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Conwy Management Catchment Summary

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1. Background to the Conwy Management Catchment summary

This management catchment summary supports the 2015 updated **Western Wales River Basin Management Plan (RBMP)**. Along with detailed information on the **Water Watch Wales (WWW)** website, this summary will help to inform and support delivery of local environmental improvements to our groundwater, rivers, lakes, estuaries and coasts. Information on **WWW** can be found in Section 6.

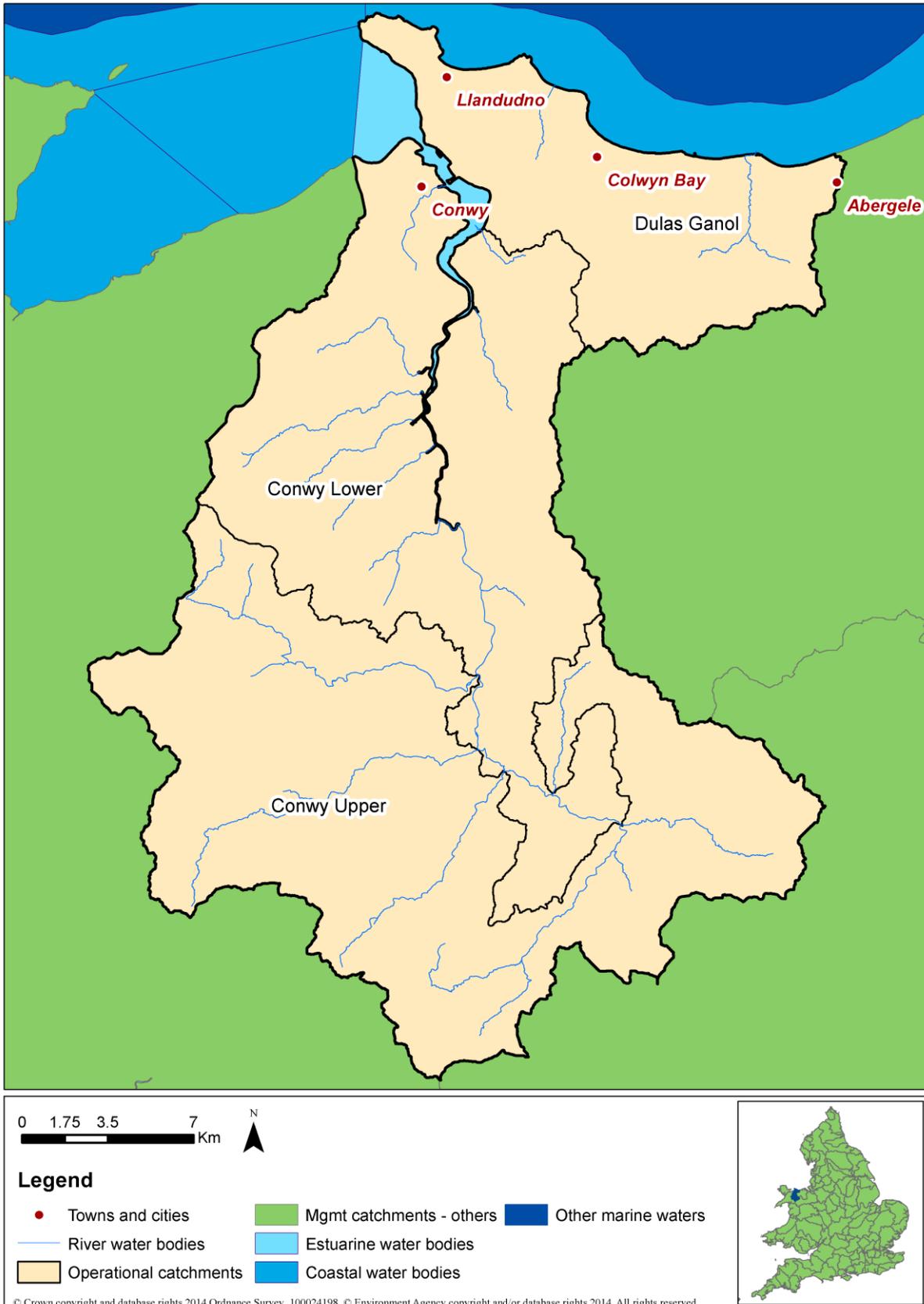
Natural Resources Wales has adopted the ecosystem approach from catchment to coast. This means being more joined up in how we manage the environment and its natural resources to deliver economic, social and environmental benefits for a healthier, more resilient Wales. It means considering the environment as a whole, so that all those with an interest in the catchment weigh up the evidence and set priorities for the many competing demands on our natural resources in a more integrated way and achieve our shared ambition for the place.

The Water Framework Directive (WFD) provides a major overarching framework for river basin management. The Floods Directive sets out a strategic approach to flood risk management planning. An updated Flood Risk Management Plan (FRMP) has been produced in parallel to the 2015 updated **Western Wales RBMP Summary**. The FRMP details how we propose to manage flood risk across the river basin district by prioritising those communities that are most at risk of flooding and detailing the measures we intend to take to manage their risk.

The FRMP and the RBMP together will shape important decisions, direct investment and action, and deliver significant benefits to society and the environment.

2. The Conwy Management Catchment

Figure 1 Conwy Management Catchment map



The source of the Conwy is in the uplands of the Migneint, an extensive area of blanket bog and part of a Special Area of Conservation. Llandudno, Colwyn Bay and Conwy are the primary settlements along the coast, with Llanrwst the largest town in the main Conwy valley. There has been a history of flooding within some of the communities and a major flood alleviation scheme has been constructed in Llanrwst. Much of the catchment above Llanrwst and the western side of the lower Conwy Valley lies within Snowdonia National Park.

Agriculture and forestry dominate the Conwy catchment. Sheep are reared in the upper catchment, with more mixed livestock in the lower sections. The catchment is an important salmon and sea trout fishery, though there is a natural barrier to migration on the Afon Llugwy at Swallow Falls. Recreation and tourism are important to the local economy, with canoeing, walking, climbing and fishing popular in the Conwy Valley.

The Conwy management catchment contains drinking water supply reservoirs including Llyn Conwy and Llyn Cowlyd. It makes a significant contribution to energy production with major hydropower generation at Dolgarrog and off-shore windfarms. There is a legacy of mining activities particularly in the Gwydyr Forest with abandoned mine shafts, adits, soil heaps and site run off influencing discharges of metals to surface waters. On the coast there are EU designated bathing beaches at Llandudno, Colwyn Bay and Llanfairfechan and sailing from the two large marinas in the Conwy estuary. The estuary contains two commercial shellfish beds.

In February 2014 a Conwy management catchment workshop was held at Glasdir, Llanrwst. During this event the benefits of the catchment were captured. These included:

- Carbon capture - blanket bogs of the Migneint at the top of the catchment and forestry
- Food production - shellfish in the Conwy estuary, upland lamb, beef and milk production
- Recreation and tourism - broad range of opportunities, important to economy but also to health and wellbeing. Examples included iconic views (Llynau Mymbyr at Capel Curig), bathing waters, fishing, world class white water kayaking, marinas and sailing, hill walking, wild swimming.
- Forestry - multiple benefits, coniferous and deciduous. Timber production, firewood, recreation, shelter, biodiversity
- Cultural and heritage - Welsh heartland, Welsh language, archaeology, history, ancient monuments and local arts and crafts
- An ideal research catchment - education and learning, well studied by Bangor University and Centre for Ecology & Hydrology
- Biodiversity - protected sites and species,
- Water - good water quality, supply for drinking, use on farm holdings and hydropower
- Energy production – hydropower
- Role of landowners as stakeholders and managers

Natural Resources Wales continues to work in partnership with a range of partners and sectors in innovative ways so that we can achieve even more together. A flavour of some of the projects that have been delivered within this management catchment over the last 3 years together with projects in development are included below:

For further information on projects please refer to [WWW](#).

Table 1. Partnership projects in the management catchment

Project Name	Project Description	Partners	Funding sources
Afon Wybrnant	Volunteers supported contractors to install low level log weirs designed to trap and retain spawning gravel. Follow up visit identified a Sea Trout guarding a red on some spawning gravel generated at the rear of the weir.	Afonydd Cymru	WFD TSO fund
Afon Iwrch	Using fencing to improve habitat on the Afon Iwrch around Rhydlanfair	Afonydd Cymru, Clwyd & Conwy Rivers Trusts	WFD TSO fund

2.1 Key facts ¹

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

Table 2. Number and type of water bodies.

Number of water bodies	Natural	Artificial	Heavily Modified	Total
River*	17	0	6	23
Lake	1	0	7	8
Coastal	0	0	1	1
Estuarine	0	0	1	1
Groundwater	1	0	0	1
Total	19	0	15	34

*River water bodies includes canals and surface water transfers

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

Table 3. Number and type of protected areas.

Protected Area	Number
Bathing Waters	4
Drinking Water Protected Areas	7

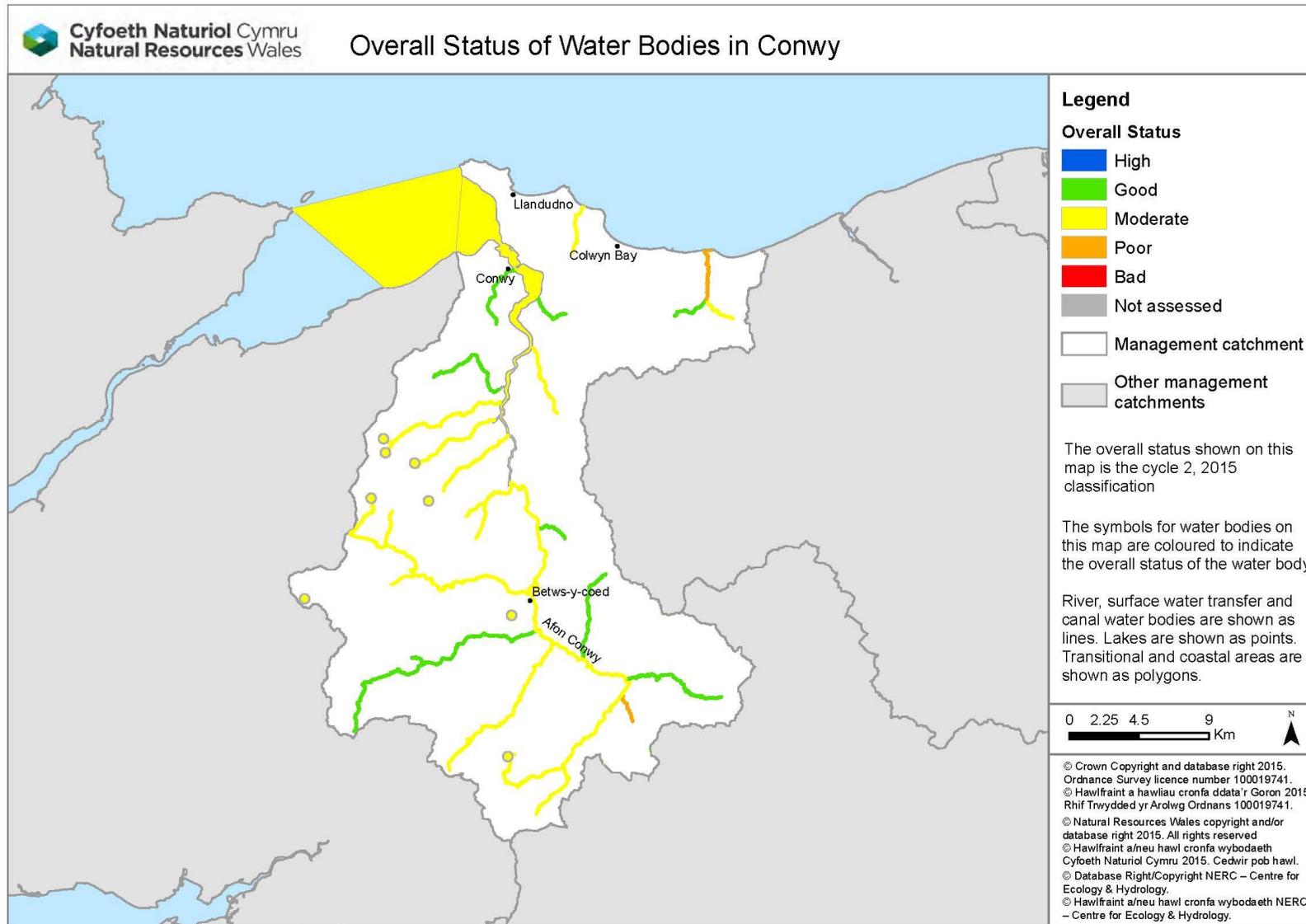
¹ There are differences in water bodies and protected area numbers compared to the first cycle plans and draft second cycle plans. This is due to changes in the water body network as well as refinement of the mapping methodologies and rules between water bodies, management catchments and protected areas.

Protected Area	Number
Natura 2000 and Ramsar sites	6
Nitrate Vulnerable Zones	0ha
Shellfish Waters	1
Urban Waste Water Treatment Directive - Sensitive areas	0

3. Current Status of the water environment

We assess the condition of water bodies through monitoring which produces an overall classification. The current status for each water body is shown in figure 2. Note, since 2009, we have updated some of the systems we use to classify water bodies, including changes to some standards and water body boundaries. Within this management catchment 24% of surface water bodies are at good overall classification status, 70% at moderate and 6% at poor overall status. There are no water bodies at high or bad overall status.

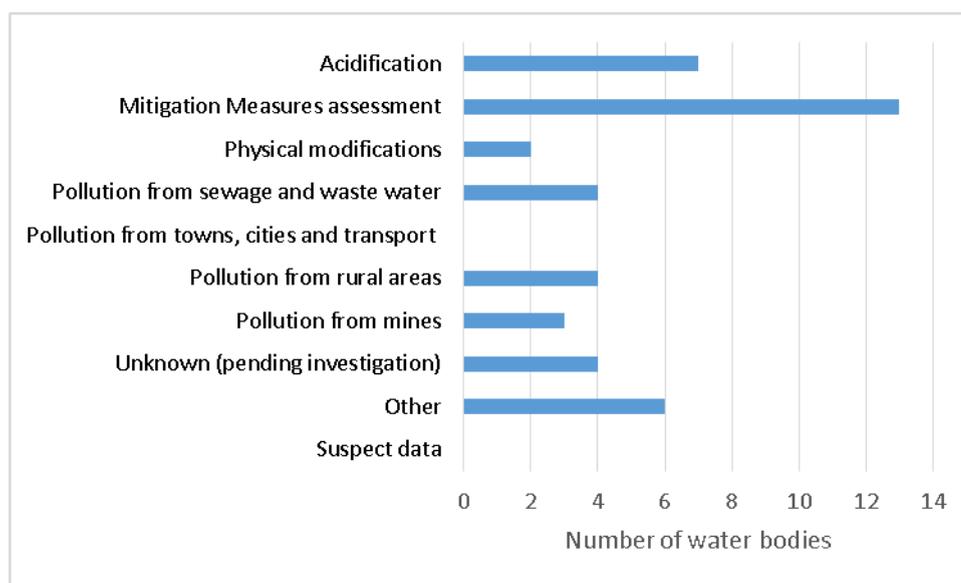
Figure 2. Current status of the Conwy Management Catchment (2015 classification)



4. The main challenges

We have carried out a programme of investigations to better understand the causes as to why water bodies are failing to meet the required standards. The results of our findings are summarised in Figure 3. The reasons for not achieving good status are listed under the Surface Water Management Issues (SWMI) in line with the updated RBMP. The graph below shows the number of water bodies listed under each SWMI to give an indication of the main issues in the management catchment, each water body may have more than one reason for not achieving good status. Acidification – the percentage of water bodies have been included with other SWMI categories.

Figure 3. Reasons for not achieving good status



Discharges from abandoned metal mines, both point and diffuse impact a number of rivers including the lower reaches of the Llugwy, the lower Conwy and the Crafnant. Metal rich discharges adversely affect river biology, as well as being unsightly. Part of the upper catchment around Llyn Conwy is acidic, which can cause toxic metals to leach from soils. Physical modifications, mainly because of impoundments for hydropower, affect water bodies above Dolgarrog on the western edge of the Conwy management catchment. Diffuse pollution, both from agricultural and forestry sources affects some rivers. In the lower catchment bacteria from waste water treatment pose a risk to shellfish beds which and could make them commercially unviable. They also pose a risk to the quality of the bathing waters.

4.1 Feedback on challenges

We need to work together to ensure the overall aims of the Water Framework Directive are met, in order to work together effectively we need to agree on the issues and solutions. The following section includes some of the issues that were raised as part of the workshop and the RBMP consultation however it is not a full list.

- Acidification in parts of catchment, Lledr and Upper Conwy
- Further upland management required
- Lack of fisheries protection and need for education of river users e.g. anglers, canoeists

- Diffuse pollution from rural land management
- Invasive non-native species
- More flexibility in agri-environment schemes like Glastir needed
- Lack of trees in the farmed landscape
- Decline in aquatic habitats and species

Case study - Working together to create perfect spawning conditions for Sea Trout on the Afon Wybrnant

The Afon Wybrnant flows into the Afon Lledr, a tributary of the Afon Conwy, near Pont Gethin viaduct. The Afon Wybrnant is approx 3km long but only the lower 400m is accessible to migratory fish due to impassable waterfalls. Over the years, spates had washed out most of the spawning gravel in this section of the stream and the aim of the project was to create new areas with a combined approach of constructing bed-check weirs and re-introducing suitable substrate. The objectives of the project were to increase the number of juvenile salmonids, to protect salmonid spawning and nursery habitat and to create habitat suitable for other species of conservation importance and biodiversity.

Results included:

- Installation of eight low level log weirs to trap and retain spawning gravel.
- Volunteer engagement on environmental/conservation projects
- A follow up visit identified a Sea Trout guarding a redd on some spawning gravel generated at the rear of the weir (see photograph below)
- The project was undertaken by volunteers and a North Wales contractor so supporting a local business



5. Objectives and measures

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

- **Prevent deterioration in status**

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

- **Achieve the objectives for protected areas**

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

- **Aim to achieve good overall status for surface and ground waters**

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

5.1. Measures

We have reviewed the reasons why water bodies are failing to achieve objectives and identified required measures. Measures are divided into two groups:

National measures apply to the whole of Wales, or the United Kingdom. In general these set the legislative, policy or strategic approach. Examples include a national ban on using a particular chemical or a national strategy for prioritising and funding the remediation of abandoned mines. A list of planned national measures is available in the updated RBMP and **WWW**,

Local measures are specific to the river basin district or a part of it. For example, the removal of invasive plants along a length of designated river or a local campaign targeting misconnections across an industrial estate. Many of the actions listed will also have multiple benefits. For example, sustainable urban drainage (SuDs) schemes help to reduce urban pollution, sewage pollution and changes to water levels. The table below summarises the types of local measures required for the management catchment, based on RNAG and protected area requirements. It includes actions from the N2K Actions database that will help the SAC/SPA/Ramsar to achieve favourable conservation status for water dependant features; for example: implementation of appropriate coastal management.

The high level categories describe the types of action required and broadly the options that are available, including voluntary and regulatory measures. At the local scale some of the options described might not be considered appropriate. There is overlap between some categories. The table also shows the number of water bodies that require the measure type, the water body numbers in this table should be used as a guide to show the significance of the issue in the catchment, and these numbers will change through the course of the 6 year programme. Up to date Reasons for Not Achieving Good (RNAGs) data is available on **WWW** and should be referred to before scoping local measures.

Table 4. Summary of required local measure for the Conwy Management Catchment.

Measure	Description	No. of water bodies
Acidification restoration	Emissions controls and upland restoration: blocking drainage, restoring blanket bog, within forestry plantation blocking forest	2

Measure	Description	No. of water bodies
	drains and establishing native trees within the riparian zone, liming options. Some overlap with "address air pollution".	
Address air pollution	Emissions controls to reduce nitrogen and acidic deposition. Some overlap with "acidification restoration".	5
Complete first cycle investigation	All ongoing WFD investigations from first cycle programme.	17
Drainage and water level management	Investigate and implement changes to land drainage regimes and structures to restore water levels.	14
Improve flows and water levels	Reduce impacts of regulated flows and abstractions, restore more natural flow regimes, implement options to improve water levels, such as water efficiency and recycling measures, alternative sources and supplies.	5
Manage invasive non-native species	Eradication and/or management of invasive non-native species in line with current national invasive species Action Plans. Includes biosecurity good practice, such as "CHECK-CLEAN-DRY" and Be Plant Wise.	7
Mine water and contaminated land remediation	Coal and metal mine, and contaminated land remediation - including passive and active mine water treatment, capping of spoil, removal of wastes to landfill, and channel diversion	5
Mitigate impacts of shipping, navigation and dredging	Assess and implement options for adapting dredging regimes and reducing the impacts of physical modifications.	4
Mitigate impacts of water resource impoundments	Assess and implement options for improving fish passage and habitat.	2
New Investigation	Includes investigations for all new failures, deterioration, and drinking water protected areas.	21
Reduce pollution from septic tanks	Target actions to ensure septic tanks are maintained correctly. Where necessary issue formal	2

Measure	Description	No. of water bodies
	works notices to owners to relocate or replace tanks and soakaways.	
Reduce pollution from sewage discharges	Reducing pollution from continuous and intermittent discharges, includes additional treatment at sewage treatment works (e.g. phosphate stripping), investigating and tackling sewer blockages, and implementing sustainable drainage to reduce surface water drainage to sewers.	3
Specific habitat and feature works	Restoration and/or conservation of specific habitat and features, including natural (e.g. caves, geological outcrops) and human structures (e.g. bridges, ruins).	3
Sustainable access and recreation management	Reduce the impacts of erosion, disturbance and damage from both water-based and terrestrial access, including tackling illegal off-roading.	19
Sustainable aggregate extraction	Reduce and mitigate impacts of extraction industries	3
Sustainable agricultural practices	Implement basic and additional measures such as correct management of slurry, silage, fuel oil, and agricultural chemicals; clean and dirty water separation; nutrient management planning; buffer strips and riparian fencing; cover crops and soil management. In N2k sites changes to grazing regimes may be required, includes scrub management.	25
Sustainable marine development	Includes off-shore energy developments, such as oil and gas exploration and tidal energy.	4
Sustainable woodland and forestry management	Restore the riparian zone, disconnect forest drains, monitor the effectiveness of the 5 principle risks associated with forestry and use forestry and woodland to reduce diffuse pollution.	5
Tackle misconnections and urban diffuse pollution	Investigate and solve misconnections to surface water drains (at residential and commercial properties) and implement sustainable drainage	2

Measure	Description	No. of water bodies
	schemes (SuDs) to reduce diffuse pollution.	

Details for specific local measures can be found on **WWW**, some examples of actions already under way in the Conwy catchment include:

- Welsh Water and private sewage dischargers are working to ensure appropriate treatment of waste water.
- Bangor University is researching innovative solutions for issues with shellfisheries
- Natural Resources Wales is improving forest management to reduce the impact of acidification and protect rivers from sediment
- Land owners are minimising the impact of agricultural land management on rivers by controlling runoff, avoiding bank side erosion and encouraging best practice
- NRW is investigating the sources and solutions for abandoned metal mines including detailed catchment studies, flow reduction measures at Parc Mine and flow monitoring at Pandora mine
- Eryri and Hiraethog Peatland Restoration Project – restoration work including ditch blocking to restore hydrological integrity and vegetation. Partners in the Conwy include National Trust and Snowdonia National Park.
- Nant Gwryd native tree planting, fencing and in river habitat restoration by NRW, Afonydd Cymru and National Trust.
- Afonydd Cymru installed low level log weirs designed to retain spawning gravels in Afon Wybernant a tributary of the Afon Lledr.
- NRW have worked with partners on the Hiraethlyn, Nant Gwryd and Iwrch water bodies as part of our focus during the first river basin cycle.

5.2 Feedback on priorities and solutions

Concerns on current status raised through the consultation and at the workshop have been highlighted in Section 4, solutions and priorities were also discussed. Of the issues raised the following were flagged as priorities:

- **More flexibility in agri-environment schemes like Glastir needed**
Proposed solutions include: Continue to influence WG of the need to make changes to scheme to deal with local issues and enable a more strategic catchment approach.
- **Acidification in parts of catchment, Lledr and Upper Conwy**
Proposed solutions include: Improved forestry management with buffer strips, ensure continuous cover forestry, consider use of lime, conditions on felling licence and education of landowners and managers.
- **Invasive non-native species**
Proposed solutions include: Need coordination at a landscape scale, work more closely with Network Rail (NRW role), and better utilise community resources, for example: community service as volunteer work to provide skills and education. Need for control of species at ecosystem level, more collaborative working between interested parties with a management plan.
- **Further upland management required**

Proposed solutions include: Scope for more grip blocking, with multiple benefits, including carbon storage and flood attenuation.

- **Diffuse pollution from rural land management for example sediments and nutrients**

Proposed solutions include: More soil testing, farmer education, fertiliser management, drivers in Glastir and cross compliance to assist. Reduce forage crops in high risk areas, targeted planning for tree planting.

- **Decline in aquatic habitats and species**

Proposed solutions included: restoration of peat bogs and ditch blocking to hold back the water, riparian habitat restoration to act as buffer strip from land runoff and help prevent erosion.

5.3 Target areas for 2015-21

We have worked across Natural Resources Wales to develop an affordable programme of local and national measures, based upon our current understanding of existing resources. Our focus is:

- Preventing deterioration in all water bodies
- Within the Western Wales RBD - improving compliance with good overall status in 21 water bodies that are currently moderate/poor, and also improving 4 poor water bodies to moderate.
- Targeting measures locally in an integrated way to deliver environmental improvements in WFD water bodies and Protected Areas, including areas protected for water habitats and species.
- Identifying where element level improvements will be achieved during the second cycle, but where further measures will be required to deliver an overall ecological status change.
- Developing our approach to natural resource management by working at a local catchment level and capturing the wider benefits delivered through WFD.

The summary provided below is not comprehensive, it provides a snapshot of the information currently available, and will be updated periodically – please refer to **WWW** for further information.

Table 5 Water bodies in the Conwy management catchment that NRW will target to achieve an improvement in status by 2021

Water body ID	Name	Target	Details
GB110066059830	Nant y Fedw (Dulas)	Good by 2021	For further information on the target water bodies please refer to WWW

Investigations programme

All water bodies for which the cause of adverse impact is as yet unknown require investigation. This applies in the case of both failing water bodies and those that have deteriorated over the first cycle.

Natura 2000 programme – actions underway/planned

The RBMP programme of measures must include any measures necessary to achieve compliance with standards and objectives for Natura 2000 sites listed in the register of protected areas.

The list below is a summary of sites where Prioritised Improvement Plan (PIP) measures are planned /underway. It does not summarise all the required actions. (Further information can be obtained by contacting NRW:

enquiries@naturalresourceswales.gov.uk)

The number of planned actions is low partly because it is difficult to assess what might be funded beyond 2015/16. Our ambition for the second cycle will develop as opportunities/resources become available. We have identified a further 2 priority actions in the Conwy Management Catchment which can be taken forward when opportunities arise.

We have also worked with stakeholders to develop and plan a number of strategic actions to support delivery of N2K objectives. These are included within the updated Programme of Measures

The table below shows the Natura 2000 sites that have actions that are planned or underway, further information on the actions can be found on the **WWW** website.

Table 6. List of N2K sites with measures planned or underway

N2k site	Planned	Underway
Y Fenai a Bae Conwy / Menai Strait and Conwy Bay	2	

Flood Risk Management Plan Measures

Further information on local measures is available in the catchment summary section of the updated FRMP.

Know Your River – Salmon and Sea Trout Catchment Plan

NRW collects a range of specific salmonid data for management purposes and this is presented in the local Salmon and Sea Trout Catchment Summaries. Salmonid specific tools, measures and data acquisition such as electrofishing results, declared catches and annual salmon egg deposition estimates are used to guide ongoing investment in fish passage and habitat restoration schemes. The summaries are updated annually and ensure that there is effective prioritisation in waterbodies to improve salmonid fisheries. The planned actions are always delivered in association with partners and contribute to enhancement and protection of this valuable resource in Wales. Further information can be obtained by contacting NRW:

enquiries@naturalresourceswales.gov.uk)

Water company programme

Within the 2015 RBMP; there are a number of measures required of Water Companies. A funding allocation for these measures was included in company business plans submitted to Ofwat for the 2015-20 period. Natural Resources Wales and the Environment Agency will publish a revised National Environment Plan detailing all water company measures in early 2016. The National Environment Programme details improvements required to comply with all water quality legislation. An outline of the measures included within this management catchment can be found in the table below, further information can be found on the **WWW** website.

Table 7. Water company investigation and improvement schemes

Water body ID	Name	Outcome
GB110066059790	Hiraethlyn	Improvement schemes, to deliver GES or Phosphorus standard
GB110066060030	Conwy - tidal limit to Merddwr	Investigations into risks to drinking water quality
GB31034400	Llyn Conwy	
GB541006614800	Conwy	Shellfish Water investigations
GB541006614800	Conwy	Investigations into impact from assets on designated bathing beaches.

5.4 Alternative objectives

We have identified 29% of water bodies where because of the nature of the problem or the required measures we have an extended deadline or less stringent objective (less than good). In each case we have provided a justification.

Table 8. Alternative objectives and justifications

Alternative objective	Justifications	Number of water bodies	Water body
Extended deadline	Cause of adverse impact unknown	3	Dulyn Dulyn Reservoir Llyn Elsi Reservoir
	Ecological recovery time	6	Caletwr (Conwy) Upper Conwy Machno Nant gwryd Llugwy - Nant gwryd to Ffynon Llugwy Conwy Bay

Alternative objective	Justifications	Number of water bodies	Water body
Less stringent objective	Technically infeasible - minewater scheme	1	Conwy (groundwater)

5.4 Opportunities for partnerships

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

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

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

6. Water Watch Wales

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

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

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

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

Link to home page: waterwatchwales.naturalresourceswales.gov.uk



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