

Water Resources Management Plan

Appendix D: Environmental Destination

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Appendix D: Environmental Destination

Over the last few years, there has been significant investment by the water industry and other abstractors to protect and improve the environment by reducing the adverse impact of abstractions on ecosystems. However, our ecosystems are still facing significant challenges. There is mounting evidence of rising temperatures on both a national and global scale leading to potentially irreversible environmental damage, and human activity continue to harm biodiversity. These impacts have led to the Welsh Government declaring a climate and nature emergency in Wales. We recognise the need to set an ambitious strategy for ecosystem resilience, enabling us to work with regulators to help enhance biodiversity through our water resources activities whilst ensuring a plentiful supply to customers – this strategy is also known as our **environmental destination**.

Natural Resources Wales (NRW) have set out a clear set of principles that we followed to develop our environmental destination:

- Deliver demonstrable benefit for the environment
- Consider the appropriate scale (spatial and temporal)
- Consider multiple benefits
- Use a collaborative approach
- Take account of all relevant evidence
- Adaptive management

D1 Setting the context

The known pressures on our water resources and associated ecosystems

The State of Natural Resources Report (SoNaRR) 2020 assesses Wales' progress against the four aims of the sustainable management of natural resources (SMNR) approach. While it looks at each of these aims individually, it also notes that they are inextricably linked and should not be viewed in isolation. This is shown diagrammatically in Figure D1.1.

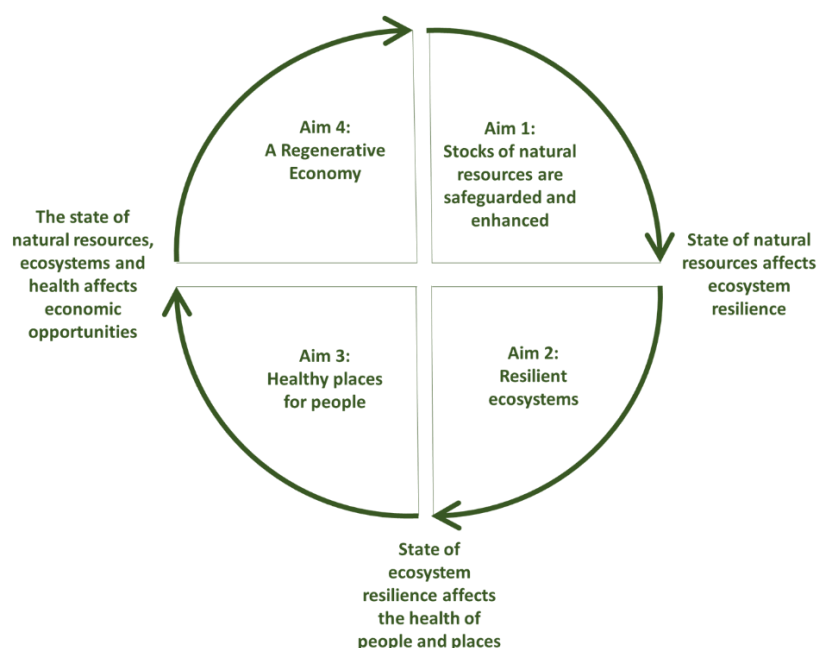


Figure D1.1: The linkages and cyclical nature of the four aims of SMNR (Source – SoNaRR2020 SMNR Aim 1 Stocks of Natural Resources are Safeguarded and Enhanced)

SMNR Aim 1 is that stocks of natural resources are safeguarded and enhanced; success would see over-exploitation of natural resources tackled to make sure they are regenerated and enhanced to meet the needs of current and future generations. In this context, 'natural resources' includes but is not limited to animals, plants and other organisms; air, water and soil; minerals; geological features and processes; physiographical features; climatic features and processes. The key purpose of our water resource management plan is to ensure that we take only what our customers need and do so in a way that does not harm the water environment. However, we need to recognise the other natural resources that could be impacted by our water resources activities and identify how to protect and enhance them.

We know that climate change is impacting water availability and flow, and that these impacts are predicted to continue and get worse. Recent trends, as described in the Welsh Report of the UK Climate Change Risk Assessment (CCRA3), have shown that in Wales:

- Annual average temperatures have increased 0.9°C from the mid-1970s to mid-2010s, with more hot summer maximums occurring (e.g. during the 2022 heatwave peak temperatures reached 37.1°C in Flintshire, which was 6°C hotter than the maximum temperature experienced during the 2019 heatwave in Wales)
- Annual mean rainfall has increased by 2% from 1402mm in the mid-1970s to 1430mm in the mid-2010s
- Sunshine hours have increased by 6.1% between the mid-1970s and the mid-2010s.

Population growth in Wales is forecast to increase by 400,000 from the current 3.1 million by 2050 (Office for National Statistics, 2020). However, this growth is mainly in south Wales, and in our area we are forecasting a supply/demand surplus that will continue until 2085. This does not mean that we can be complacent; other impacts of climate change have the potential to impact on the quality of the water we abstract, making treatment processes more costly and reducing year-round availability of water in some areas. Therefore, we need to focus on enhancing our water environment and ecosystems in order to maintain the resilience of our water supplies.

The known pressures caused by water resource management

Hafren Dyfrdwy have abstractions in the Dee catchment and Upper Severn catchment, as well as being the owners and custodians of Lake Vyrnwy and surrounding estate, and Clywedog Reservoir. The majority of our customers in Wrexham and surrounding areas are supplied via surface water abstractions from the River Dee and a series of upland reservoirs, situated in or near to the Clwyd Range and Dee Valley Area of Outstanding National Beauty (AONB). We have groundwater abstractions in Powys, situated within the Upper Severn catchment and benefit from a bulk supply agreement with Severn Trent Water which provides water from Severn Trent sources to some of our Powys customers.

There are no abstraction reductions proposed for our supply area. However, the River Dee is a Special Area of Conservation (SAC) river and significant proportions of the Upper Severn catchment are covered by various designations including Site of Special Scientific Interest (SSSI) and SAC. Therefore, our environmental destination approach will be focused on catchment level investigations (e.g. for colour / taste and odour issues at our upland reservoirs) and biodiversity improvements which will bring water quality benefits and improve resilience of our water sources.

Social, environmental or economic opportunities being sought locally

Public Service Boards (PSBs) were introduced following publication of the Well-being of Future Generations (Wales) Act 2015 to improve joint working across all public services in each local authority area in Wales. Each PSB must carry out a well-being assessment and publish an annual local well-being plan, setting out how they will meet their responsibilities under the Act. Hafren Dyfrdwy's supply area intersects with four PSBs – Powys, Wrexham, Flintshire and Denbighshire.



Figure D1.2: Wales's well-being goals

As part of the 2022 well-being assessments, PSBs have sought the opinion of citizens within their area as to how their well-being can be improved. These are set out against the four pillars of well-being – environment, culture, society and economy. While each area has unique demographics and associated sets of issues, there are some common themes that we can engage with under each pillar. Table D1.1 focuses on environment, Table D1.2 focuses on culture, Table D1.3 focuses on society and Table D1.4 focuses on economy.

Table D1.1: Environment

PSB	Challenges & opportunities	What can we do?
Wrexham	Retain green space and increase green infrastructure; increase re-use and recycling; educate and promote benefits of good environment; climate emergency; below average woodland cover; flood risk; ecosystem & biodiversity enhancement; sustainable land management	<ul style="list-style-type: none"> • Work with neighbouring landowners to improve habitats and increase biodiversity e.g. creation of wildlife corridors • Work with local flood risk groups and other relevant authorities to deliver our Drainage & Wastewater Management Plan (DWMP) in line with local development plans
Powys	Water quality; air quality; climate emergency; energy efficiency and access to renewable energy sources; access to green space	<ul style="list-style-type: none"> • Identify opportunities to provide access to green spaces across our estate where appropriate to do so • Explore opportunities to work with community groups on community renewable energy projects e.g. installation of solar panels at operational sites adjacent to housing estates
Flintshire	Climate emergency; flood risk; urban and rural green infrastructure; woodland cover; ecosystem resilience and biodiversity enhancement; sustainable land management; net zero and decarbonisation	
Conwy & Denbigh	Place nature recovery at the centre of decision making; increasing tree & green infrastructure coverage; take strategic approach to flood risk management; empower communities to tackle climate change locally	

Table D1.2: Culture

PSB	Challenges & opportunities	What can we do?
Wrexham	More community events; increasing sports participation for children and young people; access to outside recreational spaces; recognition for other cultures; promote local and Welsh history and culture	<ul style="list-style-type: none"> • Support community projects and groups through the Hafren Dyfrdwy Community Fund • Work with third sector organisations to increase our Community Champion opportunities to Hafren Dyfrdwy employees and identify opportunities to link our volunteer days with other volunteer groups • Support cultural and sporting events through provision of Refill stations and sponsorship, if possible e.g. Lake Vyrnwy marathon • Encourage uptake of Welsh language lessons amongst Hafren Dyfrdwy employees
Powys	Increase access to volunteering opportunities; address increase in families accessing food banks; encourage increased participation in sporting activities	
Flintshire	Increase in % of people participating in sports; improve access to cultural events; recognition that place and interest-based groups provide a sense of purpose	
Conwy & Denbighshire	Developing capacity of cultural, creative and tourism industries; contribute to N Wales approach to maximise opportunities from tourism and regeneration; support community run assets; sustain, value and protect Welsh language and culture	

Table D1.3: Society

PSB	Challenges & opportunities	What can we do?
Wrexham	Focus on community cohesion; demand for health and social care will increase; improve access to mental health services; expected increase in number of people 65 year or over	<ul style="list-style-type: none"> • Work with local authorities to identify opportunities for lead pipe replacement • Work with Citizens Advice Bureau and other community advice organisations to provide advice on water saving and provision of support for those struggling to pay their water bills • Continue with water efficiency audit offerings to assist customers to identify unnecessary water use to reduce bills (e.g. leaky toilets, leaks on private water pipes etc)
Powys	Poor access to services; need for smaller, more affordable, carbon neutral housing stock; tackle number of families living in absolute poverty	
Flintshire	Expected increase in number of people 65 years or over; above average % of children over 10 with mental health problems;	
Conwy & Denbighshire	Improved childhood experiences lead to improved health and societal gains; future development plans to ensure residents can meet most daily needs within short walk from home ('20 minute neighbourhood'); support healthy lifestyles; build trust and continuity within communities	

Table D1.4: Economy

PSB	Challenges & opportunities	What can we do?
Wrexham	Cost of living rising and standards being squeezed; adverse impacts on children increasing; personal debt is major problem; ensure good job opportunities; provide support, advice, training and opportunities appropriate to their needs	<ul style="list-style-type: none"> • Identify opportunities to use local suppliers and contractors • Use local authority Jobseeker resources to advertise jobs to encourage local applicants • Work with Citizens Advice Bureau and other community advice organisations to provide advice on water saving and provision of support for those struggling to pay their water bills • Explore opportunities to work with community groups on community renewable energy projects e.g. installation of solar panels at operational sites adjacent to housing estates
Powys	Significant increase in unemployment since Covid-19; focus on improving quality of jobs / pay; adapt to new 'digital workplace' emerging across Wales	
Flintshire	Living costs rising and standards being squeezed; personal debt is a major problem; job creation only increased by 2% in 18 years; 1 in 4 people are in poverty	
Conwy & Denbighshire	Work towards a 'well-being' economy that is circular and regenerative; contribute to achieving the North Wales Energy Strategy; encourage culture and nature-led regeneration linked to historic heritage and natural landscape	

D2 Understand the issues locally

In 2017, Welsh Government published their Natural Resources Policy (NRP) setting out how they will improve the way that Wales's natural resources are managed. A key part of the delivery framework for SMNR, it is seen as vital for current and future generations to continue to enjoy the benefits of our natural resources:

- Provisioning services: such as crops, livestock, fish and timber; and natural fluxes of energy
- Regulating services: such as water and air purification, noise regulation, carbon sequestration, flood risk management, waste assimilation and pollination
- Cultural services: such as recreation and associated health and wellbeing benefits; our historic environment and appreciation of our beautiful places, landscapes and nature
- Supporting systems and services: such as soil formation and nutrient cycling necessary for the production of all other ecosystem services. These systems and services are underpinned by biodiversity.

As part of a collaborative response to the NRP, Natural Resources Wales led on the development of seven Area Statements, outlining the key challenges facing that particular locality, what can be done to meet those challenges and how our natural resources can be better managed for the benefit of future generations. Each Area Statement sets out key themes, developed using locally and nationally based evidence, including the SoNaRR, the NRP and information from Public Service Boards and their well-being plans. The role of the Area Statements is to coordinate existing measures and enable new initiatives; it is a long term, iterative and innovative process which makes it an ideal reference point for our WRMP environmental destination strategy. Hafren Dyfrdwy's supply area intersects with two of the Area Statements – Mid Wales and North East Wales – and the following tables set out how we propose to contribute to addressing these themes:

Table D1.1: Mid Wales Area Statement themes

<p>Mid Wales is an area of diverse and historic landscape, resulting in its own unique identity. It encompasses a large proportion of the Brecon Beacons National Park in the south, the Berwyn uplands in the north with the Cambrian Mountains forming a central spine through the middle. Hills descend to the rugged 50 mile coastline of Cardigan Bay in the west and its rolling farmland stretches across to the Marcher borderlands in the east</p>	
Theme	How we will contribute
Improving biodiversity	<ul style="list-style-type: none"> • Continue with biodiversity improvement works at Lake Vyrnwy, in partnership with RSPB Cymru, focusing on habitat restoration for key section 7 species such as the curlew and black grouse • Work with Montgomeryshire Wildlife Trust to deliver their Pathway to Pearls project around Welshpool, creating wildlife corridors for the Pearl Fritillary butterfly and other pollinators • Use biodiversity survey reports to identify habitat improvement opportunities across our operational estate
Sustainable land, water and air	<ul style="list-style-type: none"> • Continue with the programme of peatland restoration across the Vyrnwy estate. Provides water quality, natural flood management and carbon sequestration benefits • Deliver on our River Pledges to improve wastewater assets that are adversely impacting on river quality • Work with partner organisations (e.g. Severn Rivers Trust, neighbouring water companies) to investigate extent of Heavily Modified Waterbodies (HMWB) impact downstream of Lake Vyrnwy and Clywedog Reservoir dams, with particular reference to deterioration of gravel beds which provide fish spawning sites for migratory fish species
Reconnecting people and places	<ul style="list-style-type: none"> • Expand our Visitor Experience offerings at Lake Vyrnwy and Clywedog Reservoir, improving walking trails and providing educational opportunities • Work with Open Newtown and Montgomeryshire Wildlife Trust to improve and promote the walking route between Newtown and Pwll Penarth Nature Reserve
Forestry resources	<ul style="list-style-type: none"> • Review our Forestry Management Plan for the Vyrnwy estate commercial forest to include a greater variety of conifer species, increased numbers of native broadleaf and sections of upland fringe habitats ('ffridd')

Table D2.2: North East Wales Area Statement themes

North East Wales encompasses the three separate counties of Denbighshire, Flintshire and Wrexham. It features large urban communities, industry, several of the country's major transport arteries and some stunning scenery	
Theme	How we will contribute
Develop and improve urban and rural green infrastructure	<ul style="list-style-type: none"> • Work with North Wales Wildlife Trust and the Clywd Range and Dee Valley AONB to identify joint projects for improving urban and rural green infrastructure • Working with NRW on construction of fish pass at Horseshoe Falls (a UNESCO World Heritage Site) near Llangollen
Increasing woodlands	<ul style="list-style-type: none"> • Working with our rural estates, visitor experience teams and external partners to identify possible tree planting sites. For example, we included this requirement when we built a new service reservoir at Llangollen
Promoting the resilience of ecosystems in maintaining and enhancing biodiversity	<ul style="list-style-type: none"> • Use biodiversity survey reports to identify habitat improvement opportunities across our operational estate • Work with Clywd Range and Dee Valley AONB to develop scope for peatland restoration / habitat improvement project across catchment for our impoundment reservoirs (Pendinas, Cyfynwy, Nant y Ffrith and Penycae). This will have multiple benefits – improving water quality at source, making raw water reservoirs available year-round thereby improving resilience of our water resources; improving biodiversity and ecosystems across a designated site
Farming and sustainable land management	<ul style="list-style-type: none"> • Work with the Dee Catchment Protection group to identify opportunities for promoting sustainable land management practices across the Dee catchment, with particular focus on reducing use of pesticides and improving nutrient management

In section 7 of the main WRMP narrative 'Our long term water strategy', we include a Water Resource Zone (WRZ) summary describing supply and demand at a local level, enabling us to address specific issues or potential future pressures (such as climate change) affecting those areas. The map in Figure D2.1 shows our WRZs. We have considered the environmental destination needs and opportunities within each WRZ and these are set out in the sections that follow. It is worth noting that none of our abstractions have been identified as a direct cause of Water Framework Directive (WFD) failures and NRW have not identified any abstraction reductions within our supply area; therefore, our environmental destination strategy focuses on protection and enhancement of our local environment, both land and water, to ensure that our water resource management approach continues to cause no adverse impact.

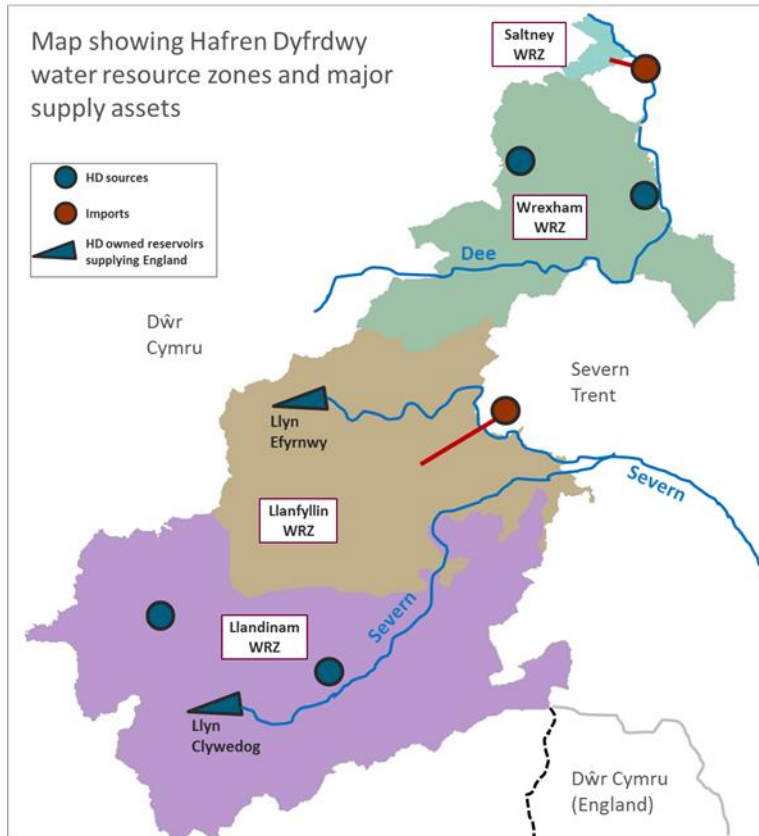


Figure D2.1: Our water resource zones

As stated above, there are no abstraction reductions proposed by NRW for our supply area. Our environmental destination approach will, therefore, be focused on catchment level investigations and biodiversity improvements which will bring water quality benefits and improve resilience of our water sources.

Saltney Water Resource Zone

Due to the water supply coming from a bulk import from Severn Trent, we have not identified any specific environmental destination needs or actions within this zone. We will, however, continue to work with Severn Trent to identify any opportunities for contributing to environmental improvements relating to their abstraction that benefit our customers.

Wrexham Water Resource Zone

The Dee and its estuary has a high conservation value. It is designated as two Special Areas of Conservation (SAC), and notified as three separate Sites of Special Scientific Interest (SSSIs). Interest features contributing to the SSSI and SAC designations of the freshwater sections of the river include floating water plantain, Atlantic salmon, lamprey, otter, and structural changes in the meandering section of the main river.

Heavily regulated for both flow and quality, the Dee flows through a mixture of rural and urban landscapes and is at risk from both agricultural and industrial pollution sources. We therefore propose to work with United Utilities, Dŵr Cymru Welsh Water, Severn Trent, NRW and the Environment Agency – through the newly reformed Dee Catchment Protection Group – to identify opportunities for minimising risks from these sources through land management advisory services and practical interventions (e.g. creation of buffer strips alongside the river; improving drainage on farms and industrial units). This will be delivered through a joint commitment on the National Environment Programme (NEP) for AMP8.

Several of our impoundment reservoir sources sit within the uplands of Denbighshire and Flintshire, surrounded by peatland and ex-mining sites; we regularly experience high colour and taste and odour issues at some of these reservoirs, resulting in water that is difficult and expensive to treat. We will work with the Clywd Range

Llandinam and Llanwrin Water Resource Zone

Clywedog reservoir is situated within this WRZ and although we do not use it for public water supply, we do own the dam and areas of land surrounding it, including small areas of woodland which presents opportunities for additional tree planting as well as improving the visitor experience to increase well-being benefits. We will be undertaking a Heavily Modified Waterbody investigation and mitigation project downstream of the reservoir, focusing on deteriorated gravels / fish spawning sites. This will be in collaboration with Severn Trent Water and South Staffs Water, delivered through the AMP8 NEP.

In addition, there is a disused reservoir near Machynlleth – Esgaireira – which already has an improved healthy ecosystem following a sympathetic lowering of the dam. There is evidence of key species on site and we plan to further develop the site into a local nature reserve. Both NRW and Montgomeryshire Wildlife Trust have expressed interest in working with us at Esgaireira and explore opportunities at neighbouring sites for creating wildlife corridors and increasing key habitats.

D3 A shared vision

Wherever possible, we will work in partnership to deliver our environmental destination strategy. This could include neighbouring water companies, local authorities or third sector organisations such as RSPB Cymru or Wildlife Trusts:

- We are part of the Dee Catchment Protection Group – a sub group of the Dee Steering Committee, made up of reps from each of the water companies who abstract from the Dee and the environmental regulators for England and Wales – who are working to identify opportunities to jointly deliver catchment level water quality protection measures in the Dee catchment. We will be delivering a joint project through the AMP8 NEP, implementing actions through a catchment scheme to prevent deterioration in water quality (turbidity) and avoid an increase in the level of water purification treatment.
- As part of Water Resources West (WRW), we are exploring a number of opportunities for working in collaboration with other members. For example, in the Upper Severn catchment, we will work with United Utilities to identify options for joint projects across the Vyrnwy estate; this could include accelerating the peatland restoration programme, targeting invasive non-native species (INNS) around the reservoir edges, or undertaking a grazing regime study (in partnership with RSPB) to achieve biodiversity and water quality benefits. NRW have included WFD Heavily Modified Water Body (HMWB) investigations and mitigation schemes in the AMP8 NEP at Vyrnwy and Clywedog, focused on impacts of regulatory releases on fish spawning gravels. Although we own both of these reservoirs, the releases and abstractions from both sources provide benefit to English customers (United Utilities, Severn Trent and South Staffordshire Water) so we will be delivering these schemes in collaboration (with United Utilities at Vyrnwy, and with Severn Trent and South Staffs Water at Clywedog).
- We have identified a need to undertake investigations in the catchments surrounding our upland reservoirs in Wrexham WRZ, with the aim of reducing taste and odour issues at source. A large proportion of the reservoir catchments sit within the Clywd Range and Dee Valley Area of Outstanding National Beauty (AONB) which presents an opportunity to work with the AONB team – part of Denbighshire County Council – to undertake habitat improvement work which offers multiple benefits including water quality improvements, biodiversity and ecosystem enhancements and water resource resilience.

D4 Implementation

We are in the process of developing our PR24 business plan, setting out our investment plans for the planning period 2025 to 2030. As part of this process, we have worked with NRW and other key stakeholders, to develop our National Environment Plan (NEP) – several of the environmental destination schemes identified in this plan meet NEP driver criteria and will be funded and delivered through this route (Table D4.1). Ofwat have stated their intention to include a standard biodiversity performance commitment for PR24 and many of our biodiversity improvement schemes will therefore be funded through this route.

Table D4.1: Programme of ED schemes to be delivered through NEP in AMP8

NEP / legislative Driver	Activities	NEP date	
Biodiversity and Invasive non-native species	Water Framework Directive (WFD) Regulations	Assessment of gravel starvation impact on 16km of river downstream of Vyrnwy and Clywedog dams	March 2027
		Reinstate gravels downstream of Vyrnwy / Clywedog	March 2030
	Section 6 of Environment (Wales) Act	Investigations and audits across operational estate	March 2027
		Improvements across operational estate	March 2030
Wildlife and Countryside Act	Implement INNS removal strategy / recommendations from AMP7 risk assessment	March 2030	
Catchment Management	WFD Regulations Drinking water protected areas	Investigation into Dee catchment cryptosporidium	March 2027
		Catchment level improvements relating to the river Dee issues	March 2030
		Investigation into taste & odour, colour and algal blooms at 5 raw water reservoirs	March 2027
		Catchment level improvements at 1 reservoir	March 2028
Net Zero Strategy	Reducing land emissions	Restoration of 519 Hectares of peatland for carbon at Lake Vyrnwy	March 2030