

Biodiversity and Resilience of Ecosystems – RWE’s contributions to maintaining and enhancing biodiversity in Wales.

Introduction

RWE is the UK’s second largest power producer, employing around 2,600 people in the UK and supplying around 12% of UK electricity. RWE one of the largest renewable generators in the UK, with a diverse operational portfolio of renewables including onshore wind, offshore wind, hydro and biomass amounting to over 2.1GW. In addition to its growing renewables portfolio, RWE operates around 7GW of modern and efficient gas-fired capacity in the UK, making us one of the largest providers of firm flexible generation, which is crucial for affordable reliability and security of supply. Going forward, the UK will play a key role in RWE’s strategy to grow its renewables portfolio and become carbon neutral by 2040. Overall, and including its committed investments in projects already under construction, RWE expects to invest around £15billion in new green technologies and infrastructure in the UK by 2030.

RWE has several companies in the UK including those who own and operate sites in Wales such as RWE Generation UK Plc and RWE Renewables UK Swindon Limited which are also holders of licences under Section 6 (1) of the Electricity Act. In the exercise of its functions RWE seeks to maintain and enhance biodiversity to promote the resilience of ecosystems so far as consistent with the proper exercise of those functions in accordance with the aims of the Environment (Wales) Act 2016.

This document provides a review of RWE’s activities aimed at maintaining and enhancing biodiversity in Wales.

In line with Welsh government guidelines, RWE has structured this report using Natural Resources Wales (NRW) Nature Recovery Action Plan (NRAP) Objectives and examples from the RWE portfolio¹. The report has been prepared having regard for the list

¹ RWE has a number of sites within Wales some of which, because of licensing and ownership structure, will be the subject to the Environmental Wales Act (2016). These include some of our offshore wind, hydro power and a gas fired power station.

published under section 7 of the Environment (Wales) Act 2016 as well as the State of Natural Resources Reports² and Area Statements³ published under Section 7 & 11 of the Act. These reports note the pressure on biodiversity from climate change. The combination of RWE's growing portfolio of renewables and its efficient dispatchable generation plants contribute to the mitigation of climate change and therefore contribute positively to maintaining and enhancing biodiversity .

The case studies presented in this report provide examples of RWE's actions seeking to enhance and maintain biodiversity at relevant gas fired, hydro and offshore wind generation sites. RWE will regularly review its biodiversity plans and actions and publish an updated report every 3 years.

This report covers our Welsh hydro, a gas fired power station and an offshore wind farm. A brief overview of each of the sites covered by this report follows:

Hydro Generation in Wales

RWE Generation UK plc own and manage approximately 6400 acres of mainly mountainous land in the Carneddau mountains in North Wales which form the catchment land for their hydro power stations:

- Dilyn (0.5MW)
- Dolgarrog (33.0MW)
- Garnedd (0.5MW)
- Cwm Dyli (9.8MW)
- Croesor (0.5MW)

Offshore Wind Generation in Wales

Gwynt Y Môr is a 576-megawatt offshore wind farm located in North Wales, 8 miles offshore within Liverpool Bay. The wind farm has been operational since 2015 and comprises of 160 turbines producing enough renewable energy to power around 400,000 residential households. The wind farm has created a significant opportunity for Wales' economy, whilst meeting the needs of the Environment (Wales) Act 2016 for low-carbon energy. RWE's interest in the wind farm is owned by RWE Renewables UK Swindon Ltd, which is part of the RWE Renewables UK group of companies owned by RWE AG.

The Gwynt Y Môr array and transit route taken by service vessels is located in the Liverpool Bay Special Protections Area (SPA) and designated Special Area of Conservation (SAC), which are both important areas for biodiversity The SPA is in place to protect

² [Natural Resources Wales / State of Natural Resources Report \(SoNaRR\) for Wales 2020](#)

³ [Natural Resources Wales / Area Statements](#)

species such as: the red-throated diver, common scoter, little gull, common tern and little tern and is a SAC for its mudflats and associated colonising organisms.

Gas fired Power Generation in Wales

RWE Generation UK Plc's Pembroke Power Station is a 2,180MW combined-cycle gas turbine (CCGT) electricity generation station situated on the Daugleddau estuary in West Wales. The plant began commercial operation in September 2012 and is one of the most efficient of its type in Europe.

Review of RWE's biodiversity actions against NRPA objectives

NRAP Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels

NRAP Objective 6: Put in place a framework of governance and support for delivery

RWE has in place policies for Environmental Protection⁴ and a commitment to biodiversity at both the corporate and operational level. We have incorporated environmental protection and energy efficiency measures into our business practices. We have committed to use natural resources responsibly and to support the use of environmentally friendly technologies in our processes. Furthermore, RWE companies embed environmental responsibilities into the requirements of job roles. Environmental Officers have specific responsibilities to ensure that, as part of the environmental management system, the operation of our business aims to achieve a high level of environmental protection and follows our sustainability practices. Strict environmental legislation, licenses, permits or other authorisations provide the framework for our operational activities in the regions where we are active. RWE invests in environmental protection to ensure continuous improvement in areas such as energy, water, biodiversity, emissions as well as wastewater and waste.

RWE's Corporate Guidelines on Environmental Protection identify the officers at board level responsible for environment⁵ and sets out a requirement for the group companies to operate in accordance with ISO 14001: 2015 "Environmental management systems - requirements with guidance for use".

⁴ [Environmental protection at RWE](#)

⁵ <https://www.rwe.com/-/media/RWE/documents/09-verantwortung-nachhaltigkeit/environmental-protection.pdf>

RWE's Corporate Responsibility Report⁶ covers our commitments on biodiversity. Since 2015, RWE has adopted a Biodiversity Policy⁷. This establishes the approach of RWE to the protection and promotion of biodiversity as the company carries out its business activities.

When planning new developments biodiversity is an important consideration for RWE and these considerations are integrated into the process of gaining the necessary consents and permits. In addition to following current legislative requirements RWE has also engaged with Natural England and other stakeholders in the development of the Net Gain tools.

The importance of biodiversity at RWE is evidenced by staff training and how we undertake our activities. All RWE Generation staff involved in letting contracts undertake a training course which now includes a section on the requirements of Biodiversity Reporting and the importance of biodiversity in general. The training material is being shared with Welsh offshore wind and hydro colleagues who have not attended the most recent training sessions.

Examples of how RWE have included consideration of biodiversity within its Welsh operations (NRAP Objectives 1 & 6)

Gwynt Y Mor Offshore Wind Farm (GYMOWF), owned by RWE (50%), Stadwerke München (30%) & Green Investment Group (20%), provides a community fund that has resulted in a joint approach with the community to increase opportunities, to improve and enhance active participation and to develop the area. Over the lifespan of the GYMOWF a contribution of £19 million is being made towards projects helping the coastal communities in the area. The fund is focused around 3 themes; building strong and sustainable communities; developing prosperous communities with strong economic growth; and reducing poverty and inequality in communities⁸. The themes identified help to ensure the fund meets the needs of the community effectively, thereby having a role in understanding, enhancing and safeguarding its biodiversity.

GYMOWF have worked alongside various groups to encourage greater engagement with the local community, helping to embed this idea of biodiversity through some of its projects. These environmental projects have a focus on the benefits of green space sustainability and promoting the community to have active involvement and responsibility over the local environment.

Since 2015 GYMOWF have been involved with these locally led projects. An example of this is a plastic awareness project that was in partnership with Colwyn Bay Town Council

⁶ <https://www.rwe.com/-/media/RWE/documents/09-verantwortung-nachhaltigkeit/cr-berichte/EN/cr-report-2019.pdf>

⁷ [biodiversity-policy.pdf \(rwe.com\)](#)

⁸ [CVSC - GYM Background](#)

and Conwy County Borough Council. The main criteria for this project were to recycle plastic and create large plastic sculptures in public spaces/parks in September 2020.

Other examples include improvements to boardwalks and access to a pond dipping platform, signage and leaflets for a site at Big Pool. The site is part of the Dee Estuary Special Protection Area – a protected region that supports over 120,000 waterfowl and waders in the winter. Big Pool Wood both provides shelter and cover for some of these wetland birds and forms part of a wildlife corridor that stretches along the coast all the way to Anglesey; particularly important for migrating birds of all kinds December 2020.

GYMOWF worked closely with Bodelwyddan Castle Trust, a charitable trust that maintained the castle grounds through conservation, education and social inclusion. The partnered project in 2015 focused on creating a parkland orchard, through planting trees and putting up information boards around the site. This project, alongside others that GYMOWF have assisted with, help to bring people together to establish a sense of community all whilst working towards long term sustainability.



Figure 1 Bodelwyddan Castle Trust- GYMOWFL in partnership to improve castle grounds

Pembroke power plant is a combined-cycle gas turbine (CCGT) electricity generation station which began commercial operation in September 2012. It is one of the most efficient plants of its kind in Europe. The station operates to conform to the conditions and limits in its environmental permit. The site had been previously used for electricity generation and the new CCGT has made use of some of the previous infrastructure. The station is situated to the west of Pembroke on the Daugleddau estuary.

Both terrestrial and aquatic biodiversity were considered during the design of the station. Planting undertaken pre-construction made use of a mix of native species and improved the connectivity of existing woodland as well as having a landscaping benefit. The station uses water abstracted from the estuary for cooling and this use contributes to the

station's high efficiency and hence reduced fuel use. The mitigation of aquatic impacts from the beneficial use of the water drove the design of the intake system. This intake system features a wide intake channel, low approach velocities, fish deterrents and a fish return system. Combined these systems help to protect local marine life.

NRAP Objective 2: Safeguard species and habitats of principal importance and improve their management.

Pembroke Case Study



Figure 2 Pembroke Power Station

Pembroke Power Station is committed to increase its site biodiversity. Overall, the site contains six different habitat types which help to support many species, some of which are considered rare. The habitats that can be found at Pembroke include marine, wild-flower grassland, semi-natural ancient woodland, artificial cliff habitats and marshland. A terrestrial survey was undertaken during the consenting of the power station (the last survey year was 2006). There were no plant species listed in the survey that are included

in the list of priority species provided under Section 7 of the Environment (Wales) Act 2016⁹.

To support the consent application a habitats map informed by survey data was produced. Comparing the habitats map to the Section 7 Priority habitats list two priority terrestrial habitats are within the land holding these being the hedgerows and the ponds. At the time of the survey the hedgerows were classed as ranging between poor and species rich. During the construction of the station additional planting was undertaken using a mix of native tree and scrub species which reinforced existing habitat and connected some previously existing wooded areas. The planting of mixed native species should help to enhance and maintain biodiversity.

Section 7 list birds recorded during the pre-construction survey included:

- Song thrush
- Skylark
- Linnet
- Bar-tailed godwit
- Peregrine Falcon

Ecological Corridors

Pembroke adopts a limited intervention approach to help biodiversity to flourish whilst minimising disturbance. During construction Pembroke implemented strategies such as the creation of ecological corridors in the form of grass buffer strips and hedgerows. Ecological corridors allow the safe passage of small mammals, birds and invertebrates between habitats and therefore are essential for the protection and enrichment of biodiversity. These corridors are more crucial than ever in encouraging the colonisation of insect species which have declined rapidly over the 21st century.

Reptile Release Areas

Pembroke's site includes two reptile release areas which provide suitable habitat for reptiles which were removed from the area when the power station was constructed. Since the areas were created, they are now home to species of common lizard, grass snake and slow worm which are protected by law. This habitat is monitored and managed by mowing to provide reptiles with areas to bask in the sun and hibernate in the winter.

Badger Setts

The site and surrounding areas are well used by badgers. Whilst badgers are not included in the Section 7 mammal list we are aware that badger setts exist on land outside of the operational boundary and plan all works accordingly to minimise or avoid disturbance.

⁹ See [Wales Biodiversity Partnership - Environment \(Wales\) Act \(biodiversitywales.org.uk\)](https://www.biodiversitywales.org.uk)

Wildflower Meadows and Marshland

Wildflower meadows provide shelter and food for small mammals, butterflies and other pollinating insects such as bees. Since the 1930s there has been a 97% decrease in Wildflower meadows across the UK, with a recent drive by local councils and planners to plant more. The Wildflower meadows are particularly important at Pembroke's site, as well as enhancing biodiversity they also help to reduce the need for pesticides by local farmers by increasing the populations of natural predators such as Ladybirds in the area. The extremely rare Shrill Carder Bumble Bee is found at the nearby location of Castle-martin peninsula, it is hoped that Pembroke's wildflower meadows will provide suitable habitat for this species.

Meadows and Marshland can also be found to the west of Pembroke's site. This diverse habitat is home to flora and fauna ranging from Kingfishers, Spotted Redshank to species of Orchid, most notably Bee Orchids. This habitat supports wildlife associated with Wetland habitats which have declined by up to 40% across the UK since the 1930s.



Figure 4 Wildflower Meadow at Pembroke Power Station

The Old Basement, Artificial Cliff Habitat

The current Pembroke power station has been built in the same location as the old coal fired Pembroke A power station and therefore the old basement is still visible. This large deep area acts as a cliff habitat for gulls and similar bird species such as Manx Shearwaters. Many bird species take advantage of the high walls and use the area for nesting as they are similar to the natural cliffs in the surrounding area. Important species such as Chough can be found in this habitat, these are a rare species of Crow with their numbers slowly declining over recent years. The population of Chough in the nearby location of Castlemartin represents up to 44% of the UK's total population, making Pembroke's site even more important.

Bats at Greenhill Farm Barn

RWE funded a survey of Greenhill Farm Barn located on RWE owned land outside of the Pembroke power station site. The survey in 2017 provided evidence of bat species including Common Pipistrelle, Long-Eared, Lesser Horseshoe and Soprano Pipistrelle bats. In response to this discovery, we worked alongside the Bat Conservation Trust to convert the abandoned barn into a bat house. The new structure has since provided ideal habitat for bat species and continues to increase the biodiversity both on site and within the surrounding site area.



Figure 5 Greenhill Farm Barn and constructed Bat house. Source: Bat Conservation Trust Website

Gwynt y Môr Case Studies

A series of pre and post-construction monitoring have been required by planning and consent conditions imposed by regulators for Gwynt Y Môr. Although imposed, we see this as an excellent opportunity to ensure the impact of development on Biodiversity is low. Examples at Gwynt Y Môr Offshore Wind Farm (GYMOWF) are outlined below.

Fish and Electromagnetic Fields

Pre-construction and post-construction surveys of fish occurred at GYMOWF in 2011 and 2016 respectively, paying particular attention to the potential effects of electromagnetic fields (EMF) from electrical cables on fish. It has been suggested in scientific literature that EMF has the potential to impair navigation and certain fish which rely on naturally occurring bioelectric fields may become confused by anthropogenic sources of EMF¹⁰. It is also thought that physiological effects could occur to embryonic stages of fish development if located next to an EMF source. Although studies suggest that EMF can cause some of these effects to teleosts (ray-finned fish that make up the largest

¹⁰ [Evaluation of Potential EMF Effects on Fish Species of Commercial or Recreational Fishing Importance in Southern New England \(boem.gov\)](http://boem.gov)

proportion of fish species), the most vulnerable taxa is elasmobranchs (cartilaginous fish such as sharks, rays and skates). Therefore, selective commercial fishing techniques including beam trawls and tangle nets were used to target elasmobranch populations in the vicinity of the wind farm at pre-construction (2011) and post-construction (2016) phases. A commonly caught species in both surveys was the Thornback Ray (see below), which are known to respond to EMF.



Figure 3 A female Thornback Ray (Raja clavate) caught during pre-construction surveys. The fish is measured, sexed and returned to the sea as soon as possible to maximise survival rates

Pre-construction survey data proposed that the majority of potential effects of the cabling within the offshore wind farm were likely to be minor, only occurring within close proximity to the cables, where the EMF levels were concentrated. During post-construction surveys (2016), in order to test the effects of the wind farm's presence on fish, there was a comparison between fishing sites within the wind farm area and a reference area outside of the wind farm. Results from the 2016 survey found that rays caught in the wind farm area were on average larger than those caught in the reference area and the number of rays in the 2016 surveys were greater compared to 2011 (although not statistically significant). There was no decrease in the number of elasmobranchs within the area where wind farm export cables are laid, concluding that they are not avoiding the export cable route and it is also likely that they will not be avoiding inter-array cables which operate with lower EMF levels. This supports data from other wind farms in the

vicinity such as Burbo Bank which have also found that elasmobranchs do not avoid areas with EMF. Many pregnant females were also caught during post-construction surveys, which encouragingly suggests the habitat is maintained as a suitable substrate for spawning and nursery.

Benthic Habitats

Within the literature it is suggested that the construction of wind farms has the potential to negatively impact benthic habitats, both by sediment disturbance during construction and in the operational phase, via the installed structures, which can lead to altered hydrodynamic regimes¹¹. In order to understand these potential disturbances pre and post construction monitoring has been carried out to scope the species and habitats and investigate if the habitats have been affected.

At GYMOWF the infauna community of the area is described as 'rich', with 408 species being recorded from the grab samples. Although the area is rich with benthic species, there were no protected benthic species recorded besides the rare thumbnail crab, *Thia scutellata*, which main populations are within the Liverpool Bay. The epifaunal communities recorded were sparse along the array locations, there was noted a presence of the common starfish, *Asteria rubens* and colonial organisms¹².

The benthic community data sets from pre-construction surveys were compared to data sets obtained during the operational phase. Faunal analysis conducted post-construction indicated a small change in relative abundance of principal taxa reflecting minor alterations to populations rather than wide-scale community shifts. However, these changes are deemed to be unrelated to the construction of the wind farm from comparing data sets, rather due to seasonality and natural variation in benthic faunal communities⁸.

Pre and post construction surveys of benthic sediment particle size distributions were compared to quantify any change. In total there has been 10 years of monitoring; 3 years pre-construction, 4 years construction and 3 years post-construction. Images of the sea bed pre and post construction are shown below:

¹¹ [Microsoft Word - bd wind farms.doc \(ospar.org\)](#)

¹² Gwynt y Môr Year 3 Post Construction Benthic Survey Technical Report

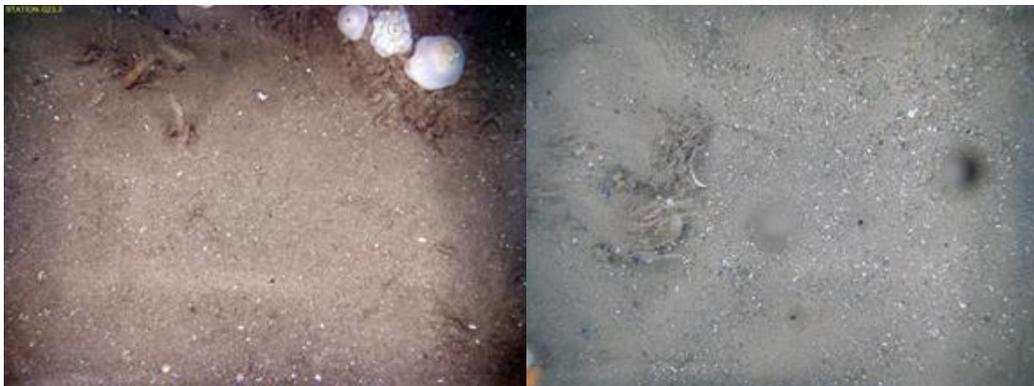


Figure 4 Comparison of 2010 pre-construction seabed sediment to 2020 post-construction seabed sediment- very low change.

Sediment particle size distributions largely remained the same pre and post-construction. There was no evidence of wide-scale change in seabed sediments within the wind farm or along the cable route. While some relatively minor changes in sediment particle size distribution were observed these also occurred in the control sites outside the development area and are therefore likely to be due to natural processes unrelated to the development.

Overall, over the 3 years of post-construction monitoring it was determined that although there were some changes to the taxa recorded, they were not significant, with the results agreeing with the Environmental Statement.

Monopile Colonisation

Offshore wind turbines are supported subsea by a foundation which is either a steel jacket design or a monopile. It has been hypothesised that monopiles are suitable habitats to support colonisation of various species, in a way akin to an artificial reef. Post-construction surveys of monopile colonisation at GYMOWF were used to investigate the post-construction effects of placement of a series of monopiles on marine species. The study was undertaken using the analysis of video footage taken by divers at three monopile sample locations.

The results found that the surface of the monopile structures was colonised by a typical fouling community of anemones, mussels, barnacles and tubeworms. Other scientific literature suggests this to be similar in nature to other offshore wind farm structures in the Irish Sea. The largely sessile colonial species provides a habitat for other mobile organisms such as scaleworms (*Polychaete worm*), ragworm (*Nereididae*), starfish (*Asteria rubens*), sea slugs (*Nudibranchia*) and various crustaceans, which were observed foraging. The rock armour surrounding the monopiles had similar fauna, with more prevalence of crabs, due to further habitats created by rock cervices.

In addition to food resources, artificial marine structures are known to attract an aggregation of fish due to shelter from wave action and currents and safety from predators. Monitoring of similar wind farms in Liverpool Bay have found strong evidence to suggest that this is also the case for offshore wind farm structures.



Figure 5 Example monopile colonisation from sessile anemones and mobile species such as the velvet swimming crab (*Necora puber*).

Birds

As GYMOWF is located within the Liverpool Bay Special Protection Area (SPA) it is a requirement to protect the following species: the red-throated diver, common scoter, little gull, common tern and little tern. The GYMOWF project undertake baseline aerial surveys to assess the seasonal abundance of the common scoter and red-throated diver. The baseline surveys indicated no red-throated divers to be present across the wind farm with a relatively low abundance of the common scoter recorded throughout October/November and a peak during February. These pre-construction surveys were then compared to the 3 years of post-construction surveys that showed similar results as although no common scoter were recorded within GYMOWF in the 3rd year of post-construction monitoring, there was a high distribution of the common scoter recorded in in-shore waters, due to their preference for shallow feeding waters. Overall the pre-construction and post-construction bird surveys demonstrate that impacts on the birds have been effectively managed across the wind farm.

Although most habitats within the array have not been negatively affected by the construction of the wind farm, certain measures were undertaken to further safeguard the habitats. Under the conditions of the GYMOWF O&M Marine Licence the site was to

ensure that the vessel routes mitigated any potential impacts the vessels could induce on the protected species. The vessel route previously travelled south of the wind farm, however the post-construction monitoring showed a high distribution of the common scoter in the south, therefore the route was changed. The service vessel routes were changed and agreed with NRW that they would adhere to this plan within the months of October and March each year- reducing the number of vessels by 2-3. The review of the vessel route and the appropriate changes made has not only improved the site's understanding of the common scoter but also reduced any negative implications for the common scoter populations present within the Liverpool Bay.

Marine Mammals

Marine Mammals were of interest surrounding the site chosen for the wind farm as previous recordings from other organisations had reported sightings of bottlenose dolphins and short-beaked common dolphins. Within the boundaries of the wind farm and across the Liverpool Bay harbour porpoise were detected year-round, and concern was raised that the noise surrounding the wind farm construction could result in a behavioural response such as temporal displacement. Aerial high-definition cameras were used by APEM Ltd on behalf of GYMOWF, for both the ornithological and marine mammal surveys. However, during the planned surveys only one marine animal was detected in the wind farm area, and so it was decided that throughout the construction phase if any sightings of marine animals were to occur the vessels alongside the Marine Mammal Observer Team would record this information. This resulted in 4 separate sightings taking place with an estimation of 15 bottlenose dolphins and 2 harbour porpoises being present.

This information was then compared to surveys taken post-construction of the wind farm. The peak estimated individuals recorded were 66 harbour porpoises March 2019 and 52 individuals in October 2018, with the majority being harbour porpoises which are common in the Irish Sea year-round. Alongside this there were recordings of the grey seal with a peak number of 966 in the 2017/2018 surveys.

Over the course of the monitoring that took place in Liverpool Bay, it is evident that the number of marine mammals has significantly increased since the construction of the wind farm.



Figure 6 Example of bottlenose dolphins sighting in baseline surveys surrounding the Liverpool Bay

Hydropower Case Studies

RWE Generation UK plc own and manage approximately 6400 acres of mainly mountainous land in the Carneddau mountains in North Wales which form the catchment land for their hydro power stations. Most of this land is designated Site of Special Scientific Interest (SSSI) with a large part designated a Special Area of Conservation (SAC).

We undertake the maintenance operations of our Hydro sites with a view to not only comply with our legal duties but also to take opportunities to enhance the local environment. For example, 50 dormouse boxes were installed as part of the Dolgarrog low head pipeline replacement project's ecological mitigation requirements. Dormice are highly endangered and were previously unrecorded in this area specialist ecological surveys were commissioned during one of which a juvenile torpid dormouse found proving that there were breeding pairs in the area and thereby contributing to our understanding of the distribution of this protected species.



Figure 7 Juvenile torpid dormouse found during monitoring surveys

We created a bat 'hotel' when one of the Dolgarrog valve houses was being renovated. The hotel is situated on the pipeline incline above Dolgarrog village. The bat 'hotel' has separate warm (heated) and cool rooms. Its use has been monitored over a number of years and it is now a major bat roost in the area with a peak of approximately 560 bats being counted during monitoring surveys. Species observed include pipistrelles, lesser horseshoe and some rare long eared bats.

Bat boxes have also been installed at Dolgarrog and are being monitored. When work that may potentially disturb bats is planned specialist surveys will be carried out to ensure mitigation measures can be applied.



Figure 8 RWE has commissioned & undertaken specialist bat monitoring surveys



Figure 9 RWE's newly constructed Bat house. Surveys have shown it to be well used.

Biodiversity and the opportunity to improve habitats is considered when planning maintenance works. For example; during routine works clearing dead or fallen trees, brash is not chipped but left in piles to create additional habitat.

When renewing a cattle grid on the land managed by RWE a hedgehog ladder was added to the structure to allow these mammals to escape should they fall in. Based on the success of this installation ladders have been added to other cattle grids to avoid trapping hedgehogs or other small creatures.

NRAP Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation:

The geographical context of our sites, habitats and biodiversity is a key consideration within our sustainability approach as the following case studies illustrate.

Pembroke Case Study

On the directly managed land around the permitted station site RWE Generation UK plc operates to encourage biodiversity. Interventions are limited as is the use of biocides. During the construction of the station RWE planted a mix of native tree and scrub species the planting reinforced existing habitat and connected some previously existing wooded areas. These areas are managed to improve biodiversity, for example, when undertaking scrub or tree felling material is left to provide new habitat. As noted previously RWE worked with others to construct a bat house on land surrounding the power station.

Hydropower Case Study

RWE Generation has managed the sites to maintain habitat. Within the catchment land holding, there are various old buildings (old agricultural buildings and dwellings) that are not in use. Where these don't have a current use, we have maintained them in a

weatherproof state to preserve them and have included open grilles on the windows to allow access to nesting birds, bats etc.

Over 2,500 Native trees have been planted as part of a pipeline replacement project providing habitat connectivity between existing native tree blocks. The planted areas are regularly monitored, maintained and are thriving.

A section of land owned by us is leased to Natural Resources Wales (NRW) to allow the Coed Dolgarrog National Nature Reserve to be protected. The land holding consists of 170 acres, the tenancy with NRW exists to protect the woodland “Site of Special Scientific Interest” (SSSI) designation, known as Coed Dolgarrog. This wooded escarpment woodland is considered of extremely high landscape value. The ancient woodland is an area of great natural diversity, supporting a rich variety of trees, plants, insects, birds, and animals. The SSSI protection is intended to ensure that it is maintained in a condition similar to that which it has been for many centuries.

NRAP Objective 4: Tackle key pressures on species and habitats

As noted previously RWE have a number of policies and procedure that contribute to tackling key pressures on species and habitats.

Climate change is a major pressure on species and habitats. RWE has an ambition to be carbon neutral by 2040. Dispatchable power plant such as Pembroke are expected to play a part in this transition working alongside the low carbon and renewable energy generation that is now the major focus of RWE’s investment strategy and projects pipeline.

RWE’s commitment to carbon neutrality is further evidenced by the recent announcement of the Pembroke Net Zero Centre. (Pembroke Net Zero Centre - PNZC ([rwe.com](https://www.rwe.com)))

NRAP Objective 5: Improve our evidence, understanding and monitoring

RWE undertake pre and post construction surveys when developing new energy projects. This data is shared with regulators. As an example at Pembroke RWE currently undertake a number of regular marine surveys. The format and extent of these surveys has been agreed with experts within NRW and the data is used to determine the extent of any impact from the operation of the station on the ecology of the Daugleddau estuary.

The data from these surveys is also made available to NRW in the form of detailed survey reports.



Figure 10 Intertidal surveying around Pembroke Power Station

RWE's hydro and offshore wind projects within Wales have undertaken a range of surveys, details of which have been previously given, the results of which have been shared with regulators. This also enables RWE to enhance its understanding of biodiversity needs on its operational sites.



Figure 11 Common lobster (Homarus gammarus) are tagged before release.

At Gwynt y Môr Offshore Wind Farm, a project is being undertaken by Aberystwyth University to assess the use of the wind farm area by economically important species, including lobster, brown crab and Atlantic cod. This will investigate the hypothesis that

offshore wind farms create reef-like habitats which may support certain species. The methods for assessing habitat use will be via tagging and receiving of data via acoustic telemetry, therefore enabling Aberystwyth University to plot habitat use by these species within the wind farm site. The study is currently underway and its data collection is due for completion in 2023. This study is in conjunction with Ecostructure which is an NGO, partly funded by the European Regional Development Fund (ERDF) and looks at climate change adaptation through ecologically-sensitive coastal infrastructure.

RWE has an active interest in new approaches that can assist in understanding the natural environment and how our operations interact with it. For example, RWE sponsored post graduate research work at the University of Southampton on the use of agent based models to simulate the migration of fish and eel in the Thames and worked with a consortium of research organisations on similar modelling techniques that were applied to the Daugleddau estuary. RWE gifted land to the neighbouring Valero oil refinery who constructed a boardwalk on it to use as part of their environmental educational area.

Summary

This report illustrates how RWE seeks to maintain and enhance biodiversity as far as consistent the exercise of its functions as well as examples of how RWE's actions align with the NRAP Objectives. These include:

- Having a management structure which embeds responsibility for the environment and biodiversity within the corporate structure
- The use of specialist staff and consultants to provide expert advice when undertaking activities
- Having regard to and safeguarding list 7 habitats and species
- Working with community groups and supporting staff volunteering
- Contributing to the achievement of Net Zero and hence the mitigation of climate change which is one of the main pressures on biodiversity.

Biodiversity Plan / Next Steps and Review

RWE's ambition for the next few years is to ensure that we continue to operate in line with our Biodiversity Policy and Corporate Guidelines on Environmental Protection and to continue to keep the consideration of biodiversity in the exercise of our undertaking.

This report will be reviewed and reissued in three years from the date of publication. An action to trigger the review will be entered in to RWE's Portfolio Action Tracker system which assigns the activity to a named individual.

Whilst our current practise and behaviours align with the NRAP Objectives we plan to promote best practise for biodiversity within the UK RWE group of companies. This will be achieved by bringing together representatives from the individual sites, sharing experiences and comparing actions.

The Biodiversity Plan review will, for each existing and any new sites, document biodiversity related activities at the site since the publication of the present report and compare the outcomes to our expectations. The next review will also report on our progress with sharing biodiversity enhancement best practise across our UK sites.