | National Trust; RSPB; Welsh Government |
| Morfa Harlech a Morfa Dyffryn | SAC | 8 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Dwr Cymru; Snowdonia National Park |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Mwyngloddiau Fforest Gwydir/ Gwydyr Forest Mines | SAC | 18 | Direct Management; Investigation; Glastir | Natural Resources Wales; Welsh Government |
| Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal | SPA | 15 | Glastir; Direct management; Investigation | National Trust; Natural Resources Wales; Welsh Government |
| Mynydd Epynt | SAC | 4 | Investigation; Glastir; Change of operational practice | Defence Estates; Natural Resources Wales; Welsh Government |
| North Pembrokeshire Woodlands/ Coedydd Gogledd Sir Benfro | SAC | 12 | Direct Management; Investigation; Management agreement | Wildlife Trust of South & West Wales; Pembrokeshire Coast National Park; National Resources Wales |
| North West Pembrokeshire Commons/ Comins Gogledd Orllewin Sir Benfro | SAC | 15 | Direct Management; Investigation; Management agreement | Wildlife Trust of South & West Wales; National Trust; National Resources Wales |
| Pembrokeshire Bat Sites and Bosherston Lakes/ Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston | SAC | 9 | Direct management; Better Woodland for Wales; Licences revoked or amended | National Trust; Pembrokeshire Coast National Park; National Resources Wales |
| Pembrokeshire Marine/ Sir Benfro Forol | SAC | 4 | Direct Management; Investigation | Natural Resources Wales |
| Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau | SAC | 127 | Direct Management; Investigation; Management agreement | Cyngor Sir Gwynedd; Network Rail; Snowdonia National Park |
| Preseli | SAC | 6 | Direct Management; Management agreement | Pembrokeshire Coast National Park; Natural Resources |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| | | | | Wales; Welsh Government |
| Ramsey and St David`s Peninsula Coast | SPA | 6 | Management Agreement; Direct management; Investigation | Natural Resources Wales; RSPB; Welsh Government |
| Rhinog | SAC | 2 | Investigation | Natural Resources Wales |
| Rhos Llawr-cwrt | SAC | - | - | - |
| Rhos Talglas | SAC | 3 | Direct Management; Management agreement | Natural Resources Wales |
| Severn Estuary/Môr Hafren | SAC | 3 | Direct Management; Investigation; Management agreement | Natural Recources Wales; Welsh Government; Welsh Water |
| Skokholm and Skomer | SPA | - | - | - |
| St David`s / Ty Ddewi | SAC | 9 | Direct Management; Investigation; Management agreement | Pembrokeshire Coast National Park; RSPB; Natural Resources Wales |
| Traeth Lafan/ Lavan Sands, Conway Bay | SPA | - | - | - |
| Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay | SAC | 1 | Investigation | Natural Resources Wales |
| Y Twyni o Abermenai i Aberffraw/ Abermenai to Aberffraw Dunes | SAC | 18 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Welsh Government |
| Yerbeston Tops | SAC | 3 | Direct Management; Management agreement | Natural Resources Wales |
| Ynys Feurig, Cemlyn Bay and The Skerries | SPA | 4 | Management Agreement; Glastir | Cyngor Sir Ynys Mon; National Trust; Welsh Government |
| Ynys Seiriol / Puffin Island | SPA | - | - | - |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Burry Inlet | Ramsar | 10 | Investigation; Direct Management; Appropriate coastal management | Carmarthenshire County Council; City & County of Swansea; Natural Resources Wales |
| Crymlyn Bog | Ramsar | 8 | Direct Management; Investigation | Natural Resources Wales |
| Cors Caron | Ramsar | - | - | - |
| Cors Fochno & Dyfi | Ramsar | 1 | Management Agreement | Natural Resources Wales |
| Corsydd Mon & Llyn | Ramsar | 9 | Direct Management; Investigation; Management agreement | Cyngor Sir Ynys Mon; Natural Resources Wales |
| Llyn Idwal | Ramsar | - | - | - |

For more detail on the location of protected areas visit Water Watch Wales for interactive maps.

# 5. Welsh part of the Severn River Basin District Progress 2009 – 2015

## 5.1 Introduction

Since the 1st April 2013 Natural Resources Wales and the Environment Agency are jointly responsible for managing the parts of the Severn RBD. The Environment Agency lead on the Severn and are therefore responsible for producing the Severn River Basin Management Plans. This section contains an assessment of what has been achieved in the Welsh section of the Severn RBD since the publication of the first plan in 2009. It includes a report on the measures implemented and how the water environment has changed in the last 6 years (based on comparing data up to the end of 2014 and the same standards and classification tools used in 2009).

Only the Welsh data is included as both the English and Welsh data will be combined in the second cycle Severn River Basin Management Plan supplied by the Environment Agency. Both Natural Resources Wales and Environment Agency work closely together and with other stakeholders to meet the requirements of the WFD and to provide a joined up approach to catchment management.

Since the 2009 plan was published there have been many improvements including increased evidence, changes to monitoring methods and in the way we monitor and collect information; for example the Heavily Modified Water Body review. Further information can be found in the **RBMP Overview Annex.** The number and type of water bodies for the Welsh part of the Severn RBD are shown in table 42 below.

Table 42. Number and type of water bodies in the Welsh part of the Severn RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River*** | 204 | 20 | 27 | 251 |
| **Lake** | 4 | 1 | 34 | 39 |
| **Coastal** | 0 | 0 | 0 | 0 |
| **Estuarine** | 1 | 0 | 2 | 3 |
| **Groundwater** | 9 | 0 | 0 | 9 |
| **Total** | **218** | **21** | **63** | **302** |

*River water bodies includes canals and surface water transfers

## 5.2 Delivery of actions from first cycle

The action taken during the first cycle can be divided into the groups set out below. The combination of all these actions collectively contribute to the protection and improvement of the water environment. The actions relate to all types of water bodies, rivers, lakes, wetland, groundwater, estuaries and coastal waters including those in protected areas. These include the programme of measures which were set out to achieve the statutory objectives, including using existing mechanisms, statutory and voluntary actions. The updated Programme of Measures is set out in Section 3 of the **RBMP Summary** together with more local detail provided in **Water Watch Wales**.

**Preventing deterioration** – all measures and many of the day to day activities of Natural Resources Wales and many of our partners contribute to preventing deterioration of the water environment.

- For further information see the equivalent section for Wales (section 2 of this report)'.

**The Programme of Measures**
The 2009 RBMP included national and more local measures, across sectors and all water body types. This was the first programme of statutory measures specifically developed to meet the requirements of the WFD. They include actions to prevent deterioration and improvements in water body status. Progress with these are formally reported to Europe through the Water Information System for Europe (WISE).

80% of measures in the first plan have been completed in the Welsh part of the Severn RBD. Some measures have not been completed for the following reasons;

- 13 measures have been reassessed are no longer needed or considered effective
- 10 were not funded (funding withdrawn)
- 2 there was no mechanism to implement the measure
- 26 reviewed and updated as a new measures for this plan (ongoing)

**Investigations**
The Programme of Measures also includes investigations, for example investigations into the impacts of metal mines through the Metal Mine Strategy for Wales. In addition to these specific types of investigations there is also a rolling programme which addresses the reasons for not achieving good status. Most investigations took place before 2013 so that the results are known in time for the formal review of the first plan.

Since the 2009 RBMP was published, Natural Resources Wales and the Environment Agency have carried out an extensive investigations programme in the Severn RBD to find out why many water bodies are not in good condition. This has included over 260 investigations in the Welsh part of the Severn; not including those to ensure 'no deterioration'. Our knowledge and understanding of the issues affecting water bodies has increased significantly. As a result, we are now in a better position to work with our partners to identify where the greatest environmental improvements can be made, which will provide the most benefit to everyone. Our investigations confirmed that the main reasons why water bodies are not in a good condition relate to issues such as, physical modifications and diffuse pollution from rural areas.

Natural Resources Wales has carried out:
- **47** investigations to confirm if a water body is not in good condition, where we had doubt in 2009.
- **198** investigations to find out why a water body is not in good condition. The second cycle RBMP includes the findings of these investigations.
- **24** further investigations are underway or planned to decide what actions could be taken to deal with the problem.

**Additional new measures**
The programme of measures requires regular review to ensure the right actions are being delivered in the right place. During the first cycle it was clear that new priorities and/or opportunities meant that some actions were reviewed to reflect the current need of the environment, this included;

- Existing measures were applied in a new place.
- New opportunities to work with partners in a different way using existing resources and funding, such as the river walk programme that formed a key part of the local investigations work.

*Welsh Government funding*
Welsh Government initiated a fund across Wales to support voluntary partnership projects which delivered improvements to the water environment. During the first cycle, Natural Resources Wales received £850k over 3 years from Welsh Government (£450k in 2012/13, £150k in 2013/14 and £250k in 2014/15) to support delivery of WFD projects. A wide range of third sector projects were supported including activities such as fencing, tree planting and barrier removal as well as a number of community engagement and awareness raising projects.

Table 43. Welsh Government WFD projects

| Year | Project Title | Lead Partner/s |
|---|---|---|
| 2012-13 | Bechan Brook Restoration Project | Severn rivers Trust |
| 2012-13 | Llifior Brook Restoration | Severn rivers Trust |
| 2012-13 | Monmouthshire Olway and Trothy (MOAT) Improvement Project | Wye and Usk Foundation |
| 2012-13 | River Cynon Habitat and Easement Improvement Study | Groundwork Merthyr & Rhondda Cynon Taff (RCT) |
| 2012-13 | South East Wales Rivers Habitat and Easement Improvement Project | Keep Wales Tidy |
| 2013-14 | Sirhowy river restoration | Groundworks, SE Wales Rivers Trust, Caerphilly County Borough Council |
| 2013-14 | Tanat Salmon Project | Severn Rivers Trust |
| 2013-14 | Trannon Catchment Project | Severn Rivers Trust |
| 2013-14 | Monty Rivers Project | Severn Rivers Trust |
| 2014-15 | Rhondda channel restoration | Salix, RCT, landowners & local community groups / volunteers |

**Alternative objectives**
In some instances there are known reasons as to why water bodies could not achieve good status by 2015. This does not mean that actions were not undertaken in these water bodies. We need to work with our partners, including the scientific community to find technically feasible cost beneficial solutions or new ways of doing things. Details of the alternative objectives for the next six years are set out in the Environment Agency 2015 Severn RBMP.

## 5.3 Deterioration

One of the main objectives of the WFD is to prevent deterioration of a water body from the 2009 baseline. Where there is shown to be a deterioration in status from 2009 to 2015 these the reasons for this must be assessed and explained.

Some deterioration may not actually mean that the quality of the environment is worse, it is just that we have monitored elements in that water body in the first cycle which were not previously monitored. It is important that all the relevant data is reviewed to determine what actions need to be taken where and in some cases no follow up action will be required.

To assess compliance with the WFD objective of preventing deterioration, the 2015 classifications results (based on data up to the end of 2014 and the same standards and classification tools used in 2009), were compared with the 2009 classification baseline. The assessment considered whether each element has deteriorated from one status class in 2009 to a lower one in 2015. This includes sites where an element has deteriorated but it hasn't caused a deterioration in the overall classification due to the classification of the other elements. Confidence has been measured in terms of certainty. Natural Resources Wales has included those sites where we are 'quite certain' to 'highly certain' that the element has failed. The results of this assessment are summarised in table 44.

Table 44. Water bodies that have element level deteriorations (at >75% confidence)

| Water bodies | Number of water bodies | % of water bodies |
|---|---|---|
| Surface water ecological status | 16 | 5% |
| Surface water chemical status | 3 | 1% |
| Groundwater quantitative status | 0 | 0% |
| Groundwater chemical status | 0 | 0% |

In the Welsh part of the Severn RBD; the total number of water bodies that have deteriorated in overall water body classification status from the 2009 baseline is 5.

**Reasons for Deterioration**

The reasons for the deteriorations outlined in table 44 above are summarised in table 45 below. In total 25 elements deteriorated over 19 water bodies.

Table 45. Water bodies that have element level deteriorations from the 2009 baseline.

| Water body name | Water body ID | Reason for Deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Afon Banwy - conf Afon Gam to Afon Vyrnwy | GB109054049850 | Reduction in number of sites used to classify. | Fish | Remaining site moderate based on 2009 survey despite 102 salmon being present. Expert judgement is no measures required. |

| Water body name | Water body ID | Reason for Deterioration | Element affected | Measure required |
|---|---|---|---|---|
| Tirabad Dulas - source to conf R Irfon | GB109055036690 | Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Copper<br>Zinc | Initially review metal failures using new cycle 2 classification tool. |
| R Irfon - conf Tirabad Dulas to conf R Wye | GB109055037090 | Phosphate: unknown, new failure.<br>Zinc: Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Phosphate<br>Zinc | Phosphate: new investigation.<br><br>Zinc: Initially review metal failures using new cycle 2 classification tool. |
| Gilwern Bk - source to conf R Arrow | GB109055041830 | Pre-existing barriers to migration and fact that previous salmon were likely stocked. | Fish | Barrier easements, habitat improvement and diffuse rural pollution measures |
| Afon Cammarch - source to conf R Irfon | GB109055041880 | Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Copper<br>Zinc | Initially review metal failures using new cycle 2 classification tool. |
| Afon Garth Dulas - source to conf R Irfon | GB109055041890 | Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Zinc | Initially review metal failures using new cycle 2 classification tool. |
| Norton Bk - source to conf R Lugg | GB109055042040 | Fish: Passed in 2003 survey, deteriorated since, exact reason unknown but pressure from pre-existing STW Ammonia and pre-existing barriers downstream.<br><br>Ammonia: pre-existing STW, no known changes, | Fish<br>Ammonia | Barrier easements in downstream water bodies & point source STW. |

| Water body name | Water body ID | Reason for Deterioration | Element affected | Measure required |
|---|---|---|---|---|
| | | assume deterioration result of variability in spot samples. | | |
| Afon Chwefru - source to conf R Irfon | GB109055042190 | Phosphate: unknown, new failure.<br>Zinc: Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Phosphate<br>Zinc | Phosphate: new investigation.<br><br>Zinc: Initially review metal failures using new cycle 2 classification tool. |
| R Wye - conf to conf Afon Marteg to conf Afon Elan | GB109055042280 | Unknown, new failure. | Invertebrates | New investigation. |
| Afon Tarenig - source to conf R Wye | GB109055042350 | Unknown, new failure. | Phosphate | New investigation. |
| Ebbw R - conf Ebbw Fach R to Maes-glas | GB109056026910 | “Ubiquitous, persistent, bioaccumulative and toxic substance (uPBT). Assume deterioration result of variability in spot samples. | Tributyltin Compounds | Identifying local source not feasible. Measures taken at national or international level |
| Nant Menasgin - source to conf R Usk | GB109056033010 | Unknown, new failure. | Invertebrates | New investigation. |
| Afon Crai - source to conf R Usk | GB109056033080 | Zinc: Suspect metal mine point and diffuse pressure was present so assume deterioration result of variability in spot samples. | Zinc | Initially review metal failures using new cycle 2 classification tool. |
| Ely R - conf Nant Clun to Allot Gardens, Ely | GB109057027260 | Invertebrates: Pollution incidents, organic materials, source not determined.<br><br>Tributyltin: “Ubiquitous, persistent, bioaccumulative and toxic substance (uPBT). Assume deterioration | Invertebrates<br>Tributyltin Compounds | Invertebrates: Cannot tackle primary source as not identified at time of incidents. Can carry out WQ inspections in the water body and have water company event duration monitoring on intermittent discharges.<br><br>Tributyltin: Identifying local source not feasible. Measures |

| Water body name | Water body ID | Reason for Deterioration | Element affected | Measure required |
|---|---|---|---|---|
| | | result of variability in spot samples. | | taken at national or international level |
| R Taff - conf Rhondda R to Castle Street | GB109057027270 | "Ubiquitous, persistent, bioaccumulative and toxic substance (uPBT). Assume deterioration result of variability in spot samples. | Tributyltin Compounds | Identifying local source not feasible. Measures taken at national or international level |
| Taf Fechan - source to conf Afon Taf Fawr | GB109057033160 | Good 2014, Moderate 2015. Based on same 4 sites, one site new 2014 survey shows reduction in salmon from 7 to 0 (trout numbers stable at 25/26). Pre-existing Barriers are known to exist so suspect as reason. | Fish | Barrier easement required plus habitat improvement |
| Claerwen Reservoir | GB30938427 | No consented discharges in WB therefore likely rural land management issues. Unknown if new issues or deterioration result of variability in spot samples. | Total Phosphorus | Drinking Water Protected Area investigation. |
| Talybont Reservoir | GB30940365 | Lack of u/s discharges therefore likely rural land management issues. Unknown if new issues or deterioration result of variability in spot samples. | Total Phosphorus | Drinking Water Protected Area investigation. |

Throughout the first cycle we have increased our understanding of the water bodies in the Severn RBD. Part of improving this knowledge is better monitoring to gain actual data. Some water bodies had no data in 2009 so the baseline was based on data from similar water bodies.

Where deterioration of status occurs, the cause needs to be identified and measures to restore the water body to its previous status put in place as soon as possible. The water

bodies listed in the table 45 above have deteriorated in classification from 2009 to 2015 for the reasons mentioned above.

Under certain and specific circumstances deterioration of status is permitted. Further information can be found in the **RBMP Overview Annex**. No cases that meet these requirements have been identified in this RBD.

## 5.4 Progress in achieving first cycle objectives

Many improvements have been undertaken in addition to these measures by many organisations and individuals. In 2009 37% of water bodies in the Welsh section of the Severn RBD achieved good or better status. The 2015 classification results indicate that 43% of all water bodies now achieved good or better status.

Although many of the measures completed over the last 6 years are providing benefits for the local environment, there has been limited improvement in the number of water bodies at good status. However, during that period 179 water body elements improved[6] by one or more class.

Table 46. Comparison of 2009 baseline with 2015 predicted and actual results

| Number of water bodies at good or better status | 2009 | 2015 predicted | 2015 actual |
|---|---|---|---|
| Surface water ecological status | 37% | 49% | 43% |
| Surface water chemical status | 6% | 6% | 12% |
| Groundwater quantitative status | 100% | 100% | 100% |
| Groundwater chemical status | 78% | 78% | 67% |
| **Overall status** | **37%** | **49%** | **43%** |

Chemical status: In 2009 6% of waterbodies were at good status, 3% failed and 91% were not assessed due to not being at risk. In 2015 12% were at good status, 5% failed and 84% were not assessed due to not being at risk. However, although there appears to be an increase of 6% for water bodies at good status and also by 2% failing this is due to an additional 21 water bodies being assessed for chemical status in the 2015 classification. Thus the results reflects the increased number of water bodies monitored rather than an actual improvement in overall chemical status, further information can be found in section 5.3.1 figure 12.

Improvement in status is limited by the current understanding of pressures on the water environment, their sources, the action required to tackle them together with the resources to deliver the programme (both people and budget). In addition the one out all out rules of WFD classification can result in a failure of one element monitored to drive the overall status.

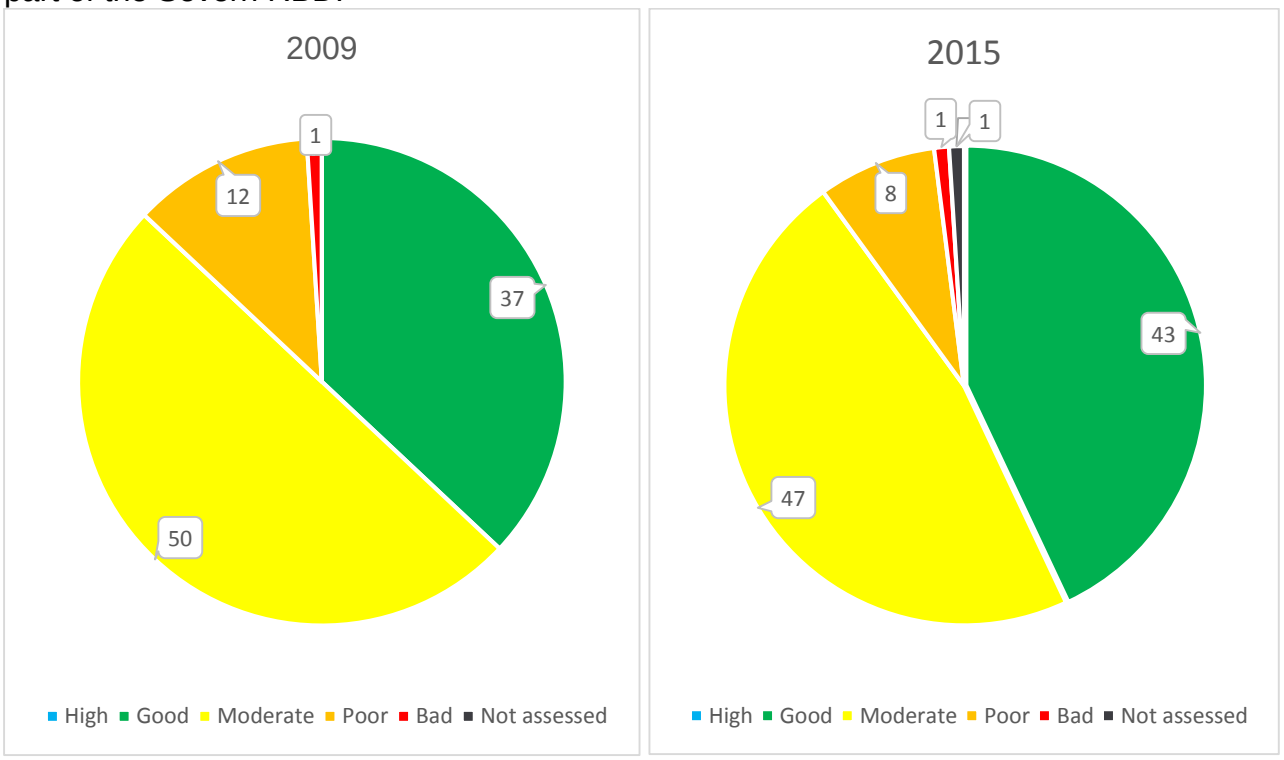
[6] Note 'Water body elements' includes ecological (biological, physio-chemical, other substances and specific pollutant elements excluding BOD and Dissolved Oxygen in canals) and chemical elements (Other Pollutants, Priority Substances and Priority Hazardouse Sunstances) only in surface waters and quantitative and chemical (GW) elements only for groundwater bodies. Excludes supporting elements. Assessed elements only.

### 5.4.1 Overall Water body classification status for the Welsh part of the Severn

In 2009 12% of all water bodies were in poor condition, 50% were in moderate condition and 37% were in good condition. Since then, many improvements have been made both in monitoring and data collection and assessment. For example, a number of water bodies are now no longer failing to meet the required standards because of some of the most highly polluting chemicals (priority substances).

The 2015 classification shows that the percentage of water bodies achieving good or better status has increased to 43%. It can be seen in figure 10 below that the number of water bodies at poor status has reduced from 12% to 8% with a resulting increase in the number of water bodies at moderate status. We expect to see further improvements as the environment responds, realising the benefits of actions.

Figure 10. Percentage comparison of the overall total number of water bodies in the Welsh part of the Severn RBD.




Some of this change reflects the number of sites monitored by the WFD monitoring programme. Since 2009, to fill gaps in our understanding, we have increased our monitoring to better understand the pressures on the water environment, especially in some estuarine and coastal water bodies. Therefore much of the change in the data indicates a better understanding of the pressures affecting the environment rather than an actual change in quality. Apparent deterioration will continue to be investigated to understand if it is due to a real change in quality of the environment or the reasons explained above.

**Surface waters**

In the first cycle there are 293 surface water bodies in the Welsh section of the Severn RBD, including rivers, canals, lakes and three estuaries.

For surface waters, good status is a statement of 'overall status', and has an ecological and a chemical component. Ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail. Further information on how the classification status is calculated in the **RBMP Overview Annex.**

Ecological classification

The health of the water bodies in the Welsh section of the Severn RBD has improved since the first river basin management plan was published. In 2009 37% of surface water bodies in the Welsh section of the Severn RBD achieved good or better ecological status. We predicted that this would rise to 49% by 2015. The 2015 classification results indicate that 43% of surface water bodies achieved good or better status. Improvement in status is limited by the current understanding of pressures on the water environment, their sources, and the action required to tackle them.

Figure 11. Percentage comparison between ecological classification for surface water between 2009 and 2015.

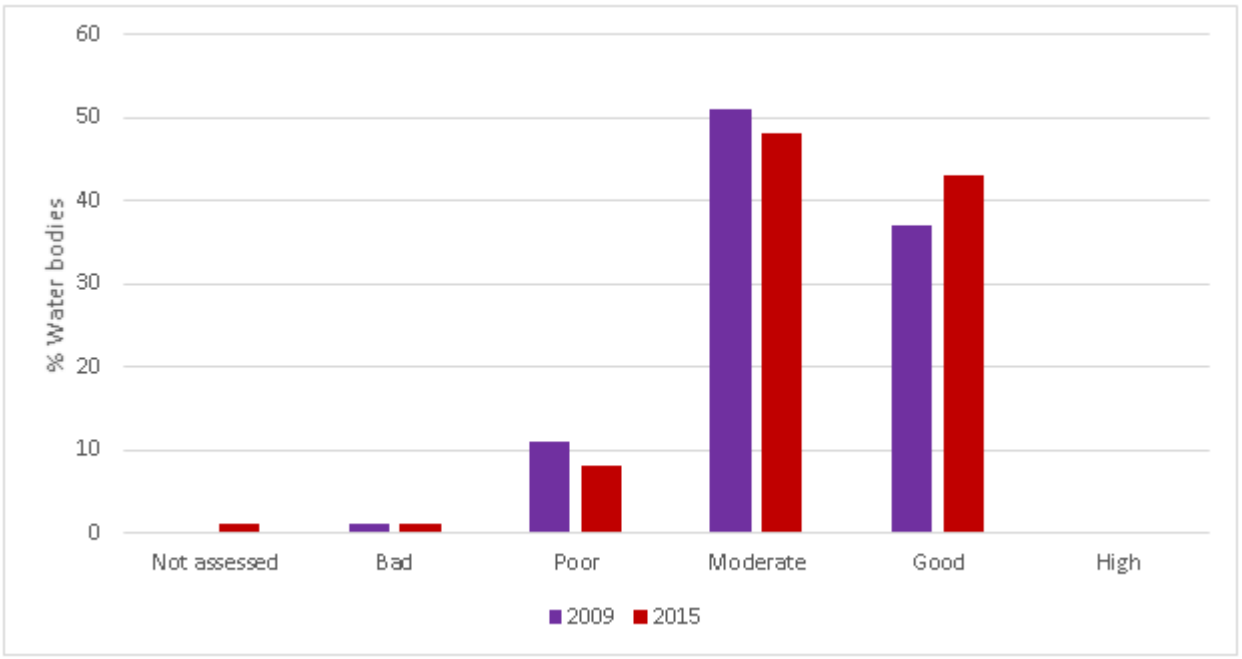
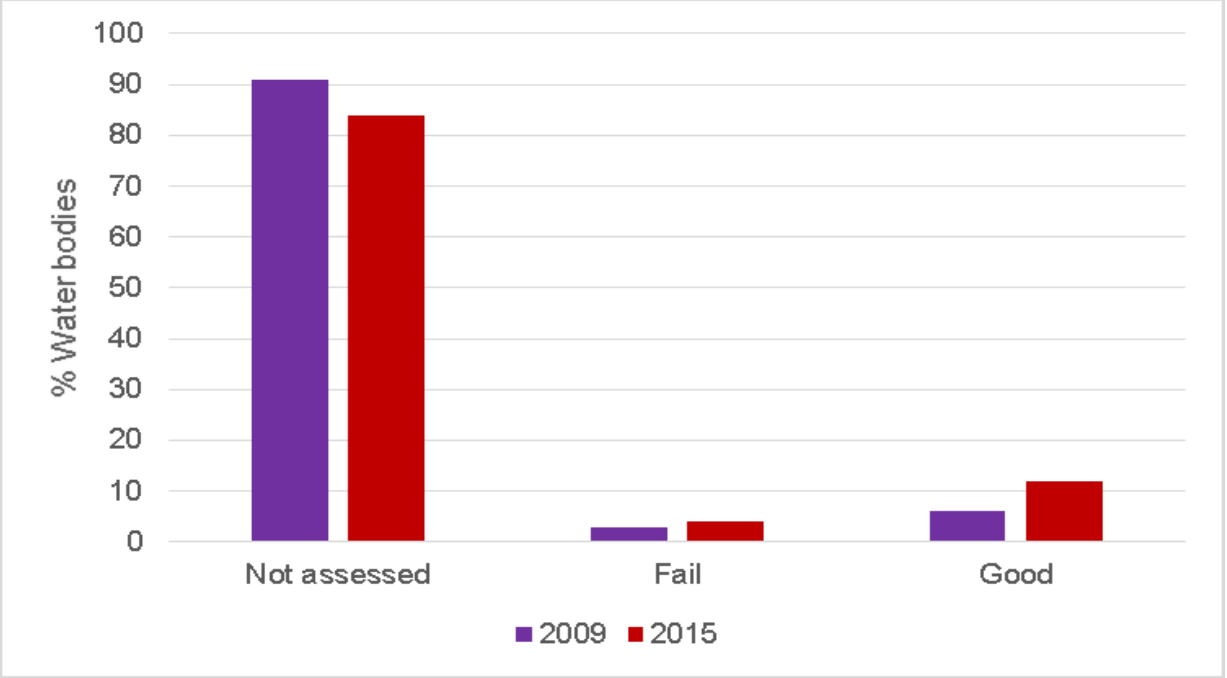


Figure 12. Comparison of 2009 and 2015 chemical classification




Chemical classification and reporting

Monitoring for chemicals is based on those that are discharged in significant quantities and at locations which are considered to be at risk of failing objectives. Over twice the number of water bodies have been reported in 2015 to that in 2009, however the proportion of water bodies failing has remained broadly similar. The chemicals causing most failures are metals related to abandoned mine discharges.

## Groundwater bodies

In the first cycle there are 9 water bodies classed as groundwater in the Welsh part of the Severn RBD. The status of groundwater bodies is assessed by the quantitative status and chemical status.

Quantitative status

All nine groundwater bodies remain at good quantitative status in 2009 and 2015.

Chemical status

Of the nine groundwater bodies in 2009 seven were at good chemical status in comparison to six in 2015. This means that three are at poor status compared to two in 2009. The increase in the number of groundwater bodies at poor status and apparent deterioration in groundwater quality is because additional surface water investigations have confirmed the link between discharges of contaminated minewaters (groundwater) into nearby surface waters leading to poor water quality.

A summary is shown in table 47.

Table 47. Summary of the number of assessed groundwater bodies and their status in the Welsh part of the Severn RBD in 2009 and 2015

| Water body category | Quantitative Status | | | | Chemical Status | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | Poor | | Good | |
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Groundwater | 0 | 0 | 9 | 9 | 2 | 3 | 7 | 6 |

For all monitoring networks please visit **Water Watch Wales** for interactive maps.

## 5.4.2 Ecological Classification Results for Water body Types

**Rivers**
In the first cycle there are 251 water bodies classed as rivers, including canals and surface water transfers in the Welsh part of the Severn RBD. Twenty of these are designated as artificial and 27 as heavily modified water bodies. A summary is shown in table 48.

Table 48. Summary of the river water bodies in the Welsh part of the Severn RBD

| Water body category | Natural | Artificial | Heavily Modified | Total |
|---|---|---|---|---|
| **River** | 204 | 8 | 27 | **239** |
| **Canals** | 0 | 7 | 0 | **7** |
| **Surface water transfers** | 0 | 5 | 0 | **5** |
| **Total** | **204** | **20** | **27** | **251** |

In 2009 87 river water bodies were classed in good ecological status in the Welsh part of the Severn RBD. In 2015 this increased by 25 water bodies to 112 which equates to a 10% increase (from 35 to 45%). A summary is shown in table 49.

Table 49. Summary of the number of assessed river water bodies and their ecological status in the Welsh part of the Severn RBD in 2009 and 2015

| Water body category | Bad | | Poor | | Moderate | | Good | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| **River** | 2 | 2 | 31 | 20 | 127 | 113 | 79 | 101 | 3 |
| **Canal** | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 6 | |
| **Surface water transfers** | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 3 |
| **Grand Total** | **2** | **2** | **31** | **20** | **129** | **114** | **89** | **112** | |

In the 2009 RBMP it was noted that for rivers, which comprise the majority of water bodies in the RBD, the main elements indicating that good ecological status or potential is not being achieved are fish, specific pollutants and phosphate. The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are fish, specific pollutants and phytobenthos.

While we have a much better understanding of the Welsh water environment and the pressures acting upon it, we still require further evidence to fully understand how to

manage these pressures to allow sustainable use of our waters and secure a safe future for both the local economy and biodiversity.

**Lakes**

In the first cycle there are 39 water bodies classed as lakes in the Welsh part of the Severn RBD. One is designated as an Artificial Modified Water body and 34 as heavily modified water bodies.

In 2009 19 lake water bodies were classed in good ecological status in the Welsh part of the Severn RBD. In 2015 this decreased by 6 water bodies to 13 which equates to a 16 % decrease (from 49% to 33%). However, in 2009 we reported that for many estuaries, coasts and lakes it would be unlikely that an improvement in the number of water bodies at 'good' status/potential could be achieved by 2015. The biological tools and monitoring data needed to classify these types of water bodies had only recently been developed in 2009. Therefore for many water bodies there was little or no monitoring information and classification was based on either modelling information or expert judgement. Our investigations over the last 6 years have helped to increase our knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. However many of these water bodies are very complex and we require further evidence to understand not only the pressures but also how to adequately deal with them in a sustainable way to ensure that both our economy and our water environment can flourish and provide a safe, clean and biodiverse environment for all. A summary is shown in table 50.

Table 50. Summary of the number of assessed lake water bodies and their ecological status in the Welsh part of the Severn RBD in 2009 and 2015

| Water body category | Poor | | Moderate | | Good | |
|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Lakes | 2 | 2 | 18 | 24 | 19 | 13 |

In the 2009 RBMP it was noted that for lakes the main elements indicating that good ecological status or potential is not being achieved are total phosphorus, specific pollutants and chironomids (CPET). The main elements in the 2015 classification indicating that good ecological status or potential is not being achieved are total phosphorus, macrophytes and phytoplankton blooms.

During the 20th Century, acid rain caused by acid gases emitted by heavy industry and coal fired power stations caused serious acidification to many of our upland lakes and streams. Air pollution regulations have successfully reduced the amount of acid deposition to much lower levels, but the chemical environment has been slow to recover, and acid sensitive animals and plants need to recolonise formerly polluted waters. However, monitoring data indicate that many of our acid sensitive upland waters are now showing clear improving trends.

Many of our lakes our heavily modified and have pressures from historic uses. Finding ways to mitigate for these impacts is challenging. Natural Resources Wales, along with our stakeholders, are continually striving to find new innovative solutions to these issues to create the right balance in order to provide safe clean drinking water, recreation and biodiversity.

**Estuarine (transitional) and Coastal Water bodies**
There are 3 water bodies classed as coastal and estuarine in the Welsh part of the Severn. None of these are designated as artificial and 2 as heavily modified water bodies.

All three were reported as moderate ecological status in 2009 and remain at moderate in 2015. In the 2009 river basin plan we reported that for many estuaries and coastal waters it is unlikely that an improvement in the numbers of water bodies at 'good' status/potential can be achieved by 2015. The biological tools and monitoring data needed to classify these types of water bodies have only recently been developed. There is limited knowledge about the pressures that affect many of these water bodies and how their biology responds to changes in these pressures. There has been no further deterioration in estuarine and coastal water bodies in Wales however, we have completed investigations into elements that have not achieved good status and put in place measures where appropriate in the wider catchment.

Table 51. Summary of the number of assessed coastal and estuarine water bodies and their status in the Welsh part of the Severn RBD in 2009 and 2015

| Water body category | Bad | | Poor | | Moderate | | Good | | High | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| Coastal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Estuarine | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 |
| **Total** | **0** | **0** | **0** | **0** | **3** | **3** | **0** | **0** | **0** | **0** |

In the 2009 RBMP it was noted that for coastal and estuarine water bodies the main elements indicating that good ecological status or potential is not being achieved was dissolved inorganic nitrogen. The main element in the 2015 classification indicating that good ecological status or potential is not achieved is mitigation measures and biological elements.

**Case study – Fisheries improvement in the Ebbw catchment**

- There have been major improvements in water however the status is still only moderate due to the quality of its fish populations, primarily as a result of barriers to migration, with additional pressures.
- In 2012 -13 via the Salmon for Tomorrow project a number of weirs have removed or improved that were impassable to migratory fish on the Sirhowy, a main tributary of the Ebbw and on the main river itself.
- Further plans to improve passage at 4 major barriers on the Ebbw Fach, with construction of fish passes; are in preparation.To complement this we have been working with South East Wales Rivers Trust, Groundwork Caerphilly and KWT to undertake in river habitat improvements, riparian tree work, bank revetment, invasive weed control, fencing and installation of gravel traps and introduction of gravel to create spawning beds.
- Gibbs Weir on the Sirhowy was a 3m high weir that we removed and regraded the river channel. We have evidence of salmon spawning upstream of this site in winter 2013 and salmon fry found in surveys undertaken in summer 2014.


## 5.5 Protected Area compliance

There are many areas where the water environment is especially valued. These areas include rare wildlife habitats or species, bathing waters and areas where drinking water is abstracted. These areas have been designated as 'Protected Areas'. These are priority for action to make sure they achieve their objectives and protect the benefits they provide.

Protected Areas need to meet standards that are relevant to their particular use. These are often more stringent than the standards used to assess ecological or chemical status under WFD. The delivery of actions during the first cycle described above will also have benefited the Protected Areas in achieving compliance.

**Drinking water protected areas**

The Drinking Water Inspectorate is the competent authority for the Drinking Water Directive. They publish an annual report detailing compliance with the Directive's water quality requirements.

Natural Resources Wales has produced associated action plans for all relevant drinking water protected areas to manage the risk of water quality deteriorating.

As more chemical samples have been taken from rivers, lakes and groundwater and new abstractions have come about, the number of drinking water protected areas classified as at risk of water quality deterioration or at poor chemical status (for groundwater only) has increased. This change, as highlighted by the improved understanding of the water environment, could be due to:

- new abstractions being developed or identified
- real deteriorations in water quality
- changes in the location of the monitoring so new or different influences on water quality are being picked up
- additional sampling data being provided by the abstractor
- the number of samples increasing providing more evidence of deterioration
- the risks having been incorrectly identified previously
- new risks have emerging that previously weren't monitored

Measures, such as providing advice and guidance to stakeholders in catchments, capital grants for infrastructure improvements (for example biobeds) and payment for ecosystem services have been used to protect water quality. The baseline for 2015 is presented in the **RBMP Summary**.

**Economically significant species (freshwater fish)**
The Freshwater Fish Directive was repealed in December 2013. Environmental objectives for freshwater fish protected areas ceased to have effect from that date. An equivalent level of protection is provided by the water body objectives in the RBMP Summary.

**Economically significant species (shellfish waters)**
Since 2013 the requirements for Shellfish Water Protected Areas (SWPAs) have transferred to the WFD. However, there are no SWPAs in the Welsh part of the Severn RBD.

**Recreational waters (bathing waters)**
A revised Bathing Water Directive introduced new water quality objectives for bathing water protected areas from 2015. 2015 is the first year of the new Directive that imposes tighter standards on bathing water qualify classifications aimed at achieving higher standards than the past Directive. Standards now have tougher water quality targets to achieve, the new standards are approximately twice as strict as previous.
There are no recreational or bathing waters in the Welsh part of the Severn RBD.

**Natura 2000 sites: Water dependent Special Areas of Conservation or Special Protection Areas**
In Wales the condition of designated habitats and species features in SAC and SPAs for the Habitats and Birds Directives are reported over 6 year cycles. This reporting approach differs between England and Wales. In England condition is reported on a unit basis and

Wales on a designated habitat or species feature basis. In addition there are slight differences to some of the categories used for reporting. Table 52 summarises the data for the Welsh section of the Severn RBD based on the number of designated habitats and species features in each category. The most recent data available has been used. There are some gaps in the data due to the differences in the requirements in which the status of some designated features are reported. For example, SPA features are reported at a UK level and not at a site level. So in table 13 the condition of individual features are reflected as unknown. Also the boundary of some of the SACs and SPAs cross more than one RBD. In these cases the relevant SAC or SPA has been considered in each RBD where the boundaries overlap.

Table 52. Natura 2000 water protected areas current condition and objectives in Wales:

| **Current condition**<br>**Number of Natura 2000 designated habitats and species** | |
|---|---|
| Favourable: Maintained | 4 |
| Favourable: Recovered | 4 |
| Favourable: Un-classified | 10 |
| Unfavourable: Recovering | 3 |
| Unfavourable: No change | 4 |
| Unfavourable: Declining | 1 |
| Unfavourable: Un-classified | 33 |
| Destroyed: Partially/ Completely | 0 |
| Not assessed | 24 |
| Total | 83 |

* note that this includes the River Wye (Wales) only

Table 53 gives information on the approximate number of actions completed in the first RBMP cycle captured in the Natural Resources Wales Special Sites Actions Database for SAC and SPA sites. Actions are recorded at a Management Unit level and some actions can affect more than one unit. It should be noted that a N2K boundary can overlap more than one RBD and have been included for each RBD. The table does not include the additional measures under WFD undertaken at the sites.

Table 53. Actions undertaken at Natura 2000 Protected Areas in the Welsh part of the Severn RBD

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Cwm Cadlan | SAC | 18 | Direct Management; Investigation; Management agreement | Natural Resources Wales |
| Drostre Bank | SAC | 1 | Investigation | Natural Resources Wales |
| Elenydd | SAC | 29 | Glastir; Investigation | Natural Resources Wales; Welsh Government |
| Elenydd – Mallaen | SPA | 205 | Better Woodlands for Wales; Glastir; Direct management | Wildlife Trust of South & West Wales; RSPB; Welsh Government |
| Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses | SAC | 13 | Direct Management; Investigation | Natural Resources Wales |
| Granllyn | SAC | 6 | Direct Management; Investigation; Management agreement | Woodland Trust (Coed Cadw); Natural Resources Wales |
| Llangorse Lake/ Llyn Syfaddan | SAC | 7 | Glastir; Investigation; Management agreement | Natural Resources Wales; Welsh Government |
| Montgomery Canal | SAC | - | - | - |
| Mynydd Epynt | SAC | 4 | Investigation; Glastir; Change of operational practice | Defence Estates; Natural Resources Wales; Welsh Government |

| Natura 2000 site | Designation | No. of actions completed 2009-2015 | Examples of actions completed | Examples of organisations undertaken actions |
|---|---|---|---|---|
| Rhos Goch | SAC | 8 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Welsh Government |
| River Usk/ Afon Wysg | SAC | - | - | - |
| River Wye/ Afon Gwy | SAC | 31 | Direct Management; Investigation; Management agreement | Wye and Usk Foundation; Natural Resources Wales; Welsh Government |
| Severn Estuary | SPA | 3 | Management Agreement; Direct management; Investigation | Natural Resources Wales; Welsh Government |
| Severn Estuary/Môr Hafren | SAC | 3 | Direct Management; Investigation; Management agreement | Natural Resources Wales; Welsh Government; Welsh Water |
| Sugar Loaf Woodlands | SAC | 1 | Review consents | Natural Resources Wales |
| Usk Bat Sites/ Safleoedd Ystlumod Wysg | SAC | 5 | Direct Management; Investigation; Management agreement | Natural Resources Wales |
| Severn Estuary (Wales) | Ramsar | 3 | Direct Management; Investigation; Management agreement | Dwr Cymru; Natural Resources Wales |
| Midland Meres and Mosses Phase 2 (Wales) | Ramsar | 13 | Direct Management; Investigation; Management agreement | Natural Resources Wales |

## 6. Review of first cycle progress

Having reviewed the outcomes over the last six years it is evident that some of the lessons learnt need to be applied to the updated plans if we are to achieve our long term objectives.

In particular the following lessons have been identified;

Monitoring and data

- Need to ensure there is an efficient and evidence based monitoring programme in place that enable the evaluation and interpretation of the data ensuring the right actions are taken in the right place.

Measures

- A number of the voluntary measures did not happen and responsibility for measures was sometimes difficult to determine. It is often these measures that are affected by limited resources, both financial plus people time and ownership of the action. This was particularly the case for many of the diffuse pollution measures which are often the more challenging issues to resolve.
- There needs to be better alignment across sectors ensuring maximum benefit for people and wildlife. In many instances there are multiple actions required to meet the water body objectives and this requires collaboration and commitment across relevant sectors who are responsible for delivery actions and preventing deterioration.
- Many of the actions are better delivered at the local catchment scale. The first cycle took more of a RBD scale working alongside the Liaison Panels. Whist this scale can be effective for strategic planning and programming a more local approach may result in better improvements.
- Projects need a more holistic approach which provides wider benefits to the whole of the catchment.
- Measures listed in the first plan were sometimes very broadly worded and therefore difficult to track. Ensure the updated programme of measures and investigations are tracked and reviewed.

Protected Areas

- Whilst many of the measures implemented between 2009 and 2015 have resulted in improvements in Protected Areas, the scale of improvements has not always been enough to secure compliance with objectives. A more holistic, catchment scale approach is required to meet the Protected Area objectives.

Communication and awareness raising

- Ensure communities and general public are involved in the decision making.
- Raise awareness of the small actions people can take at home and at work which can make an overall difference such as SUDS, rainwater harvesting and understanding the impact of actions on the environment.
- Engage with partners who could signpost their members/customers to information on how to reduce their environmental impact.

- Need to ensure that WFD is fully integrated into daily activities in both Natural Resources Wales and our partners including other Regulatory bodies such as Local Authorities.
- Promote the use of Water Watch Wales as a tool for develop partnerships and best practice.

Partnerships

- Partnership working is key to achieving the WFD objectives – whilst there have been good examples over the first cycle there is a need to ensure that we build on these partnerships in order to maximise wider environmental improvements with limited resources.
- Maximise the opportunities within Natural Resources Wales funding, including that which we give to partners via grants, for projects that will deliver multiple benefits for the water environment.
- Share best practice and information on the funding available for partners to enable them to maximise the use of Natural Resources Wales funds to attract other sources.
- Develop case studies that demonstrate the tangible outcomes that the first plans have delivered so that we are clear about what it is we are aiming for, why, where and what role people have, for example, farmers have in helping us to get there.

# Appendix

Table 54. Overall classification statistics for Wales

| Water body category | Bad | | Poor | | Moderate | | Good | | High | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| River | 3 | 3 | 79 | 35 | 626 | 561 | 272 | 376 | 1 | 0 | 6 |
| Canal | 0 | 0 | 0 | 0 | 3 | 1 | 6 | 8 | 0 | 0 | 0 |
| Surface Water Transfer | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 |
| Lake | 0 | 0 | 12 | 15 | 62 | 78 | 48 | 29 | 0 | 0 | 0 |
| Coastal | 1 | 0 | 0 | 1 | 7 | 10 | 16 | 12 | 0 | 1 | 0 |
| Estuarine | 0 | 1 | 0 | 0 | 23 | 18 | 8 | 12 | 0 | 0 | 0 |
| Groundwater | 0 | 0 | 13 | 16 | 0 | 0 | 25 | 22 | 0 | 0 | 0 |
| Grand Total | 4 | 4 | 104 | 67 | 721 | 668 | 386 | 470 | 1 | 1 | 6 |

Table 55. Overall classification statistics for the Dee RBD

| Water body category | Bad | | Poor | | Moderate | | Good | | High | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 |
| River | 0 | 0 | 10 | 4 | 55 | 56 | 21 | 26 | 0 | 0 |
| Canal | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Surface Water Transfer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lake | 0 | 0 | 1 | 1 | 11 | 16 | 9 | 4 | 0 | 0 |
| Coastal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Estuarine | 0 | 0 | 0 | 0 | 1 | 1 | 8 | 0 | 0 | 0 |
| Groundwater | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 5 | 0 | 0 |
| Grand Total | 0 | 0 | 13 | 6 | 67 | 73 | 35 | 36 | 0 | 0 |

Table 56. Overall classification statistics for Western Wales RBD

| Water body category | Bad | | Poor | | Moderate | | Good | | High | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| River | 1 | 1 | 40 | 14 | 451 | 400 | 175 | 250 | 1 | 0 | 3 |
| Canal | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| Surface Water Transfer | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 |
| Lake | 0 | 0 | 9 | 12 | 33 | 38 | 20 | 12 | 0 | 0 | 0 |
| Coastal | 1 | 0 | 0 | 1 | 7 | 10 | 16 | 12 | 0 | 1 | 0 |
| Estuarine | 0 | 1 | 0 | 0 | 19 | 14 | 8 | 12 | 0 | 0 | 0 |
| Groundwater | 0 | 0 | 10 | 12 | 0 | 0 | 15 | 13 | 0 | 0 | 0 |
| Grand Total | 2 | 2 | 59 | 39 | 510 | 462 | 242 | 307 | 1 | 1 | 3 |

Table 57. Overall classification statistics for the Welsh part of the Severn RBD

| Water body category | Bad | | Poor | | Moderate | | Good | | High | | Not assessed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2009 | 2015 | 2015 |
| River | 2 | 2 | 31 | 20 | 128 | 113 | 78 | 101 | 0 | 0 | 3 |
| Canal | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 6 | 0 | 0 | 0 |
| Surface Water Transfer | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 |
| Lake | 0 | 0 | 2 | 2 | 18 | 24 | 19 | 13 | 0 | 0 | 0 |
| Coastal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Estuarine | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| Groundwater | 0 | 0 | 2 | 3 | 0 | 0 | 7 | 6 | 0 | 0 | 0 |
| Grand Total | 2 | 2 | 35 | 25 | 152 | 141 | 113 | 131 | 0 | 0 | 3 |

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