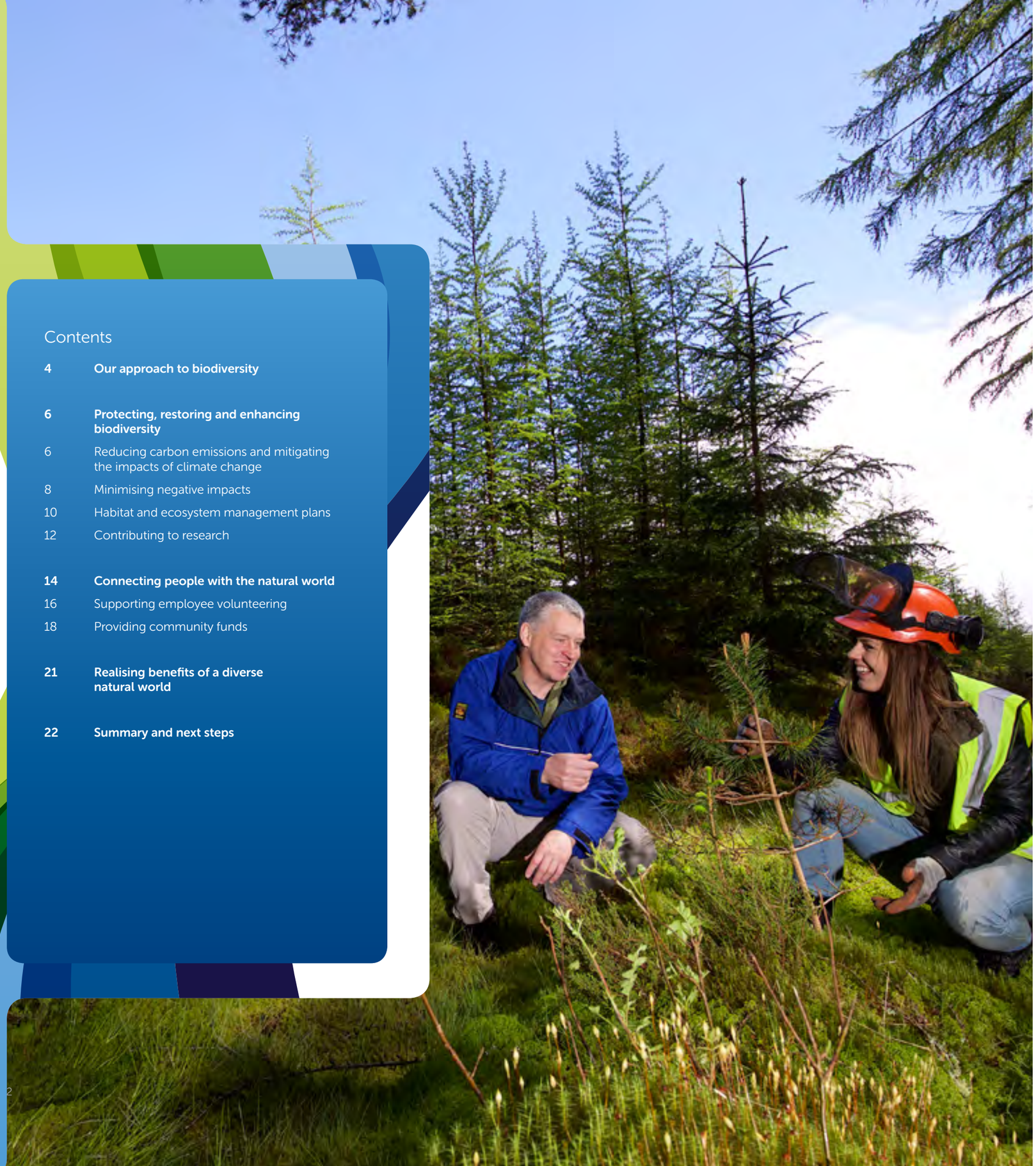
Biodiversity Report 2015

Taking responsibility for protecting and restoring biodiversity

Photo: Roddy Ritchie

Contents



Introduction

The different aspects of our business – producing, distributing and supplying energy – interact with the natural world in a variety of ways, presenting challenges that need to be managed.

This Biodiversity Report sets out SSE's Biodiversity Strategy and the progress we've made against it. That strategy focusses on protecting and enhancing biodiversity at the same time as connecting people with the natural world. In doing so, we also aim to realise the economic benefits of a diverse natural environment.

By working to reduce the carbon intensity of the electricity we generate, we are helping to mitigate the worst effects of climate change. SSE remains one of the biggest producers of renewable electricity in the UK and Ireland.

We also recognise that our business has more direct and localised impacts on the environment. That is why our approach is to actively manage our activities and the impacts they have in order to minimise negative impacts and maximise positive ones.

Whether it's working to reduce biodiversity impacts during construction of developments, ensuring we operate our assets in the most ecologically sensitive way possible or contributing to research in order to help us understand our impacts on biodiversity, we adopt methods that manage environmental impacts throughout the entire development process – from the project initiation stage through to construction and operation.

As well as managing our impacts, it's important that our actions are transparent and accountable to the wider community. SSE's Biodiversity Report 2015 is an important part in that process.

As a company, we benefit greatly from the environment – not least from the renewable power we harness from natural resources. It's only right that we look after and respect the environment and communities which allow us to operate and earn a profit, so that we can continue to share this benefit for generations to come.

Our approach to biodiversity

There is a growing realisation of the importance of biodiversity in sustaining society, and that society must manage its impact on biodiversity in an efficient, responsible and sustainable way.

To do this at SSE, we work to: build partnerships with communities, our employees, statutory organisations and others who are interested in protecting and enhancing biodiversity; assess our impact on key biodiversity issues; and make decisions which take account of these impacts.

Underpinning our decisions are statutory obligations governing designated sites and protected species but where desirable and practical we seek to go beyond minimum requirements. This involves maintaining a high degree of interaction with environmental, academic and conservation agencies and organisations, and seeking authoritative views on environmental matters.

SSE's biodiversity strategy

SSE's Biodiversity Strategy is informed by legislation in the countries in which we operate, underpinned by the requirements of the European Union's Biodiversity Strategy and the Aichi Targets set by the International Convention on Biological Diversity.

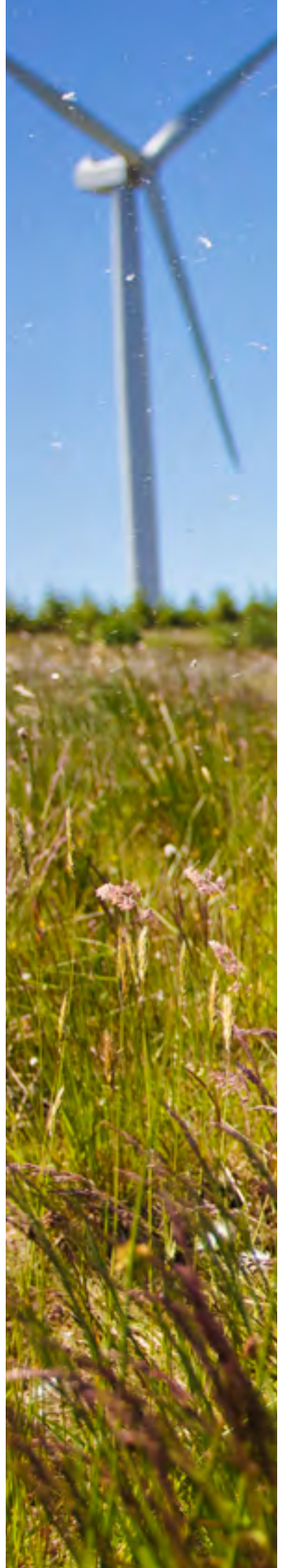
The strategy has three key aims:

1
Protect and restore biodiversity in the environments in which we work and operate, and to support healthier ecosystems

2
Connect people with the natural world, for their health and well-being and to involve them more in decision making about their environment

3
Realising economic benefits of a diverse natural environment and the services it provides

This strategy provides enduring principles to guide us in the activities we undertake, encouraging us to consider the environment in all we do and ensure we take responsibility for any impacts we may have on biodiversity.



SSE's biodiversity aims

Protecting, restoring and enhancing biodiversity

Reducing carbon emissions and mitigating the impacts of climate change

Climate change presents the most significant risk to global biodiversity and the most important response from an energy company must be to reduce its carbon emissions. The energy sector is, of course, a significant source of greenhouse gases which contribute to climate change. SSE is committed to helping mitigate this impact by decreasing the carbon intensity of our own generation portfolio to reduce carbon emissions; investing in new and existing renewable energy sources; investing in our electricity networks to allow additional renewable energy capacity to connect to the UK electricity grid; and helping our customers to reduce their energy consumption.

Largest generator of renewable electricity

SSE is the largest generator of renewable electricity across the UK and Ireland with 3,394MW of installed capacity, having invested nearly £4bn in renewable generation between April 2007 and April 2015. The impact of this continuous investment is mitigating carbon emissions. In 2014/15, SSE's renewable generation assets (including hydro pumped storage) generated 8,466GWh of electricity, displacing the equivalent of over five million tonnes of carbon dioxide equivalent.

Reducing carbon intensity

SSE has been progressively removing carbon from its generation mix – as most clearly evidenced by our long term support for renewable generation. We are moving away from a generation mix that was once weighted towards coal and gas towards one that is now weighted towards gas and renewables.

In May 2015, SSE took the difficult decision to close its Ferrybridge coal-fired power station, reflecting the reality of a national transition to cleaner forms of generation. Ferrybridge officially closed in March 2016 after 50 proud years of electricity production. In addition to this our gas-fired power station at Keadby in North Lincolnshire, returned to full service in November 2015 after being brought out of deep mothball. We're beginning to see the impact of this shift in emphasis in our generation mix – carbon emissions associated with our own activities reduced by 34% in 2014/15, in comparison to the previous year.

Connecting renewables

SSE has a responsibility to keep the lights on for the 3.7m customers who rely on the electricity network. That's why we've invested around £2bn in our transmission network since 2008, upgrading and improving the electricity transmission infrastructure to support the transition to lower carbon electricity generation.

One such investment is the new Beauly to Denny line which was successfully energised in 2015 and is now operating at up to 400kV. Along with other projects, the Beauly to Denny line has so far enabled the connection of 80 additional wind, hydro and solar generation developments in the north of Scotland.

Reducing consumption

SSE is committed to helping customers use energy more efficiently. Helping consumers reduce their energy consumption tackles two important challenges. In a world of rising energy costs, it is the most sustainable way to keep bills low over the longer term. It also reduces the overall demand for energy and so reduces the negative impact on the environment from producing energy in the first place.

To support this approach we are providing household customers with energy efficiency advice and measures to help reduce energy demand, energy bills and carbon emissions. Many of these measures are targeted at households that are classified as fuel poor and include: draught proofing, loft insulation, cavity wall insulation, external wall insulation, replacement boilers and Quantum storage heaters. We also work with both private and public sector customers to identify improvements in their management of energy consumption and building environments, offering services to businesses to help install, control and optimise building management systems. While progress continues to be made in helping to bring about an overall reduction in energy consumption, we understand there is still significant progress to be made and we are committed to working with the governments, and their agencies, in the countries in which we work to ensure the continued uptake of energy efficiency measures by both households and businesses.

Energy Company Obligation (ECO)

The Energy Company Obligation is a UK Government mandated scheme, running from January 2013 until March 2017, which requires energy suppliers to install energy efficiency measures in customers' homes. In the first two years of ECO ending 31 March 2015, we ensured the installation of 250,000 energy efficiency measures. These measures will provide estimated lifetime bill savings for vulnerable customers of £860m and result in a reduction in carbon emissions which is the equivalent of 4.59MtCO_2.

This scheme has seen us work in partnership with local authorities, such as our work with Dundee City Council to deliver a £3.5m energy efficiency project installing external wall insulation at more than 600 council and privately owned properties, which can reduce heat loss by up to 45% and can result in an average reduction in fuel bills of up to £460 a year.

Minimising negative impacts

Construction and operation of our generation, networks and telecoms assets can have an impact on biodiversity both locally and at an ecosystem scale. We endeavour to mitigate our impacts by adopting methods that take account of the environment at the point of project initiation, during project design, and during construction and operation of the asset.

This approach starts when we select new infrastructure sites and routes. Mitigating the impacts of projects at this stage can involve adopting a number of approaches including reusing or extending existing sites and infrastructure, integrating other functions into the project brief and factoring in future growth requirements. All of these methods help to reduce future impacts of construction activities on the environment.

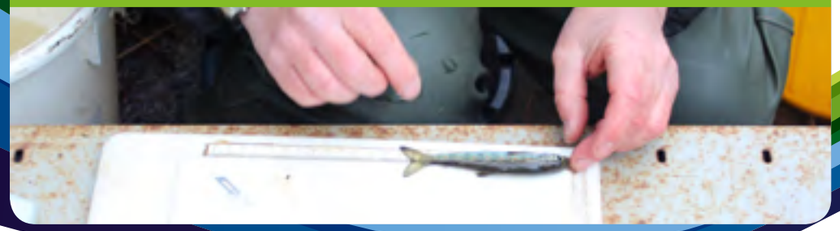
We engage with our wide range of stakeholders, and endeavour to accommodate their views, comments and suggestions in our project plans and in informing our Environmental Impact Assessments (EIAs).

During construction of major projects we adopt detailed mitigation measures, often under the guidance of a professional ecologist. These include implementation of relevant Species Protection Plans that allow us to progress construction while protecting sensitive species.

River Conon

We have a responsibility to maintain salmon stocks on the rivers where we have hydro developments. The Conon hydro scheme, north of Inverness, has had an impact on the migratory pathways for salmon. On the River Meig, one of the tributaries utilised by the scheme, we have worked in collaboration with the Cromarty Firth District Salmon Fisheries Board to enhance the production of smolts (young salmon). The Fisheries Board has opened up 15 miles of extra habitat, giving adult salmon access to a larger nursery area. The increased number of smolts produced should lead to more returning adult salmon, but although the number counted through Meig fish pass has increased, this has not been to the level anticipated.

In order to address this issue, work was undertaken in 2015 to tag smolts to assess the exit percentage at the fish pass. This highlighted that the number of smolts moving through the fish pass was lower than expected. It may be that natural brown trout predation is the main cause of the reduced smolt exit, however SSE will attempt to manipulate the flows of the dam in a way that should encourage more smolts to find the fish pass.



Beauly to Mossford Reinstatement

Effective and sympathetic reinstatement at construction sites is a critical element of minimising the long term impacts that some of our developments will inevitably bring during the build process. In upland areas natural regeneration can be particularly challenging, so during construction of the replacement Beauly to Mossford overhead transmission line in the Scottish Highlands, we undertook a project on the large verges of access tracks to restore and create new upland grassland. This process, called hydro-seeding, involved spraying approximately 6km of verges with a mixture of mulch and upland grassland seed mix. Using this technique ensured that the large areas of verges were established with vegetation more quickly and effectively as the hydro seeds germinate faster than conventional seed broadcasting. The vegetation helps to stabilise the soil at the sites and reduce the potential of erosion.

Furthermore, with upland grasslands covering less than 1% of the area of Scotland, we are contributing to maintaining and creating a rare habitat for the benefit of a wide variety of species of flora and fauna, including the native scotch argus and small heath butterflies.

Habitat and ecosystem management plans

For some planned renewable energy projects, as initially proposed, there can be a risk of adverse effects on biodiversity. In these cases we strive to offset the potential impacts by developing Habitat Management Plans, or fund conservation activity conducted by other groups.

As far as is practical, our plans will adopt an ecosystem approach and will be adapted as we learn from monitoring their effects. These projects may also deliver net biodiversity enhancement and through projects such as restoring degraded peatland, restore significant carbon stores.

Galway Wind Park

Galway Wind Park is a wind farm cluster that consists of a total of up to 69 wind turbines with an energy output capacity of 169MW. Construction of the wind park commenced in February 2015 and when completed, it will be the largest onshore wind farm in Ireland.

Biodiversity and habitat management has been one of the key issues addressed during the construction phase. Work has included a relocation exercise to protect the local population of the protected Kerry slug; eradication of the non-native invasive Japanese Knotweed and Rhododendron onsite infestations; enclosing a 40ha area of blanket bog to reduce the impact of sheep grazing and to facilitate habitat recovery and enhancement; and monthly monitoring of protected wintering wildfowl and breeding bird populations.

Keadby wind farm

SSE's Keadby wind farm, in North Lincolnshire, is situated within intensive arable farmland of relatively low ecological value. As a result, negative impacts on ecological features have not been a key driver in designing site management.

The Habitat Management Plan has worked with existing farmland conservation schemes in operation at the site, to maintain and where possible enhance the value of the area for birds, aquatic wildlife and other features. Work has included the creation of two wildlife ponds; creation and management of 2km of improved wetland in partnership with local organisations to deliver a water vole specific habitat improvement plan; and the removal of 10ha of land from arable production to create habitat suitable for marsh harriers with additional wetland and tussocky grassland habitat.

Surveys undertaken in 2015 have shown that barn owls and marsh harriers continue to forage across the wider site and numbers of wood mice and harvest mice have increased.

Contributing to research

We recognise that biodiversity comprises a web of interdependent natural systems. Plans to manage biodiversity must be evidence-based to be effective and to ensure best deployment of resources. We therefore recognise the value of research and evaluation and its role in informing our decision making.

SSE is committed to evidence-based approaches to identifying environmental problems and we will collect ecological data ourselves, or support and fund others in collecting the necessary data, to inform risk assessments and/or impact assessments of our operations (see appendix 2). We also promote adaptive management as the best way to improve our environmental performance especially in situations where there is often uncertain data and limited scientific understanding.

Dunmaglass wind farm

As part of the Habitat Management Plan (HMP) for Dunmaglass wind farm we have commissioned a Regional Eagle Conservation Management Plan (RECMP). The wind farm is situated south of Inverness in a Natural Heritage Zone (NHZ) which is home to golden eagles as well as other important native species. The RECMP will review the current status of the golden eagle population breeding within the wider NHZ, to provide an accurate reflection of the most important factors influencing the population in this landscape and, where possible, to undertake practical conservation management actions to enhance the golden eagle population by increasing its size and productivity.

In February 2015, SSE funded a dedicated Golden Eagle Project Officer to implement the RECMP. So far the Project Officer's work has involved fitting 10 GPS satellite transmitters to golden eagle chicks, collation and modelling of satellite transmitter data and constructing artificial golden eagle nests.

Photo: Ewan Weston

Salmon marine migration

SSE has commissioned a study to understand the potential impact that the Beatrice offshore wind farm, in the Outer Moray Firth, may have on the migration routes of salmon. The study will use acoustic telemetry to track smolts (juvenile salmon) as they migrate seawards down the River Conon, through the Cromarty Firth and into the fully marine waters of the Moray Firth. Very little is known about the marine stage of a salmon's lifecycle, making it difficult to predict what impacts Beatrice may have. This project seeks to address this knowledge gap and improve the understanding of early coastal migration by smolts, as well as providing information about mortality rates during the early stages of migration.

Through the research we aim to establish a baseline, understanding the numbers of smolts that successfully make it out of the firth and into the open sea. It will also help us gain a deeper understanding of their behaviour once they are out in the sea, such as what depth they swim at, whether they follow coast lines or currents on their journey across the Moray Firth and North Sea towards Norway. With this knowledge we can develop mitigation measures for the construction and operation of our offshore developments in order to reduce the likelihood of causing any disturbance.

Connecting people with the natural world

Investing in projects that provide biodiversity amenity to society

Some of our renewable energy sites can provide an educational or recreational amenity for the public. We facilitate public access in accordance with the relevant national countryside access codes and, at selected sites, we provide facilities for visitors and welcome educational groups by arrangement.

We also run various initiatives to connect people to the natural world and raise awareness of the environmental benefits of energy efficiency.

The Pitlochry Dam Visitor Centre

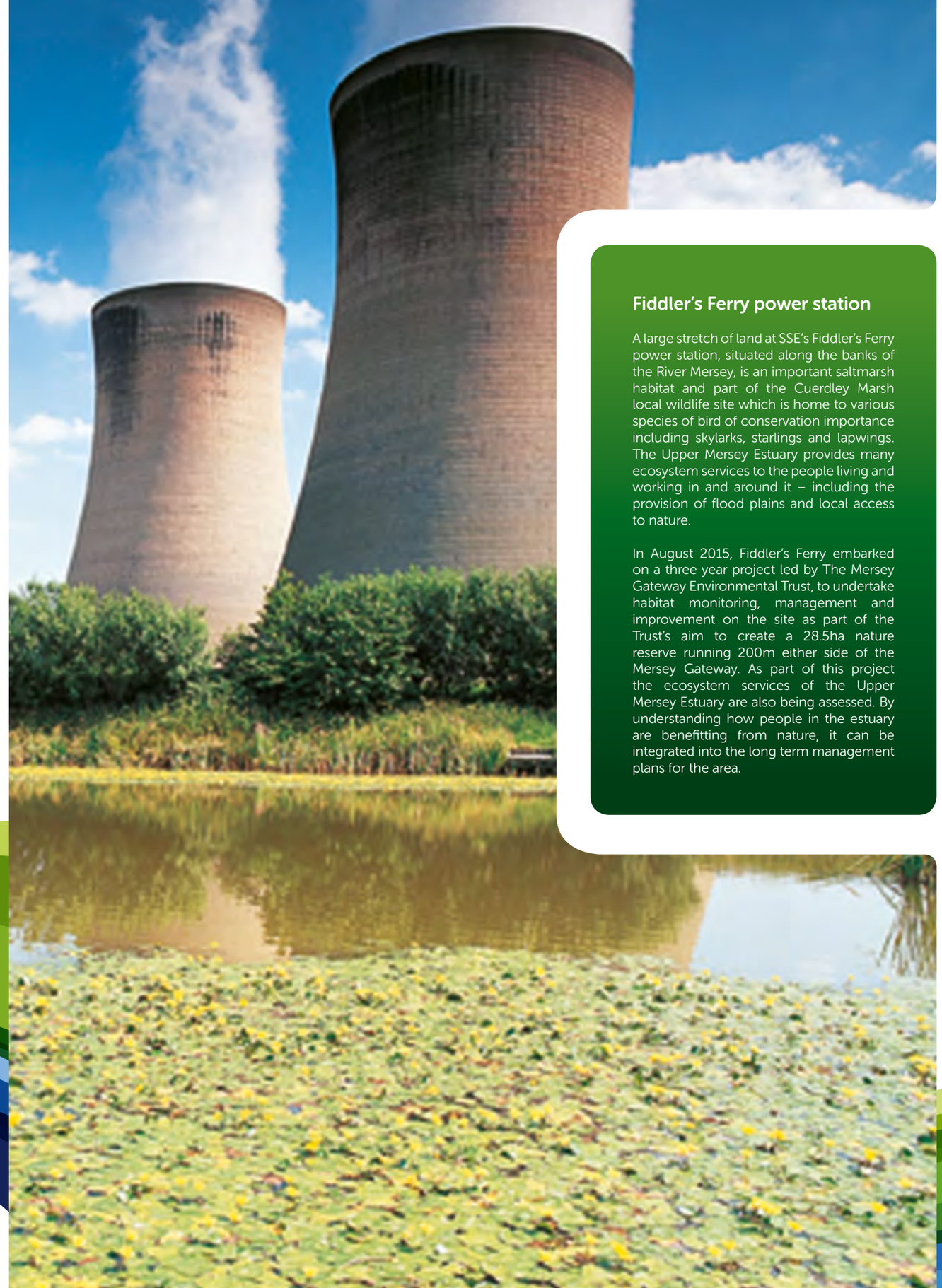
Construction of our new £4m visitor centre at Pitlochry has now started. Once completed in autumn 2016, visitors will be able to learn about the story of our heritage, in particular SSE's hydro generation legacy. The visitor centre will also present information about how we protect, restore and manage our impacts on biodiversity.

Participating in integrated regional planning

We will actively participate in the development of Local Biodiversity Action Plans (LBAP) and River Basin Management Plans (RBMP) for those catchments and rivers where we operate our hydro generation schemes.

Local Biodiversity Action Plans

Where possible, we work with local groups to participate in the development of Local Biodiversity Action Plans (LBAP). One example is our work with the Tayside Biodiversity Partnership who produce the Tayside LBAP. We are currently aiding their water and wetlands group in their assessment of the distribution of water voles in the region, in an attempt to see whether the decline of water voles in the lower parts of the Tay catchment is mirrored at higher altitudes.



Fiddler's Ferry power station

A large stretch of land at SSE's Fiddler's Ferry power station, situated along the banks of the River Mersey, is an important saltmarsh habitat and part of the Cuerdley Marsh local wildlife site which is home to various species of bird of conservation importance including skylarks, starlings and lapwings. The Upper Mersey Estuary provides many ecosystem services to the people living and working in and around it – including the provision of flood plains and local access to nature.

In August 2015, Fiddler's Ferry embarked on a three year project led by The Mersey Gateway Environmental Trust, to undertake habitat monitoring, management and improvement on the site as part of the Trust's aim to create a 28.5ha nature reserve running 200m either side of the Mersey Gateway. As part of this project the ecosystem services of the Upper Mersey Estuary are also being assessed. By understanding how people in the estuary are benefitting from nature, it can be integrated into the long term management plans for the area.

Supporting employee volunteering

SSE encourages employees to participate in its 'Be the Difference' programme. This employee-led programme allows employees to use their skills and time to support community projects where they live and work. Projects can be in various themes, such as schools, sports facilities and nature conservation projects.

One outcome of the nature conservation projects is to connect our people with biodiversity and in turn help them to understand environmental challenges.

Hilsea Lines

The Hilsea Lines are a line of 18th- and 19th-century fortifications built to protect the Northern approach of Portsmouth. Today, the Hilsea Lines is a green corridor separating Portsea Island from the mainland and has become the most varied wildlife haven on the Island, containing hedgerows, meadows, both fresh and brackish water areas, marshland and coastal habitats within its 80ha woodland. A rich variety of wildlife can be found in the greenspace, including field voles, kestrels, kingfishers, smooth newts and emperor dragonflies.

Over 100 employees from our nearby offices volunteered throughout 2015 to help maintain the Hilsea Lines, undertaking work such as repairing broken fences, levelling pathways and clearing vegetation to make it safer for walkers. It's important to maintain this area not only for historic reasons, but also to conserve this valuable greenspace on an island that is heavily developed.

Moyvane Nature Trail and Village Walk

In spring 2015, a group of employees from our Tarbert power station in Ireland, volunteered to help plant hedging at the entrances to the Moyvane Nature Trail in County Kerry. The 300 native green beech and 200 native white thorn hedge plants replaced hedging that was lost due to the severe winters of 2013/14.

The award winning trail consists of four walks in total, including a woodland and a river walk. The area is home to a rich variety of wildlife and ecosystems, and future plans to extend the existing woodland by planting a variety of native trees will further encourage natural wildlife to populate the area. The future possibility of introducing the red squirrel to the woodland is currently being examined

Providing community funds

As a responsible developer, we set up local and regional community funds for each new onshore wind farm we build. These funds serve to benefit the communities that host our renewable developments.

In 2014/15, over £3.7m was awarded by our community funds across UK and Ireland to support local community and charitable projects. Of these awards, over £230,400 was invested in environment and conservation initiatives, supporting communities to create a rich local environment that will help build a strong foundation for successful rural development.

Path improvements in rural areas

In 2014/15, over £80,850 was awarded through our community funds towards improvements to local path networks. These path networks make the outdoors more accessible, allowing the communities to get closer to nature and biodiversity in their local areas.

One of the projects supported was a new countryside walk around Williestruther Loch, near Hawick in the Scottish Borders. The Loch sits in a beautiful rural area with an abundance of wildlife, including otters, nesting swans, ospreys and various ducks. The new path will open up this beauty spot for the enjoyment of local residents, wildlife enthusiasts, photographers and visitors. It will also include boardwalks, viewing platforms and a pond dipping area, and provide a new and inspiring educational facility for local school children.

Photo: Paul Watt

Scottish Wildlife Trust Perthshire Ranger

The Scottish Wildlife Trust was awarded £25,000 from SSE's Perth and Kinross Sustainable Development Fund to increase the employment of their part-time Perthshire Ranger to full-time. The ranger will organise events such as beginner's birdwatching, family "bug hunts", specialists talks, botanical guided walks, bat evenings and wildlife tracking. They will also facilitate year round volunteering opportunities where participants can get involved in a diverse range of activities, such as bird surveys/counts, building artificial otter holts, bat monitoring and learning how to use camera traps to monitor for animals like pine martens and wildcats.

Photo: Russell Sherwood Photography

Realising the benefits of a diverse natural world

As the largest generator of renewable energy in the UK, we understand the benefits of using renewable resources (such as wind and water) for positive economic purposes, and we aim to operate our generation stations as efficiently as practical.

We also understand that our activities can have impacts on resources and services that provide value directly or indirectly to others, and recognise our wider responsibility to locate, construct and operate our assets sustainably. Making evidence-based decisions, adopting an ecosystems approach, and responding through adaptive management all contribute to more sustainable activities.

However, only by recognising the value of biodiversity, and the ecosystem services that it provides, can a fully informed evaluation be made of the options available to us.

Ecosystem VALUES project

SSE and SEPA are partners of the Technology Steering Board VALUES (Valuing Land Use change and Ecosystem Services) Project. This project aims to deliver a tool that can be used to value potentially affected ecosystem services (such as erosion and landslide control, flood risk, drinking water, whisky production, pollination and seed dispersal, preservation of archaeology, hydroelectricity and peat extraction) as a result of development planning.

The Geographic Information System (GIS) will be used to present the ecosystem services information as well as other project and design information. SSE is currently building the prototype GIS application and once this has been completed it will be examined to see how this innovative biodiversity tool can be used to inform our own decision making on new transmission line routing.

Summary and next steps

This report has highlighted the way SSE's Biodiversity Strategy plays a key role in helping us manage the environmental impacts that may arise from our activities.

Our role is varied in scope and scale – ranging from reducing the carbon intensity of electricity use, and therefore combating the threat that climate change poses to global biodiversity; to supporting local community biodiversity projects with funding or through employee volunteering. Much of our activity is focussed at an ecosystem scale, managing the river catchments that power our hydro electric schemes, implementing extensive habitat management plans to mitigate the impacts of our developments, and environmental planning of our large capital projects.

SSE aims to continue to make a positive contribution towards delivering national biodiversity strategies and in the year ahead our focus will be on:

- Considering the value of ecosystems services in our transmission line routing decision making.
- Continuing to learn from research and monitoring, which will inform our project planning, construction, operations and habitat management.
- Commissioning research to address critical areas of uncertainty.
- Delivering real biodiversity and carbon storage gains from current and future large scale Habitat Management Plans.

Appendix 1.

A selective list of species, for which our actively managed sites provide a habitat;

- Adder
- Arctic char
- Atlantic salmon
- Badger
- Black grouse
- Black throated diver
- Blanket bog
- Brown trout
- Common lizard
- Common scoter
- Dunlin
- Freshwater pearl mussel
- Golden eagle
- Golden plover
- Great crested newt
- Greenshank
- Hairy wood ant
- Hen harrier
- Horse mussels
- Juniper
- Long eared, pipistrelle and daubenton's bats
- Merlin
- Mountain hare
- Osprey
- Otter
- Pearl bordered fritillary
- Peregrine falcon
- Pine marten
- Powan
- Red kite
- Red squirrel
- Red throated diver
- Riparian woodland
- Scottish wildcat
- Seals
- Short eared owl
- Skylark
- Slow worm
- Upland heath
- Water vole
- Wood sandpiper

Appendix 2.

Selected current and recent research undertaken, commissioned or supported by SSE;

- Gordonbush golden plover trial, a five year research programme to understand potential impacts of wind farm development on golden plover.
- DEFRA Wind Farm Impacts Study (Bats), managed by the University of Exeter. SSE volunteered the use of sites for this ongoing research programme. Over the course of three years, seven onshore wind farms participated in the study.
- Griffin hen harrier research to further understand how hen harrier utilise habitat within Griffin Wind Farm. SSE funded two years of research by RSPB to investigate flight patterns, time spent at rotor height, and influence of topography.
- Development in association with Electricity Association Technologies of hardware and software for resistivity fish counters used at 17 fish passes by SSE.
- Braes of Doune red kite monitoring programme, a seven year programme of research aimed at understanding how red kite utilise and interact with the wind farm area, and to refine survey techniques.
- Investigation with Kyle of Sutherland DSFB and SEPA of downstream smolt movements with Passive Integrated Transponders (PIT).
- Testing acoustic tag technology with Glasgow University at Loch Lomond to improve understanding of smolt movements.
- Supporting University of the Highlands and Islands research using genetic analysis and fish demographic data to produce sustainable conservation limits.
- Supporting a proposal by Glasgow University to investigate the behaviour of freshwater pearl mussels in response to flow changes using a flume.
- Working with SNH, RSPB, Forestry Commission and WWT to better understand the conservation requirements of birds successfully breeding at our hydro reservoirs, including wood sandpiper, black throated diver and common scoter.
- Dunmaglass Regional Eagle Conservation Management Plan (RECMP), the primary aims of the RECMP are to review the current status of the golden eagle population breeding in NHZ 10.

SSE plc
Registered Office: Inveralmond House
200 Dunkeld Road Perth PH1 3AQ
Registered in Scotland No. SC117119
sse.com