



**Cyfoeth
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**Natural
Resources
Wales**

Vital nature: Making the connections between biodiversity and the people and places of Wales

NRW's strategic steer for biodiversity to 2022



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Foreword



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Wales has a new legal framework, and Natural Resources Wales a new purpose, together they help enable a fundamental change to the relationship that people, businesses and Government have with nature and the essential role it plays in our well-being.

Despite conservation efforts, biodiversity – the variety of life – continues to decline. Like hundreds of other organisations around the world, NRW is clearer than ever that unless we can halt and reverse this decline and build the resilience of ecosystems, our well-being and the well-being of future generations will suffer.

This document sets out NRW's priorities and ways of working and a series of high level actions and commitments. These are the things which we will take forward in the coming years as we launch a new process of engagement, enabling, collaborating and learning, to maximise the positive impacts on biodiversity and ecosystem of the decisions we and others make. It sits alongside NRW's Corporate Plan to 2022 and will steer our work to deliver improvements in the sustainable use of our natural resources and the quality and resilience of our ecosystems. Many of the actions in our Corporate Plan that address flooding, pollution, health and well-being contribute directly to development of solutions that can also help biodiversity to thrive.

NRW is also embarking on the development of a long term vision for the environment to 2050, in a collaborative process with our partners: the public sector, environmental organisations, community groups and businesses in Wales. This vision will become both the compass and route map for many of the decisions that we will need to make together, as we find new ways of working to restore the environment on which we all depend.

In Wales, as in the rest of the world, the root cause of biodiversity loss and depletion of natural resources is that for centuries the negative impacts on biodiversity and ecosystems from most social and economic activities have effectively been disregarded. Pollution of air and water, loss of pollinators, declining soil quality, depletion of fish stocks and extinction of species have not been sufficiently taken into account, or often not taken into account at all, in the choices and decisions made by individuals, businesses, public sector bodies and even entire sectors of the economy. As a result, legal and policy frameworks for protecting the environment were developed, primarily to try to control the undesirable side-effects of unsustainable activity.

But things are changing. At the heart of Wales' new legal framework is the recognition that everyone's wellbeing – economic, social, cultural and environmental – depends on healthy and

resilient ecosystems, which in turn depend on biodiversity. While past efforts have been vital in limiting the damage, the Wellbeing of Future Generations (Wales) Act 2015, and the Environment (Wales) Act 2016 give us both an opportunity and a legal imperative to shift the focus away from managing the symptoms to tackling root causes. The challenge now is to put biodiversity and

resilient ecosystems at the very centre of planning and decision-making, at all levels and across all sectors.

This strategic steer for biodiversity will be a platform for constructive dialogue, robust debate, creativity and innovation, both within our organisation and as we work with leaders and

practitioners from all sectors. As we in NRW rethink our own role as a practitioner, enabler and influencer, we recognise that we have much to learn, and we invite the people of Wales to join us on a journey that delivers for biodiversity and ecosystems for present and future generations in Wales.

July 2018



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Vital nature

Wales' natural environment is a source of wonder and inspiration. Our country is renowned for its landscapes and seascapes, mountains, coastlines and woodlands. As well as iconic species like the bottlenose dolphin, red squirrel, marsh fritillary, chough, red kite, Snowdon lily and wild cotoneaster, Wales has a great diversity of less obvious but equally important species including invertebrates, fungi, mosses, lichens, liverworts and soil organisms. All these species – and there may be up to 50,000 of them – inhabit one or more of a wide range of habitats across the land, freshwater, coasts and seas, including blanket bogs, oak woodlands, grasslands, sand dunes, rivers, estuaries, bays and reefs. Meanwhile the diverse geology of Wales is known all over the world, having produced much of the slate and coal that fed the industrial revolution. Wales has many of the key sites which helped develop the science of geology itself and which continue to play a key role in research, education and tourism.

Many people have a deep-rooted personal and emotional connection to nature or to a particular place or part

of the natural world, often formed from treasured experiences which may go back to childhood. These connections, though we may not always be consciously aware of them, are part of our sense of place and our history, and are at the heart of the cultural identity of Wales: they are our natural heritage.

The sense of emotional well-being that contact with nature often gives us at a personal level, is of course, only part of the picture. The natural environment also provides us with just about all the things we need to live and thrive: the air we breathe, the water we drink and the food we eat. It provides the raw materials and energy for our homes and industries, and can also protect us against environmental hazards, such as flooding, soil erosion and the impacts of climate change.

The natural environment provides employment and sustains communities in all parts of Wales. Thousands of people work in farming, forestry and fisheries, all of which depend on natural resources. Thousands more are employed in the tourism and recreation industries, whose key resource is Wales' natural environment

What do we mean by biodiversity, geodiversity, ecosystems and ecosystem resilience?

Biodiversity means the variety of life on earth – plants, animals, fungi and micro-organisms. It includes both genetic diversity within a single species, and the diversity that exists across all species. Biodiversity is also not just about species but the variety of **ecosystems** they inhabit, which exist at a range of scales, such as from an individual soil micro-habitat to a whole landscape.

Geodiversity means the variety of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes which form and alter them.

Ecosystems are functioning systems made up of biodiversity, the supporting environment (air, water, minerals, soil) and the interactions between them.

Ecosystem resilience is the ability of ecosystems to cope with pressures, disturbances and change – either by resisting them, recovering from them or adapting to them. Achieving ecosystem resilience is about working at a larger scales, promoting functional connections between natural places, ensuring they have high natural diversity, are in good condition and increasing their extent. Biodiversity is an essential underpinning element of all resilient ecosystems. All functioning and resilient ecosystems have a characteristic healthy and often rich biodiversity.

and the opportunities it provides for enjoyment and relaxation. The wildlife, landscapes and seascapes of Wales are a rich source of inspiration for many forms of artistic and cultural expression. These interactions with nature, in whatever form they take, play an important role in maintaining our mental health and provide opportunities to improve our physical health.

Put simply, our well-being and that of future generations depends completely on the natural environment and biodiversity. We literally couldn't live without it. And what is more, biodiversity has its own intrinsic value as well as being essential for human well-being.



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Nature under threat

Our natural environment is under significant pressures and threats. Decisions made by individual citizens, business and government often have a negative effect on nature. Climate change, pollution of air, freshwaters and seas, the loss and fragmentation of habitats to development and changes in land use, the introduction and spread of invasive species, pests and diseases and the increasing demands of the human population on natural resources to provide food, energy and raw materials, have direct or indirect impacts on biodiversity. Furthermore, biodiversity and ecosystems are not only being impacted by current pressures, they are still bearing the impacts of human activity that occurred years, decades or even centuries in the past.

Like much of the rest of the UK and Europe, Wales continues to face biodiversity loss. According to the 2016 *State of Nature: Wales* report¹ published on behalf of a consortium of nearly 70 conservation, management and research bodies, of the animal and plant species identified as conservation priorities in Wales, 33% of the species which were assessed have declined over the past decade, with between a third and a half of the remainder showing no significant improvement.

NRW's State of Natural Resources Report (SoNaRR)² includes assessments of the condition of our Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), the sites subject to the highest level of statutory

In practice: Sand dune restoration

Sand dune habitats in Wales represent some of our most important sites for biodiversity, and are highly distinctive landscapes, valued for their scenic beauty and opportunities for public access and recreation. Dunes are formed and maintained by wind erosion acting on mobile sand, and healthy dune ecosystems depend on the continuation of natural processes to maintain their characteristic vegetation and physical form. However, many sand dune habitats in Wales have become stabilised due to changes in management including reduction in grazing, increased levels of nutrients and coastal defences. Such stabilisation impacts on specialised species of plants and animals that rely on mobile, bare or pioneer habitat conditions. Many of our most important sand dune areas, including at Newborough, Kenfig and Merthyr Mawr, are protected by SSSI, NNR and SAC designations, where a number of large scale dune restoration projects are taking place. These projects are focussing on carrying out works (such as excavation and vegetation removal) to restore the balance between bare and vegetated areas and to encourage the natural mobility and dynamism of sand dune systems. The aim is that by focussing on re-establishing the underlying ecosystem processes that maintain the habitat, long term benefits can be achieved, including improving the conservation status of key species and reducing the need for repeated interventions which may only deliver short term gains.



¹ *State of Nature 2016: Wales*. Available from www.rspb.org

² *The State of Natural Resources Report (SoNaRR) 2016*. Available from www.naturalresources.wales

protection. On Wales' terrestrial and freshwater SACs and SPAs, 55% of species and 75% of habitats are assessed as being in an unfavourable condition, and the trend of many species and habitat types is one of continuing decline. Recent indicative condition assessments of our marine SACs and SPAs³ suggest that 46% of designated features (both habitats and species) are in a favourable condition and 45% in an unfavourable condition.

More widely, SoNaRR has assessed the extent to which natural resources in Wales are being sustainably used and managed and has looked at how pressures on Wales' natural resources are resulting in risks and threats to long-term social, cultural,

environmental and economic well-being. It concludes that no ecosystem in Wales is likely to have good resilience. Being less resilient means that ecosystems and biodiversity have a reduced ability to survive and adapt to challenges such as climate change, invasion by undesirable species and pressures such as hydrological change and habitat fragmentation.

If these trends continue and our biodiversity continues to decline then future generations' access to clean air, water, food, raw materials and opportunities for enjoyment of nature can no longer be taken for granted.



³ *Indicative feature condition assessments for European marine sites (EMS)*. Available from www.naturalresources.wales

Addressing the challenge

What are ecosystem services?

Ecosystem services is a term used for all the benefits that ecosystems provide for people.

- **Supporting systems and services**, including bedrock, soil formation, nutrient cycling and primary production, necessary for the production of all other ecosystem services.
- **Provisioning services** such as mineral resources, crops, fish, timber and genetic material.
- **Regulating services** including water purification, flood alleviation, biological control mechanisms, carbon sequestration and pollination of commercially valuable crops.
- **Cultural services**, providing a source of aesthetic, spiritual, religious, recreational or scientific enrichment.

The statutory purpose of NRW as set in the Environment (Wales) Act 2016 is to pursue Sustainable Management of Natural Resources (SMNR). This represents a shift of focus away from delivering our many individual statutory functions in isolation from one another, and towards addressing the pressures and drivers of ecosystem change, not just the effects. It is why NRW was established, and provides both the opportunity and the obligation to work in a more joined-up way. SMNR, together with our duty in Section 6 of the Act to seek to maintain and enhance biodiversity, and the Nature Recovery Action Plan (NRAP) which represents the biodiversity strategy for Wales, provide NRW with a renewed focus to exercise the full range of our functions so as to improve ecosystem resilience. The legal and policy framework is explained further in Annex 1.

NRW has a wide range of duties and powers that relate to biodiversity. We have statutory functions whose primary purpose is the conservation of habitats, species and geodiversity, such as our duties and powers relating to the designation and management of protected sites and the statutory protection of rare and threatened species. Our wide remit includes being a regulator, advisor, policy-maker, land manager, educator, facilitator and partner. We are the statutory nature conservation body

for Wales and an evidence-based expert independent advisor to government and others. The public and our partners rightly expect us to be champions for biodiversity and the environment, and rightly expect us to take a leading role in terms of innovation and influencing Government policy on nature conservation and biodiversity.

Many areas of work we carry out to deliver our functions are vital to securing improvements in biodiversity and ecosystem resilience, including flood risk management, forestry and woodland management, regulation of industrial processes, agriculture, waste management, water resources, fisheries and recreation.

We are already transforming the way we work through:

- Developing a detailed, shared long-term vision for the natural environment to 2050 with our staff and stakeholders during 2018/19, and how we measure progress towards it.
- Embedding our purpose – SMNR – across all of our work, and ensuring the 2016 Environment (Wales) Act's biodiversity and resilience of ecosystems duty is also embedded, helping other public bodies to do the same.

In practice: Preventative and adaptive action to manage tree health and improve ecological resilience

Phytophthora ramorum is a fungus-like pathogen which causes extensive damage and mortality to a wide range of trees. In the past four years, over 650 hectares of larch have been clear-felled in the Afan valley, which equates to well over 15% of the forest area, and felling work is still ongoing. The outbreak of *P. ramorum* across Wales, not just at Afan, has been the largest outbreak of a tree disease in Great Britain since the Dutch elm epidemic in the 1970s. It has required a huge amount of planning and resources to achieve the level of felling required at Afan, in accordance with bio-security protocols, to try and limit the spread the disease as far as possible.

The felling has taken its toll on the visual, landscape and amenity aspects of the valley but these will recover in time. We are trying to make the most of what has happened by implementing changes that will make the forest more diverse and therefore ecologically resilient to future threats such as climatic change. The climate globally and in Wales is predicted to change with wide-ranging implications for all ecosystems, including woodlands. Some of the projected changes are potentially so significant that they could completely change the extent, nature and condition of the woodlands and forests that we have in Wales, both recently planted and ancient in origin, and this will have an impact on the ecosystem services that we derive from them. The main risks for forestry in Wales are related to changes in forestry

productivity and land suitability; changes in the type, extent, frequency and impact of pests, pathogens and invasive species; and changes in the frequency and/or magnitude of extreme weather and wildfire events.

Through an increased tree restocking programme we are working to get Afan back on its feet as quickly as possible. We are planting a wider range of species, including broadleaves, making sure that the provenance of these species is capable of adapting to future climatic change. We are also looking to manage areas of the forest using Low Impact Silvicultural Systems which will enhance opportunities for biodiversity. Taken together, these actions will improve the structural, species and genetic diversity of the forest and improve habitat connectivity, making the forest more resilient to future threats, including pests and diseases.

NRW is also involved in developing and implementing broader biosecurity work with partners to ensure that threats from pests and pathogens do not become ecological tipping points. Recovery of damaged woodland ecosystems is a priority but equally important are measures to raise awareness of tree pest and disease symptoms, causes and actions, such as NRW's Keep it Clean campaign.



- The assessment of the state of our natural resources and the extent to which we are achieving SMNR, through the preparation and publication of SoNaRR in 2016, and aiming to produce SoNaRR II by 2020.
- Working with stakeholders to co-produce Area Statements across Wales, which set out priorities, opportunities and constraints to help implement the Welsh Government's National Natural Resources Policy at a local and regional level.
- Strengthening our relationships with a wide range of stakeholders and developing new partnerships.
- Collaborating, as one of the four statutory members in all the Public Service Boards in Wales, to co-produce local Well-being Assessments and Well-being Plans, as set out in the Well-being of Future Generations (Wales) Act 2015.
- Embedding our well-being objectives (developed under the Well-being of Future Generations (Wales) Act 2015) into our corporate planning processes (see Annex 1).
- Our work in the marine environment, where the legal, policy and strategic planning framework, including the development of the Welsh National Marine Plan, has already shifted to a greater focus on sustainable management of natural resources and application of the ecosystem approach.
- Developing approaches for Payments for Ecosystem Services (PES) to identify opportunities for landowners, managers and businesses to deliver biodiversity and ecosystem gains alongside achieving commercial benefits.
- Restructuring our organisation and ways of working to create integrated programmes for the services we deliver, and to give a stronger focus on organising our delivery around places and the achievement of our Well-being Objectives.

In practice: Applying the ecosystem approach in the marine environment

The past decade has seen considerable development in the planning, management and conservation framework for the marine environment at national, European and international levels. The new framework embeds the ecosystem approach as a requirement in legislation and policy in a manner consistent with the principles of SMNR. Key elements of this new framework include the Marine and Coastal Access Act 2009, the UK Marine Policy Statement, a UK Marine Strategy developed in accordance with the Marine Strategy Framework Directive, and the Welsh National Marine Plan. There are also legislative requirements in the above framework, and further obligations under the OSPAR Convention, to develop an ecologically coherent network of well-managed marine protected areas (MPAs) at a UK and North-East Atlantic scale. The network approach combines all types of marine protected sites into one network designed to a series of principles, including connectivity and resilience, collectively intended to support wider ecosystem resilience and create a strategic and targeted approach to designations. Through our statutory and advisory functions under these and other mechanisms, NRW applies an approach to the marine environment that is consistent with the principles of SMNR and our biodiversity goals.



Our agenda for action on biodiversity

NRW's statutory purpose of SMNR supports, defines and drives our biodiversity work. We have sought the views of Board members, staff and stakeholders to help define our aspirations for our work on biodiversity and building ecosystem resilience over the coming years, and to identify areas for innovation and improvement across all relevant areas of our work. Building on the principles of SMNR, the policy priorities in the Welsh Government's Natural Resources Policy and the objectives set out in the Nature Recovery Action Plan (see Annex 1), we have identified priority areas for our work on biodiversity and ecosystem resilience, under the following six themes:

- 1 Connecting people and biodiversity
- 2 Embedding the consideration of biodiversity and ecosystem resilience into all NRW's functions
- 3 Improving the approach to protected sites
- 4 Working with others to maintain and enhance biodiversity
- 5 Having the right evidence to inform our work
- 6 Investing in the knowledge and skills of our staff

Each of these is set out in more detail below, with the goals that we wish to achieve, and a series of commitments and high level actions.

We know that NRW cannot achieve success alone. Other bodies in the public and private sectors, including those in areas such as health, tourism, transport, industry, retail and housing, have an active role to play. All public authorities in Wales are subject to the biodiversity duty in Section 6 of the Environment (Wales) Act 2016, and we want to work with them in support of the delivery of this duty, while also engaging with private sector, non-governmental organisations (NGOs), community organisations and volunteers.

We must also recognise that biodiversity and ecosystems do not respect political or administrative boundaries. Wales' border with England and the seaward boundary of our marine area are not the outer limits of our ecosystems. We need to work with partners elsewhere in the UK, the Republic of Ireland and further afield, recognising that addressing many of the threats to biodiversity and ecosystem resilience requires thinking and acting across regional and national boundaries.

In practice: Anglesey and Llŷn Fens restoration project

The fens of Anglesey and the Llŷn Peninsula are rare wetland habitats, where the combination of acidic and alkaline conditions supports distinctive and unusual communities of plants and animals whose international importance for biodiversity is recognised by designation as Special Areas of Conservation. Between 2009 and 2015 NRW carried out a major programme of habitat restoration and community engagement on and around the fens, supported by European Union 'LIFE' programme funding.

The central place that the fens once had in the economic and cultural life of local communities was felt to have been lost. The fens had suffered from long term habitat damage and neglect, including from drainage works, nutrient pollution and long term decline of traditional land use practices such as livestock grazing, periodic burning and harvesting of rushes which had led to scrub development and large areas of overgrown, rank vegetation.

In addition, changes in water quantity and quality had led to peat breaking down which in turn affected the quality of local drinking water.

NRW worked with landowners in and around the fens to restore degraded peat, clear areas of scrub, re-establish grazing, restore watercourses and manage water levels so that they can support the characteristic species diversity. The project is also expected to deliver long term economic and social benefits, as well as environmental gains. Abandoned areas have now been opened up for livestock grazing, while restoring the fen habitat improves its ability to absorb and hold water, contributing to flood alleviation and lasting improvements in water quality. New opportunities for recreational access to these unusual and inspiring landscapes are also being developed.

1. Connecting people and biodiversity

Our wildlife, habitats, landscapes and seascapes are a source of inspiration and enjoyment for people who live and work in Wales and for visitors, as well as providing employment and essential ecosystem services such as food, clean water and protection from flooding. Acknowledging the dependence of a wide range of ecosystem services on biodiversity lies at the heart of SMNR and the Well-being Goals.

While recognising all the material goods and services that ecosystems provide us with, we should not lose sight of the importance of people's personal and emotional connections to nature. Loss of that connectedness can have negative impacts on the well-being of individuals and communities and makes it much harder to bring about positive changes in attitudes and behaviour. If people engage directly with the natural world, be it through outdoor activities, environmental education and learning, scientific research or the arts, or by taking an active part in the management of areas of land, water or sea for their biodiversity, they feel connected to nature and dependent upon it, and so place an increased value on it and all the benefits it provides.

Our goal:

Everyone values the species and habitats, landscapes and seascapes of Wales and has opportunities for access to nature. There is wide appreciation and understanding of the value of the natural world and its importance for people's well-being and for the economy, helping to align the choices that we make with the capacity of ecosystems to support us.

To help achieve this goal, we will:

- Champion the biodiversity and geodiversity of Wales, and use all opportunities to raise public interest, awareness and understanding.
- Prioritise biodiversity in the development of our strategy for communication and engagement with our partners, stakeholders and the public, seeking wherever possible to inspire interest in and appreciation of wildlife, habitats and special places. This means not only focussing on our remote and awe-inspiring rural landscapes and seascapes, but also recognising the value of contact with nature in local, everyday settings such as in parks, gardens and urban green space.
- Encourage opportunities for positive contact with nature through our work on promoting outdoor recreation and access to the Welsh countryside, coast and sea, including for example the Wales Coast Path and recreational and educational use of publicly owned forests.
- Enhance the contribution that protected sites, particularly our National Nature Reserves (NNRs), can make to improving well-being through the opportunities they provide for recreation, learning and contact with nature in beautiful and inspiring locations.
- Raise awareness of the cross-cutting benefits provided by biodiversity improvements and resilient ecosystems to the economy, human health and well-being, and for increasing people's sense of material and cultural connectedness to nature.
- Support public authorities of all types in their work to comply with their biodiversity duty under the Environment (Wales) Act 2016, by working to provide and share best practice, case studies, evidence, advice and inspiration, including through the Wales Biodiversity

Partnership (WBP) and our engagement with Public Service Boards (PSBs).

- Work collaboratively with the environmental NGO sector, aligning our objectives and pooling resources wherever possible, drawing on their skills and experience in promoting public interest in the natural world and using citizen science as a way of fostering interest and appreciation of nature as well as an approach to gathering evidence.
- Explore ways we can support the development of a responsible nature-based economy in Wales, such as wildlife tourism and sustainable forestry, ensuring that such enterprises inspire support for

biodiversity and nature conservation and foster positive behaviour change.

- Collaborate with the Welsh National Park and Area of Outstanding Natural Beauty (AONB) authorities, building on the profound connections that communities and visitors have with these treasured and internationally renowned landscapes, to enhance public understanding and experience of nature and the intricate relationships between landscapes/ seascapes and biodiversity.

In practice: Future Landscapes Wales Programme

The Welsh Government's Future Landscapes Wales (FLW) Programme is supporting the Designated Landscape Authorities (for the three National Parks and five AONBs in Wales), NRW, NGOs and private and public sector partners, in developing more collaborative and strategic approaches to tackling the issues facing the National Parks and AONBs. One of the main themes to emerge from this work is how to address biodiversity loss and landscape change, including within the context of EU exit, and reinforce the conservation role and purpose of Wales' designated landscapes, whose importance for biodiversity is

internationally recognised by the International Union for the Conservation of Nature (IUCN). The FLW Partners have come together to put forward an offer to address these issues across large parts of Wales. To bring about transformational change, this collaborative proposal will extend beyond the 25% of Wales designated as National Park or AONB. Taking a place-based approach, involving communities and land-managers, it will test interventions to deliver conservation outcomes alongside wider well-being benefits. It is anticipated the results from this programme could help shape future rural policy.



2. Embedding the consideration of biodiversity and ecosystem resilience into all NRW's functions

NRW functions

- Each year we issue more than 10,000 consents and permits for activities affecting water bodies, air quality, waste management, land use, woodlands, flood risk, the marine environment, fisheries, protected sites and protected species.
- We respond to around 8,000 to 9,000 planning consultations per year, as well as contributing to the preparation of numerous plans, strategies and policy documents by the Welsh Government, local authorities, utility companies and others.
- We are responsible for the management of 58 of Wales' 76 National Nature Reserves and 126,000 ha of Welsh Government-owned forests, representing about 7% of the land area of Wales.
- We own over 4,000 flood defence assets and maintain 510 km of flood defences.
- We promote countryside access, manage freshwater fisheries, make management agreements with land managers, carry out and commission monitoring and research projects, enforce environmental legislation, respond to environmental incidents and publish a wide range of technical and non-technical information and reports about our work and about the natural resources of Wales.
- We carry out a full range of supporting functions that enable us to deliver all these responsibilities, including corporate planning, financial management, human resources, IT systems, data and information, communications, buildings, vehicles and equipment.

The emphasis of the new legislation and policy is firmly on the requirement to integrate resilient ecosystem and biodiversity requirements into all sectors and functions of public authorities. In NRW, the responsibility for maintaining and enhancing biodiversity and ecosystem resilience applies not only to our biodiversity and nature conservation staff, but across the full range of our functions.

Under Section 6 of the Environment (Wales) Act 2016, in carrying out all our functions we must seek to maintain and enhance biodiversity and the resilience of ecosystems, and in so doing contribute to the Well-being Goals in the Well-Being of Future Generations (Wales) Act 2015.

Our goal:

Our statutory duty to seek to maintain and enhance biodiversity and build ecosystem resilience in carrying out our functions, is fully embedded as a key consideration in all areas of NRW's work, and we learn from others and share practices that inspire and enable Government, public authorities and businesses across Wales to do the same.

To help achieve this goal we will:

- Ensure that biodiversity and ecosystem resilience is considered at early stages in our planning and decision-making processes and incorporated as a matter of course in our plans and programmes, advice, permitting and regulation, land and asset management, commissioning and procurement.
 - Build on existing good practice, and develop training, guidance and information resources for staff to ensure high standards of delivery of our Section 6 duty across all our functions.
 - Embed compliance with our Section 6 duty within our organisational plans (Corporate Plan, Business Plan and delivery plans), rather than producing a standalone plan for our Section 6 duty.
 - Report on what we are doing to deliver our biodiversity duty by making such reporting a central part of our wider corporate performance management and reporting process.
 - Encourage the development of a funding framework for agriculture and forestry post-EU exit that has at its core the maintenance and enhancement of biodiversity and ecosystem resilience, and provide support and expert advice to the Welsh Government to enable that to happen.
 - Manage the land for which we are responsible as exemplars for biodiversity and building ecosystem resilience, including on the Welsh Government Woodland Estate (WGWE), NNRs and flood defence assets. This will include delivering the purpose and role of the WGWE, in the context of the UK Forestry Standard and Welsh Government's Woodlands for Wales Strategy.
- Lead by example in delivering multiple benefits on our land and assets, including by exploring opportunities for habitat improvement and restoration and ensuring that the protected sites that we manage are achieving their conservation objectives. This will include demonstrating best practice and innovation.
 - Implement bio-security best practice across the organisation, to help reduce the risks to biodiversity, ecosystem resilience and well-being from pests, diseases and invasive species.
 - As part of embedding SMNR and ensuring that we deliver our Section 6 duty, assess the extent to which biodiversity actions and outcomes are incorporated into the delivery of all our functions, to help identify priority areas for action and innovation. This will also include looking at ways to improve our understanding of the effectiveness of our interventions.



In practice: Biodiversity and conservation management on the Welsh Government Woodland Estate

Approximately 16,309 hectares (13%) of the WGWE is classified as high conservation value forest, which means it is managed primarily for conservation objectives. This includes forest areas designated as SSSIs, SACs and SPAs, and also Ancient Semi-Natural Woodlands, Semi-Natural Woodlands, Plantation on Ancient Woodland Sites (PAWS) or Nature Reserves. In support of Welsh Government's Woodlands for Wales strategy, and in accordance with the UK Forestry Standard, we have various programmes in place to manage these areas of the WGWE, to conserve and enhance their biodiversity and improve their ecological resilience, including:

- The prioritised restoration of PAWS to a more natural state, gradually removing the conifers and allowing them to return to predominantly broadleaves, supporting relict indigenous flora and fauna that still survive. A good example of this is our work in Wentwood forest near Newport which has just been accredited under The Queen's Commonwealth Canopy initiative.
- Targeted management interventions to proactively target biodiversity

conservation. For example, in Clocaenog forest, we manage the forest in partnership with others to support the ongoing conservation of red squirrel, the small pearl-bordered fritillary butterfly and black grouse. In Coed y Brenin, we have undertaken habitat improvement work as part of the Pearls in Peril project to safeguard the future of freshwater pearl mussels which are found within the Afon Eden SAC.

- The removal of invasive non-native species including rhododendron and western hemlock. For example, in Cwm Clettwr forest, we have removed over 20 hectares of western hemlock since the late 1990s. Cwm Clettwr is part of a network of ancient woodland site restoration work in the Dyfi Valley. Initially there was some replanting with locally sourced and grown native trees to help maintain woodland soil condition, but thereafter natural regeneration has occurred and there has been a slow but sure recovery of native woodland flora and fauna, including the dormouse.



⁴ *The purpose and role of the Welsh Government Woodland Estate.* Available from www.naturalresources.wales

3. Improving the approach to protected sites

Protected sites on land, inland waters and the sea are a key type of measure for delivering SMNR and an essential mechanism for maintaining biodiversity and building ecosystem resilience. We want our protected sites to function as core areas of a resilient ecological network, in which habitats and wildlife populations can thrive and expand, recolonising areas from which they have been lost, and contributing to ecosystem services well beyond the protected site boundaries.

On land (including the foreshore), NRW has a legal duty to notify SSSIs where they meet criteria agreed at a GB level, and to further the conservation and enhancement of SSSIs. The SSSI series is intended to represent the full range of biodiversity and geodiversity in Great Britain, and maintaining that natural diversity is central to ensuring resilient ecosystems. NRW also has duties under EU biodiversity legislation to apply all relevant functions so as to conserve the features of marine and terrestrial SACs and SPAs.

However, if we focus only on designating, protecting and managing these sites and do not address the wider pressures on biodiversity and ecosystem resilience, these jewels in the crown could become increasingly isolated islands of biodiversity. More and more of the limited resources for site protection and management will be used in trying to defend individual sites from further deterioration, rather than taking positive action and addressing the wider threats that affect the whole network of sites.

Our goal:

Protected sites on land and sea in Wales are an integrated network, ecologically connected with the wider landscape and seascape, resilient to climate change, and where a dynamic approach to site designation and management enables habitats and species to thrive and expand, providing ecosystem services well beyond the site boundaries.

To help achieve this goal, we will:

- Develop a strategic approach to terrestrial, freshwater and marine protected sites which enables the future planning and management of the site network to effectively address key challenges, including in particular the impacts of climate change on biodiversity, ecosystem resilience and well-being. In relation to the marine environment, our approach will support Welsh Government's commitment to the establishment of an ecologically coherent network of MPAs.⁵
- Build ecosystem resilience and the provision of ecosystem services by maintaining and enhancing the role of protected sites both in conserving representative examples of habitats, species and geodiversity and in improving ecological connectivity.
- Explore options to manage protected sites in geographically defined networks and groups or clusters, supported by using a wider range of policy tools and delivery mechanisms to build resilience of the network rather than on an individual site basis. This will include working with the Welsh Designated Landscapes

⁵ UK Contribution to Ecologically Coherent MPA Network in the North East Atlantic. Joint Administrations Statement: Defra, DOE, Scottish Government, Welsh Government. Available from www.gov.wales

In practice: Sites of Special Scientific Interest

The purpose of SSSIs is to conserve representative examples of the full range of habitat types, species and geological features in Great Britain. They are our principal type of protected area designation for biodiversity and geodiversity conservation. SSSIs in Wales are part of GB-wide series selected according to guidelines published (and recently updated) by the UK Joint Nature Conservation Committee (JNCC). As well as having the duty to designate (notify) as SSSI any land or foreshore which we consider to be of special interest according to the selection guidelines, NRW has a range of powers to regulate operations likely to damage SSSIs and to work with landowners to secure favourable management, through contractual management agreements. We

also advise local planning authorities and others on the avoidance and mitigation of damage to SSSIs as a result of development and infrastructure. There are 1,072 SSSIs in Wales covering approximately 12% of the land area. The primary purpose of SSSIs is nature conservation, but the majority of sites are in private ownership and are subject to a range of land uses including agriculture, forestry, recreational use and the management of water resources. A report commissioned by Defra in 2011⁶ estimated that, in addition to their direct benefits for nature conservation, the value of ecosystem services provided by the SSSI series Wales was £130-230 million.



⁶ GHK Consulting (2011) *The benefits of Sites of Special Scientific Interest*. Report to Defra, available from <http://randd.defra.gov.uk/>

- Authorities to test and develop new approaches to landscape-scale nature conservation, working beyond protected site boundaries to build wider ecosystem resilience and connectivity, and will also draw on the progressive approach already being applied in the marine environment to design an ecologically coherent network of MPAs.
- Work towards achieving favourable conservation status for habitats and species, recognising that this means both getting the features of protected sites in favourable condition within their landscape or seascape setting, and addressing pressures on conservation status of habitats and species in the wider terrestrial and marine environment. This will include exploring opportunities for managing protected sites in Wales so as to contribute to meeting international targets for ecosystem restoration.⁷
 - Progress the designation of new sites on land, inland waters and sea, or modify or extend existing sites, where there is a clear need, establishing priorities in the light of benefits and risks to biodiversity, geodiversity and ecosystem resilience. This will include reviewing the terrestrial protected site series in view of the GB guidelines for the selection of SSSIs (currently being revised and updated by the JNCC), to ensure that we have the right network of sites to maintain and enhance biodiversity and build ecosystem resilience.
 - Continue to uphold a high standard of protection and management of protected sites, including by considering ways to recognise and reward good practice and, where sites are unlawfully damaged, take enforcement action that is proportionate and in line with our regulatory principles⁸, wherever possible seeking restoration of damaged sites.
 - Use the appropriate mix of measures for the designation, safeguard and management of protected sites and the wider countryside and sea, to ensure that the coherence of the site network is maintained. This may include whole or partial de-notification of SSSIs where there is no possibility of restoration and, if a site is de-notified, taking steps to ensure no net loss to biodiversity, such as through designation of possible additional sites or other forms of intervention.
 - Use the priorities laid out in the Natura 2000 Prioritised Action Framework⁹ to guide investment of resources on terrestrial and marine protected sites, working to source funding to deliver actions identified in the Prioritised Improvement Plans and Thematic Action Plans in a systematic manner. We will also review the balance of our effort and resources spent on Natura 2000 sites and the wider protected sites network.
 - Review how we deliver our regulatory roles in relation to SSSIs and protected species, to ensure we deliver a rigorous, streamlined and effective service, consistent with SMNR and our regulatory principles, while recognising the complex and often competing priorities and constraints for landowners and managers.
 - Explore opportunities for strategic partnerships with businesses and major landowners such as utility companies and conservation charities, where protected sites under the ownership or management of such organisations could be managed more effectively to deliver the conservation of biodiversity or geodiversity features alongside providing other economic, social and environmental benefits.

⁷ See 'Aichi target' number 15, under the Convention on Biological Diversity, to restore at least 15% of degraded ecosystems. Available from www.cbd.int

⁸ *Our regulatory principles*. Available from www.naturalresources.wales

⁹ *Prioritised Action Framework for Natura 2000 sites*. Available from www.gov.wales

- Review our NNR series to embed the agreed principles for NNRs and to identify any sites which could benefit from possible alternative management arrangements (for example transfer of responsibility from NRW to other

bodies) or any sites which should be de-designated because they do not and cannot meet the required standard, and consider potential new sites to improve the representation of key habitat types within the NNR series.

In practice: National Nature Reserves

There are 76 NNRs in Wales, ranging in size from less than 1 hectare to nearly 8,000 hectares, and covering a wide range of habitats and landscapes including mountains and moorland, woodlands, bogs and fens, lowland grasslands, sand dunes, estuaries and islands. Mostly managed by NRW, NNRs are the only type of protected site in Wales where the primary land use is nature conservation, but the provision of access for recreation, education and scientific study is of key importance, with Welsh NNRs attracting millions of visitors every year. We have developed a series of 12 core principles for NNRs in Wales, reflecting their contribution to SMNR and the Well-being Goals:

- Nationally important sites for biodiversity and geodiversity
- Primary land use is nature conservation
- Exemplars of good practice in conservation management
- Public access and enjoyment for people of all abilities
- Interpretation, education and demonstration of good conservation management practice
- Stakeholder and local community involvement
- Managed by appropriate organisations, which may include strategic partnerships
- Contribute to local economy in line with social justice principles
- Management to deliver ecosystem services
- Management secure in the long term
- Opportunities for study and research
- Management consistent with ecosystem approach under the Convention on Biological Diversity 1992



4. Working with others to maintain and enhance biodiversity

Economic growth and development are vital to the well-being and prosperity of Wales, and many forms of economic activity can result in at least some localised impact on biodiversity. However, while change is inevitable and in some cases necessary to build ecosystem resilience, overall loss of biodiversity need not be an inevitable consequence of development or other economic activities that use natural resources. With careful planning and management, economic activity and developments can also deliver significant benefits for biodiversity, ecosystems and the provision of ecosystem services.

The Natural Resources Policy, the State of Natural Resources Report and Area Statements provide a common evidence base to integrate biodiversity at the earliest stages of developing policy, strategic plans and projects and to help encourage a strategic spatial and cross-sectoral approach focussed on integrating and addressing multiple issues, focussing on early interventions and solutions rather than a reactive approach which deals with issues in isolation.

NRW considers that a step-wise approach should be taken in the development of policies and plans affecting the use of natural resources, and in the management and regulation of developments and other activities. This means that the first priority should be to avoid damage to biodiversity and ecosystem functioning wherever possible, if necessary involving modifications to what is being proposed. If some degree of harm is unavoidable and justified by the balance of benefits that the development or other activity provides, alternatives should then be considered (e.g. alternative policies or approaches, or different locations), where there would be less or no harm to biodiversity. If no suitable alternatives exist and the risk of damage cannot otherwise be removed or reduced, steps should be taken to seek compensatory measures for the damage.

Our goal:

Maintaining and enhancing biodiversity and building ecosystem resilience are a routine requirement of new development and the regulation and management of natural resource use across all sectors in Wales.

To help achieve this goal, we will:

- Work with Welsh Government and our partners to provide advice and guidance to support implementation of a step-wise approach planning, development and regulation, which maximises opportunities for enhancement, seeking biodiversity gains wherever possible, and minimises unavoidable harm to biodiversity and ecosystems.
- Seek to maximise positive opportunities for maintaining and enhancing biodiversity through our engagement with the development planning system and with the developing National Marine Plan for Wales, including through our role as a consultee on the development of the planning framework itself and the preparation of plans, as well as our role as a statutory consultee and regulator of individual projects and developments.
- Use our expertise to identify and communicate opportunities and benefits in promoting the re-creation and restoration of natural habitats and wildlife populations, in particular through the Area Statement process.
- Identify strategic targets and priorities for habitat and species restoration, including through application of the Favourable Conservation Status (FCS) concept¹⁰, to help ensure that investments in biodiversity gain and building ecosystem resilience are of the right kind and made in the right locations.

¹⁰ *Favourable conservation status: UK statutory conservation bodies' common statement*. Available from www.jncc.gov.uk

- Emphasise the enhancement of ecological connectivity at a landscape/ seascape scale and reducing habitat fragmentation as priorities, when developing approaches and projects for maintaining and enhancing biodiversity.
- Work with key partners to improve river habitats across Wales, in particular through developing River Restoration Plans (RRPs), bringing together evidence from multiple sources to define constraints and enable prioritisation of resources to best effect. The particular focus will be on restoring impoverished habitats, removing barriers to ecological connectivity and establishing Atlantic salmon as a key indicator species for the condition of our rivers.
- Contribute to the development of best practice techniques, developing the evidence base and improving ecological methods of habitat creation, restoration and species translocation, so as to help developers, land managers and their advisors to provide beneficial biodiversity outcomes linked to planning conditions or obligations, or for offsite compensation when damage cannot be avoided.
- Apply the principles set out in the NRW position statement on Conservation Translocations, in developing the overall approach for biodiversity gain and when proposing, advising, managing or regulating any specific proposals or projects.
- Work with developers, planning authorities and environmental consultants to ensure that the outcomes of our advice in relation to maintaining and enhancing biodiversity and building ecosystem resilience are properly recorded, that their effectiveness is subject to ongoing monitoring and assessment, but also that this information is made available to others to improve the knowledge base and the ongoing review of best practice.

In practice: A catchment scale approach to environmental permitting

In 2014, NRW applied an innovative approach to issuing a permit to enable a commercial dairy to develop its business without harming an SAC. The dairy in Haverfordwest - a significant local employer - processes milk from farms in Pembrokeshire, producing nutrient-rich effluent which is discharged into the Cleddau River, which in turn flows into Milford Haven, part of the Pembrokeshire Marine SAC. These enclosed coastal waters are already under pressure from nutrient enrichment, and the conservation objectives for the SAC seek to prevent any increase in nutrient levels. The dairy operators wanted to increase production and build a new effluent treatment plant, which would mean increasing

their discharge of nutrients which could lead to further deterioration of water quality in the river and in the SAC. However NRW was able to issue a permit, by directly linking the discharge consent for the new treatment plant to a requirement on the farms within the same river catchment who supply milk to the dairy to reduce their nutrient inputs to the streams flowing into the Cleddau. As each farm signs up to scheme and adopts different farming practices, such as better management of cattle slurry, the nutrient load entering the rivers is progressively reduced and the discharge from the dairy can be increased with no net increase in nutrient inputs to the SAC.



5. Having the right evidence to inform our work

NRW is an evidence-based organisation. This means that we need to have the right evidence to inform our actions and interventions as a regulator, advisor, land manager, enabler and responder. We need to work with others using a common evidence base, sharing our data and information with partners, and making appropriate use of data and information provided by others.

In order to enable us to focus our effort and resources most effectively, and to give robust, proportionate and timely advice to others, we need to understand the nature and causes of environmental change, and the factors that affect biodiversity and the resilience of ecosystems, both positively and negatively. We also need to be able to assess the effect of our interventions, and the interventions of others, so that we focus our efforts on what works, and stop doing what doesn't work.

We have a focused programme of work relating to biodiversity evidence, including monitoring of protected site features, analysis, interpretation, data management and sharing, and advice to support decision-making. We also have an extensive programme of evidence-gathering relating to water quality and water resources in Wales. As well as being a significant producer of evidence, we also rely heavily on evidence generated by others, including Welsh Government, JNCC, NGOs, research institutions and the private sector. Having the right

evidence base means securing access to evidence gathered and held by others, as well as having the right focus for our own evidence gathering programmes.

Our goal:

To have a robust and open evidence base that allows our own teams and organisations of any size to put SMNR into practice, including the ability to measure, understand and communicate the causes of environmental change and the opportunities to improve biodiversity, build ecosystem resilience and maintain and enhance the benefits they provide.

To help achieve this goal, we will:

- Develop our understanding of the concept of ecosystem resilience and ways to assess it, and develop the data and evidence base to support that understanding, recognising the key importance of assessing the state of biodiversity in defining and assessing ecosystem resilience and how it may change over time.

In practice: A joined up approach to knowledge and evidence in NRW

Knowledge underpins the successful delivery of all NRW's functions. It is enshrined in the Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act 2015 that we take an evidence based approach to managing the environment of Wales for the benefit of the people of Wales. Delivering SMNR and effectively embedding biodiversity, geodiversity and ecosystem resilience into all our functions, makes it especially important that we have joined-up approach to how we capture, manage and disseminate knowledge and, crucially, that

we and our partners can view and analyse this evidence base in a holistic way which supports joined up decision making. We are working to bring together all of the knowledge and information held by NRW's legacy bodies. We are also developing the technical infrastructure to allow staff and partners to access this knowledge base in one location so that all our data, reports, maps and other forms of information are available and readily accessible to everyone who needs them.

In practice: Species re-introduction

Some threatened species benefit from specific, small-scale and localised habitat management. For example, recent projects to boost southern damselfly populations at various sites across Wales have focussed on opening up stream and ditch habitats choked by vegetation to provide more suitable conditions for the species. Mechanical diggers were used in the Preseli Hills in Pembrokeshire to widen streams and create extra pools and channels, while smaller-scale works to clear ditches have been carried out by hand in the

Cors Erddreiniog SAC on Anglesey.

Where actual species extinction has occurred at a local or regional level, detailed and careful plans are needed to ensure successful and sustainable re-introductions. NRW and its predecessor bodies have worked over a 20 year period in partnership with Natural England, NGOs and local authorities to successfully re-establish sand lizard and natterjack toad populations along the North Wales coast.



J Foster / Arc

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- Make appropriate use of well-established assessment and reporting frameworks such as Favourable Conservation Status, Good Ecological Status and Good Environmental Status, as used under EU Directives, in developing a new framework for defining and assessing ecosystem resilience.
 - Seek opportunities to maximise the use of innovative and cost-effective methods for gathering environmental evidence, including Earth Observation techniques and citizen science, to enhance the evidence base, and allow us to collect data more efficiently.
 - Present evidence on biodiversity through SoNaRR and, in the wider context of evidence on SMNR, helping to link information about ecosystems, their resilience and the benefits they provide to the well-being goals, and presenting evidence at the right spatial and temporal scales. This will include drawing on the experiences and perspectives of others in collating and effectively communicating our evidence, both within NRW and with external partners.
 - Use our influence and Wales-specific expertise to help steer and advise on UK-wide species surveillance schemes (for example in relation to birds, butterflies, bats and marine mammals), and new initiatives such as Welsh Government's Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP) and development of Earth Observation approaches, so that such schemes can

increasingly provide the broader scale evidence needed to manage the natural resources of Wales according to SMNR principles.

- Focus the investment of NRW's resources for carrying out biodiversity-related monitoring, on the designated sites in Wales and areas that we own or manage which have significant biodiversity interest.
- Design our evidence collection and monitoring around the assessment of condition and trends, thus maximising its value in informing decisions on how, when and where we and others should intervene. This will include appropriate use of streamlined approaches to evidence gathering and analysis, applying the principle of 'collect once, use often', and accepting indicative reporting where it represents the best use of limited resources.
- Develop a strategic, risk-based approach to our monitoring of protected sites (terrestrial, freshwater and marine), in line with the recent reviews of our monitoring, evidence and reporting activities. This will focus on gathering the evidence we need to effectively manage sites and the factors affecting them, and will include looking at how we can monitor across the wider suite of protected sites in Wales, rather than focussing only on SACs and SPAs.
- Continue working with the other nature conservation agencies in the UK to update the Common Standards Monitoring (CSM) guidance, which provides a technical framework for monitoring of protected sites across the UK.

- Ensure that, wherever appropriate, well targeted monitoring and evidence gathering is routinely built into all forms of interventions that we carry out and that such evidence is held and maintained in readily accessible formats, so that we can assess the effectiveness of interventions, develop good practice and share knowledge.
- Maximise the use of our rich species and habitat data sources, and adapt evidence programmes so that we use, capture and present evidence in new ways which influence and support SMNR, meet prioritised evidence needs from gaps identified through SoNaRR and the Area Statement process, and where appropriate, can be used as indicators of progress.
- Continue to develop and use joint and cooperative approaches to data provision, research and monitoring, working with partners including JNCC, universities and other research bodies.



6. Investing in the knowledge and skills of our staff

NRW staff work across a diverse range of functions, ranging from supporting and enabling services like corporate planning, finance and information management, to front line functions such as incident response, permitting, estate management, enforcement and public engagement, with a wide range of technical specialists in between, including biologists, geologists, ecologists, planners, economists, engineers and lawyers. As a complex organisation with limited resources, we must continually find the right balance in using the range of statutory duties and powers we have to deliver our multiple roles.

NRW's biodiversity and nature conservation specialist expertise is valued and respected throughout Wales, the UK and wider afield. We are seen, and see ourselves, as a leading provider of high quality, specialist advice, both internally in engaging with our own regulatory and operational functions, and externally in supporting our partners. A key challenge of embedding SMNR and the biodiversity duty across NRW is to equip all our staff with the means to effectively and confidently apply their particular knowledge and skills to achieving the shared objective of improving ecosystem resilience and well-being.

Our goal:

NRW staff have the knowledge, skills, commitment and support to deliver our goals for biodiversity and ecosystem resilience and we excel at inspiring and enabling landowners, business leaders and community groups to do the same. Our specialist expertise is valued, shared and grown with a like-minded community of leading practitioners around the world.

To help achieve this goal, we will:

- Work within all functions of our organisation at all levels, to improve understanding of biodiversity and ecosystem resilience pressures and opportunities, their role within SMNR, and our statutory duties.
- Develop our broader skills and expertise relating to SMNR and explore innovative ways of bringing staff with different specialisms together to work collaboratively across different functions and sectors.
- Recognise, value and promote the wealth of specialist expertise on biodiversity matters that we have within the organisation, supporting and enabling staff to apply those skills and knowledge to best effect, and investing in maintaining and developing that expertise in the long term.
- Develop our networking, sharing of ideas and opportunities for collaboration with practitioners in other parts of the UK, Europe and further afield, recognising that we will not necessarily have, or need, all the necessary skills and knowledge within the organisation and that we will need to make use of the expertise and experience of others.
- Develop our skills and approaches to communicating about biodiversity and ecosystem resilience using language in ways that inspire and support our partners.
- Have a clear plan and commitment to maintaining knowledge and skills within the organisation, including through continuity planning, training and supporting staff development.
- Further develop our communication, networking and joint working across our different functions, and between different parts of Wales, continuing to build positive relationships and shared knowledge and understanding between functions, breaking down professional and cultural differences.

- Acknowledge and resolve competing or conflicting internal policy objectives and priorities, and ensure that different teams are not working in opposing directions, seeking balanced solutions that promote resilient ecosystems as a fundamental requirement of SMNR.
- Ensure that, where required, biodiversity and ecosystem resilience policy, position statements, guidance and best practice are available to staff, giving clear lead and direction on key issues that affect Wales.

In practice: Restoring a grassland SSSI to deliver multiple benefits

Most of our lowland grassland SSSIs need to be actively managed and grazed by livestock to maintain their characteristic biodiversity. Grazing at an SSSI on Anglesey had progressively declined to the point where the site had eventually been abandoned and unmanaged for several years. This had allowed scrub, rank vegetation and invasive species to spread. The land was then rented to the local Scout Association to use for their outdoor recreation and education purposes. NRW set up a management agreement with them, which provided NRW funding for the clearing of scrub, mowing rank grassland and to initiate control of Himalayan balsam. The Scout Association also put their own time and money into the project. We also negotiated

a management plan for the site to allow it to be grazed when not being used by the Scouts for camping. This also provided for mowing of drier areas for hay production, at least initially to reduce nutrient levels and prevent regrowth of scrub and bramble. The agreement is delivering biodiversity benefits, in terms of improving the condition of the SSSI features and provides the Scouts with a site where they can camp, play outdoor games and pursue environmental projects which deliver health and well-being benefits for local groups. In addition, the project has restored an area which was unsuitable for livestock grazing back to a state where it can be grazed again.



Resourcing this work

Achieving the goals we set out above is ambitious and will be challenging. Like all public bodies in Wales, we are in an era of declining resources. Whilst we generate some income from our charges, sales of timber and provision of other services, our levels of Grant-in-Aid, staff resources and budgets have been declining since NRW was established in 2013, and are expected to continue to do so.

We will explore new opportunities to work in partnership with others towards shared outcomes, rather than assuming that NRW will meet all these ambitious goals alone. We already work in partnership with others across many areas of our work, and there are further opportunities to work with local communities, land managers, businesses, other public bodies and NGOs.

Much of what we need to do is about doing things in a different way. It may mean changing our attitudes, organisational culture, emphasis and ways of working, and does not necessarily mean doing more, but does mean doing things differently. Some of the work set under the themes above is about investing to

save, so that we become more efficient in the future.

We will explore ways to generate more income for our biodiversity work through, for example, developing Payment for Ecosystem Services (PES) schemes, looking at our charging schemes and improving our access to external funding sources.

In some cases, we might need to stop doing some things which we do now, to focus on greater gains in the future. We cannot deliver everything, everywhere.

We know that converting our ambitions into actions and real outcomes will require us to address questions about the resources needed and to make sometimes difficult decisions about our priorities. The rates of progress will vary considerably across the many different areas of work set out above.

Next steps

This document represents a statement of our aspirations, our intended direction of travel and our ways of working in delivering our biodiversity and ecosystem resilience duty under Section 6 of the Environment (Wales) Act 2016.

NRW's Corporate Plan commits us to developing, with our staff and stakeholders, a long term shared vision for Wales' natural environment to 2050. We will use this strategic steer for our biodiversity work as a basis and catalyst for discussions with staff and stakeholders about how that vision addresses biodiversity and ecosystem resilience, and about what needs to be done to achieve it.

The six areas for action set out above are not set in stone but represent the start of an iterative process which builds on the

best evidence and knowledge available for Wales in delivering the Nature Recovery Action Plan and the Natural Resources Policy, in line with our purpose, duties and ways of working. As well as setting NRW's biodiversity agenda, many of these areas for action could be relevant to other bodies in delivering their duties under Section 6 of the Environment (Wales) Act 2016 and working together to deliver the NRAP.

These areas for action will need to be built into our annual business planning processes. They will be translated into more detailed and prioritised annual programmes of work, with resources allocated and clearly defined outcomes, responsibilities and milestones.

Annex 1: Sustainable Management of Natural Resources: Legal and policy framework

Against the background of declining biodiversity and threats to vital ecosystem services that sustain our economy and society, Wales has a new legal and policy framework for a fresh approach for responding to the environmental challenges we are facing in the 21st century.

The new framework is built on explicitly recognising - in law - the interdependencies between biodiversity, the resilience of ecosystems, the range of ecosystem services that ecosystems and natural resources provide, and the well-being of current and future generations. At the heart of this new approach is the principle that biodiversity and ecosystem resilience are fundamental to our economic, social, environmental and cultural well-being, and so need to be at the heart of all decisions about how Wales' natural resources are used and managed.

What do we mean by natural resources?

Natural resources are defined in the Environment (Wales) Act 2016 as including: a) Animals, plants and other organisms, b) Air, water and soil, c) Minerals, d) Geological features and processes, e) Physiographical feature, f) Climatic features and processes.

The legal framework for this new approach is mainly set out in two Acts of the National Assembly for Wales. The **Well-being of Future Generations (Wales) Act 2015** aims to further the economic, social, environmental and cultural well-being of the people of Wales, both present and future generations. The Act sets out a series of Well-being Goals, and places a duty on all public bodies, including NRW, to contribute to the achievement of those goals. One of these Well-being Goals is for a resilient Wales, defined in the Act as:

“A nation which maintains and enhances a biodiverse natural

environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).”

The Act requires public bodies to set and publish their well-being objectives. NRW's Well-being Objectives are set out in our Corporate Plan up to 2022.

NRW's Well-being Objectives are to:

- WBO1** Champion the Welsh environment and the sustainable management of Wales' natural resources (SMNR)
- WBO2** Ensure land and water in Wales is managed sustainably and in an integrated way
- WBO3** Improve the resilience and quality of our ecosystems
- WBO4** Reduce the risk to people and communities from environmental hazards like flooding and pollution
- WBO5** Help people live healthier and more fulfilled lives
- WBO6** Promote successful and responsible business, using natural resources without damaging them
- WBO7** Develop NRW into an excellent organisation, delivering first class customer service

The Act also requires the Welsh Ministers to publish National Indicators against which progress towards the achievement of the well-being goals is to be assessed. The list of 46 National Indicators published by Welsh Government in 2016¹¹ includes:

- Areas of healthy ecosystems in Wales
- Status of biological diversity in Wales

¹¹ National indicators for Wales. Available from www.gov.wales

The key purpose of the **Environment (Wales) Act 2015** is to promote sustainable management of natural resources (SMNR) so as to maintain and enhance the resilience of ecosystems and the benefits they provide, and in doing so meet the needs of present generations without compromising the well-being of future generations. The Act establishes SMNR as the core statutory purpose of NRW and explicitly links SMNR and ecosystem resilience with the achievement of the well-being goals in the Well-being of Future Generations (Wales) Act 2015. Section 6 of the Environment (Wales) Act 2016 gives NRW and other public authorities a duty to seek to maintain and enhance biodiversity and ecosystem resilience, while Section 7 requires the Welsh Ministers to publish a list of species and habitats of principal importance for biodiversity and to take reasonable steps to maintain and enhance them. The Act requires the Welsh Ministers to publish a National Natural Resources Policy (NRP) setting out the key priorities, risks and opportunities for SMNR. NRW is required to prepare Area Statements as a key mechanism for facilitating implementation of the NRP.

In addition the Act identifies a series of principles for the application of SMNR. NRW must apply all of these principles in the exercise of its functions.

Sustainable management of natural resources

Under the Environment (Wales) Act 2016, SMNR means using natural resources in a way and at a rate, taking other action that promotes, and not taking action that hinders, the achievement of the objective of maintaining and enhancing the resilience of ecosystems and the benefits they provide, in so doing meeting the needs of present generations of people without compromising the ability of future generations to meet their needs and contributing to the achievement of the well-being goals in the Well-being of Future Generations (Wales) Act 2015.

The nine principles of SMNR

-  Adaptive management
-  Appropriate scale
-  Building resilience
-  Collaboration and engagement
-  Public participation
-  Evidence
-  Multiple benefits and intrinsic value
-  Long term
-  Preventative action

Together these two Acts provide the legal basis for SMNR as the framework for tackling the challenge of halting and reversing biodiversity loss and securing the resilience of ecosystems and the benefits to well-being that they provide.

Building on this new legal framework, Welsh Government has set out its commitments for biodiversity in the Nature Recovery Action Plan for Wales (NRAP)¹². This recognises that a key requirement of SMNR is to ensure that, through the underpinning principle of resilient ecosystems, Wales can continue to deliver its key UK, European and international obligations for biodiversity, for example under the Convention for Biological Diversity and other international conventions and treaties.

The NRAP underlines the importance of biodiversity to well-being and sets out the ambition and key objectives for nature recovery in Wales, which align with many of the principles of SMNR.

¹² *The Nature Recovery Plan for Wales: setting the course for 2020 and beyond*. Available from www.gov.wales

Nature Recovery Action Plan

Ambition: To reverse the decline in biodiversity, for its intrinsic value, and to ensure lasting benefits to society.

- Objective 1:** Engage and support participation and understanding to embed biodiversity throughout decision making at all levels
- Objective 2:** Safeguard species and habitats of principal importance and improve their management
- Objective 3:** Increase the resilience of our natural environment by restoring degraded habitats and habitat creation
- Objective 4:** Tackle key pressures on species and habitats
- Objective 5:** Improve our evidence, understanding and monitoring
- Objective 6:** Put in place a framework of governance and support for delivery

The new legal framework and the duties on NRW and others defined in the Environment (Wales) Act 2016, together with the range of existing statutory measures for the protection and enhancement of biodiversity and the commitments signalled by Welsh Government in the NRAP, create a transformational opportunity for a step change in NRW's approach to maintaining and enhancing biodiversity in Wales, in order to deliver multiple benefits for the well-being of the people of Wales. In essence we need to think bigger, work smarter, innovate and involve others to pursue shared outcomes and multiple benefits.

Thinking bigger...

Focusing on **ecosystem resilience** and thinking and working at the **appropriate scales** are key requirements of the new legislation. SMNR recognises the important role that protecting key species and sites plays in the provision of ecosystem services and for protecting and improving ecosystem resilience,

but it means focussing more effort on strategic and large scale work, both in terms of the practical projects we carry out our regulatory and advisory work in influencing others, including in particular through our work on developing Area Statements. To avoid individual species, habitats and protected sites becoming isolated 'islands' of biodiversity within an impoverished landscape or seascape, we need to think and work at larger scales and address pressures on biodiversity and ecosystem resilience in a joined up rather than piecemeal way.

We will continue to protect and manage individual sites and species, and support small scale projects, where protecting or restoring habitats at a local scale has wider ecosystem benefits, for example by creating or enhancing ecological connectivity over a larger landscape area. Protected sites still represent our most important and cherished areas for biodiversity and, for some habitats and species, protected sites or particular localities are especially important for to their long term survival.

Working smarter...

We are in an era of change and uncertainty in terms of environmental threats such as climate change, plant diseases and invasive non-native species. An **adaptive approach** is necessary to address problems as they arise, and to take advantage of opportunities. For example we need to respond rapidly to incidents such as flooding, pollution incidents in the sea or freshwaters, and outbreaks of disease, pests and invasive species, by diverting resources when required and for as long as required. Meanwhile, focussing more on **preventative action**, to be taken by NRW or by others, can enable us to tackle the underlying causes of biodiversity loss and poor ecosystem resilience, rather than responding in a reactive way to the symptoms or impacts. As well as responding rapidly to incidents, we need to invest in proactive actions to prevent problems arising in the first place.

Tackling the root causes of biodiversity damage rather than trying to control the symptoms, is more likely to deliver gains

in the **long term**, which is another SMNR principle and of course is fundamental to looking after the interests of future generations as well as the present one. In the interests of taking a more adaptive and preventative approach and focussing on long term goals, at times it may be necessary to reduce established roles and service levels to release resources. This will require NRW to be a flexible and agile organisation.

We are also in an era of significant political and economic change. Many of NRW's existing legal obligations and measures for biodiversity conservation derive from European legislation. The UK's decision to leave the EU could significantly change both the legal framework under which we work and the Government policies and economic and social forces that ultimately drive the patterns of land and sea use in Wales. NRW will need to be able take advantage of the opportunities that EU exit provides, and to respond effectively to the risks that it presents. For example, there is potential in Wales to develop a new agricultural support system built from the outset on the principle of payments for positive environmental outcomes. If SMNR principles, incorporating biodiversity requirements and delivering a range of ecosystem services alongside high quality food production, can be fully embedded into systems of public support for agriculture and other land uses and development, it could make funding levels available for biodiversity which are orders of magnitude higher than resources available through current funding streams. Conversely, changes to the economic environment for agriculture and other sectors in Wales as a result of leaving the EU, or significant reductions in levels of support payments, could drive profound changes in land use patterns across Wales, with unpredictable impacts on biodiversity and pressures on ecosystem services.

The **evidence** needed to support SMNR comes in many forms and from many different potential sources. We will struggle to influence behaviour to achieve better outcomes without understanding the drivers of environmental change. Therefore, as well as needing scientifically

robust evidence describing the state of biodiversity and ecosystems and the way they are changing, achieving SMNR also requires evidence on the range of social, economic and cultural factors, including lived experience, that drive the demand for the use of natural resources. The evidence we use can be in the forms that have traditionally been the cornerstone of biodiversity conservation, such as data from environmental surveys and monitoring and the findings of peer-reviewed research, but can also come from other approaches such as those based on citizen science and remote sensing. Combining traditional and non-traditional approaches to the collection and use of data and evidence can generate large volumes of useful information that would otherwise be impossible or impractical to obtain. Greater use of citizen science projects also provides further opportunities for individuals and communities to engage actively and take more ownership of biodiversity initiatives.

Innovating...

As well as having intrinsic value in their own right, biodiversity and ecosystems provide us with **multiple benefits**. When making decisions affecting natural resources, we need to both plan for delivery of multiple benefits wherever possible and take account of how achieving one set of natural resource objectives might impact positively or negatively on other objectives. Highlighting the range of benefits that biodiversity and ecosystems provide and their contribution to well-being across the Well-being Goals, is key to building public understanding and support for biodiversity conservation and enhancement. There are also economic opportunities for businesses, where environmental improvement projects can deliver biodiversity gain and other ecosystem services alongside commercial objectives. Developing new markets for ecosystem services could unlock significant new sources of potential funding for projects to benefit biodiversity.

Nature-based Solutions

Nature-based solutions are defined in the Natural Resources Policy as:

Solutions that are inspired or supported by nature, which are cost-effective and simultaneously provide environmental, social and economic benefits and help build resilience.

A similar definition is given by the International Union of the Conservation of Nature (IUCN):

Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

Closely linked to the focus on ecosystem resilience and multiple benefits, NRW is committed to the development of nature based solutions for the management of natural resources, in line with one of the key priorities of the Welsh Government's Natural Resources Policy.¹³ Delivering nature based solutions is one of the three priorities of the Natural Resources Policy. It means working with natural systems and processes, often on a landscape or catchment scale, rather than relying solely on localised engineered or technological solutions. Examples include flood alleviation through river and floodplain habitat restoration, giving space for the natural retention of flood water, adapting forest and farm management to improve water quality, reducing coastal erosion and mitigating the effects of sea level rise by managing and restoring coastal habitats, or enhancing the economic value of fisheries through habitat restoration. As the name suggests, nature-based solutions by definition should provide opportunities for maintaining and enhancing biodiversity and improvements to ecosystem resilience, which should always be a key element planned in from the start.

Achieving shared outcomes...

In terms of the SMNR principle of **collaboration and engagement**, Wales has already seen significant changes at a local level to the systems for collaborative planning and management of natural resources, including the establishment of Public Services Boards (PSBs), the application of an enhanced biodiversity duty under the Environment (Wales) Act to a wide range of public authorities, and the requirement for the preparation of source Area Statements. By enabling and encouraging others to develop solutions and biodiversity improvements in ways which take account of local circumstances and social and economic realities, we can provide benefits which are meaningful from a local perspective and more sustainable. Promoting genuine **public participation** in our work means putting people at the heart of our decision making. By consulting with and facilitating participation by the public and local communities wherever possible, especially in the early stages of project or plan development, we can foster a sense of shared stewardship and responsibility for nature.

¹³ *Natural Resources Policy*, available from www.gov.wales

Annex 2: Supporting delivery of Nature Recovery Action Plan objectives and NRW Well-being objectives

All six of our areas for action on biodiversity set out in this document are intended to contribute to achieving NRW’s Well-being Objectives and the objectives of the Nature Recovery Action Plan. The table below highlights key linkages.

	NRW’s 6 areas for action on biodiversity					
	Connecting people and biodiversity	Embedding biodiversity into all NRW functions	Improving the approach to protected sites	Working with others to maintain/enhance biodiversity	Having the right evidence to inform our work	Investing in the knowledge and skills of our staff
NRAP objectives						
1. Embed biodiversity in decision making at all levels						
2. Safeguard key habitats and species						
3. Increase ecosystem resilience						
4. Tackle key pressures						
5. Improve evidence and understanding						
6. Governance and support for delivery						
NRW’s Well-being Objectives						
WBO1 Champion the environment and SMNR						
WBO2 Ensure integrated management of land and water						
WBO3 Improve the resilience and quality of ecosystems						
WBO4 Reduce the risks from environmental hazards such as flooding and pollution						
WBO5 Help people live healthier and more fulfilled lives						
WBO6 Promote successful and responsible business						
WBO7 Develop NRW into an excellent organisation, delivering first-class customer service						

Annex 3: List of abbreviations used

AONB	Area of Outstanding Natural Beauty
ERAMMP	Environment and Rural Affairs Monitoring and Modelling Programme
FCS	Favourable Conservation Status
FLW	Future Landscapes Wales
IUCN	International Union for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
MPA	Marine Protected Area
NGO	Non-governmental organisation
NNR	National Nature Reserve
NRAP	Nature Recovery Action Plan
NRP	Natural Resources Policy
NRW	Natural Resources Wales
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PAWS	Plantations on Ancient Woodland Sites
PSB	Public Service Board
SAC	Special Area of Conservation
SMNR	Sustainable Management of Natural Resources
SoNaRR	State of Natural Resources Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WBP	Wales Biodiversity Partnership
WBO	Well-being objective
WGWE	Welsh Government Woodland Estate



Published by:
Natural Resources Wales.
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CF24 0TP

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