



**Cyfoeth
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**Natural
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Wales



Local Authority services and the water environment

Advice note on the Water Framework Directive

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About Natural Resources Wales

Natural Resources Wales brings together the work of the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales, as well as some functions of Welsh Government. Our purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future. Wales' landscape, environment and wildlife are amongst its greatest resource, worth more than £8bn to the Welsh economy.

- We will work for Wales' economy and enable the sustainable use of natural resources to support jobs and enterprise. We will help businesses and developers to understand and consider environmental impacts when they make important decisions
- We will work for the communities of Wales to protect people and their homes as much as possible from environmental incidents like flooding and pollution. We will provide opportunities for them to learn, use and benefit from Wales' natural resources
- We will work to maintain and improve the quality of the environment for everyone. We will work towards making the environment and natural resources more resilient to climate change and other pressures.
- We are the principal adviser to the Welsh Government on the environment, enabling the sustainable development of Wales' natural resources for the benefit of people, the economy and wildlife.

About the Welsh Local Government Association

The Welsh Local Government Association (WLGA) represents the interests of local government and promotes local democracy in Wales. It represents the 22 local authorities in Wales and the 3 fire and rescue authorities and 3 national park authorities are associate members.

The WLGA's primary purposes are to promote better local government and its reputation and to support authorities in the development of policies and priorities which will improve public services and democracy.

Originally established in 1996 primarily as a policy development and representative body, the WLGA has since developed into an organisation that also leads on improvement and development, equalities, procurement, employment issues and hosts a range of partner bodies supporting local government:

- [Social Services Improvement Agency](#)
- [Association of Directors of Education in Wales](#)
- [Wales Migration Partnership](#)

The WLGA remains a constituent part of the Local Government Association (LGA) for England and Wales and since April 2005, Welsh local authorities have a revised Welsh corporate membership with the LGA, ensuring that the organisation continues to represent the interests of Welsh local government to the UK Government.

FOREWORD

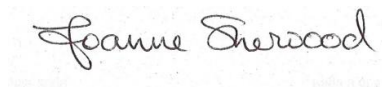
Restoring Wales' water environment is a priority and a key action within Welsh Government's programme for environment & sustainability. It requires an integrated approach to planning and managing our water and the wider ecosystem; balancing environmental, economic and social priorities. Working collaboratively will help deliver these Welsh Government priorities and is also the basis for taking an ecosystems approach that will benefit us now and in the future.

The Water Framework Directive (WFD) sets a framework to provide substantial benefits for the long term sustainable management of our waters. We are all affected by this legislation. As individuals, at the most basic level we use water every day to drink, to bathe in, to cook with and to take our human waste away. We use water through the goods we buy and the industrial processes that make them. We use water for recreation, agriculture, fishing and transport. Water is essential for our health, our wellbeing, the economy and enabling a healthy functioning environment on whose services we all rely. Through our actions however, the fragile relationship between soil, water and vegetation has been altered. Urban development, drainage infrastructure and flood defences have further exacerbated those issues. All our activities place enormous pressure on water quality and quantity, and the ecosystems it supports and the services they provide to society.

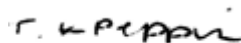
Natural Resources Wales role is to develop the River Basin Management Plans (RBMPs) and communicate the approach in Wales to improve the quality and ecological health of all our waters. Local Authorities have a key role in contributing to the planning, delivery and promotion of the RBMPs in exercising their functions.

Natural Resources Wales and Welsh Local Government Association recognise the importance of working together. We all need to have a better understanding of the roles and responsibilities our respective organisations, as well as those of the private and voluntary sectors and individuals, and how these can contribute to the requirements of WFD. This understanding will enable us to establish ways of working together to deliver the improvements needed to fulfil the requirements of the legislation and most importantly protect and improve our water.

We acknowledge the assistance provided by the Environment Agency and Sustainability West Midlands in the preparation of this advice note.



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1. The Water Framework Directive

1.1 What is the Water Framework Directive?

Water Framework Directive (WFD) is the most substantial piece of environmental legislation ever produced by the European Commission. It came into force in December 2000 and became part of UK law in December 2003. WFD is implemented across Wales and England through the Water Environment Regulations 2003. These Regulations aim to provide an integrated framework for the protection of the water environment through the delivery of actions set out in River Basin Management Plans (RBMPs). The result will be a healthy water environment achieved by balancing environmental, economic and social considerations.

Natural Resources Wales has been designated by Welsh Government as the competent authority to develop and communicate the approach in Wales to improve the quality and ecological health of all our waters. These include rivers, streams, brooks, lakes, estuaries, canals, coastal waters out to one mile from low water, groundwater bodies and all water dependent protected areas.

The Directive aims to integrate the objectives of those Protected Areas designated under earlier EU directives (i.e. Habitats and Birds, Bathing Waters, Drinking Water, Freshwater Fish, Shellfish Waters, Nitrates, Urban Waste Water).

The Water Environment Regulations 2003 requires Public Authorities, including Local Authorities to “have regard to the River Basin Management Plan and any supplementary plans in exercising their functions”.

1.2 River Basin Management Plans (RBMPs), water bodies and their objectives

Wales has three River Basin Districts: Western Wales is entirely within Wales, the Severn and Dee are cross border with England. In December 2009, the Environment Agency published the first RBMPs (2009-15) - these outline the actions needed to protect and improve the water environment and are available on the [Environment Agency website](#).

Natural Resources Wales are now working to review and update them and will publish the second RBMPs (2015-21) in December 2015. The consultation on the draft RBMPs will begin in July 2014 – documents will be available through the [Natural Resources Wales](#) website.

The RBMPs are the key source of information on the water environment and they set objectives for every water body and summarise the measures which partners will deliver to achieve these outcomes for the water environment. The plans aim to take a holistic approach to managing the water environment and ensure that we balance ecological, social and economic values in decision-making.

The RBMPs include statutory commitments to:

- protect the water environment from deterioration;
- achieve the objectives of Protected Areas by 2015 (i.e. Habitats and Birds, Bathing Waters, Drinking Water, Freshwater Fish, Shellfish Waters, Nitrates, Urban Waste Water);
- aim to achieve WFD Good Ecological Status/Potential and Good Chemical Status for all surface waters (and the equivalent for ground waters) by 2015; and
- ensure new modifications to water bodies are in line with WFD objectives.

Where an objective cannot be achieved a justification must be provided.

Timeline & engagement

Government guidance outlines the principle steps for developing the RBMPs (see below).

Timetable for main river basin management products		
Delivery Date	Product	Consultation?
22 June 2012	Working Together (statement of steps and consultation measures)	Yes – 6 months
22 June 2013	Challenges & Choices (Summary of Significant Water Management Issues)	Yes – 6 months
22 July 2014	Draft River Basin Management Plans	Yes – 6 months
22 September 2015	Second RBMPs submitted to Ministers	No
22 December 2015	Second RBMPs approved by Ministers and published	No

Figure 1 below shows the River Basin Districts and the Local Authorities that fall within them.

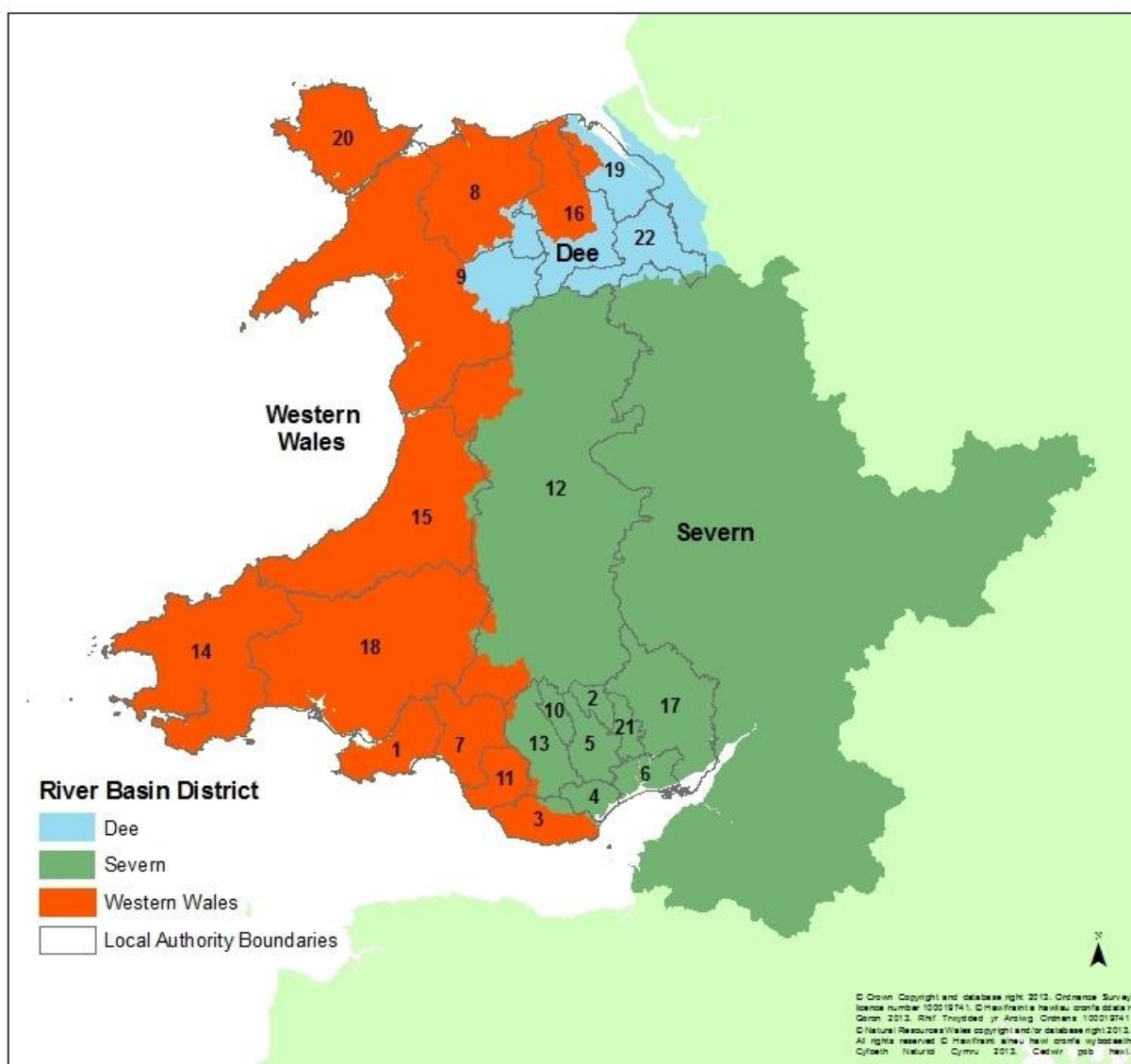


Figure 1. River Basin Districts and Local Authorities

Label No.	Local Authority	Label No.	Local Authority
1	Abertawe – Swansea	12	Powys - Powys
2	Blaenau Gwent - Blaenau Gwent	13	Rhondda Cynon Taf - Rhondda Cynon Taf
3	Bro Morgannwg - the Vale of Glamorgan	14	Sir Benfro - Pembrokeshire
4	Caerdydd – Cardiff	15	Sir Ceredigion - Ceredigion
5	Caerffili – Caerphilly	16	Sir Ddinbych - Denbighshire
6	Casnewydd – Newport	17	Sir Fynwy - Monmouthshire
7	Castell-nedd Port Talbot - Neath Port Talbot	18	Sir Gaerfyrddin - Carmarthenshire
8	Conwy – Conwy	19	Sir y Fflint - Flintshire
9	Gwynedd – Gwynedd	20	Sir Ynys Mon - Isle of Anglesey
10	Merthyr Tudful - Merthyr Tydfil	21	Tor-faen - Torfaen
11	Pen-y-bont ar Ogwr – Bridgend	22	Wrecsam - Wrexham

1.3 What is a water body and how is water body status assessed?

A water body is a manageable unit of surface water, being the whole (or part) of a stream, river or canal, lake or reservoir, transitional water (estuary) or stretch of coastal water. A 'body of groundwater' is a distinct volume of groundwater within an aquifer or aquifers.

Water body status is assessed against over 30 different parameters grouped into:

- **ecological status** (e.g. insect, plant and fish life) is a measure of a healthy and robust catchment ecosystem
- **chemical status** (covering 'priority substances' such as Mercury and Benzene).

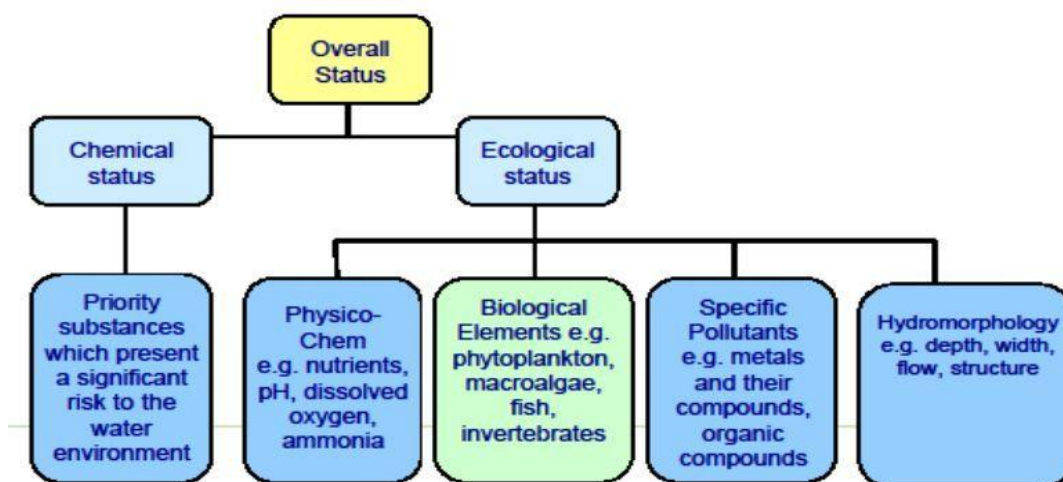


Figure 2. Water body status classification

Ecological and chemical status are combined to provide the overall status of a water body. Ecological status is measured on the scale of high, good, moderate, poor and bad. Chemical status is measured as 'good' or 'fail'. The lowest scoring element determines a water body's overall status

Artificial and heavily modified waters

Where human activities have significantly changed the shape, form and characteristics of the water environment they are designated as Artificial or Heavily Modified Water Bodies. For example we have created reservoirs to store drinking water, reinforced and raised banks to protect property from flooding and dredged channels for navigation. We assess these modifications and activities against the objective of Good Ecological Potential.

For an artificial or heavily modified water body to achieve good ecological potential, its chemistry must be 'good'. In addition, we must have mitigation measures in place to reduce the impacts of modifications and activities on the ecology.

1.4 Water Framework Directive & Protected Areas designated under Habitats and Birds Directive (Natura 2000)

The WFD sets a target that all water dependent Habitats and Birds Directive Protected Areas (i.e. 'Natura 2000' or 'N2K' sites) need to meet their specific conservation objectives by 2015.

Currently 65 of 76 Habitats Directive 'Special Areas of Conservation' and 4 out of 8 Birds Directive 'Special Protection Areas' with water dependent features have actions underway or complete to maintain them or bring them into recovering or favourable condition. This equates to 23% (by area) of all relevant Welsh Natura 2000 sites. Figure 3 shows a map of Natura 2000 sites not in favourable condition.

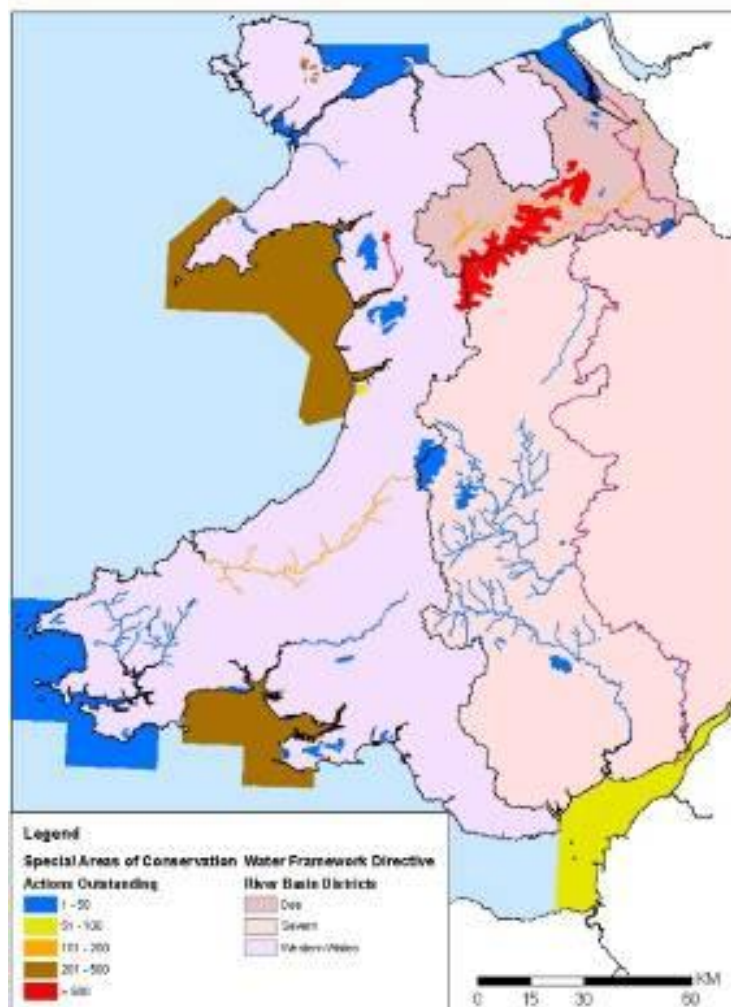


Figure 3. Natura 2000 sites not in favourable condition

Local Authorities have measures identified by Natural Resources Wales to help achieve the conservation objectives of Natura 2000 sites and bring their designated habitats and species into favourable condition. These sites may also require additional WFD related actions. Natural Resources Wales operational teams will help Local Authorities ensure their proposed measures are appropriate, planned, delivered and reported in-line with WFD RBMP requirements.

More detailed spatial information on the measures for each Local Authority is available in a web based collaborative database called the Special Sites Actions database. This can be accessed under licence by contacting your local Natural Resources Wales Operational contact, or by emailing **extranetsupport@cyfoethnaturiolcymru.gov.uk**

River basin management planning will be an important component of future development of Natural Resource Plans. Natural Resources Wales aim is to integrate major programmes to provide one set of combined actions at the same place.

1.5 Current status of Water Bodies in Wales

We have seen improvements in water quality in Wales (Figure 4). In Wales, 37% of all water bodies achieve Good Ecological Status (2012) and it is our ambition to achieve 50% by 2015. The 2012 assessment is available at www.data.gov.uk.

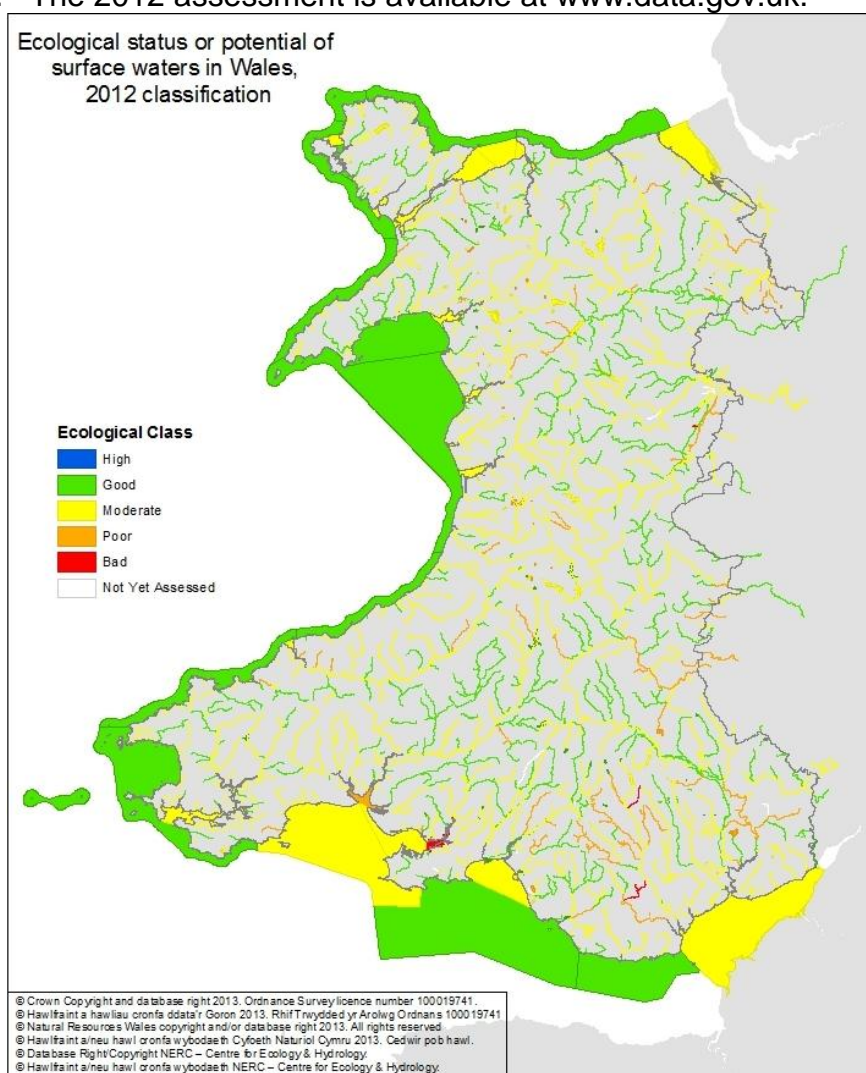


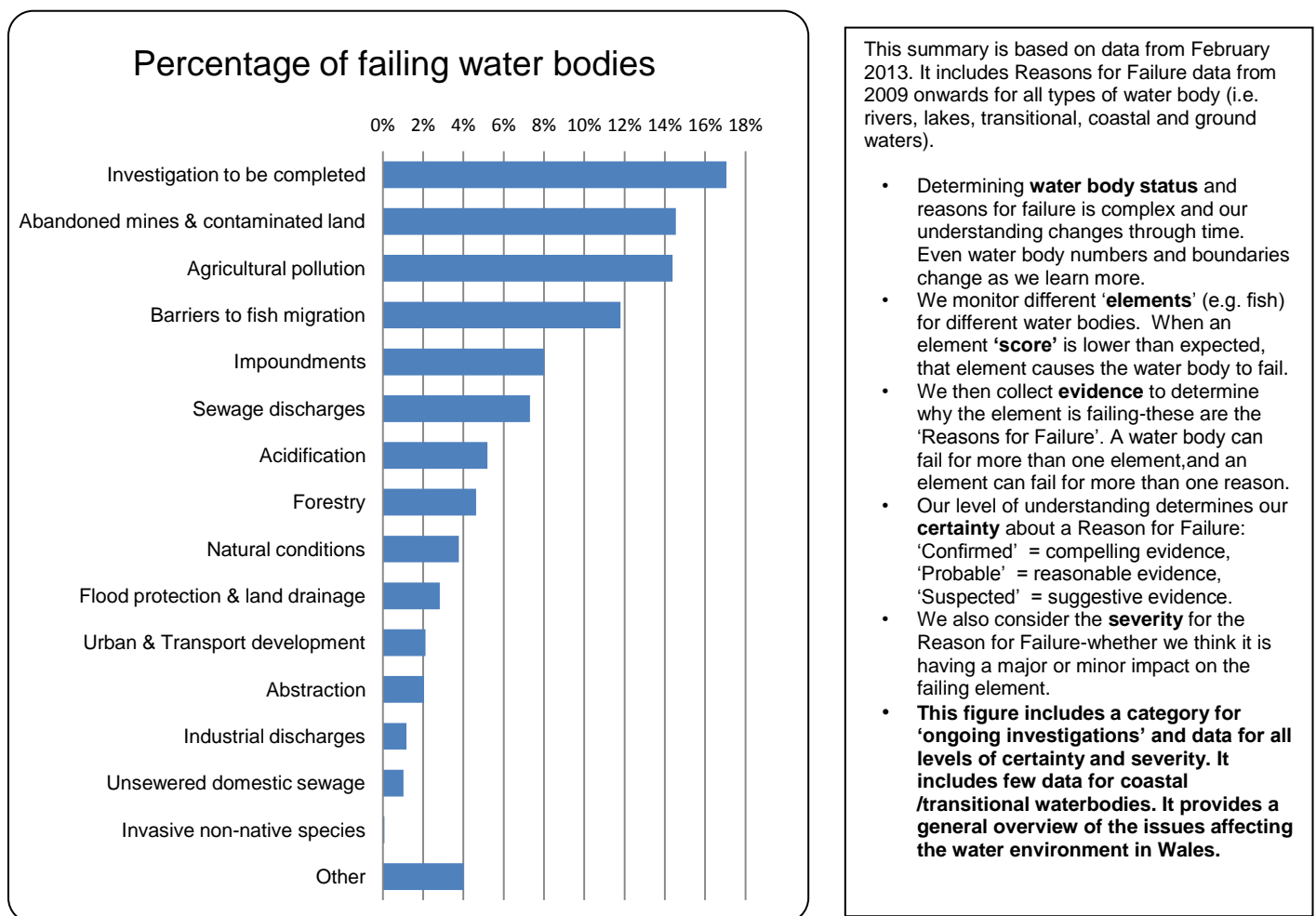
Figure 4 Ecological Status or Potential of Surface Waters in Wales 2012.

1.6 What are the issues impacting on the water environment?

Natural Resources Wales consulted on “Challenges and Choices¹” (June 2013) which focussed on current evidence and understanding of the Significant Water Management Issues impacting on Wales’ River Basin Districts.

Living Waters for Wales is a supporting document for this consultation and was developed with contributions from Wales’ River Basin District Liaison Panels and Welsh Government’s WFD Stakeholder Forum. It outlines the biggest issues affecting the water environment across Wales and the possible solutions which will deliver improvements. The information is based on evidence collated from our ‘Reasons for Failure’ investigations February 2013. Our evidence shows that approximately 15% of failures are related to abandoned mines and contaminated land, 14% to agricultural activities and 12% to barriers to fish migration.

Figure 5 Summary of issues impacting Wales’ water environment



¹<http://naturalresourceswales.gov.uk/our-work/consultations/list-of-current-consultations/challenges-and-choices-consultation/?lang=en>

1.7 Why is the water environment important for local economies and communities?

A healthy water environment forms the basis of healthy and vibrant places in which we live and work. It supports the needs of the community by making the places in which we live and work more attractive. Schemes that contribute to meeting the requirements of WFD can offer multiple benefits for local economies and communities, as demonstrated by the case studies presented in this advice note. Local investment in environmental improvements can help to generate economic activity. It also provides valuable amenities for communities to enjoy, as well as related physical and health benefits.

In the present economic situation of reducing budgets, it is even more important to ensure that we achieve value for money. Working together through collaboration, cooperation, sharing knowledge and experience, between and within our organisations, means we can all save money whilst meeting our statutory obligations. Should these obligations not be met then Welsh Government faces the risk of infraction.

The benefits of water to local economies and communities include:

- Clean drinking water to our homes and businesses.
- Water for agriculture, food production, wildlife, industry, recreation, tourism and transport.
- Water of a quality and quantity that can accept and biodegrade treated sewage and other effluents.
- Water for power generation.
- Water for health and wellbeing benefits, including an environmental setting.
- Flood risk reduced.
- Climate change mitigation and adaptation.

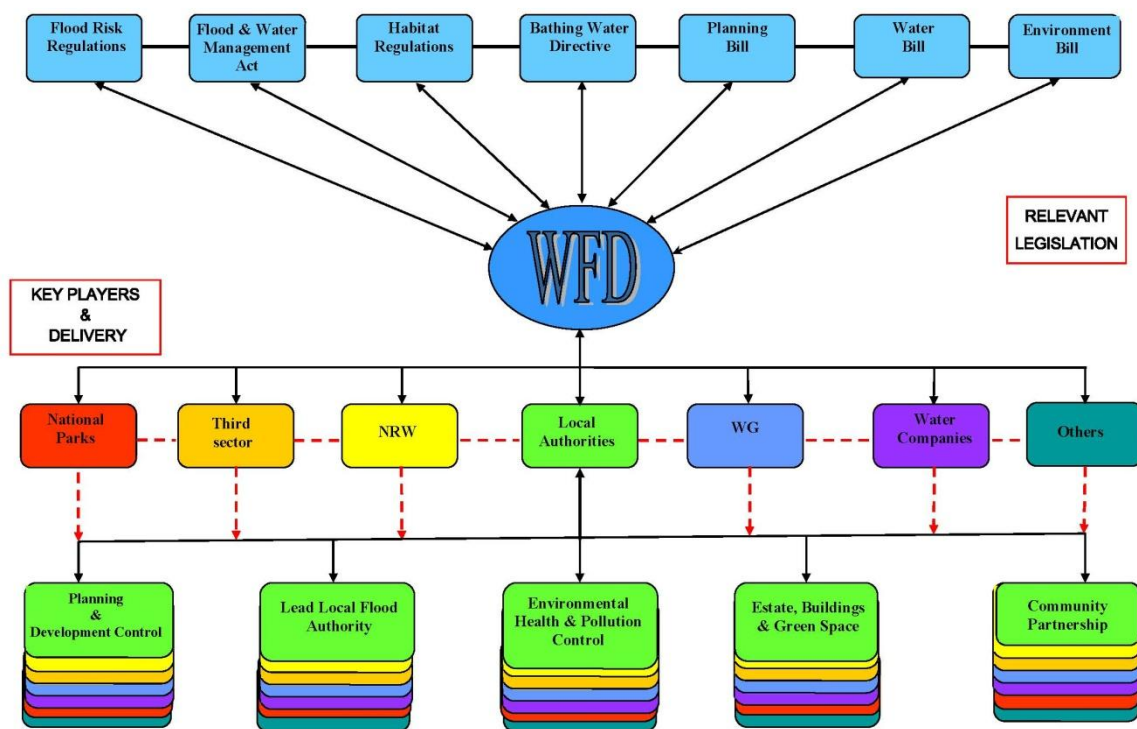
2. Local Authority Functions that can make improvements to the local water environment

Local Authorities have a wide remit. Through your functions, there is an opportunity to positively or negatively impact the water environment. It is hoped that by giving some consideration to these effects, negative impacts can be mitigated and improvements can be maximised.

Figure 6 shows the key players and interactions for each of the Local Authority functions affected by WFD.

Figure 6. WFD Interactions

WFD: INTERACTION, ORGANISATIONS, DEPARTMENTS & LEGISLATION



2.1 The Town and Country Planning Process and Building Control

Development has the potential to have both positive and negative impacts on the water environment and the status of water bodies. The Planning and Building Control processes therefore have a major role to play in delivering the requirements of the WFD.

Planning Policy Wales (PPW) (Edition 5, November 2012)

<http://wales.gov.uk/topics/planning/?lang=en> emphasises the role of local planning policies in contributing to the requirements of the WFD. In delivering for the water environment through strategic planning and the development management and building control processes, Local Planning Authorities (LPAs) may be able to achieve many objectives of their Local Development Plans (LDPs). For example, improvements in the water environment contribute to wider amenity, flood risk management, recreation, tourism and biodiversity objectives, which can support local economies.

What can you do?

Strategic and Policy Planning:

- Ensure LDPs and their associated Strategic Environmental Assessments/ Sustainability Appraisals are informed by evidence and information, including data from the RBMPs. This should draw out the issues relating to water which need to be addressed through the LDP. Some examples are shown below:
 - Ensure development is appropriately located. For example, water-intensive development should only be allocated in areas where sufficient water is available for use.
 - Protect, through allocation in the LDP, of water-related sensitive locations, such as wetland habitat.
 - Encourage upgrades to water related infrastructure, for example, water supply, wastewater sewerage and treatment, flood risk management, sustainable drainage and green infrastructure. Such improvements can help ensure that infrastructure is in place to enable delivery of strategic development sites.
 - Encourage the opening up of culverted watercourses, where they fall within the boundaries of new development sites.
 - Encourage the removal of obstructions, for example, weirs.
 - Incorporate Water Sensitive Urban Design (WSUD) techniques (including Sustainable Drainage Systems (SuDS) into new development.
 - Encourage the remediation of land affected by contamination.
 - Consider the role of the Community Infrastructure Levy (CIL) or S106 agreements to help deliver WFD outcomes, for example, water based habitat creation, green and blue infrastructure enhancement or creation.
- The policies contained within the LDP should help deliver WFD requirements, as suggested above.
- Seek the views of other Local Authority departments for advice on how the LDP can deliver wider outcomes relating to water, for example, habitat improvement and creation opportunities and the encouraging water-based recreation or reduction of surface water flooding by developing and delivering green infrastructure. There may be opportunities to make links to other Local Authority plans and strategies, for example, Local Flood Risk Management Strategies and Community Strategies.
- Ensure appropriate indicators are recorded alongside Sustainable Development Indicators to monitor the effectiveness of WFD implementation. For example:

- Number/percentages of planning permissions granted that include SuDS.
- Area of wetland habitat created through the development process.
- Number of removals of barriers to fish for example, weirs etc.
- Ecological status of the water bodies within the LDP area.

Many of the ecological indicators will already be collated by Local Authority ecologists / biodiversity officers.

- Prepare appropriate guidance for developers (for example, Supplementary Planning Guidance); if there are significant WFD issues.
- Raise awareness of WFD, training within planning policy teams and with cabinet members.

Case Study: New Housing Development incorporating Sustainable Drainage systems at Llanharan

A brownfield site in Llanharan, Rhondda Cynon Taff (RCT), has been transformed into a new housing development, fronting onto a SuDS. These are designed to reduce the potential impact of new and existing developments with respect to surface water drainage discharges and water quality.

The scheme includes a new balancing pond and wetland area which subsequently drains into a local watercourse.



The developer who remediated the brownfield site and the housing developer worked with Rhondda Cynon Taff Country Borough Council (CBC) Planning team who granted planning permission.

Rhondda Cynon Taff CBC has now adopted the SuDS scheme and is responsible for maintaining it. Further monitoring will be undertaken to gather more evidence but some benefits of this scheme are:

- SuDS aims to replicate natural systems that use cost effective solutions with low environmental impact to drain away dirty and surface water run-off through collection, storage, and cleaning before allowing it to be released slowly back into the environment, such as into water courses. This is to counter the effects of conventional drainage systems that often allow for flooding, pollution of the environment – with the resultant harm to wildlife – and contamination of groundwater sources used to provide drinking water
- The scheme provides a healthier wetland area that provides an attractive amenity for the local community and habitat for wildlife.
- The scheme acts as a visual buffer between the houses and the railway line.

Development Management and Building Control:

- Raise awareness and provide training on WFD issues for officers and community councils.
- Ensure early engagement on projects likely to have an impact on the water environment with:
 - Natural Resources Wales – operational planning teams.
 - Relevant Local Authority teams, such as Drainage, Highways, Regeneration, Community Planning, Parks, Recreation and Health.
 - Water companies.
- Incorporate any WFD issues into planning application validation checklists. For major planning applications include the requirement for a WFD assessment. This should inform changes to the proposed location or design, to ensure that impacts can be avoided, mitigated or compensated.
- Ensure Building Regulations inspections of new buildings and extensions or refurbishments include checks on drainage connections (under Part G of the Building Regulations) to identify and rectify any misconnection problems. This includes ensuring that grey water drainage is not connected to surface water drainage, but also that rainwater drainage from roofs and pathways is not disposed of into sewers if soakaways or surface water drainage options are available.
- Promote efficient use of water in new buildings and refurbishment, higher levels of water efficiency than those set out by the Water Efficiency Methodology.
- Promote TAN 22 and The Code for Sustainable Homes to developers and home owners.
- Collaborate early with flood and pollution control lead officers when drawing up S106 agreements that secure foul and surface water drainage connections from new development. Early collaboration can help ensure any proposed attenuation measures or soakaways to ground do not affect surface and groundwater water quality and quantity. This should be done before the S106 agreement has been signed.

Case Study: Wetland Creation at Llanfyllin Car Park, Llanfyllin, Powys

Llanfyllin Town Council worked closely with others to gain planning permission for a town car park incorporating a SuDS.

The Afon Cain was identified as a priority catchment where diffuse pollution needed to be reduced. Contaminants from vehicles, run-off from fields and activities associated with road maintenance were being washed from roads and roadsides into local watercourses following rainfall and snow melt causing pollution.

Llanfyllin Town Council took advantage of the opportunity to improve the situation. They designed and built a new car park which incorporated a SuDS scheme, including balancing ponds and reedbeds.

The Town Council, Powys County Council, local groups, businesses and the community all worked together. Other organisations involved were: Keep Wales Tidy, Llanfyllin High School, Cain Valley River Group, Montgomery Wildlife Trust, Civic Society, Mencap, Chamber of Commerce and Arts Connections and Environment Agency Wales. Powys County Council, as the Local Planning Authority, supported the development by granting planning permission for the scheme.

The scheme delivers multiple benefits, and helps to meet the requirements of the WFD:

- The scheme has improved the water quality and biodiversity of the Afon Cain.
- The wetland area will help support the ecological components of this water body by creating a new habitat for wildlife.
- The scheme manages surface water run-off, as it has slowed the flow from the car park to decrease the risk of flooding.
- The scheme includes a raised boardwalk which provides easy access to the wetland and river. This provides amenity and recreation benefits for the local community and visitors.
- The car park has enabled more people to reach the town for shopping and recreation.

The work was partially funded by Welsh Government's Splash Recreation Challenge fund.

For more information contact richard.dearing@cyfoethnaturiolcymru.gov.uk or townclerk@llanfyllin.org



2.2 Lead Local Flood Authority & Highways

Following the implementation of the Flood Risk Regulations 2009 (FFR) and the Flood & Water Management Act 2010 (FWMA), councils in Wales as Lead Local flood Authorities (LLFAs) have been given new roles and responsibilities for flood risk management.

LLFAs are now responsible for managing the risk of flooding from surface water, groundwater and ordinary watercourses. They also lead on ordinary watercourse consenting and enforcement. These new statutory duties have been approached in different ways and are mostly managed across Wales by Land drainage and Highways departments.

The impacts on the water environment resulting from land management, highways and flood risk management activities can often affect the physical, ecological and chemical processes. These impacts are not only limited to freshwater environments but will also affect coastal waters and the marine environment. For example:

- Physical alterations of the water environment for the purpose of flood risk management or land reclamation purpose.
- Changes to drainage patterns, such as increased volumes of run-off and changes to natural functioning of flood plains can also have an adverse impact on the water environment. See [case study Lower Swansea Valley](#).
- Diffuse pollution and water run-off from roads: run-off can carry a mix of polluting substances, such as oils, toxic metals, pesticides, salts and sediments which can seriously affect surface, groundwater bodies and bathing water quality.
- Poorly designed highways and the excessive use of artificial channels and culverts will also affect the morphology and ecology of watercourses.
- Excessive discharge of surface water from developments into watercourses can affect water quality and ultimately increase the risk from flooding downstream.

What can you do to minimise the impacts on the water environment?

- Ensure any consenting and non consenting work on an ordinary watercourse takes into account WFD requirements.
- Flood defence work should meet WFD requirements and not cause any water bodies to deteriorate from their current status or prevent future improvements from taking place. Mitigation measures in the form of environmental improvements might be necessary. Costs associated with such improvements are often minimal.
- Planned works can be adapted to ensure they are beneficial to the water environment. Liaising with your biodiversity section and third sector organisations can bring additional support, resources and funding.
- Ensure a WFD assessment is undertaken if it is deemed necessary prior to any major work taking place. Your local NRW officers will be able to advise.
- Early engagement with Natural Resources Wales, planners and other key players to identify and solve potential issues and identify opportunities which deliver wider benefits is key to successful schemes.
- The SuDS approach to surface water management has been identified as one measure with the potential to deliver long term benefits in tackling diffuse pollution, surface water flood risk and ecosystem benefits.

- Seek opportunities for retrofitting existing developments with SuDS and WSUD. These can bring benefits to communities, such as decreased levels of surface water flooding, improved water efficiency in homes and improvements to local open spaces. More information can be found at www.ciria.org. See case studies on work undertaken at [Llanharan](#), [Llanfyllin](#) and [Maesteg](#).
 - Sustainable drainage standards have not been consulted on in Wales, but Local Planning Authorities are encouraged to introduce SuDS on a voluntary basis into their planning processes and policy, such as LDPs. For more information go to: <http://www.sudswales.com/>
- Under the Flood Risk Regulations 2009, some LLFAs, the Environment Agency and Natural Resources Wales must prepare and publish Flood Risk Management Plans (FRMPs) for inland and coastal waters by December 2015. The legislation indicates these FRMPs should have regard to RBMPs and as such, measures highlighted in FRMPs should take into consideration WFD.

Highways

- Ensure that new road projects are designed to reduce the polluting effect to a minimum from any resulting run-off and to reduce flood risk. The use of environmental assessment tools (incorporating consideration of the water environment) can assist. Drainage from roads should ideally be to surface waters and not to sewers.
- Identify and monitor where new roadworks are likely to bring benefits. For example, creating attenuation ponds or soakaways will benefit water quality through filtration and create opportunities for wildlife.
- Undertake environmental impact assessments to identify potential pollution or flooding risks and implement measures to mitigate these risks by drainage design.
- Manage winter salt and gritting operations to minimise polluting runoff and impacts on the water environment.
- Work closely with Natural Resources Wales and Fire & Rescue Service to control pollution risk from accidental spillages of fuels, chemicals or other polluting materials on highways or incidents.
- Train staff in the use of spill containment kits, on highways and highways depots. Store materials at local authority highways depots to avoid pollutants entering surface water drains.
- Follow good practice when using pesticide and herbicide alongside roads to avoid impacts on water quality and water body ecology.

Case Study: Lower Swansea Valley Flood Scheme

Lower Swansea valley, in the Tawe flood plain, was an area of extensive industrial activity between the 18th and 20th centuries. Today, it is re-developed and is now home to a large retail and commercial estate of regional significance to the Welsh economy. The valley is prone to flooding with the most recent event in 1998.

Currently 284 commercial and 16 residential properties have a 1 in 100 chance of river flooding each year. There is a large transient population of shoppers and employees present throughout the day and evening. The consequence of a flood event could be very serious, with high depths and velocities of flood waters travelling across the area up to 2km from the river corridor.

A major flood scheme by Natural Resources Wales will increase the river's capacity by removing restrictions to river flow including three low level bridges and raising low spots along the river banks. Upstream, an area is also being opened to make space for water to flow.

The £7m flood risk management project is supported by European Regional Development Fund and Welsh Government. City and County of Swansea and Natural Resources Wales have collaborated on the project. Their officers are working with the local community and businesses raising flood awareness and helping them to prepare for and respond to floods. Natural Resources Wales are also making improvements to the flood warning systems.

Existing banks in the upstream area have been moved back to increase the capacity of the river and also create a natural wetland area with a succession of four small ponds. The ponds are hydraulically connected to the river through ground water and gravels. They self-flush when water levels recede. This natural filtration system should also be in line with WFD requirements by enhancing water quality.

Although the aim of this scheme is to reduce the risk of flooding to the Lower Swansea Valley, the creation of this natural wetland provides the necessary environmental improvements required to enhance the ecological status of the River Tawe



More information is available on: www.swansea.gov.uk/lowerswanseavalleyflood

Case Study: Water Sensitive Urban Design (WSUD) Pilot Project, Maesteg

Natural Resources Wales are working with Dŵr Cymru Welsh Water and Valleys to Coast Housing Association to explore opportunities to integrate environmental, economic and social gains on a housing estate, Maesteg near Bridgend. The site is amongst the most disadvantaged communities in Wales. The estate is served by a combined sewer network that receives large amounts of surface water inflow. A large proportion of the surface water flow comes from an area of open grassland above the site. This flows downhill towards the residential properties.



Before

After

This ecosystems approach to developing and delivering this work will also help deliver WFD related ecological and chemical improvements, such as:

- Changes above the site can reduce runoff and hold back flows before they reach the residential properties. The area of open space is currently occupied with grass and scrub vegetation and is well suited to provide storage. This would also help the biodiversity of the area, particularly encouraging Marsh Fritillary species through wetland creation.
- Opportunities on the estate to reduce peak flows in the drainage network and improve the local amenity value. This could be done by retaining the flow in attractively landscaped rain gardens that step down with the topography of the site. There are also opportunities to plant trees on the steeper slopes behind swales. This would improve the visual character of the site as well as improve the local ecology. It could also be used as an educational resource. All these measures would engage the community and contribute to the sense of ownership.
- Downstream on the network the sewer floods and the combined sewer overflow spills directly to a watercourse, causing pollution. The proposals would reduce these risks.
- There are large areas of open space adjacent to the roads and residential areas within the site. These areas do not contribute positively to the community or environment, but do offer opportunities to create a vibrant centre for the estate with elevated views of the attractive surrounding landscape.
- A lesser amount of run-off entering the sewer reduces the amount of sewerage that needs to be pumped and treated; reducing costs, carbon emissions and pollution risk.
- Run-off from roads, pavements and houses carries sediment and pollution into local streams and rivers (River Llynfi). Holding back the flow in swales, rain gardens and wetlands not only reduces peak flows but also allows natural improvements in the quality of the run-off.
- Social and recreational activities will increase through the introduction of effective and attractive green spaces. Natural play areas as well as outdoor “break-out” spaces will be available to community groups.

For more information contact Martyn.Evans@cyfoethnaturiolcymru.gov.uk

2.3 Environmental Health and Pollution Control

Local Authorities have a major role to play in promoting water environment benefits through environmental health and pollution control.

What can you do?

- Engage with businesses to stimulate behaviour change to reduce risks of pollution. For example: advise catering establishments not to dispose of food waste directly to surface water drains, and encourage the safe storage of oils and hazardous substances.
- Raise public awareness of drainage misconnections and water efficiency. Misconnections include both dirty water entering drains which discharge and pollute watercourses, and also rainfall run-off which ends up in sewers when better sustainable drainage alternatives exist or can be constructed.
- Tackle the health implications associated with poor management of private sewage treatment systems (septic tanks and cesspits).
- Prevent and tackle illegal fly tipping and littering of water courses.
- Provide data and information, for example at bathing waters and use planning and statutory nuisance duties to prevent unauthorised activity that can contribute to water pollution, for example car washing.
- Local Authorities, as beach controllers, are required to erect signs giving a summary of the bathing water profile and current classification at bathing waters. See case study on [Pembrokeshire's Bathing Water Strategy](#).

Case Study: Pembrokeshire County Council's Bathing Water Strategy 2013-2015

Pembrokeshire County Council has worked collaboratively to publish a three year Bathing Water Strategy for Pembrokeshire. The partners include: Natural Resources Wales, Keep Wales Tidy, Dŵr Cymru Welsh Water, Pembrokeshire Coast National Park Authority, Farmers Union of Wales, National Farmers Union, Country Land & Business Association and the National Trust.

This pioneering programme aims to ensure Pembrokeshire's bathing water quality is maintained and improved by targeting resources at those beaches with the poorest water quality e.g. Wisemans Bridge and Nolton Haven. It will also work to regain awards at beaches such as Newport, Poppit sands and West Angle.

To achieve these actions, Pembrokeshire County Council is working with the above partners to raise awareness of compliance and regulations of bathing water standards; and with Natural Resources Wales to identify and investigate pollution sources. The Strategy will be reviewed annually by the Pembrokeshire Beach Liaison Group.

For further information diana.turbervill@pembrokeshire.gov.uk or rod.thomas@cyfoethnaturiolcymru.gov.uk



2.4 Estates including green space and buildings

As significant land and property owners, local authorities play an important role in protecting and improving the water environment. Below are some examples of actions that teams who are responsible for Local Authority landholdings and buildings can take. Local Authority and Natural Resources Wales operational teams need to work together to discuss and identify potential opportunities and how these can be realised.

What can you do?

Land & Green space

- Design and maintain drainage schemes on Local Authority sites and land to provide valuable flood management, water quality, ecological and amenity benefits.
- Manage mowing regimes: by reducing the frequency of mowing, the rates of surface water run-off can be reduced, thereby reducing sediment loading and risks of polluting substances entering watercourses. Longer grass areas have a greater capacity for water retention and infiltration, and buffer zones alongside water courses also help to filter out potential pollutants and provide bankside habitat benefits.
- Use trees and shrubs as buffer strips which can dramatically increase rain infiltration rates into the ground. Additionally, planted as shelter belts trees can have major impacts on wind chill on exposed houses, as well as improving biodiversity and connectivity, air quality and visual amenity and provide shade
- Manage Invasive Non Native species including Himalayan Balsam, Japanese Knotweed, Floating Pennywort and Giant Hogweed. These can have significant impacts on watercourse ecology by suppressing the growth of native flora, damaging habitat for insects and fish, impeding water flow and increasing flood risk. Responsibility for dealing with invasive weeds rests with individual landowners, including Local Authorities. Control efforts help reduce the spread of invasive non-native species and are especially successful when conducted using as a catchment wide co-ordinated approach. Further information on management and control techniques can be found via the GB National Non-Native Species Secretariat's website - <https://secure.fera.defra.gov.uk/nonnativespecies/checkcleandry/index.cfm> - and in documents such as the Environment Agency publication '*Managing invasive, non-native plants in or near freshwater*'. <http://www.environment-agency.gov.uk/homeandleisure/wildlife/31350.aspx>
- Use pesticides and herbicides appropriately: poor management of pesticide and herbicides can have serious effects on water quality and water body ecology. Training of spray operators and adoption of good practice such as in the Amenity Forum's briefing note on '*Pesticides and water protection for sprayer operators*' helps to minimise potential impacts on the water environment.

Buildings

- Manage buildings to avoid pollution arising from drainage misconnections, spillages, chemical storage, preventing polluting substances going down surface water drains and vehicle washing. Divert rainwater from sewers to sustainable drainage alternatives such as soakaways or swales.
- Raise awareness of misconnections, and water pollution and water efficiency issues amongst Local Authority tenants (domestic and business tenants). These can dramatically reduce costs through cutting sewage charges and where rainwater drainage is removed from sewers the rainwater rebate can be applied to bills. Promote good practice through tenancy agreements.
- Ensure effluent from public toilets is treated and disposed of adequately.
- Implement sustainable features in buildings such as rainwater harvesting, woodfuel heating system and waste management schemes. Go to the link to see the case study [Natural Resources Wales Visitor Centre at Bwlch Nant yr Arian](#),² Ceredigion that showcases a locally sourced timber building with a range of sustainable features.
- Implement water efficiency measures: in (e.g. buildings and green space management) and also encourage water efficiency practices amongst local residents and businesses. This can reduce water charges, and where properties are metered it will reduce sewerage charges too. In addition, Natural Resources Wales and Energy Saving Trust provide advice and information to water users on efficiency measures. See case study on Natural Resources Wales office at [Crosshands](#).

Case Study: Rainwater harvesting at Natural Resources Wales Office, Crosshands

The construction of a new flood defence depot provided the opportunity to install a rainwater gathering and storage facility. This would provide a water resource for use in a number of ways on site. It would also provide a demonstration and test bed site to gather experience and information on rainwater harvesting techniques.

SCHEME BENEFITS

- ✓ Reduced mains water dependence with consequential reduced water bills.
- ✓ Rainwater used where potable water is not required (toilets, vehicle washing)
- ✓ Reduces rainfall run-off from site thereby reducing flood risk downstream.
- ✓ Test bed for potential of rainwater harvesting.
- ✓ Demonstration site.

Outline of scheme

- The 450m² depot roof collects rainfall and feeds an 18m³ underground storage tank. Local rainfall exceeds 1500mm on average a year providing ample runoff in all but the driest of summers. Mains water acts as a back up in times of drought.
- Water is initially cleaned by a simple metal filter prior to storage. It is then pumped from the storage tank on demand to a variety of uses around the site including :
 - Toilet flushing – primary supply to low flush 6 litre toilet cisterns
 - Vehicle and Heavy Plant washing – primary supply to a washing unit comprising of a water recycling plant, jet washer and interceptor tanks.
 - Landscaping – the tank storage will provide the water source for initial landscaping work and continued pond filling.
 - All water movement and storage levels on site are recorded using data loggers. Electric consumption is also monitored and recorded. These data will enable operational details to be analysed over time.
 - Other water saving measures such as self-closing taps, low volume cisterns and waterless urinals have been installed which cut water use still further on site.

Costs and savings analysis

The basic costs for the system when installed in 1999 suggested a 20 year pay back on the investment with annual savings through both reduced mains water and effluent charges.

Tank sizing is an important factor influencing cost and payback. A large tank was installed at this site to provide sufficient storage for a variety of trial rainwater uses. For normal applications a smaller tank of 5m³ would have been sufficient. The payback period for this size tank was less than ten years,

The site has now operated successfully for many years, with analysis identifying that up to 75% of the water use on site is provided by the rainwater system. Similar systems were subsequently fitted at Natural Resources Wales Cardiff and Llandarcy offices. For more information contact: Robert.Vaughan@cyfoethnaturiolcymru.gov.uk

2.5 Partnership and awareness

Local Authorities have an important role as community leaders to educate, advise and raise awareness with communities. This will help change behaviours to support the delivery of WFD objectives. The Local Service Boards and the Single Integrated Planning process should consider where and how they can support delivery of WFD outcomes.

What can you do?

- **Community led improvements**, including access improvements, habitat improvements, litter clean ups, recreation and education activities; this can often be done by working with partners such as, water companies, voluntary sector organisations, community groups and Natural Resources Wales. See Case Study on [Eco Llynfi](#).
- **Tackle misconnections** - work with Natural Resources Wales, water companies, community groups, plumbing and building businesses to raise awareness of and tackle drainage misconnections where foul water from washing machines, bathrooms etc. is wrongly connected to surface water drains rather than to the foul sewer. Similarly roof water should run off to soakaways or surface water drains. See case study on [Swansea Misconnections Project](#).
- **Work with businesses** to reduce the risk of water pollution. Encourage businesses to ensure that their buildings and assets (e.g. vehicle yards) have correct drainage connections and procedures for storage of chemicals and potentially polluting substances. Pollution incidents can arise from poor control of spillages and storage of oils and chemicals, pouring detergents and oils down surface water drains and dirty water from vehicle washing going down the drain.
- **Promote public awareness** via campaigns, such as the Yellow Fish Campaign to raise awareness of pollution entering surface water drains, which ultimately end up in local streams and rivers. See case study on [Yellow Fish Campaign](#).
- **Work with others**, such as NHS Trusts, and Fire and Rescue Services to help integrate water environment issues into their work.
 - Integrate water environment issues into Local Authority services delivered by third parties, such as management of biodiversity, green space delivered by voluntary and private sector contractors and local communities
 - Work with others to raise awareness of the local economic value of a good quality water environment, water resources and the importance of 'blue-green' infrastructure in underpinning economic growth.

Case Study: Eco Llynfi

Eco Llynfi began in November 2012 as a way of connecting local groups with the natural environment. The project aims to develop a local understanding of eco-connectivity and the actions that individuals and groups can take to develop it in everyday life. The Upper Llynfi Valley (Caerau to Pont Rhyd-y-cyff) was impacted by past industrial uses such as iron works and spoil tips.

Bridgend County Borough Council is working with Valleys to Coast housing association and Natural Resources Wales with funding from Welsh Government. The project is supporting a number of local groups to help the local community learn about the environment. Eco Llynfi is made up of 5 projects: Caerau Park Estate, Maesteg Welfare Park, Caerau Market Garden, River Corridor and Woodland Creation. The project team has held a number of events with the various groups, examples pictured in Oakwood and Maesteg Welfare Park below. Details of the project can be accessed at <http://ecollynfi.wordpress.com>



All of these projects show how the environment is essential for our health, our wellbeing and the economy. The Caerau Market Garden shows that a formerly derelict, crime-affected and often-flooded area can be transformed into a flourishing market garden. The SuDS scheme in the garden was funded through Valleys Regional Park's Interreg IVB WECAN project. A subsequent hedge-laying project on the site provides an environment for pollinators; improving local biodiversity and the productivity of the garden. The Caerau scheme has been funded and delivered through a collaborative approach. Marks and Spencer supported the community open day last year and will fund the creation of a natural play area.

The Eco Llynfi work has resulted in additional projects; one working with the Friends group to create drainage swales and ponds at Maesteg Welfare Park and another with Valleys to Coast Housing Association and residents' group to create a 'shelter belt' or windbreak at Caerau Park Estate. Other benefits include providing habitat for wildlife and in some areas the trees are harvested for wood products.

A related project is the Valleys Regional Park-funded scheme led by Sustrans at the former Maesteg Washery site. This uses a creative arrangement of SuDs ponds to both manage water run-off and make an attractive statement for cycle tourists arriving in Maesteg.

For more information contact: david.llewellyn@groundwork.org.uk or Robert Jones Robert.jones@bridgend.gov.uk

Case Study: Swansea Misconnection Project

Natural Resources Wales has worked with City and County of Swansea and Dŵr Cymru Welsh Water to improve the water quality in Swansea as part of our work to meet Water Framework Directive, bathing water and shellfish water standards in the city. Misconnections happen when toilets, washing machines, dishwashers, baths and showers are connected by mistake to surface water drains, instead of the foul sewer.

At present many of the water bodies in the county are failing to meet good ecological status. Much of the pollution load on the streams in the area is known to come from wrong connections. The Swansea Misconnection Project aims to identify and eliminate wrong connections to reduce the pollution in Swansea Bay.

The project was initiated several years ago when both the local authority and Environment Agency were having difficulty tracking down and resolving misconnections. Working together, we put together a project proposal and set a collaborative agreement whereby both parties contributed resources to set up a misconnection team working within the City and County of Swansea's Pollution Control department.

The team is supported by Dŵr Cymru Welsh Water and Natural Resources Wales. Guided by waterbody and bathing water investigations, the Miscon Team is tackling known hotspots within the City. In areas known to be affected by pollution from the misconnections, the Drainage Officer' surveys the surface water drainage system, looking for signs of pollution. They then visit each and every house on branches of the drainage network that are found to be polluted.

Suspect properties are dye tested to verify the existence of a misconnection and if found, negotiations commence with the occupier with the aim of correcting any wrong connections.



So far, over 1500 houses have been surveyed. The misconnection rate has found to be between 10 and 13% of all properties. That means over 150 misconnections have been identified and the vast majority of these have now been rectified.

The work continues and although Swansea is a big place, it is expected that the impact of misconnections on the water quality within the city will soon be much reduced. For further information contact

Hamish.Osbourne@cyfoethnaturiolcymru.gov.uk or

huw.morgan@swansea.gov.uk

Case Study: Yellow Fish Campaign

In 2012, Keep Wales Tidy launched the Yellow Fish Campaign. The campaign aims to raise awareness about how pouring polluting substances such as oils, paints, solvents, chemicals or dirty water down surface water drains can pollute local watercourses. These substances when entering drains can devastate local streams and wildlife. The scheme encourages communities to get involved with their local environment. Schools, community groups and businesses marked street drains with yellow fish to raise awareness and raise awareness by distributing leaflets and putting up posters.

During the first year, 10 Local Authorities in Wales signed up to the Yellow Fish scheme: Anglesey, Caerphilly, Ceredigion, Merthyr Tydfil, Monmouthshire, Neath Port Talbot, Newport, Pembrokeshire, Powys and Swansea. This year the campaign will build on previous successes and work to expand the Yellow fish message across Wales.



For more information: go to <http://www.keepwalestidy.org/>

3. Good Practice

As well as good practice in integrating WFD issues into the different Local Authority functions, some examples of steps that Local Authorities have taken are shown below:

- √ Establish a lead Cabinet Member or senior manager (e.g. from drainage, planning policy or environmental strategy teams) with overarching responsibility for ensuring that water environment and WFD issues are effectively integrated into different local authority functions and progress is monitored.
- √ Establish a small officers group within the Local Authority, with representatives from relevant functions. This group should identify key actions to complete and promote cross-functional working on WFD and water environment issues.
- √ Use a simple checklist for assessing and monitoring how WFD issues are being integrated into the work of the Authority
- √ Build good working relationships with external partners, including in organising training sessions for officers on topics such as the WFD and new SuDS roles and in delivering actions.

4. Sources of Support and Further Information

For further information and advice please contact: Natural Resources Wales – national customer contact centre: Tel. 0300 065 3001 enquiries@naturalresourceswales.gov.uk

- Natural Resources Wales [Natural Resources Wales / Managing the natural resources of Wales](#)
- Challenges & Choices Consultation [Natural Resources Wales / Consultations](#)
- Welsh Local Government Association - [Welsh Local Government Association](#)

Other useful sources of information include:

- The three River Basin Management Plans for Wales are available on the Environment Agency website
- Natural Resources Wales, Royal Town Planning Institute, Local Government Association document on spatial planning and the Water Framework Directive entitled: *The WFD and Planning – Initial Advice to Local Authorities in England and Wales* (2006)
- Environment Agency - *Water Framework Directive Mitigation Measures Online Manual*, on the EA's website <http://evidence.environment-agency.gov.uk/FCERM/en/SC060065.aspx>
- Environment Agency guidance on Water Cycle Studies (2009)
- Environmental datasets from the Environment Agency, Natural England and partners is available online at the Geostore in a system called *DataShare*, which Local Authorities can sign up to for free. www.geostore.com/environment-agency/
- CIRIA – The SuDS Manual (2007) and SuDS training courses www.ciria.com/suds/
- Welsh Local Government Association – the Local Government Association's website includes useful information on SuDS, flood risk management, drought, climate change and planning relevant to the WFD
- [SuDs Wales](#)
- Local Evidence packs for Local Authorities show WFD maps and information (as well as other Natural Resources Wales datasets) for a Local Authority area. They are available on <http://www.infobasecymru.net>. More detailed Water Framework Local Evidence Packs for Local Authority areas are available on request from local.evidence@cyfoethnaturiolcymru.gov.uk
- Water Watch Wales <http://sparkmap.comxa.com/waterwatchwales/> is a website developed by Natural Resources Wales which provides WFD information on water body status for Wales in the form of web maps. It also includes links to summary documents for river catchments. The website is currently being revised to include an interactive component which will allow external partners to upload details of projects they are involved in to enhance the water environment.
- Environment European Commission
- Review of Consents under the Conservation of Habitats and Species Regulations 2010 - Guidance for Local Authorities. This guidance provides background and context for the review of Local Authority consents, and introduces a four stage approach to the review.

5. Glossary

The following list aims to provide a brief explanation of many of the words, phrases and acronyms that relate to WFD.

Term	Explanation
Artificial water body	See Heavily Modified Water Body
Bathing Waters Directive	European Community legislation – (76/160/European Economic Community (EEC) which requires Member States to take all necessary actions to ensure identified bathing waters meet certain quality standards prescribed for the protection of the environment and public health. The new Bathing Waters Directive (2006/7/EC) will repeal the original Bathing Water Directive by end of 2014 at the latest.
Biological element	A collective term for a particular characteristic group of animals or plants present in an aquatic ecosystem (for example phytoplankton; benthic invertebrates; phytobenthos; macrophytes; macroalgae; angiosperms; fish).
Biological indicators	A parameter that can be monitored to estimate the value of a biological quality element. Indicators may include the presence or absence of a particularly sensitive species.
Biological quality element	A characteristic or property of a biological element that is specifically listed in Annex V of the Water Framework Directive for the definition of the ecological status of a water body (for example composition of invertebrates; abundance of angiosperms; age structure of fish).
Catchment	The area from which precipitation contributes to the flow from a borehole spring, river or lake. For rivers and lakes this includes tributaries and the areas they drain.
Chemical Status (surface waters)	The classification status for the surface water body. This is assessed by compliance with the environmental standards for chemicals that are listed in the Environmental Quality Standards Directive 2008/105/EC, which include priority substances, priority hazardous substances and eight other pollutants carried over from the Dangerous Substance Daughter Directives. Chemical status is recorded as good or fail. The chemical status classification for the water body, and the confidence in this (high or low), is determined by the worst test result.
Chemical Status (groundwater)	An expression of the overall quality of the groundwater body. The classification status for a groundwater body against the environmental criteria set out in the Water Framework Directive and the Groundwater Directive (2006/118/EC), as set out in Common Implementation Strategy (CIS) guidance document No 18. All five of the component tests for chemical status must be assessed as good or poor and the overall chemical status and the confidence in this (high or low) is determined by the worst test result.

Classification	Method for distinguishing the environmental condition or “status” of water bodies and putting them into one category or another.
Co-deliverer	Agencies and institutions with statutory powers or who have it in their power to deliver actions needed to implement River Basin Management Plans.
Competent Authority	An authority or authorities identified under Article 3(2) or 3(3) of the Water Framework Directive. The Competent Authority will be responsible for the application of the rules of the Directive within each river basin district lying within its territory.
Cost effective	In the context of the Water Framework Directive, it describes the least cost option for meeting an objective. For example, where there are a number of potential actions that could be implemented to achieve Good Ecological Status for a water body, Cost Effectiveness Analysis is used to compare each of the options and identify which option delivers the objective for the least overall cost.
Diffuse pollution	Pollution resulting from scattering or dispersed sources that are collectively significant but to which effects are difficult to attribute individually.
Ecological potential	The status of a heavily modified or artificial water body measured against the maximum ecological quality it could achieve given the constraints imposed upon it by those heavily modified or artificial characteristics necessary for its use. There are five ecological potential classes for Heavily Modified Water Bodies/Artificial Water Bodies (maximum, good, moderate, poor and bad).
Ecological status	Ecological status applies to surface water bodies and is based on the following quality elements: biological quality, general chemical and physico-chemical quality, water quality with respect to specific pollutants (synthetic and non synthetic), and hydromorphological quality. There are five classes of ecological status (high, good, moderate, poor or bad). Ecological status and chemical status together define the overall surface water status of a water
Ecosystem	Ecosystems are communities of living organisms (including everything from microorganisms, through fungi, plants, animals to people), their non-living surroundings (rocks, soils, air, sea, water etc.), and all the interactions that take place between them. Human activities are part of ecosystems and can have a strong influence on them.
Ecosystem Services	<p>Ecosystem services are defined as “the benefits that people obtain from ecosystems”</p> <p>They can be divided into 4 categories:</p> <ul style="list-style-type: none"> • Supporting system and services necessary for the production of all other ecosystem services, such as soil formation, nutrients cycling and primary production. • Provisioning services such as crops, fish, timber

- and genetic material.
- **Regulating services** such as water purification, biological control mechanisms, carbon sequestration, pollination of commercially valuable crops etc.
- **Cultural services** providing a source of aesthetic, spiritual, religious, recreational or scientific enrichment.

Environment Agency	Environment Agency of England
Floods Directive	The purpose of the European Union Directive on flooding (2007/60/EC) is to establish a framework for the assessment and management of flood risks aiming at the reduction of the adverse consequences on human health, the environment, cultural heritage and economic activity associated with floods in the Community. It requires member states to undertake flood risk assessments, flood risk mapping and produce flood risk management plans. The Directive was published in early November 2007 and must be transposed into United Kingdom law by 26 November 2009.
Good chemical status (surface waters)	Means that concentrations of chemicals in the water body do not exceed the environmental standards specified in the Environmental Quality Standards Directive 2008/105/EC. These chemicals include Priority Substances, Priority Hazardous Substances and eight other pollutants carried over from the Dangerous Substance Daughter Directives.
Good chemical status (groundwater)	See chemical status (groundwater). Means the concentrations of pollutants in the groundwater body do not exceed the criteria set out in Article 3 of the Groundwater Daughter Directive (2006/118/EC).
Good ecological potential	Those surface waters which are identified as Heavily Modified Water Bodies and Artificial Water Bodies must achieve 'good ecological potential' (good potential is a recognition that changes to morphology may make good ecological status very difficult to meet). In the first cycle of river basin planning good potential may be defined in relation to the mitigation measures required to achieve it.
Good ecological status	The objective for a surface water body to have biological, structural and chemical characteristics similar to those expected under nearly undisturbed conditions.
Good quantitative status (groundwater)	See quantitative status (groundwater). Means the level of groundwater in the groundwater body meets the criteria set out in Annex V (2.1.2) of the Water Framework Directive.
Good status	Is a term meaning the status achieved by a surface water body when both the ecological status and its chemical status are at least good or, for groundwater, when both its quantitative status and chemical status are at good status.
Greywater	Wastewater from sinks, baths, showers and some domestic appliances before it reaches the sewer (or septic tank system).

Groundwater	All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.
Hazardous substances	Substances or groups of substances that are toxic, persistent and liable to bioaccumulate, and other substances or groups of substances which give rise to an equivalent level of concern.
Heavily Modified Water Body	A surface water body that does not achieve good ecological status because of substantial changes to its physical character resulting from physical alterations caused by human use, and which has been designated, in accordance with criteria specified in the Water Framework Directive, as 'heavily modified'.
High ecological status	Is a state, in a surface water body, where the values of the hydromorphological, physico-chemical, and biological quality elements correspond to conditions undisturbed by anthropogenic activities.
Invasive Non Native Species	Non-native species. Many species of plants and animals have been introduced to this country since Roman times. Several of these non-native species are invasive and have been causing serious problems to the aquatic and riverine ecology and environment. Problems include detrimental effects on our native species, deoxygenation of water causing fish mortalities, blocking of rivers and drainage channels, predation and competition with our native species, and in some cases pose health risks to the public or livestock.
Liaison Panels	A panel consisting of around 15 representatives of strategic co-deliverers including bodies with statutory powers and others who will need to put measures into action for the River Basin District. The panel represents all key interests within the River Basin District and is the primary focus for engagement at the River Basin District level.
Macroalgae	Multicellular algae such as seaweed.
Measure	This term is used in the Water Framework Directive and domestic legislation. It means an action which will be taken on the ground to help achieve Water Framework Directive objectives.
Mechanisms	The policy, legal and financial tools which are used to bring about actions (measures). Mechanisms include for example: legislation, economic instruments; codes of good practice; negotiated agreements; promotion of water efficiency; educational projects; research; development and demonstration projects.
Misconnections	Misconnections of foul sewage into surface water drains are a significant source of urban diffuse pollution in those areas where a separate drainage system is used. Misconnections happen when domestic plumbing has been connected into surface water drains instead of the foul sewer. This means untreated dirty water goes directly into rivers/waterways without receiving treatment.
National Assembly for Wales	The National Assembly for Wales consists of 60 Members elected throughout Wales. The Assembly has delegated many of its powers to the First Minister, who leads the Welsh

Assembly Government. The Assembly decides on its priorities and allocates the funds made available to it from the Treasury. Within its powers, the Assembly develops and implements policies that reflect the particular needs of the people of Wales.

Natura 2000 sites	Protected Areas established for the protection of habitats or species under the Birds Directive (79/409/EEC) (Special Protection Areas) and the Habitats Directive (92/43/EEC) (Special Areas of Conservation).
No deterioration (in water body status)	None of the quality elements used in the classification of water body status deteriorates to the extent that the overall status is reduced.
Non-hazardous pollutant	Any substance that is not a hazardous substance but is liable to cause pollution in significant quantities.
Non-native species	See Invasive Non Native Species
Objective (surface waters)	<p>Three different status objectives for each water body. These are:</p> <ul style="list-style-type: none"> • Overall status objective • Ecological status or potential objective; and • Chemical status objective <p>These are always accompanied by a date by when the objective will be achieved.</p> <p><u>Ecological status (or potential) objectives</u> will be derived from the predicted outcomes for the biological elements and physico-chemical elements, plus any reasons for not achieving good ecological status (or potential) by 2015.</p> <p><u>Chemical status objectives</u> will be derived from the predicted outcomes for the chemical elements plus any reasons for not achieving good chemical status by 2015.</p> <p><u>Overall status objectives</u> will be derived from the ecological status and chemical status objectives.</p>
Objective (groundwater)	<p>There are three status objectives for each groundwater body:</p> <ul style="list-style-type: none"> • Overall status objective; • Quantitative status objective; and • Chemical status objective. <p>These are always accompanied by a date by when the objective will be achieved.</p> <p><u>Overall status objectives</u> will be derived from the quantitative status and chemical status objectives</p> <p>In addition to status objectives there are also additional environmental objectives: to prevent deterioration of status, to prevent or limit the inputs of pollutants to groundwater and to reverse any significant and sustained upward trends in pollutant concentrations.</p>
Phytobenthos	Bottom-dwelling multi-cellular and unicellular aquatic plants such as some species of diatom.
Phytoplankton	Unicellular algae and cyanobacteria, both solitary and colonial that live, at least for part of their lifecycle, in the water column.
Pollutant	Any substance liable to cause pollution.

Pollution	The direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or land which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) result in damage to material property; or (iii) impair or interfere with amenities and other legitimate uses of the environment.
Predicted outcome	The future status of a quality element or water body based on groups of practical and justified measures and the date when this status will be achieved.
Pressures	Human activities such as abstraction, effluent discharges or engineering works that have the potential to have adverse effects on the water environment.
Priority substances	A pollutant, or group of pollutants, presenting a significant risk to or via the aquatic (surface water) environment that has been identified at Community level under Article 16 of the Water Framework Directive. They include 'priority hazardous substances'.
Protected Areas	Areas that have been designated as requiring special protection under Community legislation for the protection of their surface water and groundwater or for the protection of habitats and species directly depending on water.
Quality element	A feature of an aquatic (surface water) ecosystem that can be described as a number for the purposes of calculating an ecological quality ratio, such as the concentration of a pollutant; the number of species of a type of plant.
Quantitative status (groundwater)	An expression of the degree to which a body of groundwater is affected by direct and indirect abstractions. The classification status for a groundwater body against the environmental criteria set out in the Water Framework Directive and as set out in Common Implementation Strategy Guidance Document No 18. All four of the component tests for quantitative status must be assessed as good or poor and the overall quantitative status and the confidence in this (high or low) is determined by the worst test result.
Risk	The likelihood of an outcome (usually negative) to a water body or the environment, or the potential impact of a pressure on a water body.
Risk assessment	The analysis that predicts the likelihood that a water body is at significant risk of failing to achieve one or more of the Water Framework Directive objectives.
River basin	A river basin is the area of land from which all surface run-off and spring water flows through a sequence of streams, lakes and rivers into the sea at a single river mouth, estuary or delta. It comprises one or more individual catchments.
River Basin District	A river basin or several river basins, together with associated coastal waters.

River Basin Management	The management and associated planning process that underpins implementation and operation of the Water Framework Directive. It is both an overarching process in terms of existing processes and also defines new sub-processes such as those for hydromorphology. The river basin management plans are plans for river basin management.
River Basin Management Plan	For each River Basin District, the Water Framework Directive requires a River Basin Management Plan to be published. These are plans that set out the environmental objectives for all the water bodies within the River Basin District and how they will be achieved. The plans will be based upon a detailed analysis of the pressures on the water bodies and an assessment of their impacts. The plans must be reviewed and updated every six years.
Site of Special Scientific Interest	An area of land notified under the Wildlife and Countryside Act 1981 by the appropriate nature conservation body (Scottish Natural Heritage in Scotland) as being of special interest by virtue of its flora and fauna, geological or physiogeographical features.
Source Protection Zone	A zone around a well, borehole or spring where groundwater is abstracted for human consumption (for example drinking water or food production), as defined under the Agency's Groundwater Protection Policy (GP3). Zone 1 (SPZ1) is the area closest to the abstraction, representing the highest risk to the source. Zones 2 and 3 are progressively larger. Risk-based Policies to prevent pollution are applied within these zones.
Spatial planning	Spatial planning is wider ranging than land-use planning based on regulation and control of land, and aims to ensure the best use of land by assessing competing demands. Social, economic and environmental factors are taken into account in producing a decision that is more conducive to sustainable development.
Special Area of Conservation	Natura 2000 sites that are designated under the Habitats Directive.
Special Protection Area	Natura 2000 sites that are designated under the Birds Directive.
Specific Pollutant	A substance considered as being discharged to the aquatic environment in significant quantities at the national level and for which Environmental Quality Standards have been established. As part of the ecological classification criteria, and in places where these pollutants are monitored, these standards must be met, in order for a surface water body to be classified as good ecological status.
Sustainable Drainage Systems	A system of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.
Water body	A manageable unit of surface water, being the whole (or part) of a stream, river or canal, lake or reservoir, transitional water (estuary) or stretch of coastal water. A 'body of groundwater' is a distinct volume of groundwater within an aquifer or aquifers.

Water Framework Directive	European Union legislation – Water Framework Directive (2000/60/EC) – establishing a framework for European Community action in the field of water policy.
Water Framework Directive objectives	The objectives set out in Article 4 of the Water Framework Directive together with objectives set out in paragraphs 2 and 3 of Article 7 of the Directive and which are required to be met.
Water table	The upper limit of the saturation zone.
Water use	Water Services together with any other human activity identified as having a significant impact upon the status of water.
Weight of evidence	A weight of evidence approach integrates results or evidence from several data sources, weighted appropriately, to make risk based decisions.
Welsh Government	The devolved government in Wales.
Welsh Technical Advice Notes	<i>Planning Policy Wales</i> (2002) sets out the land use planning policies of the Welsh Government (the Assembly Government). It is supplemented by a series of topic based Technical Advice Notes (Wales). Technical Advice Notes may be material to decisions on individual planning applications and will be taken into account by the National Assembly for Wales and planning inspectors in the determination of called-in planning applications and appeals.