



**Electricity  
Transmission**

**Biodiversity and Resilience  
of Ecosystems in Wales**  
December 2022

**nationalgrid**

# About this report

This report has been prepared to fulfil National Grid Electricity Transmission's Biodiversity and Resilience of Ecosystems Duty to report under Section six of the Environment (Wales) Act 2016 Part one.

A previous report was published in December 2019 which covered National Grid's gas and electricity activities in the UK. This report is the first report wholly from National Grid Electricity Transmission. Throughout this report the Welsh Government's Nature recovery action plan (NRAP) objectives are referenced alongside the actions we have taken in meeting these.





# Our business

## We are National Grid Electricity Transmission plc (NGET).

We own and maintain the high-voltage electricity network in England and Wales. That includes c.4,500 miles of overhead line, about 900 miles of underground cable and over 300 substations.

Serving England and Wales, we move electricity from where it is generated, down the superhighway of the electricity system, to our direct customers and to the distribution companies that deliver power to homes and businesses.

## Our work in Wales

Within Wales we act as a statutory undertaker, we own and manage electricity assets and are responsible for managing the energy infrastructure and the non-operational land holdings under our direct control and ownership.

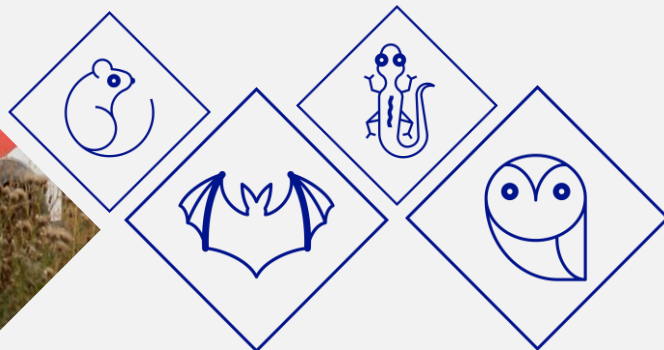
We are investing in our network, upgrading our infrastructure and facilitating connections to new sources of clean and renewable energy across Wales. We are committed to delivering these essential works on both our existing sites and in new locations in ways that avoid and minimise environmental impact, preserve biodiversity and the natural environment and foster collaboration and partnership with others.

# Our commitments to biodiversity

**We have strong commitments and targets to support biodiversity and ecosystems across the areas we work.** The National Grid Group [Responsible Business Charter](#) sets out the areas where National Grid can have the most impact on society. A key focus of the charter is our corporate environmental commitments. Underpinning this is NGET's own Environmental Action Plan which details further commitments for the period of 2021-2026.

Within NGET we also have key policies and procedures that govern how we manage the impacts and opportunities associated with the land that we own and manage. One such policy is our stakeholder, community and amenity policy. Within this policy we explain how we will meet our obligations under Section 38 and Schedule 9 of the Electricity Act 1989. These obligations relate to the preservation of amenity and regularly reviewing how we manage those duties, including our consultation process.

To support the delivery of all of our commitments, we use several tools and methods to understand, measure and be able to make decisions on how we manage biodiversity across our land. These are integrated into our governance processes, and the way we make decisions throughout the business.



## Our Environmental Sustainability Policy

We commit to:

- Identifying our environmental risks, including climate change, and developing plans to mitigate them.
- Protecting the environment by ensuring prevention of pollution is a key consideration in the design of all our assets.
- Using resources more efficiently by using sustainable materials and reducing waste.
- Identifying opportunities to use alternatives to hazardous materials.
- Seeking ways to enhance the natural value of the areas we work for the benefit of local communities and the environment.
- Ensuring all our employees have the training, skills, knowledge and resources necessary to achieve the requirements of our internal standards.
- Setting expectations of those who work on our behalf to demonstrate the same commitment to the environment as we do and working with our supply chain to contribute to the delivery of targets.
- Continually improving the Environmental Management System by reviewing and challenging our performance using feedback from stakeholders and benchmarking against our contemporaries.

Our Environmental Management System is certified to ISO 14001: 2015



# Our Environmental Action Plan

**Our Environmental Action Plan concentrates on the areas where we can make the greatest contribution to a more sustainable future, aligned to the United Nations' Sustainable Development Goals (UN SDGs).**

It responds to – and is driven by – environmental issues which are most significant to our stakeholders and our business. We are committed to reducing our negative impacts, and we will also focus on the areas where we can bring about positive change.

The plan covers our current regulatory period, 2021- 2026, and was developed through working with stakeholders and agreeing measures with our regulator Ofgem. Our dedicated Environment and Sustainability Team are responsible for reviewing our performance and commitments.

## Our natural environment commitments

By 2026, we will:



**10%**

Increase environmental value of non-operational land by 10% against a natural capital and biodiversity baseline.



**10%**

Deliver net gain of least 10% or greater in environmental value (including biodiversity) on all construction projects (including those delivered by third parties building on our land).



# Embedding biodiversity

**Key to driving improvement in the natural environment is embedding the consideration of biodiversity into our processes and having an engaged workforce.**

We have our senior leadership take accountability for our environmental performance. If a commitment goes off track, we have a champion in the senior leadership team to resolve issues and help guide us back in the right direction. We are also focusing on having a workforce that is engaged on environmental issues and who lead by example. We continue to engage with our employees through additional training, environmental working groups, newsletters, and environmental engagement site visits.

Our construction work interacts with biodiversity and ecosystems across Wales. We have built the consideration of the natural environment into our key investment and project management processes which ensures environmental sustainability is firmly on the agenda. Our Environment and Sustainability Team provide expert support to projects and the operational business. Where we need additional expert advice and support we have a team of external consultants on standby as part of our environmental services framework.

All NGET employees will complete new environmental sustainability training: Delivering our Environmental Future



100% of NGET directors are accountable for our environmental commitments.



**NRAP1 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.



# Avoiding impacts

**As part of our development of new electricity infrastructure, we carry out options appraisals on our projects.**

There are often several different ways that we could satisfy the need for a new connection, involving different locations, technologies or designs. Each time a new connection is needed, we must make judgements about the best way to achieve it, and the options appraisal provides information to inform these judgements.

There are four main topics we consider during our assessments of potential options: technical, environmental, socio-economic and cost.

Under the environmental topic we assess the wider impact to the environment associated with our options including: landscape and visual, ecology, historic environment, water, local air quality, noise vibration and soils and geology.

For new electricity transmission lines and substations within the UK we use the Holford and Horlock rules as part of our options appraisal to support our approach to routing and siting of new infrastructure.

## Pentir-Dinorwig Cable Project



National Grid is replacing the existing underground cables between Dinorwig Power Station and our substation at Pentir to maintain the security of electricity supplies for the local area and beyond. The original cables were installed in the late 1970s and are now coming to the end of their operational life. Three new cable circuits will be installed between Dinorwig Power Station and our substation at Pentir.

Biodiversity has been considered throughout, and the project has reduced its impacts through good design and planning.

This includes:

- Major design change to an on road solution to avoid impacts associated with crossing 4km of farmland, for example reducing ditch crossings, and the removal of important hedgerows
- Designing in Horizontal Directional Drilling (HDD) to avoid working within a Site of Special Scientific Interest (SSSI).
- Micro-siting work to reduce working width in fungi fields.
- Bat roost enhancements designed in as part of Natural Resources Wales licensing.

**The Holford rules** are guidelines for the routing of new high voltage overhead transmission lines: Rule 1 states: Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the first line in the first place, even if the total mileage is somewhat increased in consequence.

**The Horlock Rules** relate to the siting of electricity substations and assets. These rules also encourage avoidance of areas of highest amenity and commit to consideration of a range of environmental impacts including habitat and biodiversity.



# Delivering biodiversity net gain

As we build and maintain our electricity assets across Wales, we have an impact on the land and local habitats. It is essential that our projects seek ways to reduce the fragmentation of our habitats and species, prevent permanent habitat loss, and ensure that we can deliver positive enhancements.

We have committed to minimise the impact of our construction projects and deliver at least 10 per cent 'environmental net gain' as a result of our works. We are going further than 'no net loss'.

Our approach to net gain starts with designing projects to avoid as much environmental harm as possible. After this, we calculate our impacts using the Department for Environment, Food and Rural Affairs (Defra) Biodiversity Metric calculator version three. This industry standard tool allows us to understand the impact and then design ecological mitigation and enhancement plans for each project.



## Aberthaw Water Vole Habitat Creation



Water voles were once widespread across South Wales but due to predation, loss of habitat and changes in land management they are now effectively extinct except for a few key locations.

When undertaking construction works at Aberthaw Power Station we had no available land to implement biodiversity net gain. To achieve our commitments, and to have the best environmental outcomes, we developed a partnership with the **Wildlife Trust of South and West Wales**. As part of the partnership National Grid has funded improvements to key vole habitats in the Lower Kenson Valley, which lies largely within the Fonmon estate.

The areas chosen for habitat creation are ideal locations to reintroduce water voles and previous reintroductions have shown that creating a network of suitable habitats is key for long-term resilience of the species.

National Grid will continue to work with the Trust to monitor the long-term success of the project. Surveillance will make it possible to measure the impact of the works on the water voles and other key local wildlife such as amphibians, birds and reptiles.

Find out more about the project from the [Wildlife Trust of South and West Wales](#).

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



# Snowdonia Visual Impact Provision

**The Snowdonia Visual Impact Provision (SVIP) aims to reduce the impact of existing electricity infrastructure and improve the visual amenity and landscape of the Snowdonia National Park and Area of Outstanding Natural Beauty (AONB).**

The SVIP relocates a section of overhead line to below ground within a newly constructed tunnel beneath the Dwyryd Estuary between Minffordd and Cilfor (to the east of Porthmadog, Gwynedd). Once the cables have been installed within the tunnel, the existing pylons that cross the estuary will be removed.

The planning agreement between National Grid and Snowdonia National Park Authority (SNPA) requires the project to deliver biodiversity net gain (BNG), which will be achieved following the works at the Cilfor land (Llandecwyn). All of the BNG improvements will be managed and monitored following completion to ensure successful establishment.

During the works we will be minimising habitat loss and ensuring that the retained habitat is protected during construction activities. In addition to delivering BNG, a further financial contribution will be made to SNPA by National Grid to provide additional net gain of up to 10%. SNPA will use this additional funding to promote biodiversity and peatland enhancement projects within the National Park, and to support and fund other relevant biodiversity/landscape projects deemed appropriate by the Authority.

In addition to the net gain deliverables, a number of other enhancement features will be made at the site to improve the general suitability for birds, bats and reptiles. This includes providing bat and bird boxes to increase the roosting and nesting provision for local bat and bird populations.

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

## Biodiversity net gain

- **Restore and enhance temporarily lost sensitive habitat.**  
This will include restoration and enhancement of valley mire habitat and replanting of scrub that is temporarily lost.
- **Improvements will be made to the condition and coverage of the retained and protected habitats.**  
E.g. construction of reptile hibernacula and enhancement of existing valley mire habitat by blocking ditches to improve water retention.
- **Habitat creation through valley mire translocation and new grasslands.**  
The retained scrub habitat will also be enhanced through additional planting of trees and scrub.



# The Landscape Enhancement Initiative

**The Landscape Enhancement Initiative (LEI) is an important part of the VIP programme.**

Championed by our stakeholders, the initiative aims to use up to £12m of the current Ofgem provision for smaller visual improvement projects in Areas of Outstanding Natural Beauty (AONBs) and National Parks impacted by existing National Grid lines. Between 2015 and 2021, the LEI provided almost £4m for localised visual improvement projects across England and Wales.

It has already made a positive contribution to natural beauty, wildlife and biodiversity, cultural heritage and public enjoyment.

## Clwydian Range and Dee Valley AONB

### Lost Landscapes project

The Clwydian Range and Dee Valley form a dramatic upland frontier in North Wales, comprising scenic landscapes, dramatic summits and historic towns and villages.

The 'Lost Landscapes' project has been supported by the LEI to restore some of the key features of the AONB within 3km of two sets of overhead transmission lines that cross the area. Beginning in March 2018, the four-year project has already started to improve the character of the landscape through hedge and tree planting, the establishment of new ponds, and drystone wall restoration.

Improvements to roadside nature reserves, together with work to restore fire damaged moorland, are helping to sustain important habitats, including those for black grouse and other local wildlife. The removal of gorse and scrub from five acres of hillside has additionally improved the hallmark views for trail users along the Offa's Dyke Path above Tremeirchion. The project will also carry out works at Plas yn Ial Historic Park and Garden, a key landmark in the Morwynion Valley.

Partners Denbighshire County Council, Flintshire County Council, Wrexham County Borough Council, Natural Resources Wales, the RSPB, North Wales Wildlife Trust and Farming & Forestry Wildlife Advisory Group (FFWAG), together with local landowners, are all playing a crucial role in the project.



# Eryri (Snowdonia) National Park

## Dyffryn Maentwrog Woodland Restoration and Landscape Improvement

The Landscape Enhancement Initiative has been supporting three projects in Snowdonia to enhance the National Park's special qualities. Two woodland restoration and improvement schemes are encouraging biodiversity and protecting natural beauty near to overhead lines.

New forestry planting is creating wildlife corridors through species-rich habitats, with more than eight hectares of native woodland planted and 871m of hedgerow already restored at Maentwrog. A programme to control invasive plant species such as rhododendron has been helping to conserve and revitalise the landscape's ancient woodland at several sites, including at Llan Ffestiniog.

The third project, 'Snowdonia Traditional Boundaries', recognises the importance of historic features, such as hedgerows and drystone walls, not only visually but as hallmarks of local culture and sense of place.

Natural Resources Wales, the National Trust, the Woodland Trust, North Wales Wildlife Trust and both Welsh farming unions, as well as nearly 100 individual landowners, are all important partners in the delivery of the three projects.

**“Snowdonia has benefitted greatly from the LEI. The initiative has been successful in bringing together different organisations – including charitable and voluntary organisations – to make landscape and biodiversity enhancements on a meaningful scale.**

**These improvements will be of great benefit to walkers and other users who wish to enjoy the National Park.”**

**Jonathan Cawley,**  
Director of Planning and Land Management at the Snowdonia National Park Authority



# Improving our non-operational land

We are a major landowner across England and Wales. We own around 1,800 hectares of non-operational land, which includes a rich variety of natural habitats from ancient woodland to peat bogs. It is important to us that we manage the land we own in ways that create the most value for us and our stakeholders, and for the wider environment in which we operate.



Due to the size and nature of our landholding, we can have a significant impact on the natural environment at our sites. We can respond to the depletion of the natural environment and the biodiversity crisis by taking a different approach to the way we manage our sites. **We have committed to improve the environmental value of our UK non-operational land by at least 10 per cent by 2026, and we have a five-year delivery strategy to achieve this.**

We look at our landholding in its entirety across England and Wales, focusing on where we can deliver most value to preserve and enhance our natural assets.

We have completed a baseline assessment of our entire estate to enable us to identify the key sites which offer the greatest uplift potential.

Environmental value opportunities that we will be implementing include:



Wildflower meadow creation (an important food source for local pollinators)



Woodland restoration and management (one of Britain's richest and most diverse habitats)



Hedgerow and tree planting (to increase habitat connectivity)

As we move towards 2026 we will continue to find new opportunities, in partnership with local environmental organisations, to make the best of our natural assets and efficiently manage them in ways that benefit local communities.

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

# Restoring degraded habitats

Our approach to protecting the natural environment and delivering net gain drives the work we do in restoring degraded habitats and habitat creation. Where possible, we seek to work with local partners to identify priority habitats that drive the increases in areas of local importance.

## Ancient bog restoration at Rhigos, South Wales

**National Grid needed to build a new 400KV Substation to connect to the Pen y Cymoedd onshore windfarm in South Wales.**

As part of the development process National Grid's land ownership boundary was increased to include an area of ancient peat bog. We worked with Rhonda Taff Council, Butterfly Conservation and other specialist stakeholders to develop a 25-year habitat management plan that would start to reverse the decline and restore the ancient peatbog and preserve, enhance and expand the habitat for the Marsh Fritillary Butterfly.

Working with Rhondda Cynon Taf County Borough Council, expert hydrological and ecological advice, and the essential contribution and efforts of the conservation grazier, this rare lowland bog and its special species are now beginning to recover as it is restored back to health.

That recovery can also help in the fight against climate change because peat can 'sequest' or trap carbon and prevent it from being released to the atmosphere. In addition to locking away a large volume of carbon, the bog restoration has provided ecohydrological conditions for the expansion and improvement of rare bog vegetation.

### Protecting habitat for the Marsh Fritillary Butterfly

The Marsh Fritillary was once widespread in Britain and Ireland but has declined significantly over the last century. Populations are volatile and the species requires extensive habitats or habitat networks for its long-term survival.

The Habitat Management Area (HMA) located to the north of the substation provides a stepping stone and ecological connection to the Blaen Cynon special area of conservation (SAC) and is designated as a stronghold for the Marsh fritillary.

The HMA is surveyed by Sturgess Ecology twice every year to assess the presence of devils bit scabious which is a plant essential to support healthy population of Marsh Fritillaries and was once sparse across the site. Further surveys are carried out in late August to record the number of larva webs created by the Marsh Fritillaries.

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

**NRAP Objective 5:** Improve our evidence, understanding and monitoring



**“This project has provided a unique opportunity to capture carbon and integrate biodiversity enhancement at the same time. It’s been an incredible journey for the whole team to watch the peat bog come to life once again.”**

**Chris Plester,**  
NGET Sustainability Technical Lead

# Tackling key pressures

## **Invasive species and injurious weeds**

As part of our approach to land and estate management, each of our sites are inspected annually by our real estate service provider. This inspection process includes the identification of invasive species or injurious weeds, in addition to other issues such as pollution and fly tipping which may have the potential to impact habitats and biodiversity. Once identified, we keep a register of all sites where invasive species are present and initiate a monitoring and treatment program using our specialist contractors to control and manage the area.

## **Waste and resources**

As part of our Environmental Action Plan, our principal goal is to produce minimal waste across our whole value chain and to align our business to circular economy principles. This work will reduce the burden of waste on the natural environment and minimise resource extraction.

## **Nature Based solutions**

Working to ensure that our network is protected from the impacts of climate change and wider environmental pressures, nature based solutions are considered and assessed by our natural hazards team alongside engineering solutions, to deliver flood protection and reduce flood risk at key locations. We also consider opportunities to use natural solutions to manage impacts associated with our construction activities including visual screening, noise and pollution controls.

## **Our supplier Code of Conduct**

Our Code of Conduct sets out our expectations, values, and fundamental principles which we expect our suppliers to extend into their business and their own supply chain.

Key natural environment commitments include:

Suppliers must...

- Ensure that any activities that have an impact on natural habitats are conducted in a manner to protect biodiversity.
- Seeing ways to enhance the natural value of the area for the benefit of communities and/ or the environment.

**NRAP Objective 4: Tackle key pressures on species and habitats**

## Further information

We share updates, our successes and insights along the way on our website: [nationalgrid.com/uk/electricity-transmission/our-environmental-future](https://nationalgrid.com/uk/electricity-transmission/our-environmental-future)

If you would like to contact us about any aspect of our this report, please email: [box.ET.Environmental@nationalgrid.com](mailto:box.ET.Environmental@nationalgrid.com).

For more information on our approach to responsible business, please visit: [nationalgrid.com/responsibility](https://nationalgrid.com/responsibility)

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