Valuing and Protecting Biodiversity

Biodiversity Report 2017

About SSE

SSE is a UK-listed energy company focused on the energy markets in the UK and Ireland. Its core purpose is to provide the energy people need in a reliable and sustainable way. To deliver this, SSE is involved in the generation, transmission, distribution and supply of electricity; in the production, storage, distribution and supply of gas; and in other energy related services.

About this report

This report sets out the steps SSE has taken across its business to achieve the aims set out in its Biodiversity Strategy. The scope of this report is focused on activities for the 2017 calendar year, however, some data presented covers the financial year 2016/17 in line with the SSE Group reporting calendar.

Feedback is encouraged and is very welcome. Please get in touch by emailing **sustainability@sse.com** if you have any comments or queries relating to any of the initiatives mentioned within this report.

Contents

Foreword

SSE's heritage is rooted in the hydro-electric revolution in the north of Scotland 75 years ago. This company emerged from an understanding of the power contained within the natural world. I believe that means we must continue to have a deep respect for that world.

This is SSE's third biodiversity report and its objective is to tell a broad story of how our operations impact on the natural environment. This report, therefore, covers all our operational activities across the UK and Ireland. Specifically we seek to disclose the impact SSE's activities have on the biodiversity of the places we operate.

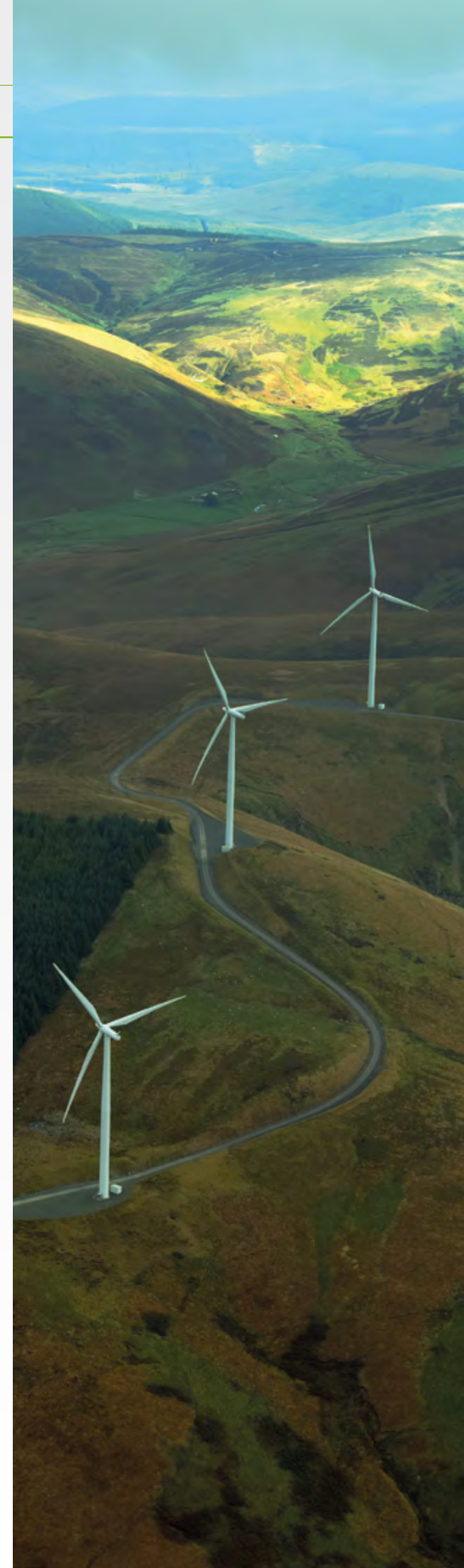
While our first responsibility must be to 'do no harm' I like to think that our contribution can go further than that – seeking to improve environments so there is a positive impact on biodiversity. We report many key performance indicators at the end of the report, but I think it is the detailed and specific case studies that tell that story most vividly.

From the sensitive way in which an ospreys' nest was relocated to the creation of bee-friendly habitats in Caithness, the number and variety of specific initiatives is significant. I also know the teams involved in these projects find the work enormously rewarding.

In the medium term, I hope SSE – along with others – will be able to quantify the impact of this work at scale. That is why the exercise undertaken to value the marine environment is so important. Submarine electricity cables connecting 59 Scottish islands are nearing the end of their operational life and must be replaced. Ensuring this work is undertaken with a full understanding of the costs and benefits – not just to people – but to the environment too is now a core aspect of our decision making. It is this, more sophisticated approach to decision making that gives a glimpse of a future where all business decisions can be made with the full understanding of the impact they have on the wider world.

I hope you find this report interesting and we warmly welcome feedback on how we can make it better in the future. Please contact **sustainability@sse.com** with any comments you may have.

Gregor Alexander
Finance Director



SSE's environmental governance

Accountability

SSE's Chief Executive has overall lead responsibility for environmental performance, including at Board-level. The Safety, Health and Environment Advisory Committee (SHEAC) advises the Board on matters relating to safety, health and environment (SHE). The work of the SHEAC is designed around SSE's eight SHE Enduring Goals, one of which is *Environment: Protecting the environment and operating in a sustainable way*. The SHEAC is responsible for setting SHE performance targets, which include environmental targets.

SSE has an Environment Subgroup which advises the business on the Environment Enduring Goal. It works to support the Group environment vision and strategy, and to drive improved environmental performance through shared learning and working efficiently. In 2017, SSE reviewed the terms of reference of its Environment Subgroup. This has enabled more group-wide environmental targets to be identified and progressed.

Finally, at business level, the heads of individual business units are accountable for environmental performance and for managing environmental impacts by applying SSE's SHE Management System.

Policy

In previous years, environmental policy was governed by SSE's Safety, Health and Environment Policy. However, in 2017 SSE created a standalone Environment and Climate Change Policy which sets out the standards SSE has in place to manage its environmental impacts and activities. This action was taken as a result of stakeholder feedback that environmental issues needed to be addressed more comprehensively in SSE's policies. SSE's Environment and Climate Change Policy can be found at www.sse.com/beingresponsible.

Environmental Management

SSE is currently certified to ISO14001:2004 across selected areas of its business. This is an international standard that specifies requirements for an effective environmental management system (EMS). The certifications cover the main areas of direct environmental impact and risk from the business, for example SSE's renewables business and thermal generation sites. During 2017, SSE progressed its work to transition from ISO14001:2004 to the latest ISO14001:2015. This is expected to be completed during 2018.

Training

All relevant employees are provided training in environmental management. Determination of which employees are relevant is done on a local level basis and training is relevant to the types of site they will be working on. Training is undertaken on a continuous basis and is updated when internal processes or statutory requirements change.

Reporting environmental performance

A monthly report of Group SHE incidents split by business unit is published internally, which is used to monitor SSE's environmental performance and highlight any issues as they arise so that action can be taken. Annual key performance indicators (KPIs) are reported externally in SSE's Annual Report and, in more detail, in its Sustainability Report. Selected environmental KPIs can also be found in this report on pages 20 to 24.

SSE's Biodiversity Strategy

SSE recognises that biodiversity plays an important role in sustaining society, and works to manage its impacts on biodiversity in a responsible and sustainable way. SSE's Biodiversity Strategy provides enduring principles to guide SSE when undertaking its activities, encouraging consideration of the environment and ensuring that SSE takes responsibility for any impacts it may have on biodiversity, whether negative or positive.

The strategy has three key aims which are supported by a number of goals. It is informed by legislation in the countries SSE operates in, underpinned by the requirements of the European Union's Biodiversity Strategy and the Aichi Targets set by the International Convention on Biological Diversity.

Aims	Goals
Protect, restore and enhance biodiversity in the areas we work	• Reduce direct and indirect carbon emissions • Minimise adverse impacts and enhance positive impacts from development and operational activities • Work with stakeholders to protect, restore and enhance biodiversity • Contribute to research to inform decision-making and best practice
Empower people to connect with the natural world	• Make selected sites accessible to provide biodiversity amenities for society • Enable employees to volunteer on biodiversity-related projects • Provide community funding for projects that protect, restore and enhance biodiversity
Realise the economic benefits of a diverse natural environment	• Use, or enable use of, renewable resources to produce energy • Take measures to ensure the value of the natural world is not reduced for others

Protecting, restoring and enhancing biodiversity

Developing and maintaining the energy infrastructure in the UK and Ireland is an essential part of providing the energy people need. As a large energy company, the breadth of SSE's activities naturally means it interacts with the environment in a variety of ways, presenting challenges that need to be actively managed.

SSE recognises that, as well as the global-scale impacts that arise from the generation of electricity, it has direct and localised impacts on the environment. That is why SSE's approach is to actively manage its activities to minimise negative impacts and maximise positive ones.

Tackling climate change

SSE's most material environmental impact is the carbon it emits when generating electricity. SSE therefore recognises it has a significant role to play in supporting the UK and Ireland move towards low carbon generation by 2050. Climate change presents the most significant risk to global biodiversity but by reducing its carbon emissions and the carbon intensity of the energy it generates, SSE is contributing to the global effort to tackle this issue.

Reducing operational emissions

SSE has a long-standing commitment to reduce the carbon intensity of its electricity generation by 50% by 2020, using 2006 performance as its baseline. This target was first achieved in 2016/17, and SSE is continuing to invest in renewable sources of energy and in the infrastructure that enables more renewable energy to connect to the electricity grid. To meet this target SSE has:

- Invested over £3.2bn in renewable energy since April 2010. It now has the largest renewable energy capacity of any company in the UK and Ireland, at over 3,300MW including pumped storage.
- Moved from an energy portfolio weighted towards coal and gas, to one weighted towards gas and renewables. Coal-fired generation contributed 3.4% of output and renewables contributed 30% in 2016/17 (22% and around 35% respectively in 2015/16).
- Enabled more renewable generation to connect to the grid through its investment of over £3bn in the GB energy network since April 2013.

SSE's total carbon emissions fell by 14% between 2015/16 and 2016/17. Detail of SSE's carbon emissions is provided on page 24. More information on what SSE is doing to address climate change can be found on pages 20 to 25 of SSE's Sustainability Report 2017.

Supporting customers to reduce emissions

SSE Business Energy provides business customers with advice on energy efficiency and SSE's energy solutions business (ESG) offers a range of services to help larger organisations optimise their energy usage. SSE Business Energy also offers a green tariff to GB customers, SSE Green, which provides 100% renewable electricity backed by a Renewable Energy Guarantee of Origin (REGO)*.

SSE's Enterprise business supports its customers to establish a more integrated and cost effective approach to energy and energy management, from installation of energy efficiency technologies to introducing sophisticated control systems.

Domestic customers are also supported by SSE's Retail business to use less energy and reduce greenhouse gas emissions. They can access services such as the online energy efficiency survey, which suggests personalised energy efficiency measures, as well as initiatives such as government mandated energy efficiency programmes.

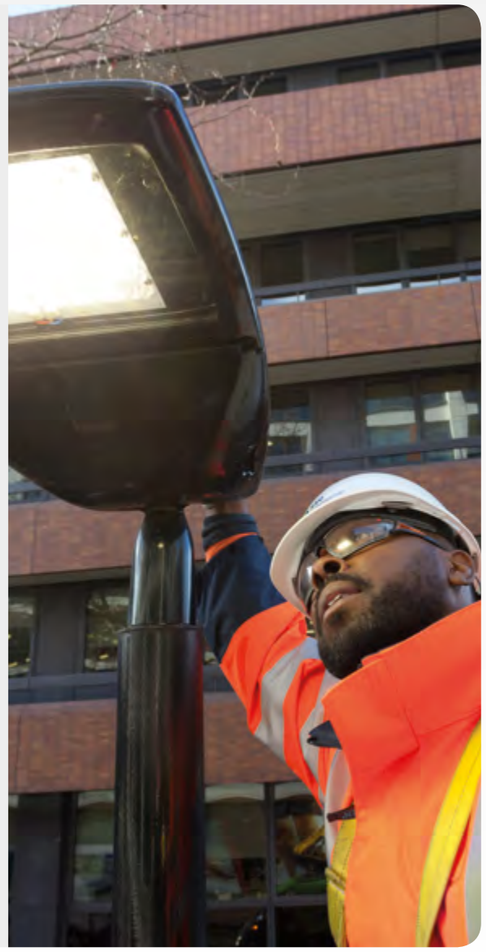
Energy efficiency in Ealing

SSE Enterprise has supported Ealing Council to significantly reduce carbon emission relating to the Borough's street lamps.

The Borough's 20,000 high pressure sodium lights are being replaced with more energy efficient LED Lanterns and the Council is also advancing its ambitions of becoming a 'Smart City' by using Mayflower Smart Controls Central Management System (CMS). While Ealing Council has begun to realise the benefits of 'going green', switching to LED lighting alone is not usually sufficient to meet cities' consumption and reduction targets. By also installing a Mayflower CMS, the Council was able to adapt and manage lighting in order to increase efficiency.

In 2017, it was estimated that the Council has realised an energy saving of 45-50% through the combination of LED conversion and Mayflower's CMS, as well as significantly reducing CO_2 emissions. While a large part of these savings has been accomplished by the move to LED, further savings will be made as the Council makes increased use of the Mayflower CMS.

Due to the longevity of the LED Lanterns and the fact that the Mayflower CMS provides a report on the performance of each individual street light, additional carbon savings can be realised through a significant drop in false call outs and a reduction in maintenance costs.



** Backed by a 'Renewable Electricity Guarantee of Origin' where consumption used is matched to an equivalent volume generated by our wind and hydro assets then exported to the National Grid.*

Developing and operating assets responsibly

SSE manages impacts from its activities by taking a strategic approach and adopting methods that take account of the environment at the point of project initiation and design, as well as during construction and operation of the asset.

Underpinning SSE's decisions are statutory obligations governing designated sites and protected species, but where possible and practical, it seeks to go beyond minimum requirements.

Development

When developing new or existing projects, SSE begins by considering things such as options for reusing or extending existing assets, or factoring in future growth requirements. Assessing different options for infrastructure sites and routes at this early stage can significantly reduce the impacts of a development. SSE meets planning obligations by undertaking detailed Environmental Impact Assessments (EIA) for large projects, and completing an environmental assessment for projects where an EIA is not a statutory requirement. Where projects are expected to have unavoidable impacts on biodiversity, SSE strives to offset these through actions such as developing Habitat Management Plans (HMP) for renewable developments in the EIA stage, or funding conservation activity conducted by other groups.

Construction

During construction of major projects, SSE adopts detailed measures to mitigate adverse environmental impacts, often under the guidance of a professional ecologist. These include implementation of relevant Species Protection Plans and Habitat Protection Plans that allow SSE to progress construction while protecting sensitive species and habitats. This could involve only undertaking aspects of work during certain times of the year, to reduce disruption to species during mating season. SSE will undertake any monitoring of biodiversity during construction that has been committed to during the planning phase, with additional measures taken if required.

Operation

SSE focuses on meeting permit and licence conditions associated with the operation of its assets, and prioritises minimising any negative impact of operations in environmentally sensitive areas. Many of SSE's assets have an Environmental Management Systems (EMS) in place to manage environmental impacts and to drive continuous improvement in environmental performance. As with construction, during the operational phase of a project any monitoring commitments made in the planning stages are undertaken.

SSE's responsible approach to developing its assets has been recognised by a number of third parties in 2017, including:

- Green Project of the Year award for Galway Wind Park at Irish Construction Industry Awards.
- Gold award at Considerate Constructors Awards for the Tievenameenta wind farm, Co. Tyrone. The project received full marks for innovation in the steps the project is taking to protect the environment.
- Green Apple award for Environmental Best Practice during construction of Clyde Extension wind farm.

Fiddler's Ferry Falcons

For the second year running, the boiler house roof of Fiddler's Ferry power station has been the home to a breeding pair of peregrine falcons. The peregrines, which usually nest on crags, rock faces and sea cliffs, have found the tall building an ideal and safe nesting site to rear young. During 2017, the pair successfully raised one chick.

Peregrines are a Schedule 1 listed species of The Wildlife and Countryside Act. Employees at Fiddler's Ferry have worked closely with a local representative from the RSPB to ensure appropriate controls and security measures are taken to allow the pair to flourish.

Alyth Ospreys

A pair of ospreys in Perthshire, which relocated from the top of a Scottish and Southern Electricity Networks (SSEN) transmission tower, successfully fledged two chicks in 2017. An artificial nest was built on a 25-metre high pole under the guidance of the Highland Foundation for Wildlife and in consultation with Scottish Natural Heritage and Perth and Kinross Council. This 're-nesting' was undertaken to allow SSEN to carry out improvement works. 2017 was the first year SSEN undertook monitoring of the ospreys, but it is thought this was the third time the pair have successfully fledged chicks since moving nest in 2014.

The ospreys were given a choice of their original nest, which was left in place on the transmission tower, or the newly created nesting platform. The ospreys ignored their old nest and went straight to the purpose-built platform and bred successfully. Ospreys became extinct in Scotland in the first part of the last century but numbers have been slowly returning.

Photo: Heilo Ecology/Ramboll Environ

Providing nesting sites at Griffin wind farm

In 2016, it was discovered that a pair of barn owls had set up home in one of the former borrow pits at SSE's Griffin wind farm. In response to this, SSE decided to erect owl and kestrel nesting boxes in various locations around the periphery of the site, to provide more suitable nesting areas outwith the turbine array.

Throughout the summer in 2017, the nest boxes were checked for activity and the result has been far better than expected, with tawny owl, long eared owl and kestrel all found to be using the boxes, albeit without confirmed breeding yet. A second pair of barn owls were also confirmed to be nesting in one of the boxes and have successfully managed to raise two chicks this year.

Creating bee-friendly habitats in Caithness

In 2017, SSEN took action to provide a new habitat for a rare type of bumblebee at one of its substations in Caithness. Work was undertaken to plant a flower rich landscape to support the Great yellow bumblebee as part of the Dounraey-Mybster and Spittal substation projects.

Caithness is home to one of the last mainland populations of the species, and after talking with local representatives from the Bumblebee Conservation Trust, it was clear there was a great opportunity to make SSEN's construction sites more bee-friendly by restoring and creating habitat.

Around 10ha of earth has been re-seeded around the substation sites with a tailored wildflower mix containing the right plants that can tolerate the acidic peaty soil and windy conditions. A hydroseeder was used to spray the mixture of wildflowers and mulch which sticks to the soil. The mixture contains flowers that will attract Great yellow bumblebees, such as red clover, common knapweed and meadow vetchling.

Photo: David Wood

Improving salt marshes at Fiddler's Ferry

A large stretch of land at SSE's Fiddler's Ferry power station, situated along the banks of the River Mersey, is an important salt marsh 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 team at Fiddler's Ferry have now entered the final year of a three-year project led by The Mersey Gateway Environmental Trust, to undertake habitat monitoring, management and improvement on the site. The project aims to bring the Upper Mersey Estuary into good ecological management and increase species diversity over the three-year period, and is part of Trust's ambition to create a 28.5ha nature reserve running 200m either side of the Mersey Gateway.

Activity undertaken on the power station land during the second year of the project, included:

- Nine new, badminton-court-sized areas of reedbed being brought under a cutting regime at Cuerdley Marsh, in addition to the areas brought into management in the first year;
- Creeks and sluices have been introduced, creating a wider area of saltmarsh and reedbed areas; and
- Wintering and breeding bird data has been collected, providing valuable information on which to monitor the wildlife enhancement.

Working with stakeholders

The breadth of SSE's operations means that its activities are subject to a number of environmental regulations. As a result, it seeks to work constructively with a range of environmental regulators, including the Environment Agency, Scottish Environment Protection Agency and Environment Protection Agency. SSE recognises the importance of working with a range of stakeholders in order to protect biodiversity, and also works with other environmental charities and local environmental groups.

Re-watering of the River Garry

In October 2017, a ten-mile stretch of the River Garry was re-watered following a landmark agreement between SSE, the Scottish Environment Protection Agency (SEPA) and the Tay District Salmon Fisheries Board (TDSFB).

Restoration of flow to the river was a result of over a decade of negotiations between the three organisations. Spawning salmon now have access to a part of the River Tay catchment for the first time since the 1950s, promising major benefits for adult salmon spawning and juvenile production. Since re-watering, 30 pairs of salmon have been seen spawning in the river between Dalmamein and Dalnacardoch.

The re-watering will result in some hydro revenue loss for SSE, however the River Garry was a special case where the wider environmental benefits were viewed by SSE as outweighing any economic disadvantage. The work SSE has undertaken with SEPA and TDSFB is a great example of the three organisations working together constructively and assessing a broad suite of parameters impacting each organisation with environmental excellence as the ultimate priority.

Preparing for changes in legislation

Eurasian beavers have been reintroduced to Argyll through a licensed trial and are also found throughout Tayside and on the River Beauly following beaver escapes or unauthorised releases.

Beavers can have a positive effect on biodiversity through their modification of habitats by coppicing, feeding and damming. The Scottish Government intend to provide legal protection to beavers in Scotland, in accordance with the European Habitats Directive, as soon as is practical.

SSEN has taken a proactive approach to the intended changes in legislation and has been consulting with Scottish Natural Heritage (SNH) on the creation of a Species Protection Plan (SPP). The SPP will set out where beavers are likely to be found, provide guidance on survey and field signs and also include mitigation strategies. In-house training on these topics has already been held with relevant employees.

There is little experience of beaver survey and mitigation in the UK and SSEN is keen to help inform best practise. SSEN anticipates that when legislative changes come into force, it will be well prepared to meet them through its early preparation.

Contributing to research

Plans to manage biodiversity must be evidence-based to be effective and research plays a valuable role in informing decision-making at SSE. SSE collects ecological data itself, and also supports and funds others to collect necessary data to inform risk assessments and/or impact assessments of its operations. SSE also shares some biological data recorded in relation to its developments with local and national recording centers. These records are then available to others to use for research purposes.

Marine mammal monitoring at Beatrice offshore wind farm

Once fully operational in 2019, the Beatrice Offshore Windfarm Ltd (BOWL)* project will consist of 84 wind turbines located around 13.5km off the Caithness coast, Scotland. A key challenge in the construction of Beatrice is ensuring the development does not impact on internationally important wildlife populations present in the Moray Firth – such as harbour seals and bottlenose dolphins, which are qualifying features of nearby EU Special Areas of Conservation. As part of the project, SSE and its BOWL partners have committed to detailed environmental monitoring during the construction phase, which includes a Marine Mammal Monitoring Programme (MMMP). The construction MMMP has been developed and led by scientists at the University of Aberdeen's Lighthouse Field Station**, and will provide a unique in-depth study of how seals, dolphins and porpoises behave in and around a wind farm construction site.

In summer 2017, highlights of the construction MMMP activities included: deployment of seabed mounted devices that detect and record echolocation clicks, confirming that mitigation measures successfully encourage porpoises to move away from turbine sites during piling; and use of mobile phone technology to track the movements and diving behaviour of harbour seals from protected breeding sites, indicating they do not routinely forage in areas where they might be disturbed by piling noise. BOWL's construction monitoring is also supporting annual surveys that use photographs of recognisable seals and dolphins to monitor longer-term trends in abundance and reproduction through the entire development period.

The studies undertaken will not only influence decisions relating to Beatrice, but will also inform a range of modeling frameworks that are currently being used to assess impacts of other renewable developments on marine mammals.

** Beatrice Offshore Windfarm Limited (BOWL) is a partnership between SSE (40%), Copenhagen Infrastructure Partners (CIP) (35%) and Red Rock Power Limited (25%).*
*** The construction MMMP is led by the University of Aberdeen, and involves collaboration with scientists at the University of St Andrews Sea Mammal Research Unit, the University of Bangor and Centre for Environment, Fisheries & Aquaculture Science.*

Connecting people with the natural environment

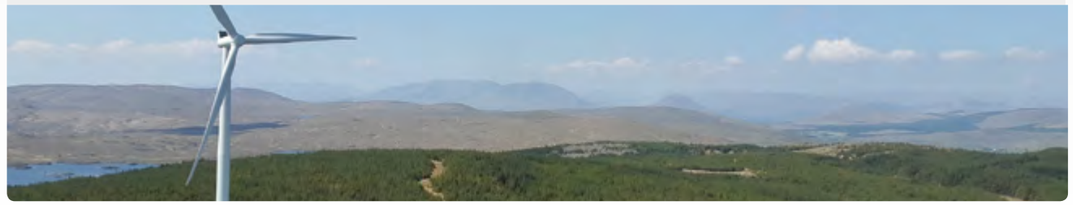
SSE recognises the important role it can play in helping to connect both employees and communities with the natural environment. Supporting people to engage in biodiversity conservation, or to simply enjoy the nature around them through leisure activities, can help improve the quality of people's lives and encourage them to become environmental advocates.

Some of SSE's sites can provide an educational or recreational amenity for the public. SSE facilitates public access in accordance with the relevant national countryside access codes and, at selected sites, it provides facilities for visitors and welcomes educational groups by arrangement. For example, SSE runs a free Educational Resource Centre (ERC) at its Fiddler's Ferry Power Station in Warrington, Cheshire. Students and young people can visit the centre to see how energy is produced in a reliable and sustainable way, and the nature reserve offers a wealth of wildlife, ideal for studying habitats, food chains/webs and ecological sampling from primary school level to university. In 2017, the ERC engaged with over 7,000 members of the local community via an extensive community events programme and school visits.

Galway Wind Park

The 169MW Galway Wind Park (GWP), co-developed by SSE and Coillte in Connemara's Cloosh Valley, has entered commercial operation and is now Ireland's largest wind farm. GWP aims to generate real benefits for the local community and environment, and they have undertaken a number of initiatives to connect the people with the local environment around the wind farm.

As part of the project, the GWP team has delivered six recreation and interpretive trails ranging in length from the wheel chair accessible Split Rock Trail (0.2km) to the Forest Cycleway Trail of 15km which is already in use by the public. Some trails will have interpretive information to develop visitors' and local residents' understanding of the biodiversity, culture and natural heritage which co-exists with Ireland's largest onshore wind farm. The GWP team also delivered an education outreach programme, which included projects such as: ornithologist visits to schools and community groups; a school photography competition to raise awareness of biodiversity among local children and to encourage the students to explore the countryside; and partnering with the local Men's Shed in Moycullen to build wooden bird and bat boxes for local primary schools, enhancing the school children's understanding of local biodiversity and bird life.

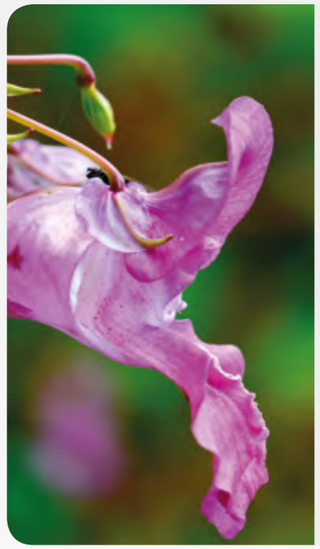


Pitlochry Dam Visitor Centre

In January 2017, SSE opened a new £4m visitor centre at the Pitlochry Dam and power station in the heart of Perthshire. The centre showcases the unique history of hydro-electricity in the north of Scotland, telling the story of remarkable feats of engineering and demonstrating how the introduction of electricity to these areas greatly improved people's lives. It also allows visitors to learn more about what SSE is doing to protect, restore and enhance biodiversity in the areas in which it operates.. The free visitor centre is open all year and welcomed over 150,000 visitors in its first year alone.

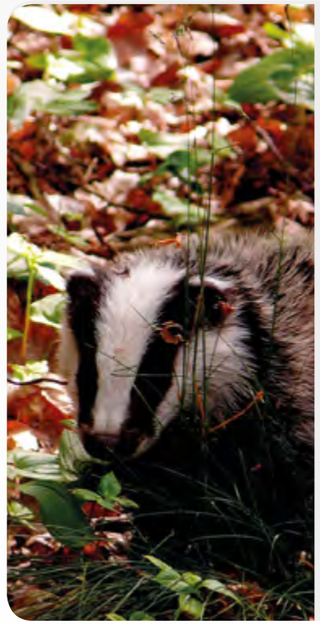
Employee-led volunteering

SSE encourages employees to give something back to the communities in which they live and work through its 'Be the Difference' programme. Every employee is entitled to take one paid working day per year to volunteer for initiatives that are important to them. In 2016/17, SSE employees volunteered a total of 3,407 days, supporting over 700 projects across the UK and Ireland. Some employees chose to use this day to take part in biodiversity related projects, helping to connect them with the nature in their local area.



Invasive non-native plant removal in Hampshire

In June 2017, a group of eight volunteers from SSE's Havant office used their 'Be the Difference' day to take part in the Hampshire and Isle of Wight Wildlife Trust's programme of removal of invasive non-native plants. This is the fourth year SSE employees from Havant have supported the programme, continuing what has become a successful partnership. Himalayan balsam grows very quickly and tall generally in marshy conditions, and especially on river banks. It is problematic as it out-competes native plants in ecologically sensitive areas. The volunteers were tasked with uprooting and removing the Himalayan balsam plant along the Lymington River near Boldre, Hampshire. This site, within the New Forest national park, has been designated a Site of Special Scientific Interest and is host to some of southern England's rarer species including all three of the UK's species of snake.



Raising awareness of badgers

Biology students from Aberdeen University Conservation Society spent an afternoon with a member of SSEN's environmental team in November 2017, to learn all about one of Scotland's most widespread but rarely seen protected species – badgers.

Badgers are one of the protected species encountered most frequently by SSEN during construction and maintenance works, meaning that its environmental team have plenty of experience when it comes to identifying signs of the mammal which enables them to mitigate the impact of its activities on the species.

SSEN's Environmental Advisor used their 'Be the Difference' day to guide the students around examples of different types of badger setts and supported them to put theory into practice as they looked for further evidence of badgers and of other animals which sometimes also occupy the setts. During the outing, the students found, identified and interpreted badger paths, footprints, claw marks, hairs, feeding signs and bedding material. The day was a great example of an employee undertaking skills-based volunteering to support a local group.

Community funding

As a responsible developer, SSE provides community investment funds to the communities near its renewable developments in the UK and Ireland. In 2016/17, SSE provided around £5.3m from its community investment funds in the UK to support local community and charitable projects. Of this, over £260,000 was granted towards projects which help protect and enhance the environment. In Ireland €714,000 was awarded through the funds, with almost €33,500 granted to environmental projects.

Protecting the native Irish honey bee

In April 2017, Three Rivers Beekeepers Association set up the queen rearing group among the beekeepers of Donegal and Tyrone. The project was supported by a €1,600 grant from the SSE Airtricity Meentycat Community Fund. With threats such as the African Small hive beetle and the Asian hornet being found in Europe which can devastate native bee colonies, it is becoming increasingly important to raise queen bees from native bee stock to reduce the need for importing them and minimise the risk of introducing new diseases or pests to Ireland. Using queen rearing kits and nucleus hives, the group will raise new queen bees as well as the important drone males. The project will improve the native bee stock throughout Ireland and promote the conservation, study and re-introduction of the native Irish honey bee in the area. This is the second grant from the fund to support the group, which received €3,600 in 2015 to set up a learning apiary and plant wild flowers.

Enhancing Rush Furlong Nature Reserve

Lincolnshire Wildlife Trust was awarded £30,000 in October 2017 from SSE's North Lincolnshire Sustainable Development Fund for the purchase of seven hectares of land to extend a popular nature reserve. Rush Furlong Nature Reserve in Haxey protects 60 local species of flowering plants, including green winged orchids whose habitat is becoming increasingly rare. The site is very important to the heritage of the local area as it is one of the last places across the country where the old medieval strip system of farming can be seen. The purchase of seven hectares of land adjacent to the existing nature reserve helps to enhance the facilities and increase the availability of land for public use. The project will enable a range of educational and recreational activities to be developed for residents and tourists including lectures, guided walks and school visits.

Photo: Lincolnshire Wildlife Trust

Realising the benefits of a diverse natural world

SSE is one of the largest generators of renewable energy in the UK and Ireland. It understands the benefits of using natural resources (such as wind and water) for positive economic purposes. As a business, SSE relies on good quality environments to operate successfully. For example, SSE needs a healthy water environment to operate its hydro-electricity assets, some of which have been in operation for over 70 years, and it requires good quality water for its thermal operations, for example to cool generation plants.

SSE also recognises that its activities can have impacts on resources and services that provide value directly or indirectly to others. SSE has a wider responsibility to locate, construct and operate its assets sustainably, ensuring impacts on biodiversity are managed effectively. SSE's Biodiversity Strategy provides a framework to ensure SSE meets this responsibility. Through its responsible approach to the planning, development and operation of assets, working constructively with stakeholders and contributing to research to make evidence-based decisions, SSE ensures its activities are sustainable.

SSE strives to achieve the right balance between economic benefit and the impacts it may have on biodiversity. In recent years, SSE's networks business has undertaken innovative work to put monetary values on biodiversity to allow more informed decisions to be made around new developments.

Placing a value on marine environments

A number of Scottish and Southern Electricity Networks' (SSEN) submarine electricity cable assets are nearing the end of their operational and economical life. SSEN is embarking on a significant programme of investment to ensure that it continues to provide a safe, reliable, secure supply of electricity to the 59 Scottish Islands which depend on these connections.

Scotland's National Marine Plan, adopted in March 2015, requires SSEN to consider how submarine electricity cables are installed, buried and protected within the marine environment. To help SSEN account for the impacts that its operations have on society, the environment and the economy, it has developed an innovative cost benefit analysis methodology. Through applying the methodology, it is able to model scenarios which consider the full implications that the submarine electricity cable installation, protection and decommissioning proposals will have socially, environmentally and economically.

One of the environmental impacts being looked at is change in seabed natural capital value. SSEN recognises that the seabed is home to species which provide a food source and support a vast ecosystem which people depend on. Natural capital is the term used to place a value on the renewable and non-renewable environment which provides society with the resources it is dependent upon. In the case of submarine electricity cables, SSEN impacts on the natural capital of the seabed and its associated marine ecosystem and services. By including natural capital value in the methodology, the impact that submarine electricity cable engineering decisions may have on seabed natural capital are considered.

SSEN is committed to consulting with all parties who have an interest in how these cables are installed, from the customers who rely on the electricity to the marine users who may be impacted. It is currently holding a public consultation with stakeholders on aspects of the cost benefit analysis methodology, comments and feedback can be submitted before 12 February 2018*.

** For more information on the consultation, see http://news.ssen.co.uk/media/226820/CBA-Report-A4-32pp-hres.pdf*

Reporting on environmental performance

Disclosure of SSE's environmental performance is an important way to increase transparency to stakeholders and to ensure the company is accountable for its actions and impacts. SSE reports and shares environmental data with statutory stakeholders and also voluntarily reports key performance indicators (KPIs) in relation to its environmental performance in its sustainability reports and annual reports. This section contains a selection of SSE's environmental KPIs. For protected area key, please see page 25.

Networks assets in protected areas

Scottish and Southern Electricity Networks (SSEN) forms part of the SSE Group. SSEN's electricity distribution and transmission networks carry electricity to over 3.7 million homes and businesses across the north of Scotland and central southern England. This essential infrastructure covers a vast geography so will naturally cross protected areas. Much of the network has been in place since before protected designations were established. SSE's focus is to maintain and operate these assets with minimal impact on biodiversity.

	RAMSAR	NNR	SSSI	SAC
Length of overhead line* in protected area (km)**	478.4	132.1	1,862.8	981.7

** includes overhead line carry capacities from low voltage through to 400kV*
*** some designated areas overlap, so assets are counted more than once under different protected areas*

Hydro assets in protected areas

SSE's heritage has its foundations in the large scale development of hydro-electricity in the north of Scotland in the 1940s and 1950s, bringing power to people in the north for the first time, and with dams, tunnels and power stations which serve customers across Great Britain to this day. This legacy means SSE naturally takes a long-term approach to the operation of its assets and to the relationships it builds with the communities it works alongside.

The vast majority of SSE's hydro-electricity assets have been in place since before protected designations were established. SSE works very closely with regulators, environmental organisations and the local community to ensure that its hydro-electricity operations have minimal adverse impacts on these stakeholders and the environment.

No. of hydro-electricity power stations in, or adjacent to, protected areas*	21

**Protected areas considered: NNR, RAMSAR, SAC, SPA, SSSI*

Habitat Management Plans

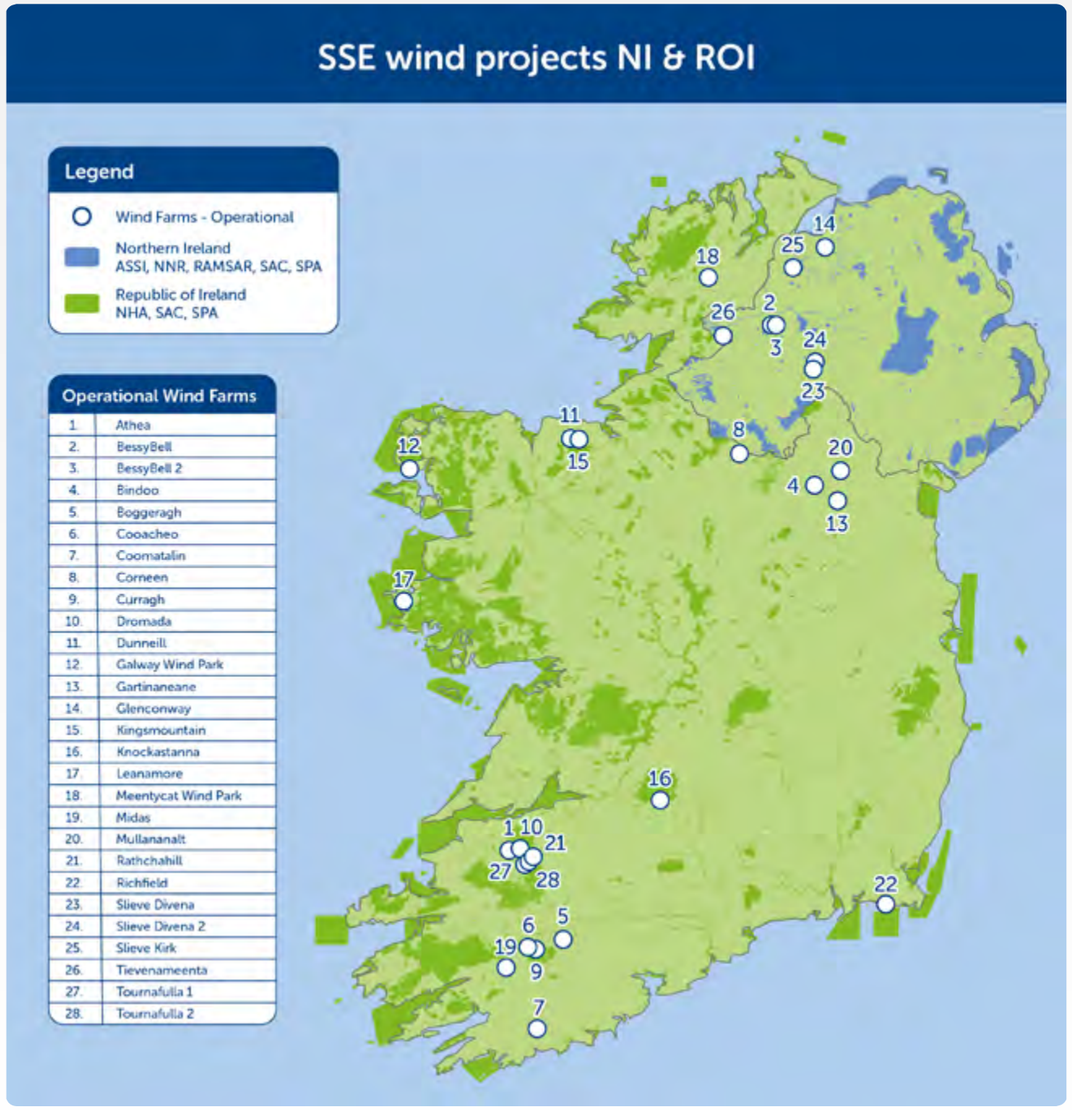
For renewable energy projects, SSE seeks to mitigate any identified impacts of its developments through the implementation of Habitat Management Plans (HMPs) and often funds third party conservation activities. As far as is practical, SSE's plans will adopt an ecosystem approach and will be adapted as it learns from monitoring their effects. These projects may also deliver net biodiversity enhancement and through projects such as restoring degraded peatland, restore significant carbon stores.

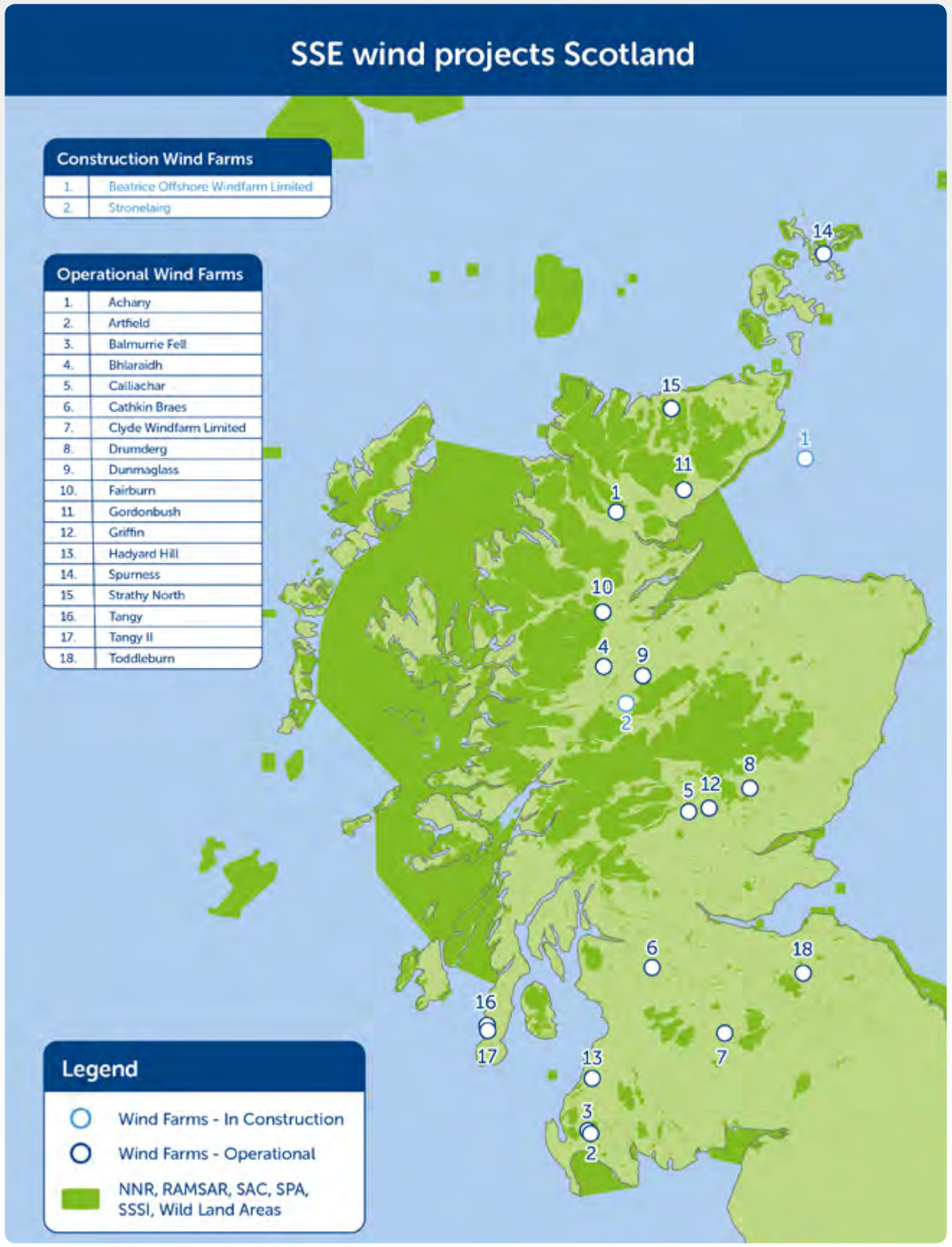
Site	Details of HMP	Area covered by HMP (Ha)
Scotland		
Achany	Black grouse and water vole habitat enhancement, peatland habitat enhancement (with focus on foraging ground for upland waders), maintain populations of dwarf birch and mountain bearberry.	c. 2
Balmurrie Fell	Peatland habitat enhancement.	2.6
Bhlaraidh	Native woodland replanting, grouse habitat enhancement.	18
Calliachar	Grazing management to enhance moorland diversity, native woodland planting, bracken control to aid grassland and heathland restoration, construction of artificial otter holts, enhance habitat to benefit Hen Harrier, Short eared owl, Black Grouse, Red Grouse and Golden Plover.	223
Clyde Windfarm (Scotland) Limited	Native woodland replanting, blanket bog and heathland restoration, predator control, grazing reduction, experimental Molinia control/heather seeding.	c.5,291
Dunmaglass	Habitat management, ditch blocking for blanket bog creation, deer management, heather cutting rather than muirburn, predator control.	1,899
Fairburn	Habitat management for hen harrier, merlin and golden eagle. Heather management, bracken control and broad-leaved planting, hedgerow planting and management, deer management, ditch blocking.	4,711
Gordonbush	Forestry removal, moorland restoration, heather management, drain blocking, native woodland restoration, small scale agricultural activities, deer management.	5,350
Griffin	Native woodland planting, black grouse habitat enhancement, enhance habitat for mammal species, creation of wetland habitat, deer management, biodiversity thinning of commercial woodland.	892
Strathy North	Hen harrier enhancement, peat restoration, riparian native woodland, short sward management, deer management.	1,020
Toddleburn	Enhancement of existing woodland SSSI, native woodland planting in other areas, create mix of wetland areas and tussocky grassland.	c.70
Northern Ireland		
Glenconway	Peatland management, drain blocking, invasive species removal.	c. 22
Slieve Divena 2	Red grouse, peat and snipe management.	17
Slieve Kirk	Peatland and bird monitoring, grazing management, invasive species removal, aquatic habitat creation, watercourse protection.	580
Tievenameenta	Ditch blocking, peat management.	42
Ireland		
Galway Wind Park – Cloosh	Conifer felling, drainage blocking and bog reinstatement.	59
Galway Wind Park - Seecon	Conifer felling, drainage blocking and bog reinstatement.	174
Galway Wind Park - Uggool	Fencing, grazing management and quadrat vegetation monitoring.	16

Wind generation assets in relation to protected areas

During the project planning stages, as a responsible developer, SSE ensures sites are sensitively chosen when locating assets, to avoid legally protected areas. The following maps show SSE's wind farm projects, including joint ventures, in relation to protected areas. The maps focus on Scotland and the island of Ireland, where the vast majority of SSE's wind assets are located. Some designations and data available differ between countries.

It should be noted that areas may be protected for certain species or habitats which SSE's assets will have minimal, or no, impact on. Due to the scale of the maps, project locations are approximate.





**Wild Land Areas are not a statutory designation but they are provided a degree of protection from wind farms under Scottish Planning Policy.*

General environmental performance

Environmental incidents

SSE has adopted an internal classification of environment related incidents, which reflect their scale and impact and are aligned with those used by SSE's principal regulators.

	GRI indicator	2017/16	2016/15	2015/14
Number of major environmental incidents	GRI 307-1	0	0	0
Number of serious environmental incidents	GRI 307-1	8	11	4
Number of minor environmental incidents	GRI 307-1	57	20	31
Number environmental prosecutions*	GRI 307-1	0	0	1

* *Includes prosecutions and civil penalties*

Carbon emissions

Details of SSE's carbon emissions are provided in the following table, broken down by scope 1, 2 and 3 emissions. For more detail on how SSE calculates its carbon emissions, see SSE's criteria for GHG emissions reporting which is available at www.sse.com/beingresponsible.

	GRI indicator	2017/16	2016/15	2015/14
Scope 1 emissions[1] ('000s tCO_2e)	GRI 305-1	8,004	11,021	13,079
Scope 2 emissions[2] ('000s tCO_2e)	GRI 305-2	1,034	1,138	1,244
Scope 3 emissions[3] ('000s tCO_2e)	GRI 305-3	10,357	10,375	12,368
Total carbon emissions (million tCO_2e)		19,395	22,534	26,676
Carbon intensity of electricity generation ($kgCO_2e$/MWh)	GRI 305-4	304	397	474

[1] *Scope 1 comprises emissions from operations owned or controlled by the organisation.*
[2] *Scope 2 comprises emissions from the generation of purchased electricity, heating and cooling.*
[3] *Scope 3 comprises emissions that occur outside of the organisation in support of its activities.*

Emissions to air

	GRI indicator	2017/16	2016/15	2015/14
SO_2 (tonnes)	GRI 305-7	1,564	10,685	16,871
NO_x (tonnes)	GRI 305-7	5,555	6,704	9,977
SF_6 (kg)	GRI 305-7	9.3	23	21

Water use

SSE uses water across its thermal and hydro-electricity generation assets, and also in its non-operational buildings. The vast majority of water abstracted by SSE is used in its hydro generation operations (around 98%) and is therefore returned to the environment almost immediately.

	GRI indicator	2017/16	2016/15	2015/14
Total water abstracted (million m^3)	GRI 303-1	22,658	28,856	27,109
Total water consumed (million m^3)	GRI 303-1	5.0	8.2	19.4
Total water returned (million m^3)	GRI 303-1	22,654	28,848	27,090

Protected area key

ASSI	Areas of Special Scientific Interest
NHA	National Heritage Areas
NNR	National Nature Reserves
RAMSAR	Wetlands of international importance designated under the Ramsar Convention
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
Wild Land Areas	Areas considered to represent the most extensive areas of high wildness and given national importance in Scottish Planning Policy

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