RIIO-ED2 Business Plan
December 2021

SP ENERGY NETWORKS

# Annex 4C.3:

# Environmental Action Plan

PRINCIPAL PARTNER
UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

# Contents

# An introduction to this annex

## Scope

A key aim of the RIIO-2 Framework is that network companies support the transition to a smarter, more flexible, sustainable low carbon energy system, whilst supporting the Just Transition, in addition to taking appropriate steps to mitigate their own environmental impact.

Our distribution system transports electricity from the electricity transmission network to the cities, towns and communities of central and southern Scotland in our SP Distribution licence area and Merseyside, North West England and North Wales in our SP Manweb licence area. Our network is a critical element of the UK energy system and we therefore play an essential role in the decarbonisation and electrification of the energy sector and of the economy as a whole.

### Impact of COVID-19

In 2020 COVID-19 began to impact every part of our society and the UK economy. It has changed our ways of working, socialising and living. As the operator of critical national infrastructure, our priority at the beginning of 2020 was to keep the power flowing to our 3.5 million customers; in turn keeping us connected to family, friends and work. Looking to the future, the journey to Net Zero has never been more important. The environmental, social and economic benefits of building a sustainable future and decarbonising various industries, products and services are huge. We are at the heart of delivering the Green Recovery for the UK, which will act as a stimulus for economic growth across a variety of sectors by helping to create jobs and attract investment.

### Providing a reliable, adaptive service

Our network provides vital reliability and security of supply, adapting to the accelerating rate of change in energy production and use. In recent years generation connected to the distribution network has risen by 178% (from 900MW in 2010 to 2,500MW in 2017). The 2GW of onshore wind connected to our network represents a quarter of all the UK's onshore wind, further underlining the transition from traditional one-way generation-demand flows towards a far more liquid and flexible market, where demand and generation offset one another at a much more local level than before, and visibility of true power flows becomes more challenging.

### Supporting long term decarbonisation goals

Our DFES indicates that by 2030 we could have up to 1.5m Electric Vehicles (EVs) and 0.9m Heat Pumps connected across both our licence areas, and we could see levels of Distributed Generation increase by up to 200%. As focus on decarbonisation of transport and heat intensifies, reliance on electricity is likely to increase. Irrespective of overall demand profiles, more individuals and businesses will use electricity exclusively for all their heat and transport needs. We engage with a wide range of stakeholders and work together with our network peers to understand the demands that these changes place on UK networks, and invest wisely to improve performance, ensure security of energy supply and facilitate the connection of low carbon technology.

### Managing the network and its impacts

Whilst providing the capacity, flexibility and security of supply to realise this fast-evolving energy future, we work with our supply chain to efficiently manage existing and new network assets in ways that achieve neutral or positive environmental and social impacts. We operate and maintain linear infrastructure which may be routed through, or adjacent to, a wide range of culturally or environmentally sensitive landscapes and structures, ranging from pristine to degraded habitats. While we provide the network connections and services that customers require, we recognise the need to protect these environments and communities from any negative effects. Throughout the life of our assets, we not only meet the requirements of government policies and legislation but strive to better them by balancing fair and responsible environmental practices with socio-economic considerations.

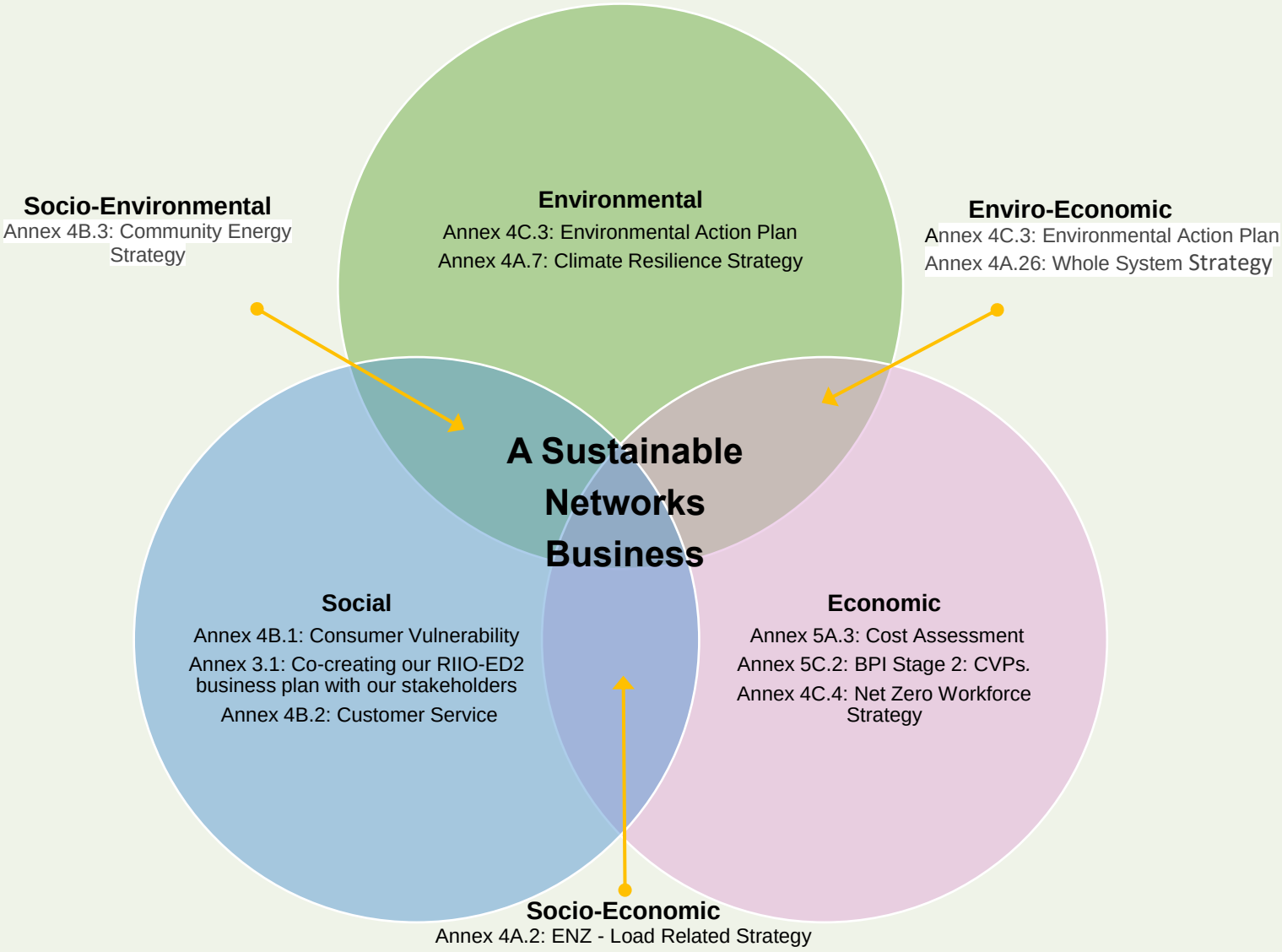


*Figure 1: Sustainable Networks Model*

## Key highlights

- Our Science-Based Targets[1] for all areas of our carbon footprint are currently being externally validated, and we will deliver carbon reductions in line with these targets and our goal to be a Net Zero Carbon organisation by 2035.
- Throughout the RIIO-ED2 period we will be Carbon Neutral across Scopes 1 and 2 (excluding losses) by reducing our emissions as far as practicable in line with our Science-Based Target and offsetting residual emissions, in line with our stakeholder feedback.
- We will decarbonise over 800 cars and vans in line with our commitment to The Climate Group's EV100 initiative. During RIIO-ED2 we aim to outperform this 2030 target and accelerate the electrification of our fleet to 2028 (the end of RIIO-ED2).

[1] Please see Glossary of Terms for definitions

- We will create 7 new environmental roles within our business to drive improvements in our supply chain, Scope 3 carbon reductions and environmental regulation and compliance.
- We will reduce our supply chain carbon emissions in line with our Science-Based Target, and we will set requirements for at least 80% of our supply chain to set their own Science Based Targets, in addition to other enhanced environmental sustainability contractual requirements.
- We will significantly reduce the pollution risk from our oil filled assets by removing PCBs from our network, in line with the agreed industry approach, and retrofitting oil spill containment measures to 203 transformers, using low carbon alternatives to concrete where technically feasible.
- We will create 500 'biodiversity units'[1] across our ED2 work programme, to not only fully mitigate any impacts but to enhance local biodiversity, and we will deliver 10% improvement in existing biodiversity levels on 25 hectares across our network.
- We will reduce the amount of waste we send to landfill in line with our 2030 goal of 100% diversion (excluding 'compliance waste[1]') and will reduce the amount of waste we produce per £ of annual expenditure, in line with the waste minimisation target we will set before the start of RIIO-ED2.

## Benefits

Our Environmental Action Plan (EAP) will deliver multiple benefits over the RIIO-ED2 period and will take us a significant step towards the achievement of our vision of a sustainable networks business, as described in our Sustainable Business Strategy.

By delivering the commitments set out in this EAP, as well as the benefits quantified above, we will avoid 24,647 $tCO_2e$[1] being emitted (from our Scope 1 and 2 sources), avoid leakage of 48.12kg of $SF_6$ support our supply chain in achieving their own carbon emissions reductions and avoid 7890 litres of oil pollution.

We will also reduce energy consumption by 15.2GwH at our offices, depots and substations by implementing our energy reduction measures.

Our Environmental Action Plan will help to deliver our vision to be a sustainable networks business as set out in our Sustainable Business Strategy. Our Sustainable Business Strategy outlines our stakeholder-led vision, drivers, goals and objectives for environmental and sustainability improvements to 2050. These underpin our RIIO-ED2 commitments and go beyond legal compliance requirements.

## Customer and stakeholder input

Customers, and especially stakeholders, shared a wealth of feedback on this topic throughout both the RIIO-ED2 engagement programme and our ongoing working groups. This engagement tells us that three broad areas are of most importance to customers and stakeholders: decarbonisation of our network and operations, our impact on the natural environment and pollution. Decarbonisation is the primary area of focus for most stakeholders. They strongly support SPEN to be highly ambitious in our decarbonisation efforts and believe that we should set an example for other businesses to follow. Stakeholders believe we should focus our efforts on decarbonising transport, especially our heavy vehicle fleet, our supply chain (through early engagement and a culture or carbon management instilled in our procurement processes) and our buildings. As a network operator, it is also critical for SPEN to manage and reduce network losses. When it comes to our impact on the natural environment, stakeholders believe it is important for us to understand our natural assets and put forward activities that will protect and enhance biodiversity. In particular, our customers believe we should leave the natural environment in a better (or at least, the same) condition compared to how it was when we started operating within it. Finally, focusing on pollution, our stakeholders believe it is important for us to take a comprehensive view of the issue and consider actions to reduce the risk of pollution caused by network assets, the waste we generate and the noise and light pollution of our operations. Finally, in line with feedback gathered on other aspects of the plan, our stakeholders believe it is critical for us to work in collaboration with all stakeholders to achieve our ambitions of delivering a sustainable network.

# Delivering our Plan

As a responsible network operator, we believe that our commitments do not and should not end at legal and regulatory compliance but that we should be leading the transition to a more sustainable network and society. We have set ambitious targets, aiming high and moving fast, and we are committed to work towards these goals in an open and collaborative manner. We do not believe that it is appropriate for organisations to compete in this area. The most efficient and speedy delivery of sustainability goals requires:

- Sharing of best practice and adoption of relevant successes from other organisations;
- Development and implementation of common approaches where possible;
- Sharing of data and solutions (open source); and
- Collaboration to remove barriers/find solutions - with peers, supply chain, local communities, customers and other stakeholders.

To deliver our Environmental Action Plan we will be investing £156.15m over the RIIO-ED2 period. These costs are embedded within Part 4E 'Our Expenditure Plans' and costs to deliver our environmental and sustainability plans are outlined in this annex.

Environmental sustainability considerations will be embedded in our business processes and decision making and we will build on our existing ISO14001 certified Environmental Management System to achieve 'beyond compliance' environmental performance and our sustainability goals. We will ensure environmental issues are identified early in the development of projects and work programmes, in order to inform design and planning to minimize impacts.

Our staff and contractors will need additional training and upskilling to ensure that they are aware of new environmental requirements and how this impacts their role. For further information on our workforce plans please Annex 4C.4: Net Zero Workforce Strategy.

Our systems will require investment to be able to collect, store and report additional environmental data. Our procurement process will be reviewed to include environmental considerations to make sure we deliver on our obligations. Our sustainability data is becoming more critical and we must ensure its quality via appropriate levels of governance, including external verification, and report transparently on our performance and progress to our targets.

Our plan is ambitious, and we are dependent on our supply chain to deliver core aspects of our plan. We must work in collaboration with our supply chain to support them and bring them along on this journey with us, ensuring that smaller suppliers are not left behind. We will continue to be a Partner of the Supply Chain Sustainability School to facilitate this. To enable this transition of our supply chain, we will require increased resources within supply chain management in our businesses. Please see the Supply Chain Sustainability chapter of our EAP for further information. For more information on how we will deliver our plan, please see Chapter 6; Delivering our plan of our RIIO-ED2 Business Plan.

# Signpost for Ofgem's business plan requirements

| Ofgem BP Guidance No | Annex Page Number |
|---|---|
| **3.33. Submitting an Environmental Action Plan (EAP) is a minimum requirement under Stage 1 of the BPI. An EAP in the Business Plan should encompass activities DNOs intend to undertake in RIIO-ED2 to decarbonise the electricity distribution network and to reduce the wider impact of network activity on the environment. As a minimum requirement under Stage 1 of the BPI, a DNO's EAP must:** | |
| • Include a methodology that has been used to assess the environmental impacts of the company's network and Business Plan in RIIO-ED2. The assessment methodology must set out: | Section 3. Developing our Environmental Action Plan, Page 41-50 |

| | |
|---|---|
| • a review of the significant environmental impacts arising from its network activity. | Section 3. Developing our Environmental Action Plan, Page 41-50, Full information on scale of impacts is presented throughout various parts of the annex in the "How we did in RIIO-ED1" Sections |
| • the opportunities and challenges for addressing material impact areas. | Section 2 - Strategy, Page 30 – 40 Challenges discussed in detail in each section. |
| • an options analysis to identify the value for money of initiatives to reduce its environmental impact. | Section 3. Developing our Environmental Action Plan, Page 41-50, Appendix C – Page 165-173 |
| • evidence that consideration of impacts was coordinated with the company's wider business planning processes and decisions. | Section 2 - Strategy, Page 30 – 40 Section 3. Developing our Environmental Action Plan, Page 41-50 |
| • evidence that wider stakeholders have been involved in the assessment. | Section 4 Stakeholder Engagement, Page 51 - 66 |
| • clarify the DNO's long-term overall targets/objectives for the network's environmental impacts, beyond the RIIO-ED2 period. | Section 2 - Strategy, Page 30 - 40 |
| • include an assessment of the network's potential environmental impacts in RIIO-ED2 without intervention, in comparison to its current impacts. | Appendix B – Page 159-164 |
| • set out the role the company envisages playing in supporting the low carbon energy transition. | Section 1.2 Our Role in reducing UK emissions, Page 11<br>Section 8, Page 147-150 |
| • set out the deliverables, outputs and environmental benefits the company proposes to deliver from implementing the EAP. | Section 2 - Strategy, Page 30 – 40<br>Table 4 - Page 27<br>Table 7 – Page 47<br>Appendix B – Page 159-164 |
| • set out clear links between the impact areas it has prioritised in the EAP, the deliverables and targets in RIIO-ED2, and how these are linked to the company's long-term environmental targets/objectives. | Section 2 - Strategy, Page 30 – 40<br>Table 4 - Page 27<br>Table 7 – Page 47<br>Deliverables are set out in each section under "RIIO-ED2 Commitments"<br>Appendix B – Page 159-164 |
| **3.34. We expect that EAPs will draw together the direct carbon impacts claimed in any relevant Engineering Justification Papers (EJPs) and Cost Benefit Analysis (CBA) submissions (for example losses, Electric Vehicle fleet) and will include a list of all such submissions where:** | Appendix D – Page 174-175 |
| • carbon reduction is the main driver of the proposal. | Appendix D – Page 174-175 |
| • carbon reduction contributes to a substantial part of the benefits claimed by the projects. | Appendix D – Page 174-175 |
| **3.35. In developing their EAPs to meet the minimum requirement of Stage 1 of the BPI, companies must ensure their actions to address the specific activities in scope of the EAP demonstrate a level of ambition in line with the respective baseline expectation. The activities in scope and baseline expectations are outlined in Appendix 3.** | Appendix E – Page 176-186 |
| **Appendix 3** | Appendix E – Page 176-186 |

# 1. Introduction

## 1.1 The Climate Emergency

In August 2021, the Intergovernmental Panel on Climate Change (IPCC), released their Sixth Assessment Report on climate change. The IPCC warns that human-driven climate change has occurred on a global scale, affecting the atmosphere, oceans and biosphere. The IPCC state that changes to the oceans and ice sheets are considered to be irreversible. Only drastic cuts in greenhouse gas emissions this decade can prevent rising global temperatures.

The changing climate presents a wide range of threats and challenges to the environment, infrastructure, economy and people of the United Kingdom. The 'Independent Assessment of UK Climate Risk 2021" report highlighted the following issues:

- Natural environment– Climate change poses risks to the UK's soils, natural carbon stores, agriculture, wildlife and coastal habitats and seas.
- Infrastructure - Flooding poses the greatest long-term risk to infrastructure performance from climate change, but the growing risks from heat, water scarcity and slope instability caused by severe weather could be significant.
- Health, communities and the built environment - There are potential health benefits from warmer winters in the UK, but more action is needed to manage current risks to people from cold temperatures through addressing fuel poverty.
- Business - Flooding and extreme weather events which damage assets and disrupt business operations pose the greatest risk to businesses now and in the future. This could be compounded by poor capacity to adapt to climate change.
- International dimensions - Climate change will impact upon water security, agricultural production and economic resources around the world. The main risks arising for the UK from climate change overseas are through impacts on the food system, economic interests abroad, and increased demand for humanitarian aid.

### *1.1.1 Government legislation*

**Scotland: Climate Change (Emission Reduction targets) (Scotland) Act 2019**

The new Climate Change Act puts into law the Scottish Government's intention to deliver Scotland's fair share of the global emissions reduction necessary to limit temperature rises to 1.5˚C, in line with the Paris Agreement.

**Wales: Environment (Wales) Act 2016**

The Environment (Wales) Act introduces new environmental legislation to Wales, with a focus on sustainably and proactively planning and managing Welsh natural resources. The act introduces emissions targets to Wales, including at least an 80% reduction in emissions by 2050 and interim targets to help achieve this. In March 2021 Senedd Cymru approved a Net Zero target for 2050.

**UK: The Environment Bill 2020**

As the UK leaves the European Union, the Environment Bill introduces a new environmental governance framework. The Bill aims to improve ministerial environmental governance as we leave the EU, with this new structure driving focus on key environmental challenges. Some features of the Bill will affect all of the UK, including the devolved nations, whilst other aspects will only apply in England. The Bill is expected to be put into law by the end of this year.

**UK: The Carbon Budget Order 2021**

In June 2021, the UK set new targets as part of the Carbon Budget Order 2021, following recommendations from the Climate Change Committee in their December 2020 Sixth Carbon Budget.

The new law targets a 78% reduction in carbon emissions by 2035 in comparison to 1990 levels, and a net zero target of 2050. For the first time, a share of emissions from international flights and shipping will also be accounted for in the UK Carbon Budget as part of this new law.

## 1.2 Our role in reducing UK emissions

The Committee on Climate Change (CCC) 2019 Report recommended that the UK should legislate as soon as possible to reach Net Zero greenhouse gas (GHG) emissions by 2050. The Committee on Climate Change 2020 Reducing UK Emissions Progress Report to Parliament has reinforced that message with a new determination, indicating that we must seize the opportunity to make the COVID-19 recovery a defining moment in tackling the climate crisis.

***Figure* 2** below summarises the key technologies and behaviours identified by the CCC that would best meet the challenges of reaching Net Zero GHG emissions, with the most relevant outlined below:

- **Resource and energy efficiency**, reducing demand for energy across the economy.
- **Extensive electrification**, particularly of transport and heating, supported by a major expansion of renewable and other low carbon power generation.
- **Development of a hydrogen economy** to service demands for some industrial processes and for electricity and heating in peak periods. By 2050, a new low carbon industry is needed with UK hydrogen production capacity of comparable size to the UK's current fleet of gas-fired power stations.
- **Carbon capture and storage** (CCS) in industry, with bioenergy, and very likely for hydrogen and electricity production.

Our role in delivering these targets extends beyond managing our own emissions; our network must be ready to accommodate the decentralised, non-synchronous, low carbon generation that is essential to achieving these climate change targets.

Protecting our network from the risks of extreme weather is key to continuing to provide a reliable electricity supply to consumers that is fit for the future. The risks from extreme weather include increasing occurrences of extreme heat, storms, flooding and drought. The adoption of Net Zero targets does not reduce the need for adaptation since the effects of the global temperature rises will continue to increase for many years to come. Global average temperature is currently around 1°C above pre-industrial levels and rising. The CCC has advised that long range adaptation strategies should consider a range of temperature scenarios to prepare for climate change.

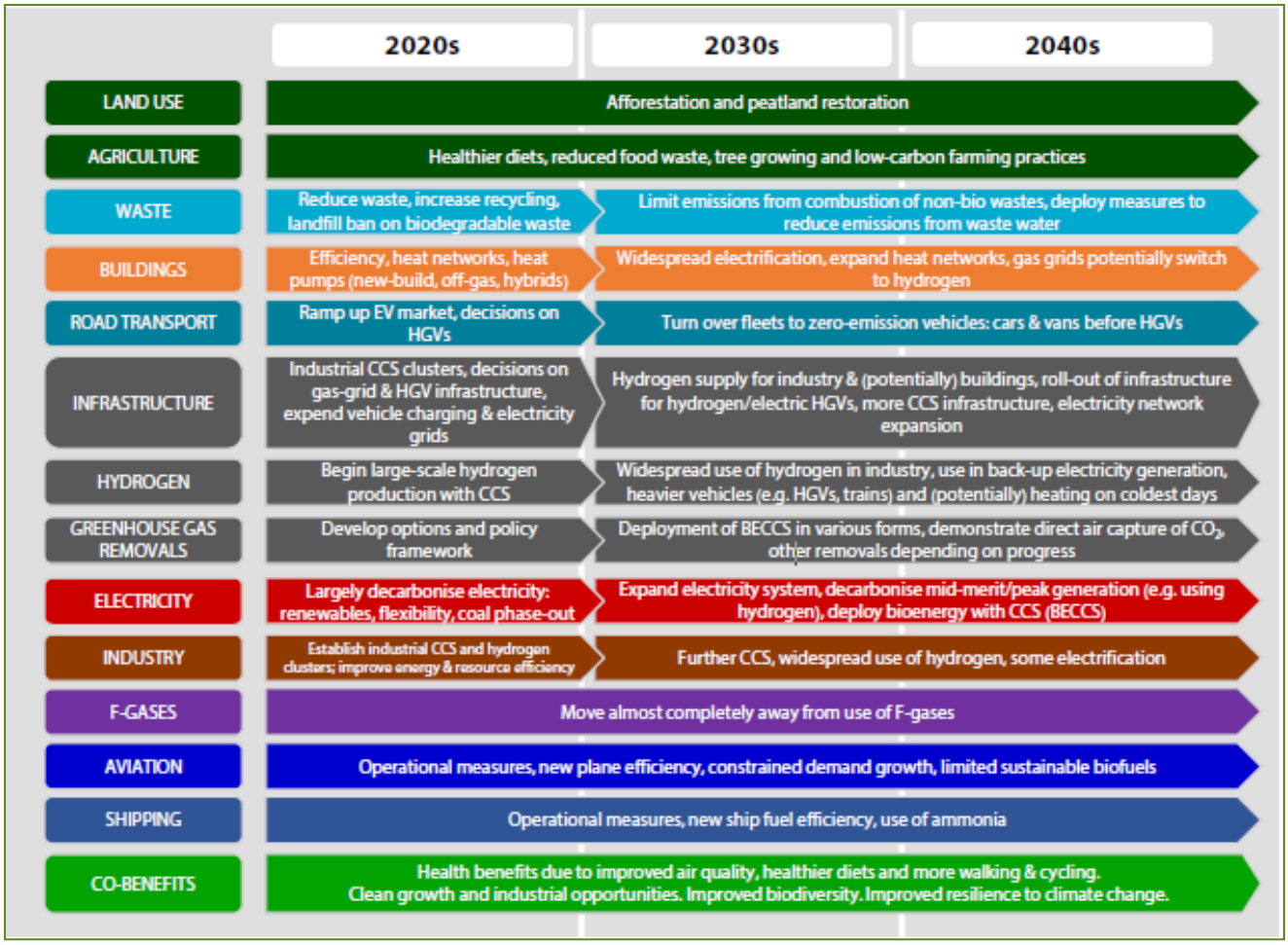


*Figure 2: UK Net Zero GHG scenario*

*Source:* Committee on Climate Change (2020)- Reducing UK emissions Progress Report to Parliament

***Table 1*** below highlights the contribution the electricity sector needs to make and the high-level timescales that frame the evolution of the energy system transition. Our RIIO-ED2 business plan is aligned to this transition.

*Table 1: SP Distribution and SP Manweb RIIO-ED2 contribution to UK Net Zero GHG scenario*

| | CCC Net Zero GHG scenario (2020s contribution) | Our actions in RIIO-ED2 to deliver our own contribution |
|---|---|---|
| **Electricity** | Largely decarbonise electricity: renewables, flexibility, coal phase-out | Renewable energy tariff for depots/offices<br>Piloting of solar panels on substations |
| **Hydrogen** | Start large-scale hydrogen production with CCS | Decarbonisation of operational fleet – investigation of options for HGVs |
| **Buildings** | Efficiency, heat networks, heat pumps (new-build, off-gas, hybrids) | Energy efficiency and renewable energy measures at substations<br>BREEAM Excellent rated HQ<br>Refurbishment of depots and offices in line with Net Zero ambitions |

| | CCC Net Zero GHG scenario (2020s contribution) | Our actions in RIIO-ED2 to deliver our own contribution |
|---|---|---|
| **Road transport** | Ramp-up of EV market, decisions on HGVs | Electrification of operational fleet (except HGVs) ahead of EV100 2030 commitment<br>Improved video conferencing and laptop-based communication options to avoid travel<br>Measures to encourage less travel, car sharing and move from air and car to rail travel<br>Business travel reductions via raising staff awareness of carbon impacts |
| **Industry** | Establish industrial CCS and hydrogen clusters; improve energy and resource efficiency | Embodied carbon measurement and reduction<br>Embedding circular economy principles (BS8001), establish baseline and set targets.<br>Activities with our supply chain to reduce embodied carbon and other environmental impacts associated with the design, manufacture, transport and construction of our network assets.<br>Installation of energy efficiency and renewable energy measures at substations during refurbishment. |
| **Land use** | Afforestation, peatland restoration | Implementation of a Biodiversity and Natural Action Plan<br>Protect biodiversity and seek to enhance. Increase environmental value on our sites |
| **Aviation** | Operational measures, new plane efficiency, constrained demand growth, limited sustainable biofuels | Company ban on domestic flights.<br>Implementation of updated business travel policy. |
| **Waste** | Reduce waste, increase recycling rates, landfill ban for biodegradable wastes | Measures to achieve targeted 95% landfill avoidance by 2023 and stay on track for 100% avoidance by 2030<br>Embedding circular economy principles, establishing baseline and setting targets.<br>Implement targets for waste reduction and the use of secondary materials for RIIO-ED2 |
| **F-Gases** | Move away from F-Gases | Driving development and implementation of Sulphur hexafluoride ($SF_6$) alternatives<br>Minimising $SF_6$ inventory and leakage rates via refurbishment, removal and replacement works<br>Prompt repair of leaks |

| | CCC Net Zero GHG scenario (2020s contribution) | Our actions in RIIO-ED2 to deliver our own contribution |
|---|---|---|
| **Infrastructure** | Industrial CCS clusters, decisions on gas grid and HGV infrastructure, expand vehicle charging and electricity grids | Implementation of Network Losses Strategy<br>Provision of electric vehicle charging infrastructure at our sites, for operational fleet, staff and visitors |
| **Co-benefits** | Health benefits due to improved air quality, healthier diets and more walking and cycling. Clean growth and industrial opportunities. Improved biodiversity. Improved resilience to climate change | Use of operational EVs<br>Staff initiatives to encourage walking and cycling, business travel reduction, flexible working, sustainable catering, etc.<br>Implementation of a Biodiversity and Natural Capital Action Plan |

## 1.3 Summary of our Environmental Action Plan

**We play a critical role in meeting the UK's ambitious climate change targets and in enabling the transition to a sustainable, Net Zero future.**

While we do this, we must reduce our environmental impacts, increase efficiency through constant innovation and adapt our world-class, resilient network to withstand the effects of climate change to deliver sustainable value for current and future customers. Our Sustainable Business Strategy outlines our stakeholder-led vision, drivers, goals and objectives for environmental and sustainability improvement to 2035, underpinning all our RIIO-ED2 commitments.

The actions and costs to deliver baseline environmental compliance are embedded throughout our Business Plan. This annex therefore predominantly focuses on the beyond-compliance commitments we will deliver during RIIO-ED2 to continue to drive more environmentally and socially sustainable performance.

### RIIO-ED2 Aims

Our ambitious plan for environmental sustainability in RIIO-ED2 represents a significant step-change from RIIO-ED1. This is driven by the accelerating global environmental agenda; UK, Welsh and Scottish Government Net Zero targets; and significant stakeholder support. We welcome the enhanced regulatory regime for this area and our RIIO-ED2 plans will enable us to build on our RIIO-ED1 performance and quickly eliminate, reverse, reduce or manage a wider range of environmental impacts than ever before, within the context of our long-term Sustainable Business Strategy.

### Current maturity level

Our RIIO-ED2 plan and commitments are designed to quickly build on our current performance, using our established process for achieving maturity. Improving our maturity starts with identifying and collecting initial data, progressing to identify metrics and baselines, then culminates in the setting, delivering and ongoing tracking of targets.

Our current maturity levels (see ***Figure 3***) clearly show the areas (above and beyond compliance) which have been a focus under the RIIO-ED1 framework, and those which have increased in priority more recently.

| | | Increasing maturity → | | | | |
|---|---|---|---|---|---|---|
| | **Maturity Level** | 1 | 2 | 3 | 4 | 5 |
| **Driver** | **Impact Area** | Identify and collect initial data | Identify metrics and establish baseline for chosen metrics | Analyse data and identify priorities | Set targets and Identify actions to eliminate / reduce / mitigate | Deliver actions Track metrics and report progress |
| | | Verify | | | Review | |
| | Supply chain sustainability | 1 | | | | |
| | Scope 1 (Operational Transport,SF6, Other Fuel Consumption) | | | | 4 | 5 |
| | Scope 2 (Buildings Energy Usage,Carbon impact of Network Losses) | | | | 4 | 5 |
| | Scope 3 (Business Transport,Contractor Emissions,Embodied Carbon) | 1 | 2 | | | |
| | Preventing pollution | | | | | 5 |
| | Land and Biodiversity Protection and Enhancement | 1 | | | | |
| | Enhancing visual amenity | | | | | 5 |
| | Sustainable Resource Use | 1 | | | | |
| | Waste Reduction | | | 3 | 4 | 5 |

*Figure 3: Current maturity levels*

**In RIIO-ED1:**

- We have updated our standard contract terms, pre-qualification questionnaires and specifications, obligating suppliers and contractors to meet high environmental management standards and report data on impacts and progress monthly. We do not yet use a carbon metric or set specific targets for environmental impact reductions from our supply chain.
- We have become a Supply Chain Sustainability School (SCSS) Partner, allowing us to better support all supply chain members. We have developed requirements for contractors and suppliers for all new contracts to become members of the SCSS and undertake relevant sustainability and environmental training.
- Carbon Footprint Scopes 1 and 2, Preventing Pollution and Enhancing Visual Amenity are all at full maturity and therefore subject to the continuous improvement loop at levels 4 and 5 in

***Figure 3***. Please see Section 6.10 Business Carbon Footprint for definitions of Scopes and Glossary of Terms for further definitions.

- Our major projects processes ensure the protection of biodiversity and involve consultation with local stakeholders to ensure alignment with local priorities. However, we do not yet have business-wide systems in place to systematically embed biodiversity protection and enhancement. We are currently developing tools and metrics to allow us to collect data and measure our impacts.
- Elements of waste reduction are at full maturity (waste management and measurement), however we are continuing to analyse data and identify priorities to move up the waste hierarchy (Figure 53) and deliver a more circular approach to resource management and minimisation.
- We have started to embed the principles of a circular economy to enable more sustainable resource use and will follow an appropriate, recognised standard, such as the BS8001 circular economy implementation framework, during RIIO-ED2.

## Maturity level by 2026

| | | Increasing maturity → | | | | |
|---|---|---|---|---|---|---|
| | **Maturity Level** | 1 | 2 | 3 | 4 | 5 |
| **Driver** | **Impact Area** | Identify and collect initial data | Identify metrics and establish baseline for chosen metrics | Analyse data and identify priorities | Set targets and Identify actions to eliminate / reduce / mitigate | Deliver actions Track metrics and report progress |
| | | Verify | | | Review | |
| | Supply chain sustainability | | | 3 | 4 | |
| | Scope 1 (Operational Transport,SF6, Other Fuel Consumption) | | | | 4 | 5 |
| | Scope 2 (Buildings Energy Usage,Carbon impact of Network Losses) | | | | 4 | 5 |
| | Scope 3 (Business Transport,Contractor Emissions,Embodied Carbon) | | | 3 | 4 | |
| | Preventing pollution | | | | | 5 |
| | Land and Biodiversity Protection and Enhancement | | | 3 | 4 | |
| | Enhancing visual amenity | | | | | 5 |
| | Sustainable Resource Use | | | 3 | 4 | |
| | Waste Reduction | | | 3 | 4 | 5 |

*Figure 4: Understanding and mitigation maturity levels by RIIO-ED2 mid-point*

**By the mid-point of RIIO-ED2 (and in preparation for RIIO-ED3) we will have:**

- Introduced consideration of environmental sustainability in our procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum.
- Introduced KPIs within contract specifications and cascaded to all relevant suppliers. Started to work with suppliers to meet these standards, particularly supporting SMEs. Started to report on the actual percentage of suppliers (by value) meeting the enhanced standards and KPIs.
- Started to engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages.
- Further developed requirements for contractors and suppliers of all new contracts to become members of Supply Chain Sustainability School (SCSS), of which we are a partner, and undertake relevant sustainability and environmental training.
- Delivered reductions in Scopes 1 and 2 carbon emissions in line with our Science-Based Target trajectory, offsetting the residual emissions to achieve Carbon Neutrality annually since the beginning of RIIO-ED2.
- Achieved alignment with PAS2080 Carbon Management in Infrastructure in relevant business activities and processes.
- Introduced a project carbon measurement tool for embodied and other capital carbon[1] emissions in new projects and established a baseline and set reduction targets for end RIIO-ED2 and end RIIO-ED3 on trajectory to Net Zero Carbon by 2035.
- Identified, and subsequently started to monitor and report metrics to track progress towards our validated Scope 3 Science-Based carbon reduction Target.
- Removed PCBs from our network by the end of 2025 in line with the agreed sector approach.
- Developed and piloted a common approach and robust methodologies for delivering biodiversity enhancement (‘net gain’) alongside Natural Capital assessment and value increase.
- Embedded these biodiversity and natural capital assessment methodologies and associated tools, and a Biodiversity and Natural Capital Action Plan process in our business decision-making processes for projects and the management of existing sites. Formed strategic partnerships with local ecological protection organisations to support the enhancement of biodiversity and natural capital and to support people’s access to nature.
- Part way through delivery of biodiversity enhancement targets.
- Delivered our 95% landfill avoidance target in 2023 and on trajectory to achieve full landfill avoidance by 2030. Set waste reduction targets per £ expenditure and recycled/reused materials as % of total input materials, to be achieved by end ED2 and 2030.

## Maturity level by end of RIIO-ED2

| | | Increasing maturity → | | | | |
|---|---|---|---|---|---|---|
| | **Maturity Level** | 1 | 2 | 3 | 4 | 5 |
| **Driver** | **Impact Area** | Identify and collect initial data | Identify metrics and establish baseline for chosen metrics | Analyse data and identify priorities | Set targets and Identify actions to eliminate / reduce / mitigate | Deliver actions Track metrics and report progress |
| | | Verify | | | Review | |
| | Supply chain sustainability | | | | 4 | 5 |
| | Scope 1 (Operational Transport,SF6, Other Fuel Consumption) | | | | 4 | 5 |
| | Scope 2 (Buildings Energy Usage,Carbon impact of Network Losses) | | | | 4 | 5 |
| | Scope 3 (Business Transport,Contractor Emissions,Embodied Carbon) | | | | 4 | 5 |
| | Preventing pollution | | | | | 5 |
| | Land and Biodiversity Protection and Enhancement | | | | 4 | 5 |
| | Enhancing visual amenity | | | | | 5 |
| | Sustainable Resource Use | | | | 4 | 5 |
| | Waste Reduction | | | | 4 | 5 |

*Figure 5: Understanding and mitigation maturity levels by end of RIIO-ED2*

**By the end of RIIO-ED2, we will have:**

- Achieved more than 80% of RIIO-ED2 suppliers (by value) meeting enhanced environmental standards and having set or are working towards validation of Science-Based Targets.
- Involved our supply chain in our design, planning and construction processes, utilising their expertise to drive down environmental impacts associated with the life cycle impacts of our network, met our embodied carbon reduction targets, and will have set targets for ongoing reductions into RIIO-ED3.
- Reduced our Scope 1 and 2 carbon emissions in line with our Science-Based Targets trajectory and maintained Carbon Neutrality throughout RIIO- ED2.
- Converted a significant % of the cars and vans in our vehicle fleet to electric vehicles, at least in line with our EV100 commitment (100% by 2030) but ideally, we will have accelerated this to achieve full electrification by end RIIO-ED2.
- Found a low carbon alternative to diesel generators and deployed this across our operations.
- Maximised the avoidance of new $SF_6$ assets on our network, having driven the development of alternatives at all voltages and implemented these when technically feasible and market

ready. Minimised leakage from existing $SF_6$ assets by employing all available leakage repair methodologies and replacing assets where repairs proved unsuccessful, delivering a reduction in leakage of 10%.

- Continued to purchase 100% renewable electricity and reduced buildings' energy consumption by 15.2GWh (8%), to minimize associated carbon impacts. Piloted renewable generation at substation and depot sites to offset building energy demand.
- Avoided around 36GWh of network losses via the implementation of our Losses Strategy.
- Minimised pollution by achieving zero environmental notifiable breaches throughout RIIO-ED2, implementing Pollution Prevention Plans for all 132kV projects, reducing fluid filled cable top-ups by 10% and retrofitting 203 transformers with oil containment measures (using low carbon alternatives to concrete where technically feasible).
- Worked with our local communities, landowners, Network Operator colleagues and other stakeholders to deliver biodiversity enhancement across our RIIO-ED2 project portfolio and increased biodiversity by 10% on 25 hectares of our existing sites and linear network. Set a target for Biodiversity Enhancement for RIIO-ED3.
- Be on target for our 2030 avoidance of landfill of 100% (excluding 'compliance waste'). Embedded circular economy principles in our processes to deliver our targeted reductions in quantities of waste produced and set targets for such reductions for ED3 and beyond. Delivered our target for % of input materials being from recycled/reused 'secondary' sources

### *1.3.1 Our Costs*

***Figure 6*** below summarises the costs embedded in our RIIO-ED2 Business Plan that deliver environmental sustainability improvements. We provide a breakdown of costs throughout this plan.

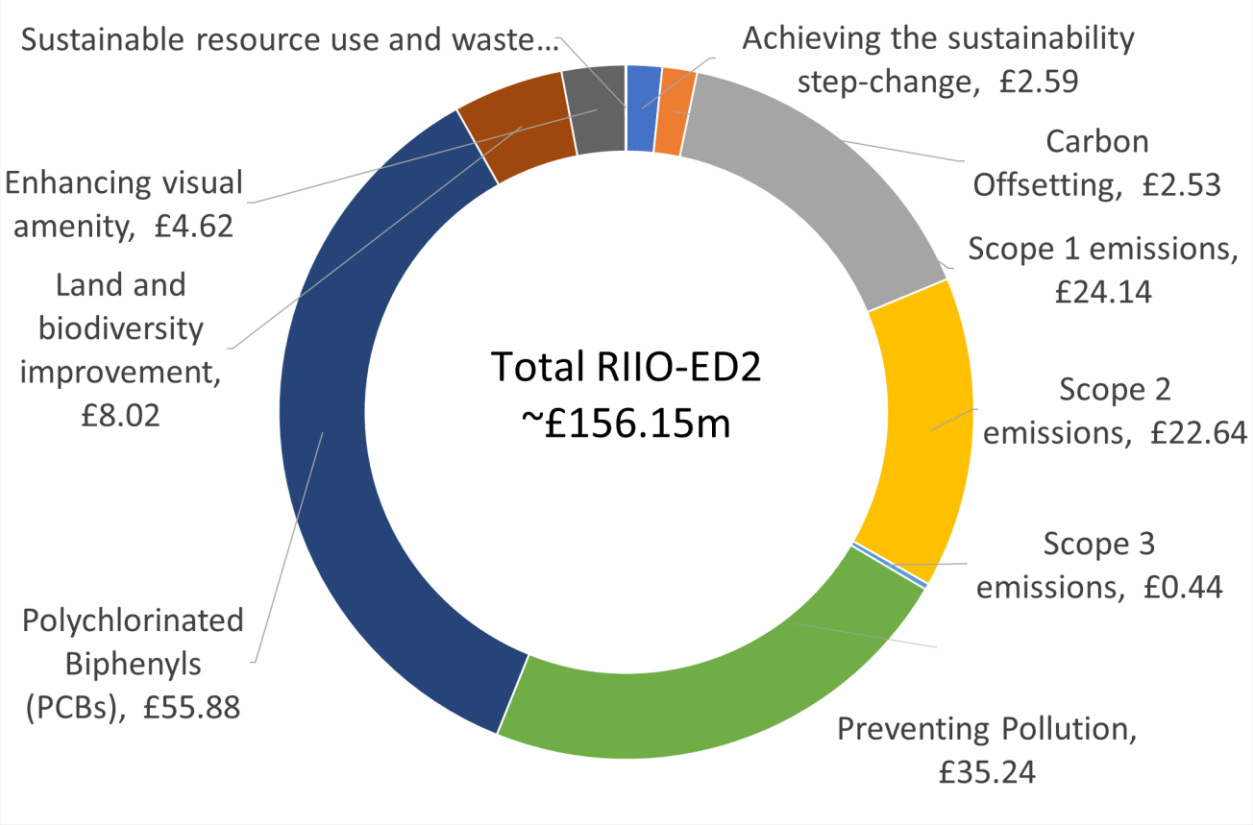


*Figure 6: Environmental sustainability RIIO-ED2 costs (£m)*

Costs are outlined in this section to provide transparency of the total cost of our RIIO-ED2 Environmental Sustainability package. All of these costs are included within Chapter 5 *'Our*

*expenditure plans'* of our Business Plan and related annexes. Mapping of costs included within this EAP to our commitments, and to the related Business Plan Data Tables, can be found in Appendix A.

### 1.3.2 Social Return On Investment (SROI) (net benefit per £ spent)

We set out to assess the broader impacts of our Environmental Action Plan on customers and stakeholders. Given the nature of this strategy and the high-degree of positive externalities that will stem from the initiatives within it, we considered it appropriate to measure its impact beyond a traditional cost benefit analysis (CBA) by adopting a comprehensive social value measurement framework, which incorporates social return on investment (SROI) modelling and builds upon traditional CBA by also measuring and accounting for typically qualitative, social impacts of a project. This is done by using financial proxies to quantify societal benefits that are not generally monetised (e.g. assigning a monetary value to savings, in line with BEIS guidance). It is important to note that the method adopted is fully aligned with the industry wide SROI methodology as agreed by all DNOs and developed with key stakeholders including Ofgem in 2020. The areas that have been included are:

- Carbon Neutral- Offsetting
- Scope 1: Operational Transport Fleet
- Scope 2: Buildings Energy Efficiency
- Scope 3: Supply Chain Emissions
- Preventing Pollution Bunding and land contamination clean-up
- Leakage from Fluid Filled Cables Fluid filled cable replacement
- Land and Biodiversity Protection and Improvement
- Sustainable Resource Use and Waste Reduction

These initiatives will cost ~£70.4m during RIIO-ED2.They have Gross Present value in 2050 of approximately £421m. They will deliver £332 SROI (net benefit per £ spent) to 2050.

### 1.3.3 Our Commitments

Our commitments are categorised into levels:

*Table 2: Commitment hierarchy*

| | |
|---|---|
| **Core environmental commitments** | These are 10 top level environmental commitments that all other commitments sit under. |
| **Commitments** | These 16 commitments sit under the overarching core environmental commitments |
| **Deliverables** | These 45 deliverables sit under commitments and outline how the commitments will be delivered |

Speed of delivery is key to the effectiveness of our plan. Commitments are prioritised as follows:

- **By 2023**– Activities carried out in readiness for the start of RIIO-ED2.
- **Throughout RIIO-ED2** – Activities starting before or at the beginning of RIIO-ED2 and continuing through and potentially beyond the RIIO-ED2 period.
- **By 2025** – Activities representing considerable business change, reliant on asset replacement or upgrade programmes, or which follow the completion of other RIIO-ED2 commitments, and which will be in place in time to influence the RIIO-ED3 development process.
- **By end of 2025** – Timeline specific to Polychlorinated Biphenyls (PCB) Legislation.

- **By 2028** – Activities or programmes of work which may start from the beginning of RIIO-ED2 but will not complete until 2028.

***Table 3*** provides a summary of our commitments for RIIO-ED2 in delivering an environmentally sustainable network.

*Table 3: Environmental sustainability commitments*

| Header and drivers | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|
| **Achieving the sustainability step-change**<br>  <br>Sustainable Society<br>  <br>Carbon and Energy Reduction<br>  <br>Climate Change Resilience<br>  <br>Water Efficiency and Protection<br>  <br>Land and Biodiversity Improvement<br>  <br>Sustainable Resource Use | **We will embed environmental sustainability considerations in our business processes whilst maintaining and continually improving our ISO14001 certified Environmental Management System. This will enable us to achieve 'beyond compliance' environmental performance and our sustainability goals.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | **We will continue to provide transparent reporting of our environmental and sustainability performance by publishing an annual report of our progress against all environmental and sustainability commitments – in line with metrics and a format developed in collaboration with the other DNOs.** | **Continuing business as usual – Ofgem, Operators** | Throughout RIIO-ED2 |
| | **We will improve the quality of environmental data collected and analysed at all stages of the asset lifecycle, investing in enhanced IT systems and formalising data sharing collaborations with key stakeholders.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | **We will continue to ensure that our staff, contractors and suppliers have the skills and knowledge to allow us and our supply chain to move beyond compliance and achieve our Sustainability Goals, by identifying and ensuring delivery of appropriate environmental training.** | **External Stakeholders - Supply Chain** | Throughout RIIO-ED2 |
| | We will embed a process for Initial Environmental and Sustainability Reviews (IESRs) for all relevant projects, to identify potential environmental issues and opportunities at the earliest stage. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers | By 2023 |
| **Supply chain sustainability**<br>  <br>Sustainable Society<br>  <br>Carbon and Energy Reduction<br>  <br>Climate Change Resilience | **We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2 suppliers (by value) meeting these standards.** | **External Stakeholders - Ofgem, Supply Chain, Environmental Regulators, Operators** | By 2028 |
| | We will increase consideration of environmental sustainability in our procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum. | External Stakeholders - Environmental Regulators, Supply Chain, User Group, Operators | By 2023 |
| | We will continue to be a Supply Chain Sustainability School Partner, requiring contractors and suppliers for all new contracts to become members and undertake relevant sustainability and environmental training. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |

| | | | |
|---|---|---|---|
|  Water Efficiency and Protection  Land and Biodiversity Improvement  Sustainable Resource Use | We will engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2025 |
| | We will engage with suppliers throughout the duration of their contracts to continue to reduce impacts and optimise benefits. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |
| **Decarbonising our network and assets – strategic commitments**  Carbon and Energy Reduction  Climate Change Resilience  Sustainable Resource Use | **We will deliver efficient and economic actions to reduce our scope 1, 2 & 3 business carbon footprint by 67.2% by 2035 from a 2018/19 baseline, in line with validated Science-Based Targets aligned to a 1.5 c pathway.** | **External Stakeholders - Ofgem, Operators** | Throughout RIIO-ED2 |
| | **We will minimise our carbon footprint to achieve Net Zero carbon by 2035.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | **We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | We will align our offsetting approach to the Oxford Principles for Net Zero Aligned Carbon Offsetting, ensuring high probability of 'Additionality' and low probability of 'Reversibility', delivering additional environmental and social benefits where practical. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers, Supply Chain | |
| | We will identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards our carbon reduction targets. | External Stakeholders - Ofgem, Operators | By 2023 |
| | We will implement processes for carbon management in relevant business activities, aligned with PAS 2080 Carbon Management in Infrastructure. | External Stakeholders - Supply Chain, Operators | By 2025 |
| **Scope 1 Emissions**  Carbon and Energy Reduction  Climate Change Resilience | **We will decarbonise our operational fleet by 2030, replacing 100% (over 800) of our cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028.** | **External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers** | By 2028 |
| | We will install electric vehicle charging infrastructure for our operational fleet at our sites | External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption. | Continuing business as usual | Throughout RIIO-ED2 |

| | | | |
|---|---|---|---|
|  | **We will reduce our $SF_6$ leakage by 10% over the RIIO-ED2 period compared to RIIO-ED1.** | **External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | External Stakeholders - $SF_6$ Strategy consultation | Throughout RIIO-ED2 |
| | We commit to reporting on total $SF_6$ Bank and leakage reduction rates using a common Distribution Network Operator (DNO) methodology. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | By 2023 |
| | We will continue to carefully manage our assets in line with our $SF_6$ Strategy to minimise $SF_6$ leakage, repair leaks quickly, and where this is not possible, replace the asset before its anticipated end of life. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will continue to require manufacturers to provide equipment with a $SF_6$ leakage rate which is half that of the internationally recognised standards, where technically viable. | Continuing Business as usual, External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will drive the development and adoption of $SF_6$ – free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | **We will analyse our generator use and set targets for reduction in carbon emissions to be achieved by end of RIIO-ED2.** | **External Stakeholders - Supply Chain, Operators, Expert Reviewers** | By 2023 |
| **Scope 2 Emissions**<br>  <br>  <br>  | **We will continue to purchase green electricity through a 100% UK-based renewable energy tariff backed by Power Purchase Agreements (PPA) for all our buildings. Beyond this, we will reduce our buildings and substations energy consumption by a minimum of 15.2GWh (8%) over the RIIO-ED2 period.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | We will reduce energy consumption by a total of 3.4GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh over the RIIO-ED2 period. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |

| | | | |
|---|---|---|---|
| | We will pilot and monitor renewable generation at substation and/or depot sites to offset building energy demand. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2028 |
| | **In RIIO-ED2, we will continue to implement our Losses Strategy to avoid an estimated 36GWh of network losses, thereby limiting losses to a lower level than would otherwise be the case.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | We will continue to lead the Energy Networks Association Technical Losses Group to improve industry understanding of losses. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will continue to drive the development and understanding of losses by contributing to the evidence base on the proportion of losses that network companies can influence/control, collaborating with supply chain and industry peers and piloting new technology such as the MAAV. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will continue to consider and minimise network losses throughout all design and connections activities. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will pro-actively target high-loss legacy assets for replacement with modern low-loss alternatives. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | By 2028 |
| | We will report on the progress of implementing the losses strategy and associated performance measures. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will use a minimum underground mains cable size of 300mm$^2$ to further reduce losses, where it is cost effective and appropriate to do so. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will continue to use a minimum pole mounted transformer size of 25kVA to further reduce losses on our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| **Scope 3 Emissions**<br>Carbon and Energy Reduction<br>Climate Change Resilience | **We will continue to implement our 2021 Business Travel Policy to reduce business travel emissions by at least 580 $tCO_2e$ during RIIO-ED2.** | **Continuing Business as usual, External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | **We will require strategic suppliers to set Science-Based Targets within 5 years, aiming for 80% of our supply chain by value.** | **External Stakeholders - Supply Chain, Operators** | by 2028 |
| | We will create a new role in RIIO-ED2 to drive actual reduction in Scope 3 carbon emissions in our supply chain by approximately 100k $tCO_2e$ | External Stakeholders - Supply Chain, Operators | By 2023 |

| | | | |
|---|---|---|---|
|  <br>Sustainable Resource Use | We will introduce a measurement tool for embodied carbon and other capital carbon emissions to establish a baseline and a set a target to reduce carbon on new projects during RIIO-ED2. | External Stakeholders - Supply Chain, Operators | By 2023 |
| | We will work collaboratively with our stakeholders, including the other Distribution and Transmission Network Operators, throughout RIIO-ED2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| | We will monitor and report on embodied carbon in new projects. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| **Preventing pollution**<br>  <br>Sustainable Society<br>  <br>Water Efficiency and Protection<br>  <br>Land and Biodiversity Improvement<br>  <br>Sustainable Resource Use | **We will continue to target zero environmental regulatory interventions and notifiable breaches.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | **We will implement Pollution Prevention Plans at 100% of our RIIO-ED2 132kV projects.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | **We will reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres (10%) by replacing 19.429km of our leakiest fluid filled cable.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | **We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | **We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.** | **Continuing business as usual** | By end of 2025 |
| | **We will use low carbon alternatives to concrete bunding for our RIIO-ED2 retrofit projects where technically feasible.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | We will adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will continue to report on noise pollution incidents and actions taken to reduce them. | Continuing business as usual | Throughout RIIO-ED2 |
| | We will report on volumes of PCB contaminated equipment on and removed from the network. | Continuing business as usual | Throughout RIIO-ED2 |
| | We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will implement a programme to identify, risk assess and address high risk legacy land contamination. | Continuing business as usual | Throughout RIIO-ED2 |

| | | | |
|---|---|---|---|
| | We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |
| **Land and biodiversity improvement**<br>  <br>Land and Biodiversity Improvement<br>  <br>Sustainable Society<br>  <br>Climate Change Resilience<br>  <br>Water Efficiency and Protection | **We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities and local wildlife groups** | **External Stakeholders - Environmental Regulators, Ofgem, Operators** | By 2028 |
| | **We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | by 2028 |
| | We will implement a Biodiversity & Natural Capital Action Plan process to guide local operation implementation with the aim of increasing environmental value across our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| | We will collaborate with stakeholders, including other DNOs, throughout RIIO-ED2 to develop and pilot robust methodologies and tools for delivering Biodiversity and Natural Capital assessment. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | We will identify, and subsequently monitor and annually report, metrics to track the levels of biodiversity and value of natural capital and ecosystem services on our sites and the achievement of our targets. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| | We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |
| **Visual amenity**<br>  <br>Land and Biodiversity Improvement<br>  <br>Sustainable Society | **We will remove 35km of overhead lines in Areas of Outstanding Natural Beauty National Parks, and National scenic areas.** | **External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators** | By 2028 |
| **Sustainable resource use and waste reduction**<br>  <br>Sustainable Resource Use | **We will divert 100% of our waste from landfill by 2030, excluding compliance waste.** | **External Stakeholders - Sustainability Working Group, Circular Economy Forum** | Throughout RIIO-ED2 |
| | **We will establish a baseline and targets for waste reduction per £1m of total annual expenditure, to be achieved by the end of RIIO-ED2 and 2030 in line with our zero waste to landfill date.** | **External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working** | By 2023 |

| | | | |
|---|---|---|---|
|   Carbon and Energy Reduction | | **Group, Expert Reviewers** | |
| | We will continue to collaborate with environmental/ waste regulators, other infrastructure companies and our supply chain to drive sustainable resource use and waste minimisation in order to meet our RIIO-ED2 and Sustainability Goals. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| | We will implement metrics to measure the sustainability of our resource use, with the aim of establishing a baseline to enable target setting during RIIO-ED2. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2025 |
| | We will continue to report on actual waste to landfill, recycling and reuse as a percentage of total and we will commence reporting on all new waste and resource use metrics. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| | We will set targets for recycled & reused materials as a % of total input materials to be achieved by end RIIO-ED2 and 2030. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2023 |
| | We will follow an appropriate, recognised standard such as BS8001 to embed circular economy principles where relevant throughout our business processes. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |

### *1.3.4 Our Initiatives*

The following table collates the key RIIO-ED2 initiatives that deliver environmental impact reductions from our RIIO-ED2 Investment Decision Pack and elsewhere throughout our Business Plan. These initiatives are those included in our Business Plan Data Table M23 Environmental Initiatives. Further details on our initiatives and associated RIIO-ED1 performance can be found in Appendix B: Our RIIO-ED2 Initiatives

*Table 4: Summary of RIIO-ED2 Business Plan Data Table M23 Environmental Initiatives*

| Initiative identifier | EAP commitment or deliverable | Predicted Benefit |
|---|---|---|
| Decarbonising our Network -Net Zero Carbon Target and Carbon Neutrality - Carbon Offsetting | EAP Commitment: We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses. | 101,315 $tCO_2e$ will be offset during RIIO-ED2 and there will be a SROI of £91.63 by 2050 |
| Decarbonising our Energy Networks - Scope 1: Operational Transport - Fleet decarbonisation and charging | EAP commitment: We will decarbonise our operational fleet by 2030, replacing 100% of over 800 cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028 during the RIIO-ED2 period. | 16,786 $tCO_2e$ will be avoided over RIIO-ED2 |

| Initiative identifier | EAP commitment or deliverable | Predicted Benefit |
|---|---|---|
| Decarbonising our Energy Networks - Scope 1: Fugitive Emissions - $SF_6$-free alternatives | EAP Commitment: We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | Replacement of $SF_6$ containing assets at the Lister Drive Depot in SPM alone will remove 1200 kg of $SF_6$ from the network and save 634 $tCO_2e$ of emissions via leakage over the course of RIIO-ED2. |
| Decarbonising our network and assets - Scope 1 emissions - $SF_6$ Strategy | EAP commitment: We will reduce our $SF_6$ leakage by 10% over the RIIO-ED2 period compared to RIIO-ED1.<br>EAP Commitment: We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | 1,097 $tCO_2e$ will be avoided via leakage reduction of $SF_6$ over RIIO-ED2 and 2,262 kg of $SF_6$ (51,590 $tCO_2e$) will avoid being added to the network. |
| Decarbonising our Energy Networks - Scope 2: Buildings Energy Usage - Office and depot refurbishment | EAP Commitment: We will refurbish 8 of our strategic office and depots sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh overs the RIIO-ED2 period. | Energy consumption across offices, depots, and substations will be reduced by at least 15.2 GWh over RIIO-ED2 |
| Decarbonising our network and assets - Scope 2: Buildings Energy Usage - Substation building refurbishment | EAP Deliverable: We will reduce energy consumption by a total of 3.4 GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | Energy consumption across offices, depots, and substations will be reduced by at least 15.2 GWh over RIIO-ED2 |
| Decarbonising our network and assets - Scope 2: Carbon Impact of Network Losses - Losses strategy | EAP commitment: In RIIO-ED2, we will continue to implement our Losses Strategy to avoid an estimated 36 GWh of network losses, thereby limiting losses to a lower level than would otherwise be the case. | 6,764 $tCO_2e$ of emissions via losses will be avoided over RIIO-ED2 |
| Decarbonising our network and assets - Scope 3 - Business transport | We will continue to implement our 2021 Business Travel Policy to reduce business travel emissions by at least 580 $tCO_2e$ during RIIO-ED2... | 580 $tCO_2e$ of emissions will be avoided during RIIO-ED2 |
| Reducing our Network's Environmental Impacts - Preventing Pollution - Bunding and land contamination clean-up | EAP commitment: We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | 4,400 litres of oil spillage will be avoided over RIIO-ED2 |

| Initiative identifier | EAP commitment or deliverable | Predicted Benefit |
|---|---|---|
| Reducing our Network's Environmental Impacts - Leakage from Fluid Filled Cables - Fluid filled cable replacement | EAP Commitment: We will reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres (10%) by replacing 19.429km of our leakiest fluid filled cable. | 3,490 litres of oil spillage will be avoided over RIIO-ED2 |
| Reducing our Network's Environmental Impacts - Polychlorinated Biphenyls (PCBs) - Persistent organic pollutant remedial asset changes | EAP Commitment: We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators. | Ensures that SPEN will comply with legislation by eliminating PCBs on the network |
| Reducing our Network's Environmental Impacts - Polychlorinated Biphenyls (PCBs) - Persistent organic pollutant oil testing | EAP Commitment: We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators. | Ensures that SPEN will comply with legislation by eliminating PCBs on the network |
| Reducing our Network's Environmental Impacts - Management of Noise Impact - Noise pollution | EAP commitment: We will continue to report on noise pollution incidents and actions taken to reduce them. | Reduce potential disruption to the public from noise from infrastructure |
| Reducing our Network's Environmental Impacts - Land and Biodiversity Protection and Improvement | EAP Commitment: We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity | Improves resilience of the local ecosystem to changes in climate. Improves public access to green spaces in certain locations, leading to public health benefits. |
| Reducing our Network's Environmental Impacts - Land and Biodiversity Protection and Improvement | EAP Commitment: We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities and local wildlife groups. | Improves resilience of the local ecosystem to changes in climate. Improves public access to green spaces in certain locations, leading to public health benefits. |
| Reducing our Network's Environmental Impacts - Enhancing Visual Amenity | EAP deliverable: We will remove 35km of overhead lines in Areas of Outstanding Natural Beauty National Parks, and National scenic areas. | Reduces the impact of our infrastructure on visual amenity, encouraging public engagement with these scenic locations and leading to public health benefits. |
| Reducing our Network's Environmental Impacts - Sustainable Resource Use and Waste Reduction | EAP Commitment: We will divert 100% of our waste from landfill by 2030, excluding compliance waste. | 746 $tCO_2e$ |

# 2. Strategy

## 2.1 Our Corporate Approach

Sustainable development is at the heart of our corporate purpose and values.


*Figure 7: Iberdrola Group purpose and values*

Our commitment to sustainable development is embedded within our code of ethics, company strategies, governance and decision-making processes, all of which can be found on our website here: https://www.iberdrola.com/sustainability.

Our RIIO-ED2 Business Plan, policies and procedures provide the means to deliver the sustainable development agenda at distribution network level. Throughout our approach we consider economic, social and environmental benefits to ensure we deliver best overall value for consumers.

Our decision-making process, as detailed within Annex 5A.3: Cost Assessment, balances technical, economic, and environmental factors during the discharge of statutory and licence obligations. Our Business Plan and this Environmental Action Plan are the result of extensive stakeholder engagement and aim to deliver the objectives of our Sustainable Business Strategy while delivering excellent network performance and value for money.

## 2.2 Our Sustainable Business Strategy

Our Sustainable Business Strategy[2] has been developed through several years of collaboration with our stakeholders, and is regularly updated in response to internal and external policy developments, in order to ensure that our business continues to manage the transition to a low carbon energy system over short, medium and long-term timelines.

To capture the views of our external stakeholders, we formed a Sustainability Stakeholder Working Group (SSWG) which is populated by representatives from organisations with strategic interests in sustainability in the licence areas in which we operate including, for example, environmental regulation agencies and nature organisations. The SSWG has met quarterly since 2016, with the main focus for discussions being the actions required to deliver the SP Energy Networks Sustainable Business Strategy and associated opportunities to collaborate. The group has welcomed our ambitious reduction targets and our commitment to report transparently on our sustainability improvement activities.

During the RIIO-ED2 process we have worked hard to fill gaps in our stakeholder engagement coverage, particularly in both England and Wales and in academia. We have identified and engaged extensively with a broad range of key stakeholders who have significantly influenced our RIIO-ED2 commitments and the contents of this EAP. We continue to seek to expand the membership of the SSWG to better represent the full range of key stakeholders and allow them to continuously influence our activities and the development of our Sustainable Business Strategy in the future.

[2] SP ENERGY NETWORKS, 2020. SP Energy Networks Sustainable Business Strategy. https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Sustainable_BusinessStrategy_2021_FINAL_Online.pdf

### 2.2.1 Our Vision

Our vision is to be a sustainable networks business. We will embed the principles of sustainability in our decision-making by working with our stakeholders to:

Efficiently manage and develop our network in support of the low carbon transition; and,

Achieve neutral or positive environmental and social impacts.

We will be a leader in this area. Our actions to become a sustainable network operator will drive our supply chain and support our customers and communities to become more sustainable.

**Climate change resilience**
We will develop our network to mitigate impacts of climate change.

**Carbon and energy reduction**
We will be a carbon neutral company throughout our value and supply chains, and will actively support our customers and local communities towards achieving this goal.

**Sustainable resource use**
The principles of a circular economy and efficient use of resources will be embedded in our business. The materials required for network construction and operation will come from sustainable sources.

We will produce zero waste, with the components of all end-of-life assets being reused or recycled into new products.

**Land and biodiversity improvement, water efficiency and protection**
We will protect and continually enhance the biodiversity around our assets and support national and local strategies. Our decision-making will incorporate the principles of Natural Capital Assessment to ensure that levels of natural assets are at least protected, and where possible, enhanced.

**Sustainable society**
We will have a net-positive impact on the environment and the communities in which we operate.

We will collaborate with national and local stakeholders to understand their needs and maximise the positive social and economic impacts of our operations on communities, including education, skills and employment.

**Our 'sustainable business' model will be characterised by:**

- Consideration of environmental, social and economic costs and benefits in decision making;
- Collaboration with stakeholders; and,
- Transparency in decision-making processes and reporting of performance.

*Figure 8: SP Energy Networks Sustainable Business Strategy vision statement*

### 2.2.2 Our Sustainability Drivers

To deliver our vision of a sustainable networks business, we're focusing on six key areas of activity that will deliver big sustainability benefits for all. We call these our Sustainability Drivers (Figure 9).

These Drivers help guide decisions on which activities and projects we take forward. They allow us to connect different activities across the business that contribute to the delivery of our Goals and Objectives, and they help facilitate communication of our activities.


*Figure 9: SP Energy Networks Sustainable Business Strategy Drivers*

### 2.2.3 Our Goals

Where we hold good quality accurate data we have identified and quantified impact reduction goals for short, medium and long-term deadlines (Figure 10) and published these in our Sustainable Business Strategy. The 2023 target date is aligned with the end of the RIIO-ED1 price control, 2030 is aligned with Scottish and UK Government interim decarbonisation timelines, and the other deadlines relate to price controls or our Science-Based Targets deadline (which is 15 years after our SBT baseline year, as per SBTi guidance).

| | Carbon and Energy Reduction | Sustainable Resource Use | Land and Biodiversity Improvement |
|---|---|---|---|
| *2023* | -15% carbon footprint* | Divert 95% of waste from landfill | |
| *2026* | | | No Net Loss on named RIIO-T2 Major Projects Schemes |
| *2028* | | | 500 Biodiversity Units created across our ED2 work programme<br>10% Enhancement across 25 Hectares of our distribution network |
| *2030* | -80% carbon footprint* | 100% waste recycled or re-used (excluding compliance waste) | |
| *2035* | Achieve Science-Based Targets and Net Zero Carbon | | |
| *2040* | | Zero Waste | |

*targets from a 2013/14 baseline carbon footprint (scopes 1 and 2 plus business travel, excluding losses).

*Figure 10: SP Energy Networks environmental sustainability goals*

### 2.2.4 Maturity of impact understanding and mitigation

We take a systematic approach to managing and reducing our environmental impacts by using a documented Environmental Management System (EMS). With our commitment to environmental legislative compliance as a foundation, the environmental impacts of our activities are then prioritised for improvement actions via a risk assessment process. This process is described in Appendix B. The EMS has been externally certified to ISO14001:2015, the international standard for EMS, for over a decade and is fully embedded throughout our business processes. These identified environmental impacts informed the identification of our Sustainability Drivers, the development of our Sustainable Business Strategy and the identification of our sustainability goals and objectives. These impacts are reviewed annually and inform the environmental planning process which identifies annual actions and targets.

Our strategy is to continually improve the breadth and quality of the data we hold, refining our key goals as new data streams become available to us. Our medium and long-term goals for are evolving as a result of developing policy, societal expectations and RIIO2 stakeholder engagement.

The level of maturity of our understanding of each of our environmental impacts informs the types of action required to progress, as shown in ***Figure 11*** below.

| | | Increasing maturity → | | | | |
|---|---|---|---|---|---|---|
| | **Maturity Level** | 1 | 2 | 3 | 4 | 5 |
| **Driver** | **Impact Area** | Identify and collect initial data | Identify metrics and establish baseline for chosen metrics | Analyse data and identify priorities | Set targets and Identify actions to eliminate / reduce / mitigate | Deliver actions Track metrics and report progress |
| | | Verify | | | Review | |
| | Supply chain sustainability | 1 | | | | |
| | Scope 1 (Operational Transport,SF6, Other Fuel Consumption) | | | | 4 | 5 |
| | Scope 2 (Buildings Energy Usage,Carbon impact of Network Losses) | | | | 4 | 5 |
| | Scope 3 (Business Transport,Contractor Emissions,Embodied Carbon) | 1 | 2 | | | |
| | Preventing pollution | | | | | 5 |
| | Land and Biodiversity Protection and Enhancement | 1 | | | | |
| | Enhancing visual amenity | | | | | 5 |
| | Sustainable Resource Use | 1 | | | | |
| | Waste Reduction | | | 3 | 4 | 5 |

*Figure 11: Stages in maturity of impact understanding and mitigation*

We followed this approach to develop our RIIO-ED2 Environmental Action Plan (see Section 3) and describe the commitments, metrics and actions in the relevant subsequent sections.

### 2.2.5 Our Objectives

Alongside our goals, we deliver on set objectives related to each Sustainability Driver, as shown in ***Figure 12*** ,

***Figure*** 13 and Figure 14: SP Energy Networks Water Efficiency and Sustainable Society sustainable objectives 2020***Figure 14***. Each Objective is measured against high level Key Performance Indicators (KPIs) and specific actions detail how we will work to fulfil the objectives.

We annually review existing environmental and sustainability data to:

- Guide the objectives, KPIs and actions for the period to 2030;
- Quantify our inputs (e.g. materials used, electricity and fuel consumption) and outputs (waste, $CO_2e$); and

- Facilitate the setting of business-wide SMART Objectives.

Our current Sustainability Objectives as listed in the Strategy are shown in the next three figures:


*Figure 12: SP Energy Networks Carbon and Energy Reduction and Climate Change Resilience sustainability objectives 2020*

**Prevention of Pollution**

Identify, risk assess and address high risk legacy land contamination by the end of RIIO2.

Eliminate Polychlorinated Biphenyls (PCBs) from our network in line with legislation and the statistical approach agreed with the environment agencies, by end 2025.

Reduce oil leakage from our network and reduce the total volume of oil in our network assets.

Retrofit oil containment measures to substation assets without such protection.

- Install oil containment bunds at 203 primary and grid transformers in ED2.
- Implement T2 oil risk mitigation programme of works.

**Land and Biodiversity Improvement**

Assess and minimise visual amenity and ecological impact when designing, constructing, managing and maintaining our network.

Implement management processes for invasive and non-native species on our land and along our network by 2023.

Deliver biodiversity and natural capital enhancement in the geographical areas covered by our network.

- Implement a methodology to measure biodiversity and embed consideration of biodiversity impacts in business decision-making by the middle of our RIIO2 price controls.
- Achieve no net loss in biodiversity across the T2 work programme.
- Deliver 500 biodiversity units across the ED2 work programme to move beyond mitigation to enhancement.
- Deliver 10% enhancement of biodiversity across 25 hectares of our land and along our distribution network during ED2.
- Incorporate natural capital assessment in our business decision making processes by the middle of our RIIO2 price controls.
- Deliver a net positive impact on natural capital values across our transmission network by 2026.

**Sustainable Resource Use**

Become a fully circular and 'zero waste' business by 2040.

- Divert 95% of waste from landfill by end 2023 and 100% by end 2030.
- Introduce life cycle assessment and circular economy principles to business processes by the middle of our RIIO2 price controls.
- Identify and implement resource use and waste metrics, quantify baselines and set improvement targets by the end of RIIO2.
- Identify priority resource input and waste streams and implement actions to reduce.

*Figure 13: SP Energy Networks Prevention of Pollution, Land and Biodiversity Improvement, and Sustainable Resource Use sustainable objectives 2020*


*Figure 14: SP Energy Networks Water Efficiency and Sustainable Society sustainable objectives 2020*

## 2.3 Our commitment to the Sustainable Development Goals (SDG)

The United Nations' Sustainable Development Goals (SDGs) provide a global framework for delivering improvements in all areas of sustainability by 2030. As part of Iberdrola, we support the UN SDGs and have embraced these as part of our Sustainable Business Strategy and corporate governance system.

We have identified the SDGs to which we, as SP Distribution and SP Manweb, contribute:

*Table 5: SP Distribution and SP Manweb SDG mapping to Sustainability Drivers*

| | SDG | Goal aims and our contribution | Sustainability drivers | Related Annex |
|---|---|---|---|---|
| **Main focus** |  | ***'Ensure access to affordable, reliable, sustainable and modern energy for all'***<br>• Providing excellent network reliability and value for money<br>• Connecting renewables to the network quickly and sustainably |  | Consumer Vulnerability |
| |  | ***'Take urgent action to combat climate change and its impacts'***<br>• Enabling decarbonisation of electricity, heat and transport through providing the required network capacity and connections<br>• Reducing our Business Carbon Footprint<br>• Ensuring the electricity network is resilient to the effects of climate change |  | Environmental Action Plan, Climate Resilience Strategy, Whole Systems Strategy |
| **Direct Contribution** |  | ***'Ensure access to water and sanitation for all'***<br>• Reducing the risk of water pollution from our operations<br>• Reducing business water consumption |  | Consumer Vulnerability |
| |  | ***'Build resilient infrastructure, promote sustainable industrialization and foster innovation'***<br>• Significant investment in innovation<br>• Providing system solutions that enable the most efficient use of the network, reducing the need for costly upgrades |  | Innovation Strategy Climate Resilience Strategy |
| |  | ***'Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss'***<br>• Reducing the risk of biodiversity loss or land contamination from our operations<br>• Understanding and protecting the ecological value of the environments in which we operate |  | Environmental Action Plan |
| |  | ***'Revitalize the global partnership for sustainable development'***<br>• Inclusive, responsive stakeholder engagement, acting on the issues that are most material for stakeholders, and delivering meaningful impact<br>• Working in partnership with stakeholders and organisations to co-create solutions for sustainability |  | Stakeholder Engagement Strategy, Whole Systems Strategy, Environmental Action Plan |
| **Indirect Contribution** |  | ***'End poverty in all its forms everywhere'***<br>• Providing value for money<br>• Supporting customers in fuel poverty<br>• Supporting vulnerable communities to adopt low carbon technologies |  | Consumer Vulnerability |

| | SDG | Goal aims and our contribution | Sustainability drivers | Related Annex |
|---|---|---|---|---|
| |  | ***'Ensure healthy lives and promote well-being for all at all ages'***<br>• Enabling air quality improvement through the connection of low carbon technologies<br>• Enabling access to green spaces through landscape and visual mitigation schemes |  | Consumer Vulnerability |
| |  | ***'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'***<br>• Providing a wide range of training and development opportunities for staff<br>• Providing educational opportunities in the communities in which we operate |  | Consumer Vulnerability |
| |  | ***'Achieve gender equality and empower all women and girls'***<br>• Driving down the gender pay gap<br>• Empowering women through staff networks and gender-neutral recruitment processes |  | Consumer Vulnerability<br>Net Zero Workforce Strategy |
| |  | ***'Promote inclusive and sustained economic growth, employment and decent work for all'***<br>• Providing network capacity and connections to accelerate growth in green industries |  | Consumer Vulnerability |
| |  | ***'Reduce inequality within and among countries'***<br>• Targeting investment to where it's needed the most<br>• Working to ensure a just low carbon transition |  | Consumer Vulnerability |
| |  | ***'Make cities and settlements inclusive, safe, resilient and sustainable'***<br>• World class safety performance<br>• Working with communities to enhance resilience |  | Consumer Vulnerability |
| |  | ***'Ensure sustainable consumption and production patterns'***<br>• Minimising overall resource consumption<br>• Increasing re-use and recycling |  | Environmental Action Plan |
| |  | ***'Promote just, peaceful and inclusive societies'***<br>• Transparency, inclusivity and accountability in our business processes |  | Consumer Vulnerability |

# 3. Developing our Environmental Action Plan

As outlined above, building on our commitment to environmental legal compliance, our Sustainable Business Strategy identifies our Sustainability Drivers which represent the key issues associated with our network and business activities. Our goals and objectives sit below these Drivers. Our process to date for delivering these objectives has been to produce a detailed annual Sustainability Plan of prioritised actions, metrics and targets. The relatively limited focus of RIIO-ED1 on such activities has had an impact on our scope for ambition.

We therefore welcome Ofgem's decision to create a new Environmental Framework for RIIO-2. This has allowed us to follow our planning process and embed the measures required to move 'beyond compliance' towards becoming a sustainable networks business in our RIIO-ED2 Business Plan. Thereby ensuring that we will take the necessary steps towards delivery of our sustainability goals, our stakeholders' expectations and our fair share of Net Zero carbon targets and the UN SDGs.

We have developed this Environmental Action Plan (EAP) with our stakeholders, focusing on the areas identified in Ofgem's RIIO-ED2 Business Plan Guidance:

- Decarbonising the energy network, with a focus on our carbon footprint and embedded carbon in our network.
- Reducing our network's environmental impacts.

Our EAP aligns these areas to our Sustainability Drivers and details the commitments, initiatives and actions we will deliver over the five-year price control period 2023-2028, towards our longer-term strategic goals for 2030 and 2035 and beyond.

To identify the priority environmental impacts to target for improvement during RIIO-ED2 we considered a variety of data and information sources - in line with our EMS (Environmental Management System) Management Review process - including our longer-term strategic goals, our Environmental Aspects and Impacts Registers (introduced above and see Appendix B) Ofgem baseline expectations and findings from audits and incident investigations.

Our 2021 high priority environmental impacts from our Environmental Aspects and Impacts Registers are:

- Fugitive emissions of gases to air
- Fugitive emissions to land and water
- Production of waste
- Staff environmental competencies
- Use and losses of electricity
- Wildlife and biodiversity impacts

We then considered the level of maturity of the various impact areas (as shown in Section 2.2.4, ***Figure 11****: Stages in maturity of impact understanding and mitigation)* and applied the 'Environmental mitigation hierarchy' (***Figure 15: Environmental mitigation hierarchy*** below) to guide identification of the required next steps for each.

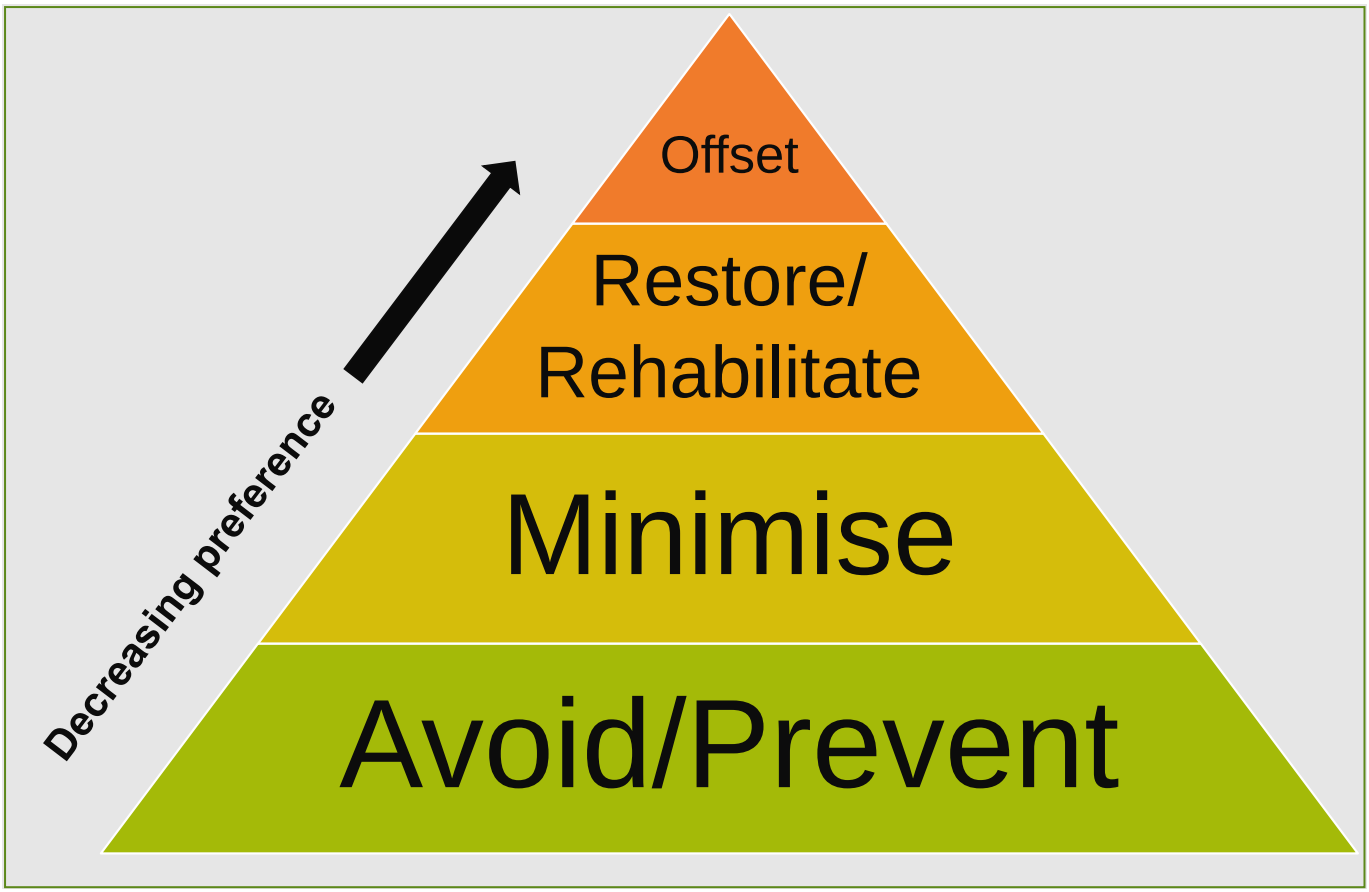


*Figure 15: Environmental mitigation hierarchy*

Specifically, this EAP:

- Describes the methodology we use to assess our environmental impacts
- Clarifies our strategic objectives and targets for the network's environmental impacts
- Prioritises impacts for reduction during RIIO-ED2
- Identifies actions to deliver improvements with:
    - milestones and indicators to track delivery
    - an assessment of impacts in RIIO-ED2 compared to current levels
    - costs of delivering reductions, including evidence of value for money
    - expected deliverables, outputs and benefits

## 3.1 Embedding environmental considerations and costs in our Business Plan

### *3.1.1 Asset management and investment planning*

As described within our main Annex 4A.24: Investment Approval Process and Governance, our investment decisions are founded upon the ISO55001 standard: a robust asset management lifecycle process that is widely used throughout industry. We use a series of phase gates in our process to ensure we correctly evaluate, challenge and ultimately deliver the best-balanced solution for all our stakeholders. We consider multiple factors, including the environment, when evaluating projects.

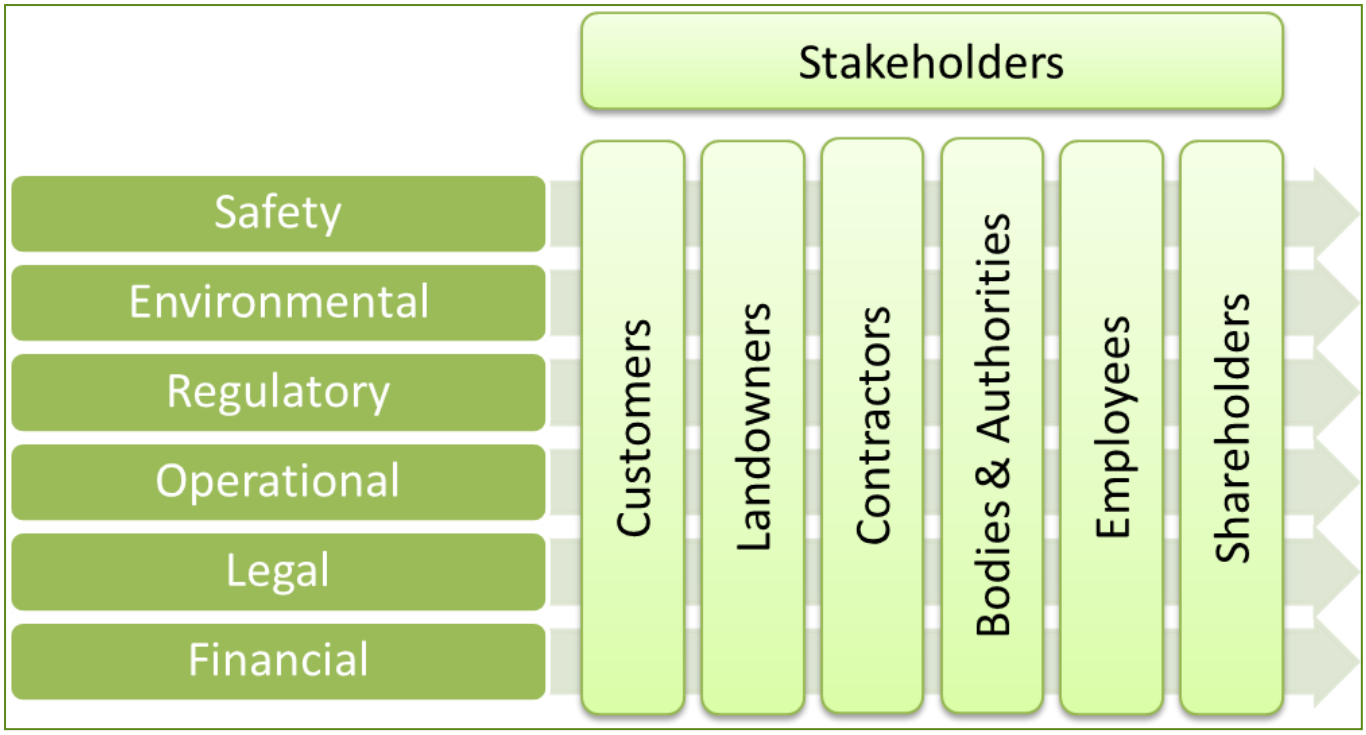


*Figure 16: Investment decision-making factors for consideration*

### 3.1.2 Assessing the environmental impact of our investment decisions

Development of our planned investments, including our RIIO-ED2 Business Plan, starts with the identification of a network need. To help develop our RIIO-ED2 Investment Plan, we used Initial Environmental and Sustainability Reviews (IESRs). These provide an early assessment of potential environmental and sustainability risks and opportunities associated with each identified network need.

IESRs were prepared, where appropriate, to support this Investment Planning process, the objectives of which were to review the potential environmental benefits and impacts of the works proposed, and compliance with relevant environmental regulation, policy and standards. The process for IESRs is shown in ***Figure 17*** below.

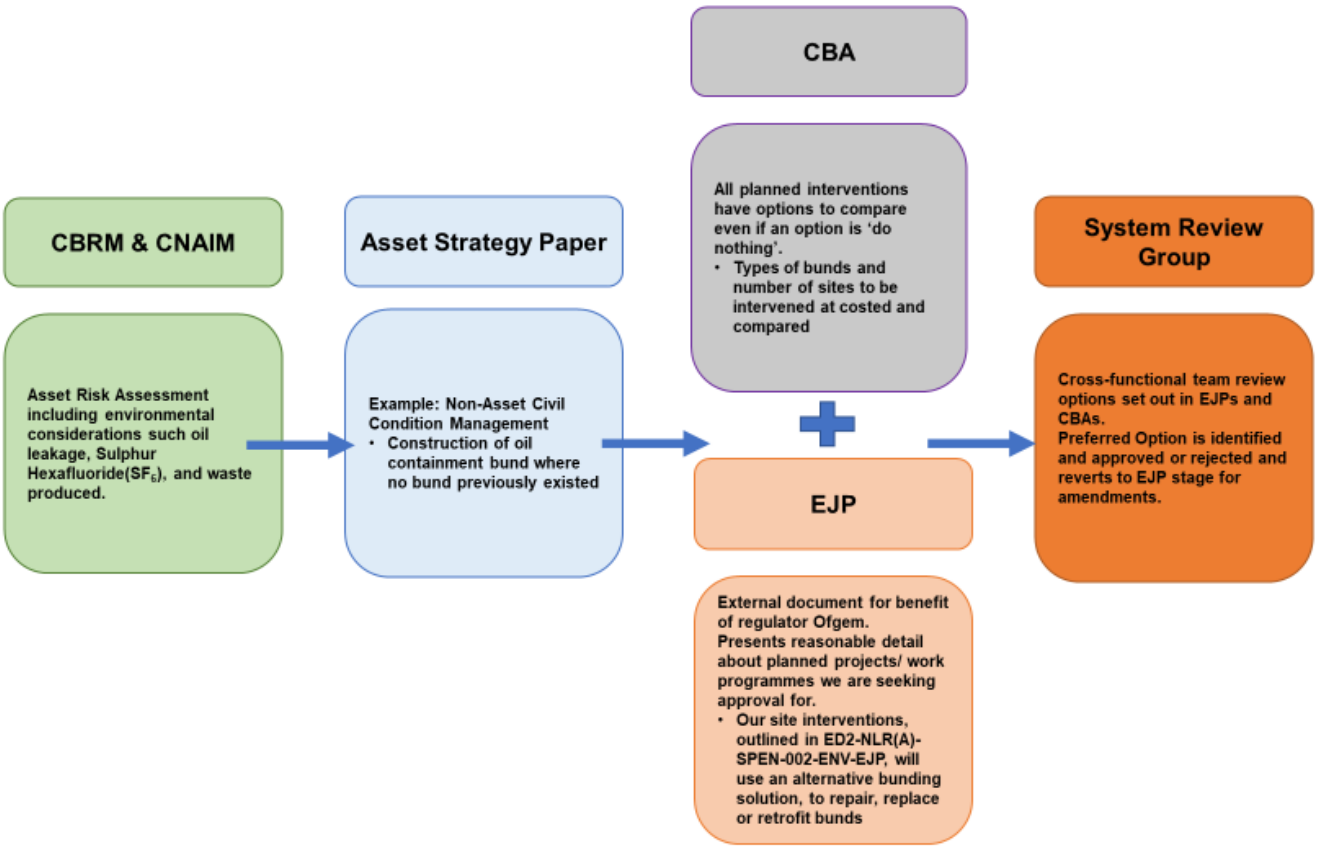


*Figure 17: IESR review process*

### Stage 1: CNAIM & CBRM

The first stage of the IESR used the Distribution Network Operator (DNO) Common Network Asset Indices Methodology (CNAIM); a common framework of definitions, principles and calculation methodologies, adopted across all GB DNOs, for the assessment, forecasting and regulatory reporting of Asset Risk.

Environmental factors considered here include volume of oil lost, volume of lost Sulphur Hexafluoride ($SF_6$), probability of fire and quantity of waste produced. CNAIMv2.1 has been used to identify and prioritise high risk assets suitable for intervention, either by refurbishment or replacement.

### Stage 2: Strategy Papers

The second stage involved preparing an IP1 Concept Approval paper which describes the need and outlines a proposed scope of options. These strategy papers outline our process to develop a holistic and optimised asset investment portfolio. Environmental impacts were considered at this early stage and we seek to provide a solution that achieves an equitable balance between environmental, technical and economic matters (see Annex 5A.3: Cost Assessment). A strategy paper was created for each asset class which included outputs aligned with the RIIO-ED2 asset management objectives:

- Safe and resilient network (e.g. risk reduction: risk points)
- Environmental sustainability (e.g. $SF_6$ alternatives)
- Customer service and vulnerable customers (e.g. reducing interruptions).

Strategy papers were also created for non-asset strategies and programmes including Losses and Visual Amenity.

All of our Strategy papers, CBAS and EJPs for RIIO-ED2 were independently reviewed for environmental and sustainability content by external specialists, and scope of works revised to reflect any recommendations.

### Stage 3: Engineering Justification Papers and Cost Benefit Analysis

In the third stage the options identified are drafted into Engineering Justification Papers and a preferred option identified. Design options are assessed through the RIIO-ED2 Cost benefit analysis (CBA) model, where applicable This provides additional information on the costs and benefits for each option to allow for an informed decision on the most appropriate solution.

In evaluating the preferred option, the Cost of Carbon associated with asset interventions has been assessed. We recognise that there is currently an over-arching challenge facing all infrastructure investments to understand the true cost of carbon for work undertaken, this challenge extends to the energy industry and electricity distribution sector.

To overcome this, we have worked alongside carbon accounting specialists at AECOM to link our asset activities to an activity category within the Carbon Trusts Environmentally Extended Input Output Database (EEIO). This EEIO conversion approach uses the OPEN IO database originally developed by the Sustainability Consortium at the University of Arkansas and further adapted by the Carbon Trust to assign a kg $CO_2e$/£ for each category. We have converted this to a tonne/$CO_2e$ for our activities based on asset unit cost information where possible. This tonne/$CO_2e$ is then used to derive a monetary value of carbon using Ofgem's CBA template. Using this approach, we have been able to ensure the carbon costs for preferred and discounted options are captured within the final NPV of our associated CBA.

During RIIO-ED2 we will continue to work with our supply chain to improve our understanding and visibility of accurate carbon accounting costs associated with the addition and disposal of assets on our network.

We incorporate environmental and social factors in our EJPs, thereby ensuring these factors are taken into consideration in our long-term business planning. Please see Appendix C for a list of the RIIO-ED2 Engineering Justification Papers and Cost Benefit Analyses that were used to directly inform the development of the EAP. Further information on the Cost Benefit Analysis model can be found in the Annex 4A.23: EJP and CBA Index.

AECOM reviewed each EJP against the following predefined list of environmental sustainability issues, noting any positive or negative environmental impacts in a review document:

- **Operational and embodied carbon emissions** – Each EJP review evaluates the impact of the proposed intervention on our Business Carbon Footprint, for instance through changes to network losses, or the need for new materials, components or construction techniques that will result in embodied carbon and other capital carbon emissions.

- **Supply chain sustainability** – In order for the overall carbon impact of interventions to be reliably assessed, we need suppliers to provide accurate embodied carbon data for their products. Each EJP review notes that the requirement for suppliers to provide this information alongside other sustainability criteria is now part of our wider sustainable procurement policy.

- **Resource use and waste** – For each proposed intervention, the EJP review evaluates how approaches such as reuse of existing assets, renovation and refurbishment can reduce the volume of resources required and waste generated. Each review also notes the waste reduction hierarchy of waste prevention – reduce - reuse – recycling – recovery – disposal.

- **Biodiversity and natural capital** – The EJP review outlines the measures that will be taken to minimise adverse impacts on biodiversity and natural capital.

- **Preventing pollution** – A number of interventions identify a need to reduce leakage of oil or other pollutants as a primary or secondary driver for the investment. In these instances, the EJP review recognises the environmental sustainability benefits of this work. All reviews note that we

will always follow all relevant hazardous waste regulations and act to minimise the impacts of pollution on the environment.

- **Visual amenity** – EJP reviews recognise instances (such as undergrounding cables) where we are taking specific action to minimise the impact on visual amenity but note that in many cases the nature of our networks and assets can make this challenging.

- **Climate change resilience** – Each EJP review notes the importance of securing the resilience of our networks in the face of a changing climate, alongside the steps that we are taking to reduce our emissions in line with our Net Zero ambitions. Where interventions include specific actions to address climate resilience, this is recognised in the EJP review.

The EJP reviews also made reference to the likely need for planning and environmental impact assessment (EIA) for a limited number of work programmes. In cases where a specific planning application might be required, it was noted that the sustainability-related text for inclusion in the EJP was not provided in lieu of a properly constituted environmental statement prepared as part of an EIA.

#### Stage 4: System Review Group (SRG) Approval

In the final stage, technical options that have been proposed in the Engineering Justification Paper (EJP) are reviewed by a cross-functional team, the System Review Group (SRG), to challenge the design proposals. EJPs are either approved or sent back to the previous stage for amendment.

By following this process, we ensured that environmental considerations were taken into account at every stage in the development of our RIIO-ED2 plans.

## 3.2 Incentives and other regulatory mechanisms

### *3.2.1 Output Delivery Incentive: Financial (ODI-F): Environmental Scorecard*

The purpose of the scorecard is to incentivise us to outperform the targets in our EAP and in some cases to penalise underperformance. Metrics and targets within the Scorecard are under discussion with Ofgem and the other DNOs and will be developed between final plan submission and draft determination. For the environmental scorecard we propose the below metrics.

*Table 6: Proposed Environmental Scorecard Metrics*

| Metric | RIIO-ED2 Target | Unit | Mechanism |
|---|---|---|---|
| Business Carbon Footprint - Operational Fleet Fuel Use | *16,786* $tCO_2e$ *avoided* | $tCO_2e$ | Symmetrical Incentive |
| Temporary generation | TBC | $tCO_2e$ | Reward only Incentive |
| Substation and depot energy use | 15.2GWh reduction | kWh | Symmetrical Incentive |
| Waste Landfill Avoidance | 98% Landfill avoidance, excluding compliance waste | Tonnes/% of weight | Reward only Incentive |

### 3.2.2 Output Delivery Incentive: Reputational (ODI-R) and Licence Obligation (LO): Environmental Action Plan and Annual Environmental Report

Our Environmental Action Plan (EAP) outlines the key actions we intend to take during the RIIO-ED2 period to minimise, reduce and report on our environmental impacts. Our EAP must meet the baseline expectations that have been set by Ofgem in the RIIO-ED2 Business Plan Guidance. Please see Appendix C for mapping of our EAP to these expectations. We will be held to account for the delivery of these as we report our progress in our Annual Environmental Report (AER). The EAP is a reputational incentive only.

We welcome Ofgem's decision to introduce an obligation for a public environmental report through a new licence obligation. While we already publish our Business Carbon Footprint data and other qualitative information in our Distribution Environmental and Innovation Report, we recognise that this does not cover the full extent of our impacts. We will work collaboratively with Distribution Network Operators and other stakeholders to develop a consistent and appropriate approach in the lead up to RIIO-ED2. The metrics we propose to use to track our performance are identified in ***Table 7***.

*Table 7: Environmental Action Plan RIIO-ED2 Targets*

| Area | RIIO-ED2 Target | Unit | Actions |
|---|---|---|---|
| Scope 1 and 2 Business carbon footprint (BCF) excluding losses | Reduction in Scope 1 and 2 BCF (excluding losses) in line with our SBT | $tCO_2e$ | Setting verified Science-Based targets (SBT)and corresponding plans.<br>Electrification of operational fleet.<br>Buildings electricity supplied from 100% guaranteed renewable energy<br>Reduction in buildings and substation energy use.<br>Reduction in other fuel use. |
| Sulphur Hexafluoride ($SF_6$) | 10% reduction in $SF_6$ leakage | $tCO_2e$/kg/% | Leakage Repair programme.<br>Piloting of $SF_6$ free alternatives as they become technically feasible and market ready.<br>Further information can be found in our RIIO-ED2 $SF_6$ Strategy (Section 6.12.1). |
| Losses | Avoid an estimated 36GWh of network losses | GWh | Early replacement of high loss assets.<br>Implementation of our Losses Strategy (Annex 4A.8: Losses Strategy).<br>Continue to lead Energy Networks Association (ENA) Losses committee. |
| Scope 3 carbon emissions, including purchased goods and | 100,000 | $tCO_2e$ | Setting of Scope 3 SBT. |

| | | | |
|---|---|---|---|
| services, capital goods, upstream transportation and distribution, waste generated in operations, business travel and employee commuting. | | | Introduction of PAS2080 Carbon Management in Infrastructure<br><br>Development and implementation of carbon measurement tool to baseline and monitor embodied carbon and other capital carbon emissions throughout RIIO-ED2.<br><br>Work in collaboration with other network operators and with our supply chain to reduce Scope 3 carbon emissions. |
| Supply chain management | 80% of RIIO-ED2 suppliers (by value) meeting our new enhanced environmental standards | No. of Suppliers<br><br>% £ spend covered by compliant suppliers | Update environmental requirements in new contracts.<br><br>Support for suppliers through membership of Supply Chain Sustainability School. |
| Sustainable resource use and waste reduction | 100% diversion from landfill by 2030 – 98% diversion from landfill by end of RIIO-ED2.<br><br>Set targets for reduction in waste produced per £ total annual expenditure, to be achieved by end RIIO-ED2 and 2030.<br><br>Set targets for recycled & reused materials as a % of total input materials to be achieved by end RIIO-ED2 and 2030. | %/tonnes | Embedding circular economy principles in our business processes.<br><br>Waste and resource use targets set in new contracts. |
| Biodiversity and natural capital | Creation of 500 biodiversity units across our networks at projects and programmed of work.<br><br>10% increase in environmental value across 25 hectares of existing linear infrastructure and non-operational land | Biodiversity Units | Development and implementation of Biodiversity and Natural Capital Action Plan.<br><br>Enter into strategic partnerships with local ecological protection organisations.<br><br>Adopt tools to measure biodiversity and natural capital. |
| Fluid-filled cables | Reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres | Litres | Leakage repair programme.<br><br>Fluid-filled cable removal and replacement programme. |

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| Noise pollution | Minimise number of noise incidents and time taken to resolve | No. of incidents | Proactively minimise the impacts of noise resulting from the construction, maintenance, and operation of our electrical infrastructure.<br>Take timely action to rectify noise complaints from our plant and sites. |
| Polychlorinated biphenyls (PCBs) | Removal of PCBs from the network, in line with legislation by 2025 | No. of assets removed | Eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.<br>Report on volumes of PCB contaminated equipment removed from the network. |

### 3.2.3 *Customer Value Proposition (CVP): Network Loss Reduction and Safety Enhancement Introduction*

As part of our overall strategy to reduce losses and enhance the safety of our network, we propose to employ a custom-built vehicle called the MAAV – or Mobile Asset Assessment Vehicle – that detects electromagnetic fields and identifies likely exposed voltages (called 'Contact Voltages'). Further information can be found in Annex 5C.2: BPI Stage 2: CVPs and Annex 4A.8: Losses Strategy

### 3.2.4 *Output Delivery Incentive: Reputational (ODI-R): Network Losses Mechanism*

As discussed in Section 5.2.2 of our Losses Strategy (Annex 4A.8 Losses Strategy), independent technical experts WSP have worked with the Energy Networks Association(ENA) Technical Losses Working Group to produce a report that investigates best practice and makes independent recommendations as to future loss incentive mechanisms. We published key findings as part of our Losses Discretionary Reward Tranche 3 submission.

In line with the guidance in the WSP report, we propose a reputational RIIO-ED2 losses mechanism which builds on the existing RIIO-ED1 framework and recognises the complexity in the measurement and management of losses arising from the Net Zero transition. We will continue to collaborate with Ofgem and the other DNOs to further develop this proposal between Final Plan submission and Draft Determination.

### 3.2.5 *Uncertainty Mechanism: Environmental Legislation Re-opener*

It is important that this reopener captures the impacts from changing environmental standards that extend beyond EAP activities. Furthermore, it is important that the scope of this reopener is has a sufficiently wide enough definition to capture changes in regulations under the oversight of bodies such as the Environment Agency (EA) and Scottish Environment Protection Agency (SEPA) whose changes in policy or approach can have similar impacts to those driven by new legislation.

A notable example is the current review being undertaken by the EA of the existing Waste Regulations and the classification of hazardous waste (Technical Guidance WM3). Specifically, the EA is assessing the effectiveness of existing guidance and protocols regarding the classification of excavated waste materials (as hazardous or nonhazardous) arising from any utility activities that involve incursions into the ground e.g. streetworks. The EA is expected to conclude its review by 2023 with any changes to guidelines regarding WM3 likely to impact the required level of waste sampling,

testing, and disposal of excavated spoil with associated costs changes of several £million per year, per license.

### 3.2.6 Bespoke Uncertainty Mechanism: Volume Driver: Polychlorinated Biphenyls

We are proposing a volume driver to adjust our RIIO-ED2 allowances for the actual numbers of pole mounted transformers and poles we replace to mitigate potential PCB contamination. We believe our proposed volume driver is the best way to minimise risk to consumers by ensuring they only pay the efficient costs of our compliance with PCB legislation and asset replacement requirements. Further information can be found in Annex 5B.1: Uncertainty Mechanisms.

### 3.2.7 Bespoke Allowance with Clawback: Biodiversity Enhancement

We are proposing to enhance biodiversity across our networks on projects and programmes by 500 biodiversity units over the RIIO-ED2 period. We will also pilot biodiversity enhancement initiatives across 25 hectares of our non-operational land and existing linear infrastructure to deliver a targeted 10% enhancement in biodiversity units. We are proposing that this be funded via allowance with clawback provisions.

# 4. Stakeholder Engagement

We engage proactively with our stakeholders to anticipate their needs and deliver an environmentally, socially, and economically sustainable energy service for current and future consumers. Our approach is founded on our comprehensive Stakeholder Engagement Strategy, which enables us to engage in a credible, tailored way on an ongoing basis to continually improve our services. This section lays out the specific engagement carried out in the development of this plan and outlines our plans for ongoing engagement during RIIO-ED2. Please see Appendix E: Stakeholder Engagement Strategy for details of business-as-usual engagement.

## 4.1 Stakeholder Engagement for the development of our Environmental Action Plan

Our RIIO-ED2 plan must be sustainable in terms of strategic direction, prioritisation of environmental, economic, and social impacts, timelines for delivery and acceptable levels of financial investment. To achieve this, we engaged with a wide range of stakeholders to guide our decision making and develop a well-balanced, fully justified plan that facilitates Net Zero and delivers the objectives outlined above while meeting the needs of network users and consumers.

Working closely with our stakeholders is a vital part of mitigating our environmental impact and ensuring the sustainability of all our investment decisions. This is especially important because of the increasing pace of change in the sustainability agenda, which requires us to be open to new information and ideas and make balanced decisions in response. The delivery of sustainability benefits requires the adoption of new approaches and tools, and sustainability initiatives are both a product of, and reliant upon, location-specific knowledge that stakeholders can provide.

## 4.2 RIIO-ED2 Engagement Plan

We focused our engagement on those stakeholders who are knowledgeable about the environmental and sustainability impacts of our work or are potentially affected by our plans in this area, as identified above.

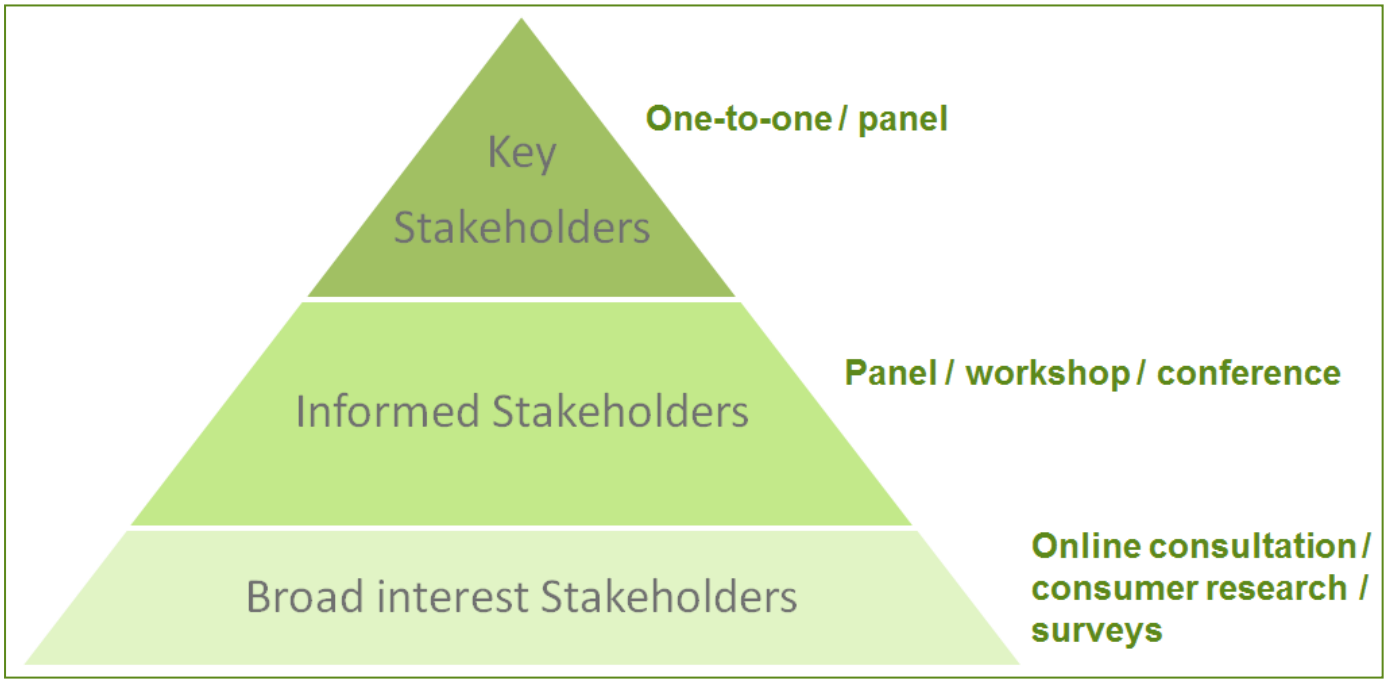


*Figure 18: RIIO-ED2 hierarchy of sustainability engagement development*

Engagement to develop the EAP is taking place in several iterations:

- **Phase 1 – Identifying customer and stakeholder priorities (Summer 2020)** - In the first phase of our RIIO-ED2 engagement programme, we set out to identify the overarching priorities of our customers and stakeholders. Understanding these priorities plays a critical role in the development of our Business Plan. They signal the outcomes that our customers and stakeholders care about the most and, as a result, drive our ambition across each part of the plan.
- **Phase 2 – Influencing our sustainable ambition (Autumn 2020)** –In the second phase of engagement we undertook six workshops covering various sustainability topics, roundtable discussions with SSWG, environmental regulators and informed stakeholders, coordination with other network operators to share best practice, cross-vector engagement with government and major infrastructure organisations.
- **Phase 3 – Co-creating our business plan (Winter/Spring 2021)** –benchmarking of draft business plans with other operators, incorporation of CEG feedback, detailed topic-specific engagement with key and informed stakeholders, incorporation of feedback from external experts, strategic stakeholder panels, four stakeholder workshops covering our carbon emissions strategy, biodiversity and natural capital, developing our supply chain sustainability strategy and delivering the future of sustainability .
- **Phase 4 – Business Plan acceptability (Autumn 2021)** – engagement with SSWG, key and informed stakeholder to finalise commitments and costs, engagement to confirm broad interest stakeholder acceptance of commitments and costs, incorporating final feedback from our independent Consumer Challenge Group, initial engagement on next steps for commitment delivery.

As in RIIO-ED1, our Engagement Strategy will be updated on a regular basis and will continue to align to relevant international standards. Business engagement will continue to be validated by a sufficiently qualified independent organisation. Our strategy for engagement to deliver our RIIO-ED2 EAP commitments will therefore evolve as the Engagement Strategy evolves.

Throughout RIIO-ED2, the insights of the Independent Customer Engagement Group (CEG) and our Sustainability Stakeholder Working Group (SSWG) will continue to influence the ongoing development of our Sustainable Business Strategy and the delivery of our commitments.

## 4.3 RIIO-ED2 Engagement Outputs

| Engagement | Purpose | Outputs |
|---|---|---|
| **Phase 1 – Identifying customer and stakeholder priorities (Summer 2020)** | | |
| **Customer Engagement** | SPEN engaged 1550 customers between September and November 2020. The sample was recruited to be representative across domestic and commercial customers. | The objective of this research was to identify the priorities of SPEN's customer base and to understand the level of ambition that customers would support, in principle, on priority areas below:<br>• Environmental regulations.<br>• Timelines for when we achieve being carbon neutral.<br>• Biodiversity at our sites.<br>• Waste reduction.<br>• Environmental sustainability in our supply chain. |
| **Stakeholder Engagement** | SPEN gathered the views of 91 stakeholders from 26 groups between October and December 2020 on the priorities that should guide our investments, | Stakeholders engaged broadly agree that SPEN's top three priorities during RIIO-ED-2 should be the following:<br>• Developing the network of the future to enable the energy system transition and facilitate Net Zero targets. 65 placed |

| Engagement | Purpose | Outputs |
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| | strategies, and actions over the RIIO-ED2 period and beyond. To minimise stakeholder fatigue and provide a flexible means of engagement during difficult times, feedback on these priorities was gathered in the surveys sent to stakeholders as part of Phase 2 engagement. | this priority in the top three. The average rating of importance was 4.63/5.<br>• Supporting vulnerable customers and communities to ensure no-one is left behind in the energy system transition. 48 stakeholders placed this priority in the top three. Stakeholders rated it 4.44/5.<br>• Ensuring that we keep electricity supplies reliable and secure. 46 stakeholders placed this in their top three priorities. An overall a score of 4.63/5, tied with 'developing the network of future', was awarded. |
| **Phase 2 – Influencing our sustainable ambition (Autumn 2020)** | | |
| **Carbon Reduction and Sustainable Society workshops** | Two workshops (Business Carbon Reduction and Sustainable Society) were held as part of the Influencing our Sustainable Ambition RIIO-ED2 workstream. During these workshops, we presented our strategies to reduce business carbon emissions to a range of expert stakeholders and partners and sought their feedback on these proposals and additional activities that we could undertake to reduce emissions.<br>The two workshops covered the following range of topics:<br>• A high-level presentation of our activities to reduce business carbon emissions.<br>• Fleet decarbonisation.<br>• Our $SF_6$ strategy.<br>• Managing network losses.<br>• Substation electricity use. | **SPEN's role in reducing business carbon emissions**<br>• Stakeholders shared a range of activities and initiatives that SPEN should undertake to reduce its business carbon emissions. Stakeholders highlighted the need for SPEN to invest in exploring and testing new technologies to accelerate decarbonisation and anticipate future demands. Stakeholders also suggested that SPEN identify ways to decarbonise transport and logistics operations by auditing its fleet, assessing the journeys undertaken by its fleet, and shifting towards EVs.<br>• A recurring theme that arose across stakeholder feedback was the need for SPEN to consider the impact of its decarbonisation efforts on end customers, with a focus on vulnerable consumers. Some stakeholders indicated that a whole energy system thinking is required to ensure that SPEN's customers are presented with all credible options.<br>**Fleet decarbonisation**<br>• Most stakeholders agreed with SPEN's proposed commitment to fully electrify its fleet by 2030, with several stakeholders lauding the proposal's potential impact in reducing emissions and shifting public perception regarding EVs. A stakeholder who disagreed with SPEN's proposed commitment noted that SPEN should look beyond EVs and seek to determine the best zero emission vehicle for a specific task, which may not always be electric.<br>• There was consensus among stakeholders that SPEN should fully decarbonise its fleet sooner than 2030 if market conditions allow. Several stakeholders noted that SPEN should aim to decarbonise its small and medium vehicle fleet at an earlier date, citing potential alignment with the Scottish Government's commitment to fully electrify small and medium vehicles in the public sector by 2025.<br>• Stakeholders indicated a range of challenges that SPEN should be aware of with respect to fleet decarbonisation. Notable examples include: a lack of full technology maturity, fleet acquisition cost, and charging infrastructure accessibility and availability.<br>• There was consensus among stakeholders that SPEN should pilot new technologies such as hydrogen and smart charging solutions. Stakeholders noted the importance of pilot programmes in determining the best solution to electrify SPEN's fleet and to subsequently effectively deliver this technology at scale. Stakeholders highlighted potential benefits of hydrogen, which could provide a solution for |

| Engagement | Purpose | Outputs |
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| | | larger vehicles, and the possibility to widen access to charging infrastructure by leveraging smart technologies.<br><br>**Sulphur hexafluoride Strategy ($SF_6$)**<br><br>• Most stakeholders agreed with SPEN's approach to managing its in-service $SF_6$ assets, although dissenting stakeholders questioned the decision to prioritise carbon emission offsetting over immediate asset replacement. One of the dissenting stakeholders questioned the effectiveness of offsetting emissions given the potency of $SF_6$.<br><br>• Most stakeholders indicated support for SPEN's approach to investing in new assets, although a stakeholder representing manufacturers believed that SPEN should make a greater effort to avoid $SF_6$ wherever this is possible.<br><br>• Stakeholders welcomed SPEN's proposal to use $SF_6$ alternatives and highlighted that testing new solutions will play a key role in SPEN's general decarbonisation efforts. Stakeholders noted that SPEN should nonetheless ensure that testing initiatives are cost-efficient and give thought to the holistic impact of adopting a given technology solution before piloting that solution.<br><br>**Managing network losses**<br><br>• When asked if SPEN should focus on managing losses within their control rather than seeking to reduce absolute losses, two stakeholders disagreed, without providing any explanation for their dissent. However, most of the stakeholders agreed with the approach. Some of the additional comments were: SPEN should be incentivised to minimise losses it can control, there still needs to be a recognition that the drive should be towards a zero figure, and that keeping load and generation as close as possible and using local balancing will reduce losses.<br><br>• Most stakeholders agreed with SPEN's strategy to accelerate the replacement of high-loss assets. Stakeholders' main comments with respect to this question revolved around the cost implications flowing from accelerating the replacement of high-loss assets.<br><br>• Most stakeholders agreed that if lifetime losses are lower, higher asset costs are justified. Several stakeholders who agreed also indicated that this approach should lead to a greater ROI and reduced costs over the long term.<br><br>• When asked for additional considerations for managing network losses, a stakeholder representing the health sector suggested that one factor to consider was the risk of passing on the cost burden to vulnerable customers and pushing them into fuel poverty. To prevent customer bills from rising, the stakeholder suggested that SPEN should lobby government to receive additional financial support, or for the introduction of another pricing mechanism in the electricity bill which would avoid the most vulnerable customers from being impacted.<br><br>**Substation electricity use**<br><br>• All the stakeholders agreed with the aim to improve the energy efficiency at existing grid and primary substations where other interventions are planned in RIIO-ED2. One of the stakeholders highlighted that there are straightforward ways of improving efficiency but to achieve some of the |

| Engagement | Purpose | Outputs |
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| | | harder energy efficiency gains, SPEN should be looking at a fundamental improvement of infrastructure. Some of the additional suggestions provided by stakeholders were to consider 'natural' solutions, such as convection air cooling, and that SPEN should aim for the assets to be at least carbon neutral, including energy reduction targets.<br>• The majority of stakeholders agreed that installing micro-generation at substation sites to offset building energy demand is something that SPEN should consider, but also suggested that it should only be done if it is effective and if there is a strong business case for it. One of the stakeholders also suggested that SPEN should maximise the efficiency of their assets first, before considering micro-generation. One final aspect that was highlighted by several stakeholders is the need to address the barriers to achieving Net Zero, presented by legislations which prevent organisations from generating energy. |
| **Sustainable Resource Use, Scope 3 Carbon and Supply Chain Sustainability Workshops** | SPEN organised two workshops on Sustainable Resource Use, Scope 3 Carbon and Supply Chain Sustainability as part of the Influencing our Sustainable Ambition RIIO-ED2 workstream. During these workshops, we presented our strategies to reduce waste and Scope 3 emissions to a range of expert stakeholders and partners and sought their feedback on these proposals and any additional activities that we could undertake to reduce emissions.<br>The two workshops covered the following range of topics:<br>• Science-based targets for the supply chain.<br>• Alignment with PAS2080 standard.<br>• Industry collaboration for development of tracking methodologies.<br>• Environmental product declarations.<br>• Scope 3 carbon reduction activities.<br>• Sustainable resource use ambition.<br>• Circular economy principles.<br>• Waste management plans for the supply chain.<br>. | **Science Based Targets – Supply Chain**<br>• Most stakeholders agreed it would be reasonable for SPEN's suppliers to start the process of setting science-based carbon reduction targets. However, stakeholders also broadly agreed that smaller companies may find setting of science-based targets difficult and therefore will require direct support from SPEN via practical advice and/or guidance. The majority of stakeholders also highlighted the importance of setting a reasonable timeframe for the supply chain to set the targets depending on the scale of the carbon footprint (as it can be a time-consuming exercise) and because smaller companies will most likely have less resources and skills to set them on a short notice. Finally, it was stated that companies will most likely have different levels of knowledge in the area and therefore there might be a need for an educational program from SPEN's side to align their thought processes.<br>**Alignment with PAS2080 Standard**<br>• Most stakeholders agreed it is justified for implementation of PAS2080 to incur some initial costs as climate change mitigation and achieving Net Zero are both vital. However, one of the stakeholders who remained neutral suggested that it should be done with care as cost can sometimes 'out benefit' the need. Some additional suggestions were to have awareness education, particularly for small businesses to see the justification and that carbon reducing solutions can directly reduce the costs as well.<br>**Industry Collaboration**<br>• Stakeholders agreed that it would be beneficial for SPEN to collaborate with the other DNOs to create a standard set of assumptions and carbon factors for relevant network assets. One stakeholder also highlighted that it might be a good idea to look at the transmission network operators, which are already collaborating in that field to see if it would be beneficial to apply this kind of approach at distribution level.<br>**Environmental Product Declarations**<br>• Stakeholders agreed that it would be reasonable for SPEN to mandate that its supply chain provides Environmental Product Declarations as part of the procurement process. It was again highlighted that there is a need to work with smaller suppliers to assist them with the Environmental Product Declarations as they have limited resources and knowledge, meaning that quality of the data they will provide |

| Engagement | Purpose | Outputs |
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| | | might not be as good as the data from larger companies. They also suggested that one way of helping suppliers would be to set clear expectations and timelines for delivery and show them examples of EPDs, so companies know what they need to provide. Finally, collaboration with the supply chain and early engagement were also highlighted as key factors behind aligning strategies and visions.<br><br>**Scope 3 Carbon Reduction Activities**<br><br>• When asked how SPEN could reduce the carbon emissions of purchased goods and services, up- and downstream transportation, waste disposal and business travel the responses varied considerably. However, most stakeholders broadly agree that SPEN should first understand the emission sources through undertaking close work with local authorities, supply chains, governments, and customers. On the back of this, SPEN can develop a plan to reduce these emissions. It was also suggested to collaborate with other DNOs to share information and learn, and to work with suppliers and contractors to sign up to shared goals and targets.<br><br>• Stakeholders broadly agreed that SPEN should consider paying more for equipment, material and innovative solutions which will reduce carbon and provided diverse views on how SPEN should decide where to draw the line. The main trend that emerged was around the need for balance in cost and benefits and that the line should be drawn when the cost outweighs the need.<br><br>**Sustainable Resource Use Ambition**<br><br>• When presented with a goal to divert 95% of waste from landfill by 2023, recycle or re-use 100% of waste by 2030 and move to a circular zero waste model by 2040, the majority of stakeholders agreed that it is an ambitious but achievable target. Only one academic disagreed as he believes that SPEN should have separate targets for reuse and recycling because reuse is less carbon intensive, but much less common, so SPEN needs to specifically target and address it. Stakeholders also suggested that to achieve this, a circular model and general path to getting there need to be clearly defined.<br><br>**Circular Economy**<br><br>• When asked what the key factors are to consider for designing out waste through all stages of the asset lifecycle, stakeholders broadly suggested that one of the most important aspects is designing the assets in such a way that they could be efficiently deconstructed and reused to build other assets. Additional suggestions were to have continuous collaboration with the industry and consumers outline targets and to purchase materials that are recyclable at the end of the asset lifecycle.<br><br>• Stakeholders provided diverse views when asked which circular economy principles should be tracked as leading and lagging indicators of circularity.<br><br>**Supply Chain**<br><br>• All stakeholders agreed that SPEN should require waste management plans for all new projects and programs as they are a standard part of major capital construction projects already and are good practice in general. One aspect highlighted by several stakeholders was to make better use of waste heat, regulation, and identification of |

| Engagement | Purpose | Outputs |
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| | | opportunities as it is vital for the decarbonisation but very often undervalued.<br>• Stakeholders also suggested the supply chain can be supported and incentivised through the following:<br>  • Workshops.<br>  • Mini competitions.<br>  • Innovation fund.<br>  • Innovation labs.<br>  • Tendering process.<br>  • Early engagement with suppliers.<br>  • Clear procurement guidelines. |
| **Biodiversity, Climate Adaptation, and Pollution Prevention Workshops** | SPEN organised 2 workshops on Biodiversity, Climate Adaptation, and Pollution Prevention as part of the Influencing our Sustainable Ambition RIIO-ED2 workstream to share its strategies for biodiversity enhancement and natural capital management, and to identify new ways to effectively develop its activities in these areas.<br><br>The first workshop involved Scottish stakeholders, providing us with the opportunity to ask questions concerning Scottish biodiversity protection and natural capital management specifically. We discussed using the Defra Biodiversity Metric 2.0 as a base to develop our methodology for natural capital assessment, and the applicability of the Metric to some regional Scottish ecosystems.<br><br>The second workshop focused on Welsh stakeholders, which enabled us to build a clearer picture of local priorities and of relevant parties to engage and collaborate with.<br><br>Both workshops covered the following areas:<br>• Our high-level vision for biodiversity enhancement and natural capital management.<br>• Our strategy to develop Biodiversity Net Gain (BNG) and the use of incentives to accelerate BNG delivery.<br>• Methodologies to assess natural capital. | **Enhancing biodiversity and managing natural capital**<br>• Stakeholders indicated that it is key for SPEN to develop an in-depth understanding of its natural assets to effectively protect and enhance the biodiversity of these sites. Gaining this understanding will not only enable SPEN to implement suitable measures to safeguard site biodiversity, but also seize opportunities which can help improve the biodiversity of its sites.<br>• Stakeholders put forward a range of activities that SPEN could undertake to widen its biodiversity impact. Suggestions included joining up different habitats by leveraging SPEN's lineal infrastructure, planting more trees and setting up a biodiversity net gain fund in partnership with NGOs. Smaller-scale activities that were suggested included putting up bird and bat boxes throughout the network and becoming a corporate member of the UK Wildlife Trust.<br>• Several stakeholders noted that SPEN's lack of legal control over the majority of land crossed by its infrastructure restricts its direct capacity to enhance biodiversity in these areas. On the back of this, stakeholders recommended that SPEN connect with a range of influential landowner associations (e.g. Welsh farming unions) to engage with landowners in a targeted and effective manner.<br>• Stakeholders also highlighted the importance of carefully planning access to project sites and of protecting naturally regenerating habitats during projects and underlined the key role played by brownfield sites in maintaining the biodiversity of their wider habitats.<br>**Delivering Biodiversity Net Gain (BNG)**<br>• Stakeholders broadly agreed with SPEN's proposed strategy to develop a biodiversity net gain methodology by the end of 2021, pilot and embed this methodology in relevant processes by the end of 2023 and deliver 'No Net Loss' as a minimum and 'Net Gain' from 2026.<br>• While stakeholders felt the proposed timeline was achievable, several argued that SPEN could accelerate this to better reflect the gravity of the biodiversity emergency.<br>• Stakeholders also noted that SPEN's BNG methodology should be flexible enough to align with the No Net Loss and biodiversity value methodology, which is currently being developed by the Scottish government. |

| Engagement | Purpose | Outputs |
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| | • Our strategies to mitigate oil pollution and respond to noise pollution complaints. | • There was a general agreement among stakeholders that SPEN should be incentivised to accelerate the delivery of BNG. Stakeholders noted that mechanisms that accelerate the move beyond minimum compliance are welcome, and that incentives are likely to optimise beneficial outcomes.<br>**Our strategy to understand and manage natural capital**<br>• Stakeholders recommended that SPEN examine the natural capital assessment methodologies adopted by other large service providers (e.g. Network Rail) and consult guidance provided by the Natural Capital Coalition to inform its own methodology.<br>• Scottish and Welsh stakeholders broadly agreed that the Defra Biodiversity Metric 2.0 was a logical starting point for the basis of SPEN's methodology development. However, some stakeholders suggested that the Metric was too complex and stressed the need for SPEN to anticipate alignment with an eventual Scotland and Welsh-specific metric. A majority of Scottish and Welsh stakeholders expressed support for the development of functionality to account for the specifics of Scottish or Welsh habitats.<br>• Stakeholders agreed that a timeline to develop and pilot SPEN's natural capital assessment methodology should be as ambitious as possible, given the urgency of the climate and biodiversity crises. Some stakeholders suggested that SPEN adopt a multi-staged approach, designed to focus initially on quick wins by leveraging readily available information (e.g. existing habitat maps).<br>**Pollution prevention**<br>• Stakeholders agreed with SPEN's proposal to prioritise its bunding programme based on environmental risks and alignment with asset refurbishment or replacement projects. Stakeholders emphasised the need to consider both current and future risk when considering environmental risk. In addition, some stakeholders also believe that SPEN should play a leading role in the development of a circular economy by undertaking initiatives to promote the reuse of assets to reduce waste streams.<br>• The majority of stakeholders agreed that SPEN's strategy to respond to noise pollution complaints from existing plant is sufficient. Several stakeholders highlighted the need for SPEN to consider the effect of noise pollution on animals and highlighted the importance of mitigating light pollution, due to the negative impact of artificial light on animals.<br>• Stakeholders suggested that SPEN could mitigate the effects of oil pollution by moving away from oil use where possible and by extending use of biodegradable oils and biofuels. |
| **Phase 3 – Co-creating our business plan (Winter/Spring 2021)** | | |
| **Workshop: Delivering the Future Sustainably** | In this online event, we presented our commitments across several areas of our business plan to provide stakeholders with a holistic view of our proposals. The objective of this event was to gather feedback and challenge from our stakeholders on the relevant commitments, identify gaps and | • Overall, stakeholders shared the sentiment that SPEN's sustainability strategy should be as ambitious as feasibly possible over a number of key areas, ranging from carbon-reduction targets to fleet decarbonisation, and that we should aim to show leadership in those areas.<br>• Stakeholders highlighted the importance of adopting a collaborative and partnership-driven approach across multiple vectors of our sustainability strategy. Notable suggestions include continued engagement with suppliers to |

| Engagement | Purpose | Outputs |
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| | gather additional insight into their wants, needs and preferences. | maximise the impact of carbon reduction initiatives and collaborating with landowners, local authorities and other relevant actors to effectively deliver biodiversity enhancements on land that SPEN does not own.<br>• Stakeholders supported SPEN's drive to drill into the environmental impact of its supply chain and to set out ambitious sustainability standards for its supply chain partners. Stakeholders agreed that SPEN should expect suppliers to demonstrate that they meet these standards by adopting relevant certifications. It was underlined that SPEN should engage these parties at an early stage and provide advice and support to suppliers, particularly smaller companies, so as not to place them at a disadvantage.<br>• Stakeholders considered the social dimension of sustainability, emphasising that SPEN should provide support to vulnerable consumers and smaller businesses for any additional costs incurred by initiatives undertaken to accelerate the pathway to Net Zero, to make the low carbon transition equitable and ensure that nobody is left behind. |
| **Developing our strategy for carbon emissions Workshop** | In this online event, we sought feedback from stakeholders on our carbon reduction strategy across several areas of our business plan. | • While stakeholders encouraged SPEN to move towards carbon neutrality as soon as possible, it was underlined that any emission target SPEN sets for itself must be achievable given SPEN's lack of control over certain elements (e.g. technological development or regulation). The majority of stakeholders were in favour of SPEN setting an interim carbon reduction target based on the controllable portion of its footprint. Most stakeholders were broadly opposed to carbon offsetting, as they felt this does not address the fundamental challenge.<br>• Stakeholders urged SPEN to decarbonise its heavy vehicles as aggressively as possible and to consider solutions such as hydrogen or green gas, which may be more suitable and realistic than electrification for these vehicle types.<br>• Stakeholders recommended that SPEN establish a carbon management culture and embed this into procurement strategy in order to deliver an effective carbon management programme. This could be complemented by incentivising suppliers to reduce emissions and working with industry bodies to drive low carbon innovations. |
| **Developing our strategy for biodiversity and natural capital enhancement Workshop** | In this online event, we sought feedback from stakeholders on our biodiversity enhancement and natural capital strategy across several areas of our business plan. | • Stakeholders recognised the challenge that flows from SPEN being active across different countries and urged SPEN to work with relevant organisations at a local level to ensure the provision of a bespoke approach where required.<br>• Partnership building with landowners was seen as crucial for SPEN to effectively deliver biodiversity enhancement on land it does not own.<br>• Stakeholders broadly supported the use of the developing 'NATURE' biodiversity and natural capital assessment tool, although it was pointed out that the scope of the tool could be widened to account for qualitative criteria, such as social benefits.<br>• Stakeholders were broadly supportive of the development of a Biodiversity and Natural Capital Action Plan, although it was commented that SPEN's current plan would need to be metric driven and place greater emphasis on natural capital. |
| **Developing our strategy for supply chain** | In this online event, we sought feedback from stakeholders on our supply chain sustainability | • The vast majority of stakeholders were supportive of SPEN setting a voluntary Scope 3 Science Based Target. |

| Engagement | Purpose | Outputs |
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| **sustainability Workshop** | strategy across several areas of our business plan. | • Stakeholders commended SPEN's collaborative approach to supply chain management but indicated that SPEN should supplement this strategy through targeted engagement with individual suppliers, which could notably include engagement on a proposal-by-proposal basis.<br>• Most stakeholders were supportive of SPEN asking supply chain partners to adopt relevant environmental and sustainability standards or certifications and suggested that a checklist of required accreditations could be published as part of tender processes. It was emphasised that SPEN should ensure that criteria do not place small suppliers at a disadvantage, given their limited resources. |
| **Phase 4 – Business Plan acceptability (Autumn 2021)** | | |
| **Developing our targets and plans for greenhouse gas reduction and removal Workshop** | In this online event, we sought feedback from stakeholders on carbon reduction and removal within our business operations. | • There was almost a complete consensus among stakeholders that it would be preferable to focus on reducing carbon emissions rather than offsetting them. At the same time, they acknowledged that offsetting would have to feature as part of the approach in the short term.<br>• Stakeholders supported the proposed focus on Scope 1 and 2 emissions, emphasising the need for early industry-wide collaboration to align processes and goals<br>• Stakeholders largely believed that the Net Zero target should be brought forward if it was a realistic ambition<br>• Stakeholders were very much of the view that the Oxford Principles were an appropriate standard to adopt for carbon offsetting purposes |
| **Developing our strategy and principles for social sustainability Workshop** | In this online event, we sought feedback from stakeholders around our social sustainability strategy and principles. | • Generally speaking, stakeholders wanted SPEN to include as many targets and metrics as realistically possible and suggested a number of organisations that could influence the process of creating them. Going further, there were calls for SPEN to take a leading role and engage more in order to help to create local targets and metrics within its patches by helping to establish best practices on the ground.<br>• When discussing priorities around the best practices to adopt, concrete short-term environmental-sustainability and decarbonisation goals emerged as a significant area of focus. In addition, a number of stakeholders called on SPEN to use the United Nations' (UN's) Sustainable Development Goals (SDGs) as a road map for developing local sustainability goals. However, this would need to be coupled with local engagement to establish different communities' needs |
| **Developing our plans and initiatives for value chain carbon reduction and circular economy Workshop** | In this online event, we sought feedback from stakeholders around our plans for value chain carbon reduction and the circular economy. | • Stakeholders were of the view that SPEN could influence its supply chain through greater collaboration on infrastructure development and higher-level sustainability targets.<br>• The majority of stakeholders agreed that suppliers over a certain value by spend should be required to set verified Science Based Target (SBTs) within 5 years.<br>• Stakeholders largely agreed that SPEN should bring forward its Zero Waste target to align with its Net Zero Carbon target. |
| **Biodiversity and natural capital Workshop** | In this online event, we sought feedback from stakeholders on our biodiversity enhancement | • At a high level, stakeholders agreed with SPEN's baselining and prioritising approach, clearly visualising the huge |

| Engagement | Purpose | Outputs |
|---|---|---|
| | and natural capital strategy across several areas of our business plan. | opportunity in collaboratively creating a national network for biodiversity.<br>• Stakeholders agreed with SPEN's proposal to set a 10% enhancement target for 25 hectares in order to test their approach.<br>• Stakeholders agreed that collaboration was key to any impactful biodiversity strategy. |

### 4.3.1 Willingness to Pay

**Overview of feedback on the Sustainability commitments**

89% of all customers are willing to pay for the whole RIIO-ED2 bill. On average, customers in SP Distribution and SP Manweb would be willing to pay an additional £2.08 and £2.10 respectively for the RIIO-ED2 proposals presented. ***Figure 19*** below shows specific figures for the commitments within this topic area.


*Figure 19: Willingness to Pay*

### 4.3.2 Responding to Feedback

The following table tracks the changes that we have made to our Environmental Action Plan in response to stakeholder feedback across all stages of our engagement:

*Table 8: Changes made to EAP in response to stakeholder feedback*

| Section | Type of Change | Description | Led by |
|---|---|---|---|
| **Supply chain sustainability** | Update | We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2 suppliers (by value) meeting these standards. | Customer Engagement Group and External Stakeholders |
| **Strategic Carbon Reduction** | Update and Addition | New commitment: We will deliver efficient and economic actions to reduce our scope 1, 2 & 3 business carbon footprint by 67.2% by 2035 from a 2018/19 baseline, in line with validated Science-Based Targets aligned to a 1.5°c pathway. | Customer Engagement Group and External Stakeholders, Developing our targets and plans for greenhouse gas |

| | | | |
|---|---|---|---|
| | | | reduction and removal Workshop |
| **Strategic Carbon Reduction** | Update | New Commitment: We will minimise our carbon footprint to achieve Net Zero carbon by 2035. We have also included within the EAP what our definition of Net Zero is. | Customer Engagement Group and External Stakeholders Developing our targets and plans for greenhouse gas reduction and removal Workshop |
| **Strategic Carbon Reduction** | Update | New Commitment: We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses. Additional cost of £2.53m support by stakeholders | Customer Engagement Group and External Stakeholders Developing our targets and plans for greenhouse gas reduction and removal Workshop |
| **Strategic Carbon Reduction** | Update | New Deliverable: We will align our offsetting approach to the Oxford Principles for Net Zero Aligned Carbon Offsetting, ensuring high probability of 'Additionality' and low probability of 'Reversibility', delivering additional environmental and social benefits where practical. | Customer Engagement Group and External Stakeholders Developing our targets and plans for greenhouse gas reduction and removal Workshop |
| **Strategic Carbon Reduction** | Update | Reordered section to better reflect the Scopes covered by Science Based Targets and reported on to Ofgem. | Internal feedback |
| **Strategic Carbon Reduction** | Addition | Stakeholders involved in our workshops suggested that we develop a carbon abatement chart, to make it easier to understand the relative merits of options and drive cost efficient investment. We have developed a cost of carbon abatement curve to compare proposed RIIO-ED2 initiatives. | Customer Engagement Group and External Stakeholders |
| **Operational Transport** | Update | New Commitment: We will decarbonise our operational fleet by 2030, replacing 100% (over 800) of our cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028. | Customer Engagement Group and External Stakeholders |
| **Operational Transport** | Addition | New Deliverable: We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption. | Customer Engagement Group and External Stakeholders |

| | | | |
|---|---|---|---|
| **Fugitive emissions ($SF_6$ and other Insulation and Interruption Gases [IIG])** | Update | $SF_6$ Strategy updated to include transition to $SF_6$-free assets. | Customer Engagement Group and External Stakeholders |
| **Fugitive emissions ($SF_6$ and other Insulation and Interruption Gases [IIG])** | Update and Addition | New deliverable: We will drive the development and adoption of $SF_6$-free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable. | Customer Engagement Group and External Stakeholders |
| **Fugitive emissions ($SF_6$ and other Insulation and Interruption Gases [IIG])** | Update and Addition | New Deliverable: We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | Customer Engagement Group and External Stakeholders |
| **Fuel consumption (including red diesel, natural gas and other fuels used in buildings and operations)** | Update and Addition | New Commitment: We will analyse our generator use and set targets for reduction in carbon emissions to be achieved by end of RIIO-ED2. | Customer Engagement Group and External Stakeholders |
| **Buildings Energy Use** | Addition | New deliverable: We will refurbish 8 of our strategic office and depots sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh overs the RIIO-ED2 period | Customer Engagement Group and External Stakeholders |
| **Buildings Energy Use** | Addition | New deliverable: We will reduce energy consumption by a total of 3.4GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | Customer Engagement Group and Carbon Workshop Feedback |
| **Carbon impact of network losses** | Addition | Added CVP for MAAV vehicle | Customer Engagement Group and External Stakeholders |
| **Carbon impact of network losses** | Addition | New deliverable: We will pro-actively target high-loss legacy assets for replacement with modern low-loss alternatives | Customer Engagement Group and External Stakeholders |
| **Carbon impact of network losses** | Addition | New deliverable: We will use a minimum underground mains cable size of 300mm2 to further reduce losses, where it is cost effective and appropriate to do so. | Customer Engagement Group and External Stakeholders |
| **Carbon impact of network losses** | Addition | New deliverable: We will continue to use a minimum pole mounted transformer size of 25kVA to further reduce losses on our network | Customer Engagement Group and Carbon Workshop Feedback |
| **Capital Carbon** | Addition | New Commitment: We will require strategic suppliers to set Science- | External Stakeholder Feedback and |

| | | | |
|---|---|---|---|
| | | Based Targets within 5 years, aiming for 80% of our supply chain by value. | Developing our plans and initiatives for value chain carbon reduction and circular economy Workshop |
| **Capital Carbon** | Addition | New Deliverable: We will create a new role in RIIO-ED2 to drive actual reduction in Scope 3 carbon emissions in our supply chain by 100k $tCO_2e$ | External Stakeholder Feedback and Developing our plans and initiatives for value chain carbon reduction and circular economy Workshop |
| **Preventing Pollution** | Update | New Commitment: We will use low carbon alternatives to concrete bunding for our RIIO-ED2 retrofit projects where technically feasible. | Customer Engagement Group and External Stakeholders |
| **Preventing Pollution** | Addition | New Deliverable: We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | Customer Engagement Group and External Stakeholders |
| **Preventing Pollution** | Update | New Commitment: We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites. | Customer Engagement Group and External Stakeholders |
| **Land and biodiversity protection and enhancement** | Addition | New Commitment: We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities, and local wildlife groups | Customer Engagement Group, SSWG and External Stakeholders. Biodiversity and natural capital Workshop |
| **Land and biodiversity protection and enhancement** | Addition | New Commitment: We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity. | Customer Engagement Group, SSWG and External Stakeholders. Biodiversity and natural capital Workshop |
| **Land and biodiversity protection and enhancement** | Addition | Added Bespoke Allowance with Clawback for Biodiversity enhancement | Customer Engagement Group, SSWG and External Stakeholders. Biodiversity and natural capital Workshop |
| **Land and biodiversity protection and enhancement** | Update | Change to deliverable: We will implement a Biodiversity & Natural Capital Action Plan process to guide local operation implementation with the aim of increasing environmental value across our network. | Customer Engagement Group and External Stakeholders |

| | | | |
|---|---|---|---|
| **Land and biodiversity improvement** | Addition | New Deliverable: We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature. | Customer Engagement Group and External Stakeholders |
| **Land and biodiversity improvement** | Addition | New Deliverable: We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals. | Customer Engagement Group and External Stakeholders |
| **Sustainable resource use and waste reduction** | Addition | New Commitment: We will establish a baseline and targets for waste reduction per £1m of total annual expenditure, to be achieved by the end of RIIO-ED2 and 2030 in line with our zero waste to landfill date. | Customer Engagement Group and External Stakeholders |
| **Sustainable resource use and waste reduction** | Update | Updated Commitment: We will divert 100% of our waste from landfill by 2030, excluding compliance waste. | Customer Engagement Group and External Stakeholders |
| **Sustainable resource use and waste reduction** | Update | In response to Sustainability Stakeholder Working Group and CEG feedback, we updated Sustainable Resource Use and Waste Reduction to clarify that our approach will align to an appropriate and recognised standard (such as BS8001 circular economy implementation framework) Updated commitments to strengthen and clarify. | Customer Engagement Group, SSWG and External Stakeholders |

### *4.3.3 Engagement, collaboration, and reporting*

#### Commitments and Deliverables

Recognising that timely, tailored, and effective engagement is central to delivery across all areas of our Action Plan, we have identified a range of engagement, collaboration and reporting commitments and deliverables required for delivery throughout RIIO-ED2. Collaboration is key to the delivery of our RIIO-ED2 Commitments – but also is critical to the ultimate achievement of societal Net Zero carbon emissions and reversing the Climate and Biodiversity Emergencies.

#### Achieving the sustainability step-change

- We will continue to provide transparent reporting of our environmental and sustainability performance by publishing an annual report of our progress against all environmental and sustainability commitments – in line with metrics and a format developed in collaboration with the other DNOs.
- We will improve the quality of environmental data collected and analysed at all stages of the asset lifecycle, investing in enhanced IT systems, formalising data sharing collaborations with key stakeholders.

#### Supply chain sustainability

- We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2 suppliers (by value) meeting these standards.

- We will engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages.
- We will engage with suppliers throughout the duration of their contracts to continue to reduce impacts and optimise benefits.

### Decarbonising our network and assets

- We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption.
- We will drive the development and adoption of $SF_6$-free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable.
- We will continue to lead the Energy Networks Association Technical Losses Group to improve industry understanding of losses.
- We will continue to drive the development and understanding of losses by contributing to the evidence base on the proportion of losses that network companies can influence/control, collaborating with supply chain and industry peers and piloting new technology such as the MAAV.
- We will work collaboratively with our stakeholders, including the other Distribution and Transmission Network Operators, throughout RIIO-ED2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice.

### Preventing Pollution

- We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.
- We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites.
- We will adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables.
- We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles.

### Land and biodiversity

- We will collaborate with stakeholders, including other DNOs, throughout RIIO-ED2 to develop and pilot robust methodologies and tools for delivering Biodiversity and Natural Capital assessment.
- We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals.
- We will identify, and subsequently monitor and annually report, metrics to track the levels of biodiversity and value of natural capital and ecosystem services on our sites and the achievement of our targets.
- We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature.

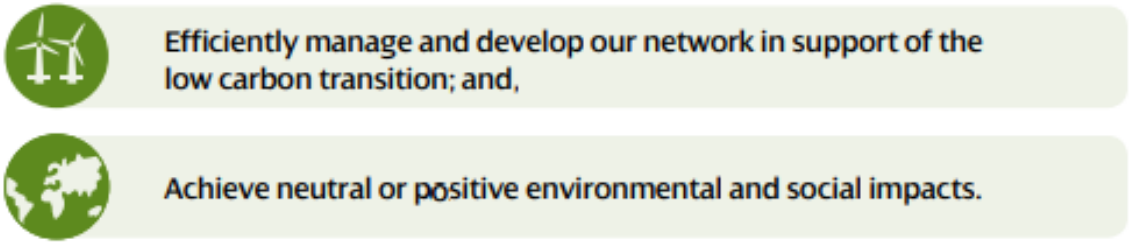
### Sustainable resource use and waste reduction

- We will continue to collaborate with environmental/ waste regulators, other infrastructure companies and our supply chain to drive sustainable resource use and waste minimisation in order to meet our RIIO-ED2 and Sustainability Goals.
- We will continue to collaborate on innovation projects to reduce resource use and waste produced during RIIO-ED2.

# 5. Delivering a More Sustainable Network


## 5.1 Our Vision (extract)

**Our vision is to be a sustainable networks business. We will embed the principles of sustainability in our decision-making by working with our stakeholders to:**




We will be a leader in this area. Our actions to become a sustainable network operator will drive our supply chain and support our customers and communities to become more sustainable.

### Carbon and energy reduction

We will be a carbon neutral company throughout our value and supply chains.

### Sustainable Resource Use

The principles of a circular economy and efficient use of resources will be embedded in our business. The materials required for network construction and operation will come from sustainable sources.

### Sustainable society

We will have a net-positive impact on the environment and the communities in which we operate.

We will collaborate with national and local stakeholders to understand their needs and maximise the positive social and economic impacts of our operations on communities, including education, skills, and employment.

**Our 'sustainable business' model will be characterised by:**

Consideration of environmental, social, and economic costs and benefits in decision making.

Collaboration with stakeholders; and

Transparency in decision-making processes and reporting of performance.

## 5.2 Our Objectives (extract)

**Sustainable Society**

Work with our supply chain to quantify and reduce our Scope 3 carbon emissions and other environmental impacts.

- Implement Introduce environmental sustainability considerations in procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum by the middle of our RIIO2 price controls.
- Agree with our supply chain a suite of metrics to be used as Key Performance Indicators in our contracts.
- Enhance the environmental requirements in our contracts to be met by 80% by value of our supply chain by the end of our RIIO2 price controls.
- Collaborate with our supply chain at all stages to leverage their expertise.
- Remain a Partner in the Supply Chain Sustainability School and require contractors and suppliers to become members and undertake relevant environmental and sustainability training.

Use the UN Sustainable Development Goals to identify and fill gaps in strategies and plans.

Extend the scope of the Sustainable Business Strategy to incorporate social aspects, in line with a broader definition of sustainability, during its 2022 review.

*Figure 20: SP Energy Networks Sustainable Business Strategy: Sustainable society and process objectives*

## 5.3 Achieving the sustainability step-change

The environmental and sustainability requirements of RIIO-ED2 are a significant step-change from RIIO-ED1 and will require changes in our internal processes and systems to enable us to achieve our sustainability goals.

Our staff and contractors will need additional training and upskilling to ensure that they are aware of new environmental requirements and how this impacts their role. For further information on our workforce plans please see Annex 4C.4: Net Zero Workforce Strategy.

Our systems will require investment to be able to collect, store and report additional environmental data and our procurement process will be reviewed to include further environmental considerations to make sure we deliver on our obligations. Please Annex 4C.1: Digital Strategy.

### *5.3.1 How we did in RIIO-ED1: Achieving the sustainability step-change*

**Environmental Management System**

Our Environmental Management System (EMS) has been certified to the relevant International Standard, ISO14001:2015, for over a decade and environmental controls are therefore embedded in our business processes. The Plan Do Check Act continuous improvement cycle upon which the standard is based ensures that we continuously review our environmental impacts, ensuring compliance with environmental legislation and prioritising the most significant impacts for action to reduce (please see Appendix A for details of our current SP Distribution and SP Manweb Network Environmental Aspects and Impacts Registers and a description of the process by which these are produced). External certification gives us confidence that our internal systems are to the required

standard and that we continue to meet the standard's requirements for legal compliance and continual improvement

### Data and Reporting

Throughout RIIO-ED1 we have been working to improve the quality and completeness of our environmental data. Some of these improvements can be tracked through the commentary provided with our annual Regulatory Reporting Pack (RRP) returns. We achieved the Planet Mark certification for our 2016/17 carbon footprint. We have successfully retained this certification for the five consecutive years since.

The Planet Mark™ Code of Practice adheres to the highest of recognised standards and is administered by an independent Advisory Panel composed of leading academic and industry experts. The Planet Mark™ is partnered with Cool Earth, the award-winning charity that works to halt rainforest destruction in Central Peru. For every Planet Mark Certification delivered, a pledge is made to protect an acre of rainforest. Please see ***Figure 21*** below showing we have been awarded Planet Mark Certification.


*Figure 21: The Planet Mark Certification*

As well as the Business Carbon Footprint data that we report annually to OFGEM, we also collect data on other environmental impacts, including waste disposal (from our depots and disposed of by contractors on our behalf) and environmental incidents. We report all our environmental data to our parent company for inclusion in the annual Iberdrola Sustainability Report.

### Training and Awareness

We are part way through a very substantial environmental training programme, that will be completed before the start of RIIO-ED2, to ensure that all staff have the relevant knowledge to be able to competently manage environmental issues that they encounter in their daily work. This programme includes several e-learning courses as well as classroom courses on managing environmental risk and environmental leadership. The primary aim of this programme is to ensure adequate levels of knowledge to ensure environmental compliance and we expect our environmental incident rate to drop, as well as other improvements relating to environmental impact reductions.

We have achieved Gold level membership of the Supply Chain Sustainability School (***Figure 22***), which recognises our commitment to upskilling our colleagues and increasing sustainability literacy across our supply chain.


*Figure 22: Supply Chain Sustainability School Gold Membership*

## Staff Personal Objectives

An organization, such as SP Energy Networks, that seeks to be a leading Sustainable Networks Business must have environmental considerations embedded in its business processes and culture. Environmental issues must be managed at the front end and as part of line management roles and responsibilities and be lead from the top of the organisation. An important element of this is to clarify and list environmental responsibilities for all. All staff, up to and including our CEO, have environmental and sustainability objectives within their annual goals.

## Definition of Strategy and Goals

Our Sustainable Business Strategy took a year and a half to develop, involving extensive stakeholder input, and was published in early 2018 and has been updated annually since. This strategy is very ambitious in its Goals, as we believe this is required in order to deliver decarbonisation and avoid catastrophic impacts on our eco-systems. Our stakeholders agreed, and subsequent events such as the increased public awareness campaigns and the publication of the Committee on Climate Change Net Zero report serve to support our ambition.

## Stakeholder Engagement and Collaboration

In order to develop our strategy, we established our Sustainability Stakeholder Working Group (SSWG) which meets quarterly and brings together our key environmental sustainability stakeholders including the Scottish Environment Protection Agency, Nature Scot, the Scottish Government, the Scottish Wildlife Trust, Keep Scotland Beautiful, the Sustainable Scotland Network, Zero Waste Scotland and the 2050 Climate Group. The Group's initial aim was to draft SP Energy Networks' Sustainable Business Strategy. Following its publication, the SSWG's purpose is to allow the identification and implementation of opportunities for members to collaborate on common sustainability goals. This group provided considerable input to our RIIO-ED2 business planning

process. We are aiming to expand the SSWG to cover more English and Welsh stakeholder groups as we move into the next stage of our RIIO-ED2 preparations.

Collaboration will be necessary to achieve decarbonisation, sustainable resource use and biodiversity protection with the urgency required at efficient cost. We will continue to work with the ENA Environment Committee and the other DNOs to share best practice and experiences and to work together to drive reductions in common environmental impacts, avoiding duplication of effort and cost.

### *5.3.2 RIIO-ED2 Commitments: Achieving the sustainability step-change*

#### Environmental Management System

Our EMS forms the basis of our management of our environmental impacts and we will continue to prioritise its continuous improvement and ongoing certification to ISO14001:2015 as the foundation for environmental compliance and moving 'beyond compliance' to deliver our strategic goals.

#### Data and Reporting

We will continue our work to improve the quality and completeness of our environmental data, shifting the focus upstream from operational impacts to those occurring in our supply chain and during the design and construction of our assets. We will also work to ensure that this data is available to those who need it to make sustainable decisions. This includes enhancements to our Geographical Information Systems to make environmental data visible to those planning or delivering works on the network. There is a significant amount of data available externally that would be beneficial to our decision making and could cut our costs, some of which we have identified via our Sustainability Stakeholder Working Group, we will therefore progress data sharing arrangements with relevant organisations. Please see Annex 4C.1: Digitalisation Strategy

We have laid out in this EAP the metrics that we propose to use to track delivery of our actions and achievement of our targets and goals. We will work with the other DNOs and Ofgem to agree a common reporting methodology and set of metrics for use in the Annual Environmental Report that OFGEM are proposing to introduce for RIIO-ED2.

#### Training and Awareness

We will continue to improve our environmental training provision for staff and will ensure that training is provided in the new processes and systems introduced to deliver compliance with our RIIO-ED2 commitments. All our trainee programmes will contain an environmental sustainability module and all new cohorts will undertake environmental sustainability training as part of their induction.

This training will be extended, where relevant, to our supply chain. We will maintain our Supply Chain Sustainability School Gold Award, which recognises our commitment to upskilling our colleagues and increasing sustainability literacy across our supply chain.

During the RIIO-ED2 period we will achieve the Bronze Carbon Literacy Training Award as offered by Keep Scotland Beautiful. Achieving the Bronze Award requires the development and implementation of carbon literacy training for staff, including senior leadership.

#### New Roles

To ensure that we can deliver the enhanced RIIO-ED2 environmental sustainability requirements we are proposing to create several new roles in our businesses.

Two Environmental roles, one in each of our distribution licences to support the licence in the delivery of the enhanced environmental requirements in RIIO-ED2.

Four Supply Chain Manager roles, to support, manage and monitor our supply chain with the enhanced environmental requirements that will be embedded in contracts.

One Carbon Specialist role, that will with cover both of our distribution licenses, and will be focused on the reduction of Scope 3 carbon emissions. Please see section 6.17 Capital Carbon for more details on this role.

## Stakeholder Engagement and Collaboration

Our Sustainability Stakeholder Working Group (SSWG) will continue to form the basis of our engagement with our key environmental sustainability stakeholders. Now that the RIIO-ED2 Business Plan has been submitted, the aim is to move the focus to the delivery of collaboration projects that will be instrumental in delivering our goals and those of our stakeholders.

We will continue to participate in collaboration groups with other networks and infrastructure companies, with the aim of identifying and sharing best practice and working together to find practical and optimal solutions, including:

- Major Infrastructure Resource Optimisation Group (MI-ROG)
- Scottish Infrastructure Circular Economy Forum (SICEF)
- Energy Networks Association Environment Committee
- Supply Chain Sustainability School
- Infrastructure Decarbonisation Forum (InDeFor)
- Sustainable Glasgow
- Edinburgh Climate Compact
- Liverpool City Region Built Environment Board
- Scottish Business Climate Collaboration (COP26)

*Table 9: Our commitments and deliverables in RIIO-ED2: Achieving the sustainability step-change*

| **Description of Commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will embed environmental sustainability considerations in our business processes whilst maintaining and continually improving our ISO14001 certified Environmental Management System. This will enable us to achieve 'beyond compliance' environmental performance and our sustainability goals.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| **We will continue to provide transparent reporting of our environmental and sustainability performance by publishing an annual report of our progress against all environmental and sustainability commitments – in line with metrics and a format developed in collaboration with the other DNOs.** | **Continuing business as usual – Ofgem, Operators** | Throughout RIIO-ED2 |
| **We will improve the quality of environmental data collected and analysed at all stages of the asset lifecycle, investing in enhanced IT systems and formalising data sharing collaborations with key stakeholders.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| **We will continue to ensure that our staff, contractors, and suppliers have the skills and knowledge to allow us and our supply chain to move beyond compliance and achieve our Sustainability Goals, by identifying and ensuring delivery of appropriate environmental training.** | **External Stakeholders - Supply Chain** | Throughout RIIO-ED2 |
| We will embed a process for Initial Environmental and Sustainability Reviews (IESRs) for all relevant projects, to identify potential environmental issues and opportunities at the earliest stage. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers | By 2023 |

### 5.3.3 RIIO-ED2 Metrics: Achieving the sustainability step-change

*Table 10: RIIO-ED2 Metrics: Achieving the sustainability step-change*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| ISO14001:2015 certification | Certification | n/a |
| Training Plan delivery | % of Training Plan target | n/a |
| Stakeholder Engagement Plan delivery | % of Engagement Plan target | n/a |

### 5.3.4 RIIO-ED2 Costs and Benefits: Achieving the sustainability step-change

*To deliver our RIIO-ED2 plans in this area, it will cost £2.59M.*

## 5.4 Supply chain sustainability

Our strong relationship with our supply chain is critical to the successful and sustainable delivery of our plans. Our diverse suppliers provide a wide range of services throughout the whole lifecycle of assets, including design, manufacture, installation and maintenance of assets, extending the useful life of the asset. Beyond safe, efficient and compliant works, we must collaborate with our supply chain: to minimise environmental impacts; set enhanced environmental standards; and drive industry-wide environmental improvements, drawing on the huge breadth and depth of expertise and services within our supply chain.

### 5.4.1 Ofgem Baseline Expectations

***Supply chain management***

- *Adopt high standards of environmental management in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs*
- *Adopt target of more than 80% of suppliers (by value) meeting code in RIIO-ED2.*
- *Commit to reporting on actual percentage of suppliers (by value) meeting code.*

### 5.4.2 How we did in RIIO-ED1: Supply chain sustainability

During RIIO-ED1, we updated our standard contract terms, pre-qualification questionnaires and specifications. This requires suppliers and contractors to report on their environmental management standards every month. Iberdrola adopted a new supplier engagement platform, Go Supply, in 2020. All Iberdrola group suppliers are required to sign up to the platform, which provides a mechanism for assessing and recording supply chain sustainability. All strategic suppliers must complete a sustainability questionnaire to achieve a sustainability score. If suppliers do not meet the required score improvement plans will be put in place and the suppliers will be supported to deliver changes.

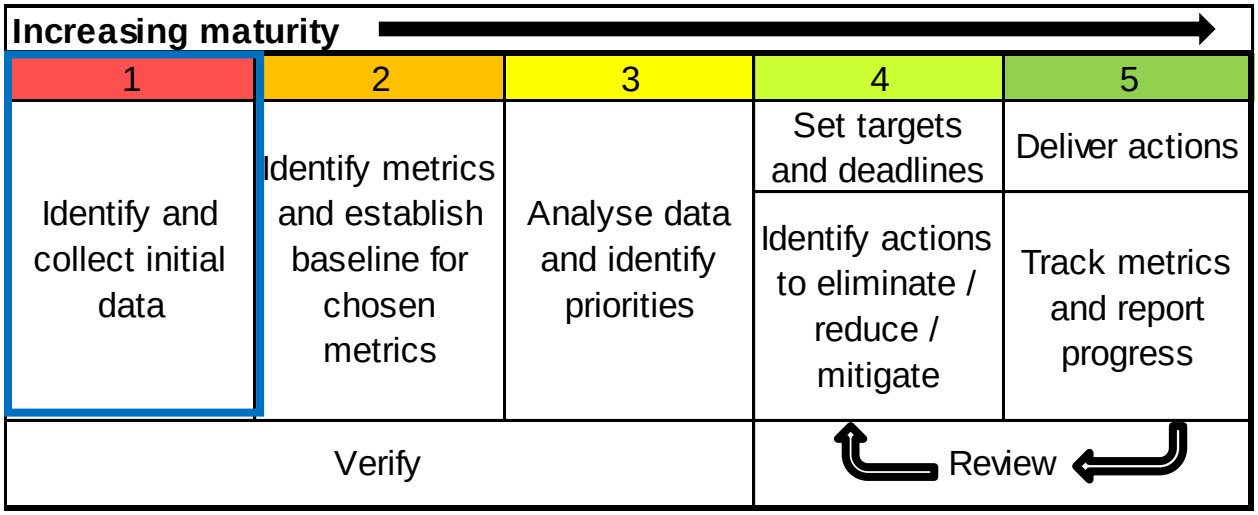
We also became a partner of the Supply Chain Sustainability School (SCSS) and require all our suppliers on new contracts to sign up to the school. For our suppliers, this is a free service and provides learning resources for them to help them on their sustainability journey. Membership of the school allows us to support smaller suppliers to build their capability to deliver enhanced sustainability standards.

Working with our suppliers and contractors throughout RIIO-ED1 has resulted in many solutions being piloted, such as the trial of the reuse of plastic buckets for jointing resin. This project has the potential to save over £29,000 each year from mixed recycling costs and save up to 220 tonnes of carbon dioxide equivalent ($tCO_2e$).

We conducted a pilot Life Cycle Assessment of one of our RIIO-T1 windfarm connection projects, which identified that around 70% of the environmental impacts associated with our network are in our supply chain, findings backed up by our stakeholders and with similar figures quoted by other organisations. This pilot provided data we can use to prioritise impact reduction actions and has informed our RIIO-ED2 plans to a significant degree.

We will continue to encourage suppliers to sign up to our free procurement platform, Go Supply, which includes a detailed assessment of sustainability credentials as part of registration. When strategic suppliers don't meet our minimum sustainability criteria, we will continue to collaboratively set up improvement plans – helping our suppliers to develop and implement processes and gain the skills and knowledge to become compliant.

**Level of maturity:**




### *5.4.3 RIIO-ED2 Plans: Supply chain sustainability*

As a result of our level of maturity with respect to supply chain sustainability identified above, and as outlined below, we will be embedding sustainability considerations in our supply chain by taking action in several key areas. We recognise that our ability to influence these environmental impacts is greatest at the point at which we specify contracts and designs, so that is why we are updating our specification, design, procurement and contract management processes to maximise the positive benefit delivered through our supply chain. We will:

- Adapt our business processes to include sustainability considerations throughout the value chain. We plan to use PAS2080: Carbon Management in Infrastructure and ISO20400: Sustainable Procurement to guide us.

- Revise our procurement approach by including a carbon metric in our tender assessment process to ensure that the carbon costs as well as the financial costs are factored into our decision making.

- Embed requirements for environmental legal compliance, impact reduction and data reporting in our contractual processes and documents. We will introduce, in collaboration with our supply chain, supplier standards or codes of conduct which will define expectations for supplier environmental performance and form part of our contracts. Again, in collaboration with our suppliers we will agree a suite of environmental contract metrics to allow us to measure performance and improvements. We will work with the Supply Chain Sustainability School to support all members of our supply chain to achieve these new standards and to gain the necessary knowledge to realise the benefits of reducing their own impacts and thereby support us to reduce ours.

- Work with our supply chain throughout the investment process, by involving them earlier to maximise opportunities to design out impacts and working with them throughout the planning, construction, and operation stages to identify opportunities to reduce environmental impacts.

**Enhanced Environmental Requirements**

- Alignment with Environmental Management System certification (or equivalent). If the contractor does not operate to ISO 14001 specification the contractor shall provide alternative evidence of relevant systems, processes, monitoring, reporting and review.

- Sustainability and/or Environmental Policy which demonstrates commitments to meet environmental requirements relevant to the delivery of this contract.

- Company greenhouse gas emissions (reduction targets and progress against these targets in the previous 3-5 years).

- Evidence of reducing emissions that arise within contracts similar in nature.

- Compliance with SP Energy Networks environmental policy and any applicable procedures.

- Ethical Sourcing - Provide details of the ethical sourcing of materials through recognised credible standards e.g., BES6001/2.

- Environmental Product Declarations: Where available, the Contractor shall provide Environmental Product Declarations (EPDs) aligned to ISO 14025:2006 for significant materials streams and products, especially those that will be permanently installed by the Contractor.

- Innovation: In order to reach Net Zero, SPEN and the supply chain will require to continually innovate. Contractors may provide alternative innovations for the application of practical, circular solutions that can be demonstrated to meet relevant performance requirements

- Site Waste Management Plan shall be provided including anticipated % of waste sent to landfill, % reused, % recycled.

- The Contractor shall commit to reporting carbon emissions from contract delivery and embed effective carbon management principles consistent with PAS 2080 Carbon Management in Infrastructure specification.

- The Contractor shall commit to setting a carbon reduction target and reporting the carbon footprint of the project throughout the delivery of this contract via the SMARTWASTE online platform (software for site waste management). This must include product stage emissions and construction stage emissions as outlined in PAS2080 Carbon Management in Infrastructure.

### *5.4.4 RIIO-ED2 Commitments: Supply chain sustainability*

*Table 11: RIIO-ED2 Commitments: Supply chain sustainability*

| **Description of commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2 suppliers (by value) meeting these standards.** | **External Stakeholders - Ofgem, Supply Chain, Environmental Regulators, Operators** | By 2028 |
| We will increase consideration of environmental sustainability in our procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum. | External Stakeholders - Environmental Regulators, Supply Chain, User Group, Operators | By 2023 |

| | | |
|---|---|---|
| We will continue to be a Supply Chain Sustainability School Partner, requiring contractors and suppliers for all new contracts to become members and undertake relevant sustainability and environmental training. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| We will engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2025 |
| We will engage with suppliers throughout the duration of their contracts to continue to reduce impacts and optimise benefits. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |

### 5.4.5 RIIO-ED2 Metrics: Supply chain sustainability

*Table 12: RIIO-ED2 Metrics: Supply chain sustainability*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Suppliers compliant with enhanced environmental standards | % by value | n/a |
| Supply Chain Sustainability School - supplier members | % by value | n/a |
| Supply chain KPIs to be developed during RIIO-ED2 | | |

### 5.4.6 RIIO-ED2 Costs and Benefits: Supply chain sustainability

*Costs to deliver our supply chain sustainability commitments are embedded throughout all costs of our Environmental Action Plan.*

# 6. Decarbonising our Energy Network


The most effective way for us to mitigate climate change is by connecting low carbon technology to decarbonise society. While we do this, we must also reduce the carbon footprint of our business operations, and make sure our network is resilient to the effects of climate change.

Our aim is to outline our commitments transparently to enable our stakeholders to fully understand the merits - and current limits - of what we can achieve based on our performance to date and the regulatory framework to which we must conform.

Our targets for decarbonising our network are deliberately challenging. To achieve them, we will need transformation at every level of our business. To determine the most cost-efficient interventions, we have identified the options available and considered the costs against the quantity of carbon reduction. This allows us to achieve the carbon savings at the lowest cost to the customer.

## 6.1 Ofgem Baseline Expectations

***Business carbon footprint (BCF)***

- *Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.*
- *Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.*
- *Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero.*
- *Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions.*

***Sulphur Hexafluoride (*$SF_6$*)***

- *Commit to implementing a strategy in RIIO-ED2 to manage* $SF_6$ *on their network. This should include economic and efficient actions to reduce leakage rates and where appropriate, economic, and efficient* $SF_6$ *asset replacement.*
- *Adopt a target for* $SF_6$ *leakage reduction.*
- *Commit to reporting on total* $SF_6$ *bank and leakage reduction rates using a common DNO methodology.*

***Losses***

- *Develop and commit to implementing a strategy to efficiently manage both technical and non-technical losses on the DNO's network over the long term. This should include specific actions and performance measures to track the impact of actions in RIIO-ED2.*
- *Commit to reporting on the progress of implementing the losses strategy and associated performance measures.*
- *Contribute to the evidence base on the proportion of losses that network companies can influence/control.*

***Embodied carbon***

- *Commit to monitoring and reporting on embodied carbon in new projects.*

- *Commit to collaborating with DNO's supply chain on addressing challenges to reduce embodied carbon in the network.*
- *Commit to establishing baseline and a target to reduce embodied carbon on new projects during RIIO-ED2.*

## 6.2 Our Vision (extract)

### Carbon and energy reduction

We will be a carbon neutral company throughout our value and supply chains and will actively support our customers and local communities towards achieving this goal.

## 6.3 Our Goals

Our quantified Carbon and Energy Reduction Goal is shown in ***Figure 23*** below.


| | Carbon and Energy Reduction |
|---|---|
| 2023 | -15% carbon footprint* |
| 2026 | |
| 2028 | |
| 2030 | -80% carbon footprint* |
| 2035 | Achieve Science-Based Targets and Net Zero Carbon |
| 2040 | |

*Figure 23: SP Energy Networks Sustainable Business Strategy: Summary of key goals and rationale*
**targets from a 2013/14 baseline carbon footprint (scopes 1 and 2 plus business travel, excluding losses).*

## 6.4 Our Objectives (extract)

**Carbon and Energy Reduction**

Deliver greenhouse gas emissions reductions in line with a 1.5 degree Science-Based Target trajectory to 2035.

- Continue to purchase 100% UK-based renewable energy backed by PowerPurchase Agreements for all our buildings.
- Electrify the operational vehicle fleet (excluding HGVs) by 2030 at the latest, seeking to accelerate to the end of the RIIO-T2 and RIIO-ED2 price control periods.
- Minimise the leakage of $SF_6$ gas from our network by reducing the leakage rate of new $SF_6$ equipment and addressing leaks urgently.
- Drive the development and adoption of $SF_6$-free technologies, collaborating with supply chain and industry peers, piloting new technologies where technically viable and adopting when market ready.
- Where a repair to a leaking transmission asset proves ineffective and the asset requires to be replaced, the $SF_6$ emissions from that asset will be offset until its replacement.
- Achieve carbon neutrality across Scopes 1 and 2 Distribution emissions (excluding losses) from the beginning of ED2 (April 2023).
- Reduce transmission network losses by around 14.5 GWh (circa 3% of 2018/19 losses) thereby limiting losses to a lower level than would otherwise be the case due to increasing renewable energy transfers.
- Reduce distribution network losses by around 36 GWh thereby limiting losses to a lower level than would otherwise be the case due to increasing renewable energy transfers.
- Align processes with PAS2080: Carbon Management in Infrastructure before RIIO3 business planning commences.
- Apply the Oxford Principles for Carbon Offsetting to ensure high probability of additionality and low probability of reversibility.
- Introduce a 'capital carbon' measurement tool for projects/works programmes, establish baselines and set reduction targets, by the middle of RIIO2 price controls.
- Identify, monitor and report metrics to track progress towards our Scope 3 SBT.
- Collaborate with other Distribution and Transmission Network Operators throughout RIIO2 to assess and manage capital carbon, drive efficiencies throughout our common supply chain and share best practice.

Achieve Net Zero greenhouse gas emissions across all scopes by 2035.

Implement RIIO2 buildings energy efficiency and renewables work programmes.

**Climate Change Resilience**

Increase the resilience of network to extreme weather events utilising nature-based solutions where practical.

Deliver our RIIO2 climate adaptation actions and strategies.

*Figure 24: SP Energy Networks Sustainable Business Strategy: Carbon and energy reduction and climate change resilience objectives*

## 6.5 Science-Based Targets

In order to understand and influence the carbon emissions associated with our network, we must accurately measure, analyse and report carbon data and embed carbon reduction initiatives and carbon management processes throughout our operations. We must use robust, complete data to set targets, and these targets must ensure that we are delivering our share of the reductions required to deliver the Paris Climate Agreement (1.5°C).

We have set our Science-Based Target for Scope 1, Scope 2 and Scope 3 carbon emission reductions aligned with a 1.5°C pathway, in line with the Science Based Targets Initiative[3] methodologies and these will be validated early 2022. Targets are considered 'science-based' if they are in line with the level of decarbonisation required to keep global temperature increase to 1.5°C above pre-industrial levels, as described in the Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC).

By setting Science-Based Targets across all scopes, we are extending our focus to include indirect carbon emissions from our supply chain in addition to our direct emissions reported within the business carbon footprint.

Whilst all network operators must present, and deliver Science-Based carbon targets, there is sufficient variability in the methodologies, timelines and level of ambition within these targets that the reader should note that not all SBTs are equal and consider each company's targets on their own merits. As an operator with both Distribution and Transmission networks with their differing carbon footprints and regulatory timelines, our target date and ambition levels may vary from those of operators with only transmission or distribution licences. Our baseline date of 2018/2019 has been set as this process was started in our transmission business for their RIIO-T2 price control submission.

## 6.6 Net Zero Carbon Target

Beyond our Science Based Target, we have aligned our definition of Net Zero to the SBTi definition, outlined in their Foundations for Science-Based Net-Zero Target Setting in the Corporate Sector. The SBTi define the following two conditions to reach Net Zero emissions:

> *"To achieve a scale of value-chain emission reductions consistent with the depth of abatement achieved in pathways that limit warning to 1.5°C with no or limited overshoot and;*
>
> *To neutralise the impact of any source of residual emissions that remain emissions that remain unfeasible to be eliminated by permanently removing an equivalent amount of atmospheric carbon dioxide."*

Under this definition, we must deliver 1.5°C aligned greenhouse gas reductions across our value chain (scopes 1, 2 and 3) and permanently remove atmospheric carbon dioxide equivalent to the residual emissions that remain unfeasible to eliminate. Our stakeholders support us in aligning with this strict definition to avoid accusations of greenwashing and to ensure we hold ourselves accountable for a defined level of ambition, however we recognise that until a global standard is agreed, different organisations may use different definitions of Net Zero, leading to variability in the targets set. At the time of writing the Science Based Targets Initiative (SBTi) released global criteria for the development and delivery of Net Zero greenhouse gas targets. The criteria are available here. We will review and align our Net Zero target and approach with these as we move into the RIIO-Ed2 period.

The Greenhouse Gas Protocol currently requires electricity networks companies to account for the greenhouse gas impact of electricity lost from the network under their scope 2 emissions. These

[3] The SBTI is a collaboration between CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF) and one of the We Mean Business Coalition commitments.

emissions currently account for around 60% of the total SPEN value chain carbon footprint. There are two types of network losses: technical losses, which make up the majority, are an inherent part of power flowing through network assets and can be managed but not ever eliminated; and non-technical losses, which are units of energy transferred but not correctly accounted for, inaccurate billing estimations or illegal abstraction. The carbon impact of the electricity lost is driven by the mix of traditional and renewable generation on the GB grid as it flows through our networks. Whilst the actual amount of electricity lost from the network might increase in the coming years, due to increased electrification and greater renewable generation uptake, the carbon intensity of the electricity will decrease as the grid mix decarbonises. There is currently a wide margin of uncertainty as to how far and how fast either of these variables will evolve, meaning that the greenhouse gas impact may rise before it falls. The greenhouse gas impact of losses is therefore significant within our business carbon footprint, predominantly beyond our direct control, and highly uncertain over the coming years. Under the Net Zero definition above, we must include the greenhouse gas impact of network losses within any Net Zero target.

We have tested a range of greenhouse gas reduction targets with stakeholders and received strong support for achieving Net Zero greenhouse gas emissions earlier than the UK and Scottish dates. Broad interest stakeholders welcomed the idea of a 2040 target, with 82% either agreeing or strongly agreeing. Of specialist stakeholders working in the sustainability and greenhouse gas reduction field, 50% want us to hit net Zero before 2040 and 36% want us to achieve it by 2040. Stakeholders almost unanimously agreed that our approach to delivering cost efficient carbon reductions is robust, with 95% of respondents either agreeing or strongly agreeing with our proposed plans.

As we will deliver 1.5°C-aligned greenhouse gas reductions across our full footprint in line with current best practice, the question of when to set a Net Zero or Carbon Neutral date is largely one about the acceptable costs and timelines for offsetting the residual emissions from our value chain or controllable footprint.

Our 2035 net zero target is ambitious. We have taken care to outline our definition and to understand the feasibility of achieving this. There are a number of uncertainties and factors out with our control, particularly related to losses (outlined above) and the long-term feasibility of carbon removal offsetting. We will therefore continue to focus our effort on maximizing the carbon reductions which can be economically, technically, and feasibly reduced and will assess our net zero carbon target annually, ensuring our definition of net zero aligns to the latest guidance. In this way, we will ensure that our net zero target is clearly defined and robust, whilst being as ambitious as possible.

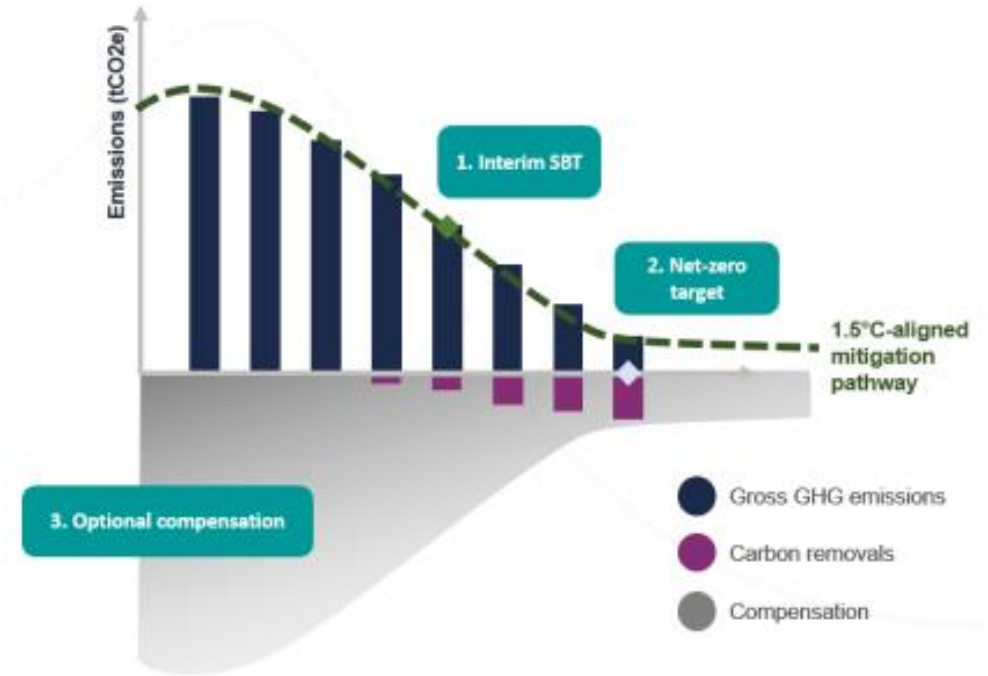



*Figure 25: Graphical representation of a net-zero target, interim SBT, and optional compensation*

*Source:https://sciencebasedtargets.org/resources/files/Net-Zero-Criteria-Draft-for-Public-Consultation-v1-0.pdf*

## 6.7 Carbon Neutrality and Offsetting Strategy

Further to our Net Zero target, we will achieve neutrality across our Scope 1 and Scope 2 greenhouse gas emissions, excluding losses, from 2023, making the most ambitious reductions possible within technological and regulatory boundaries, reviewing our approach annually and removing or offsetting what cannot be reduced - in line with the PAS2060 specification for the demonstration of carbon neutrality.

We will apply The Oxford Principles for Net Zero Aligned Carbon Offsetting to ensure our approach to offsetting is robust and credible (***Figure 26***).

Our Carbon Removal Proposal is set out below;

- We will offset carbon in line with the Oxford Carbon Offsetting Principles, ensuring high probability of 'Additionality' and low probability of 'Reversibility'
- We will offset our emissions 'locally' relative to the emissions source
- We will prioritise 'carbon removal' over 'carbon reduction' in line with Net Zero target setting, as defined by the Science Based Target Initiative
- We will focus on rewilding and explore environmental restoration options (e.g. peat restoration) rather than commercial foresting where practical, to drive additional environmental and social benefits
- We will revise our carbon offsetting strategy as best practice evolves and new technologies become technically and commercially viable, moving to carbon removal technology with long term storage

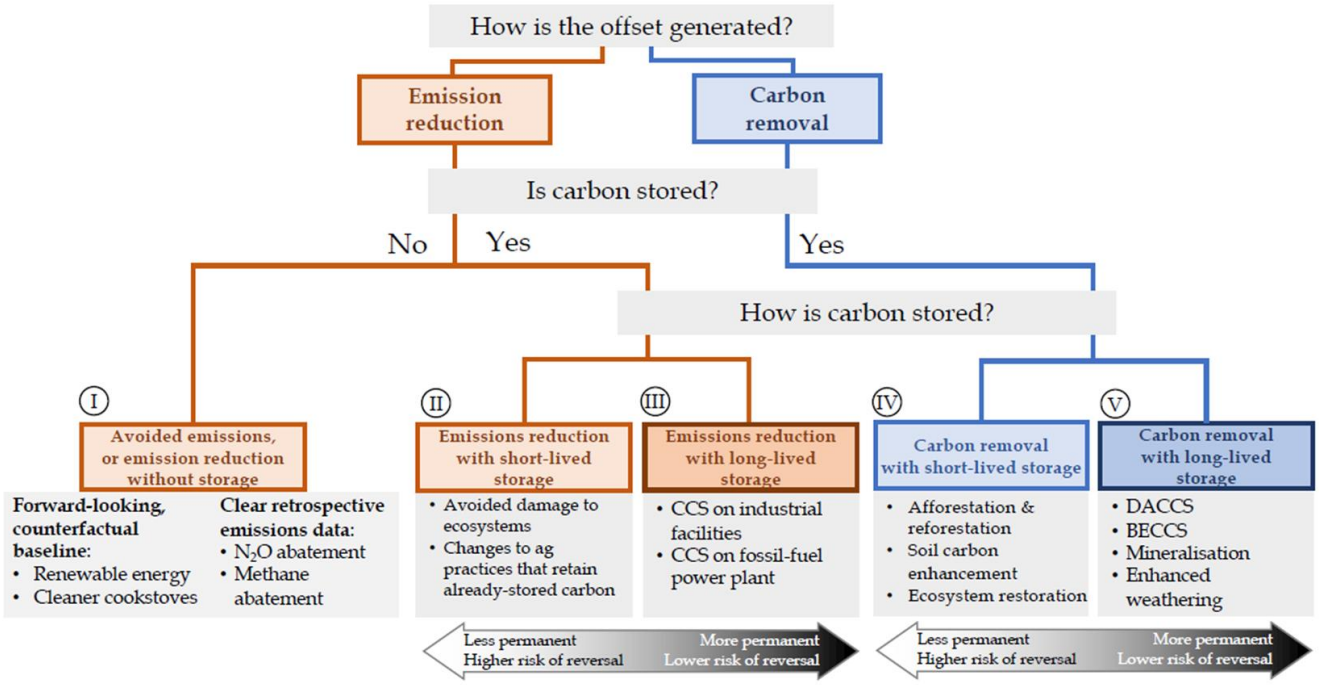



*Figure 26: Oxford Carbon Offsetting Principles*
*Source: The Oxford Principles for Net Zero Aligned Carbon Offsetting*

## 6.8 Carbon Marginal Abatement Costs Curve

As a responsible Distribution Network Operator, we have a commitment to develop and maintain our network in a way that provides the best value for value for money for our customers, in addition to

aggressively pursuing our decarbonisation targets. Therefore, have created a Marginal Abatement Costs Curve (MACC) to outline the costs of our carbon reduction initiatives. This will allow us to continue to identify the most cost-effective solutions to reduce carbon and pursue our decarbonisation goals in an economic and efficient way. ***Figure 27*** below shows our Marginal Abatement Costs Curve. As we progress towards and through the RIIO-2 price control period we will continue to review and add data to the MACC to allow us to continually assess the decisions we make.

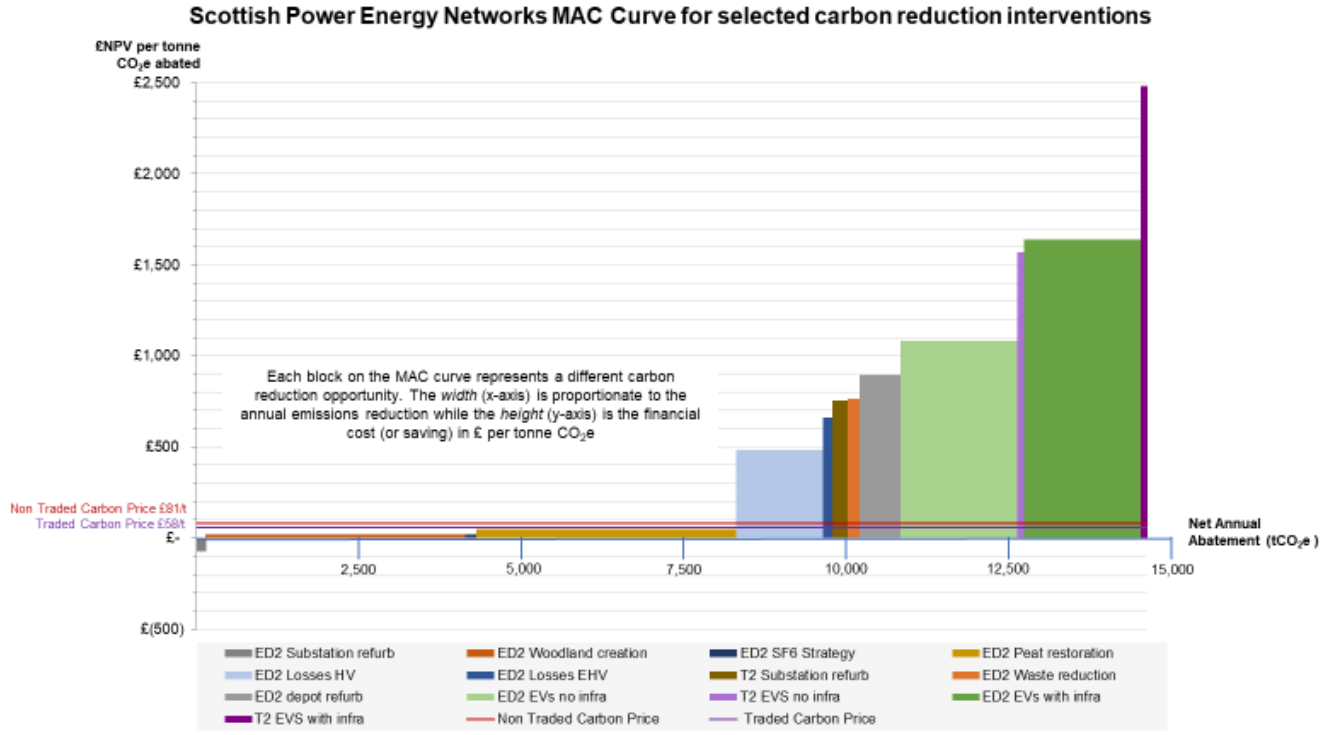



*Figure 27: Marginal Abatement Costs Curve*

## 6.9 PAS 2080: Carbon Management in Infrastructure

As we develop and reinforce our grid to support renewable integration, the electric vehicle transition and the decarbonisation of heat, we must consider the carbon embodied in the materials used to build our network and other capital carbon emissions associated with our construction projects. We must design and build infrastructure, which is efficient, future proof and which minimises waste. As we build and develop our network to enable the UK's low carbon transition – we must also reduce the carbon emissions associated with the infrastructure we design and build.

This is why we are developing a carbon management process to inform the way we design and develop our projects. PAS2080 Carbon Management in Infrastructure outlines a framework for reducing whole life carbon emissions by embedding carbon quantification and reduction targets into the way we design, procure, and construct our network. This consistent approach to carbon management can be applied by all parties through a project value chain with the primary objective of reducing carbon emissions in a manner that also reduces cost.

Where appropriate in our RIIO-ED2 investment decision making process, we identified opportunities to reduce carbon by applying the carbon emission reduction hierarchy as described within the Infrastructure Carbon Review, outlined in ***Figure 28*** below.

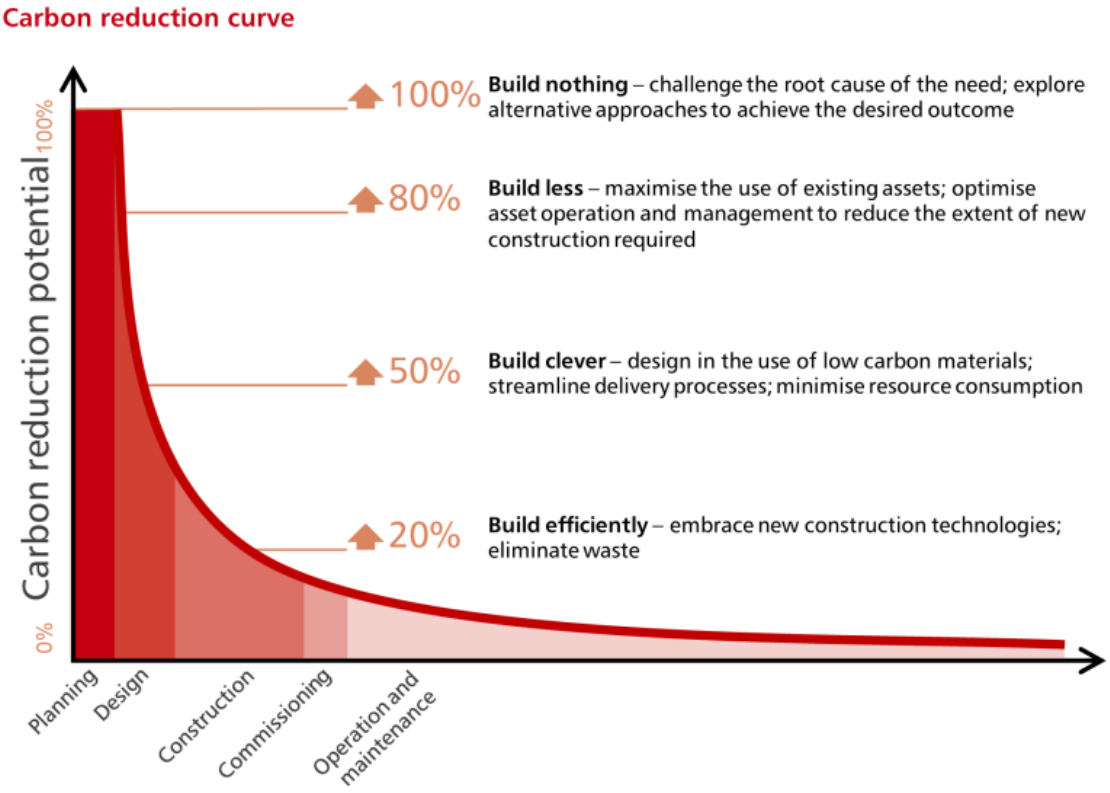



*Figure 28: Carbon Reduction Curve*

**Source:** Infrastructure Carbon Review

This approach supported the development of options for the cost benefit analysis process (Annex 4A.23: EJP and CBA Index). The option appraisal process prioritised reuse, then refurbish and finally replace, where this option was supported by CBA.

The process was following for our RIIO-ED2 Transformer Bunding Refurbishment Programme (RIIO-ED2 ED2-NLR(A)-SPEN-002-ENV-EJP). A number of transformers have been assessed as being in a deteriorated condition and therefore requiring consideration for intervention. By implementing "build clever" solutions for this programme we have adopted a High-Density Polyethylene (HDPE) solution, which replaces a carbon intensive concrete design. RIIO-ED2 Strategic Carbon Reduction. For further information please see Section 7.6 Preventing Oil Pollution.

## 6.10 Carbon Footprint

We calculate our emissions according to the Greenhouse Gas Protocol, which defines emission categories by the level of control as follows:

- Scope 1: Direct GHG emissions – from sources owned or controlled by the company;
- Scope 2: Electricity indirect GHG emissions – from the generation of electricity purchased by the company;
- Scope 3: Other indirect GHG emissions - a consequence of the activities of the company but occur from sources not owned or controlled by the company (e.g. business travel, contractors' emissions).

### *6.10.1 How we did in RIIO-ED1: Business Carbon Footprint*

*Table 13: RIIO-ED1 Business Carbon Footprint performance*

| | | Units | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|---|---|---|
| ***Scope 1*** | **Operational Transport** | $tCO_2e$ | 6,477 | 5,885 | 5,498 | 6,536 | 5,746 | 5,477 |
| | **SF6** | $tCO_2e$ | 699 | 1,300 | 2,371 | 1,272 | 1,784 | 2,723 |
| | **Buildings Other Fuels** | $tCO_2e$ | 26 | 54 | 28 | 43 | 98 | 84 |
| | **Red diesel** | $tCO_2e$ | 233 | 208 | 219 | 3,193 | 3,403 | 3,472 |
| ***Scope 2*** | **Depot buildings Electricity** | $tCO_2e$ | 4,735 | 4,370 | 3,356 | 2,569 | 1,229 | 249 |
| | **Substation Buildings Energy Use** | $tCO_2e$ | 13,789 | 12,243 | 10,468 | 8,421 | 4,005 | 11 |
| | **Losses** | $tCO_2e$ | 568,242 | 922,992 | 796,635 | 620,489 | 605,293 | 504,981 |
| ***Scope 3*** | **Business Transport** | $tCO_2e$ | 2,417 | 2,101 | 1,843 | 1,706 | 1,724 | 844 |
| | **Contractor Emissions** | $tCO_2e$ | 1,057 | 6,558 | 8,214 | 8,281 | 6,898 | 6,425 |
| ***Total*** | **Total BCF (excl. losses)** | $tCO_2e$ | **29,433** | **32,719** | **31,997** | **32,021** | **24,887** | **19,285** |
| | **Total BCF (incl. losses)** | $tCO_2e$ | **597,675** | **955,711** | **828,632** | **652,510** | **630,180** | **524,266** |

As illustrated in

***Table 13*** above, the largest contributors to our carbon footprint are network losses. We have therefore continued to prioritise these for action. Carbon emissions from network losses are to a significant extent not within our control as they are determined by the amount and carbon intensity of electricity generated and transmitted through the network. Losses are therefore excluded from the graph above for clarity, but Section 6.15 Scope 2: Carbon impact of network losses outlines the measures we will take to minimise the increase in losses arising from increased renewables on the network.

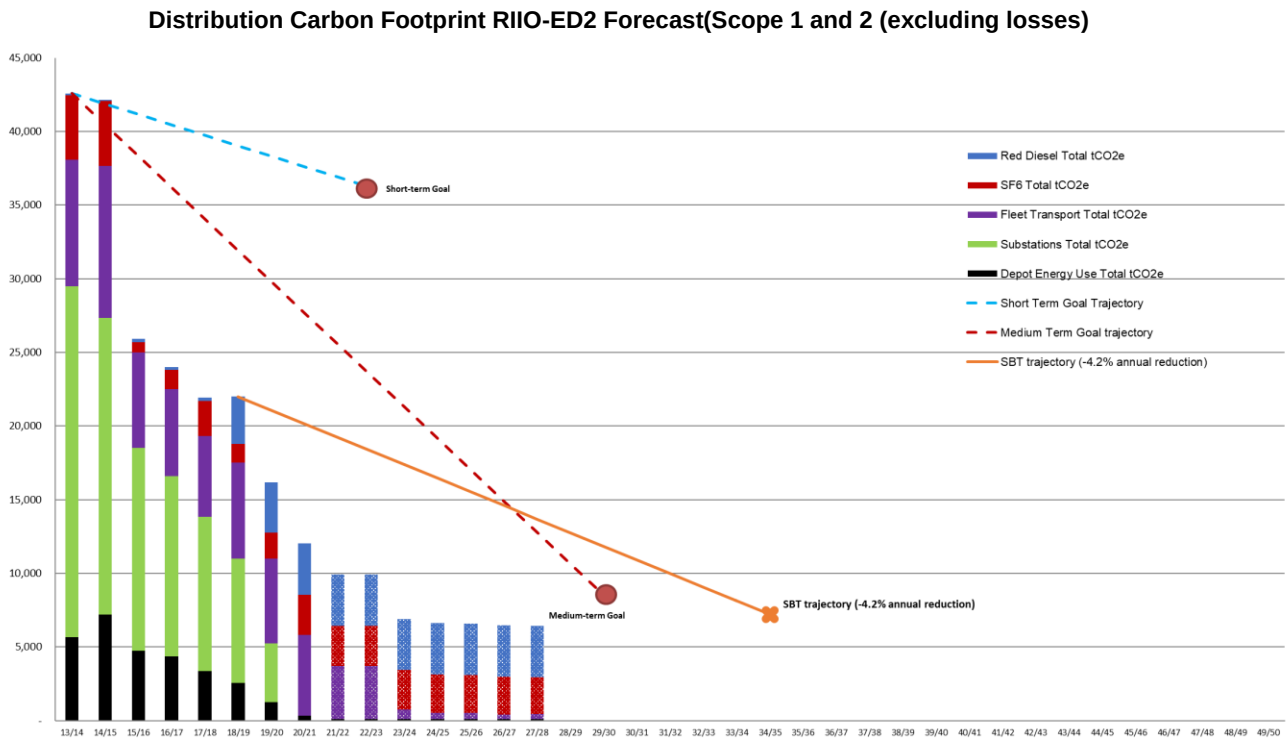



*Figure 29: RIIO-ED1 Actuals and RIIO-ED2 Forecast Carbon Footprint Scope 1 & 2 (excluding losses)*[4]

By reporting year 2015/16 we had reached our target of 15% reduction in emissions by 2023 excluding losses (on a 2013/14 baseline).

The changes in carbon emissions associated with the sources shown in ***Figure 29***, from our baseline year (2013/14) until our SBT baseline year of 2018/2019, are as a result of:

- Improvements in data quality and completeness, including improvements to estimation methodologies (these improvements are explained in the RRP Commentary documents for the relevant years) and carbon reduction initiatives.

The changes shown in Figure 29, from our SBT baseline year (2018/19) to present (2020/21), are as a result of:

- Moving onto a Renewable Energy Guarantees Origin (REGO) tariff, sourced from 100% UK-based renewable energy generation via Power Purchase Agreements (PPAs), for our substation and depot buildings.
- Reductions in operational fleet emissions as a result of increased vehicle efficiencies and the introduction of a vehicle management system to monitor and influence driver behaviour, including driving efficiency.

Due to the work that we have done during RIIO-ED1 and the initiatives that we plan to undertake in RIIO-ED2, we are left with two sources of emissions that require further attention

- $SF_6$ – During RIIO-ED2 we are implementing our SF6 strategy and are beginning the transition to SF6 free assets. This is however dependent on the supply chain and the availability of market ready, technically viable, economically efficient solutions.
- Diesel generators – We are at the beginning of the journey, exploring the alternatives that are available. During RIIO-ED2 we will work with our supply chain to pilot various alternatives to traditional temporary generators and where economically viable we will start to transition to these alternatives.

[4] RIIO-ED2 Forecast based on a 100% of cars and vans electrified by 2028.

Our SBT target shown in Figure 29 is representative only of our SP Distribution and SP Manweb contribution. Our SBT will be a SP Energy Networks target and will also include our transmission business. Please see our Sustainable Business Strategy for details.

The forecast carbon emissions reductions shown in Figure 29 reflects the electrification of our fleet.

We predict that by 2023/24 we will achieve both our medium-term goal of 80% reduction in our Business Carbon Footprint, and our Science-Based Target for Scopes 1 and 2 excluding losses (with respect to our Distribution Licences). This will put us well on the road towards our Net Zero Carbon goal.

### 6.10.2 RIIO-ED2 Commitments: Carbon Footprint

*Table 14: RIIO-ED2 Commitments: Decarbonising our networks and assets*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will deliver efficient and economic actions to reduce our scope 1, 2 & 3 business carbon footprint by 67.2% by 2035 from a 2018/19 baseline, in line with validated Science-Based Targets aligned to a 1.5C°pathway.** | **External Stakeholders - Ofgem, Operators** | By 2028 |
| **We will minimise our carbon footprint to achieve Net Zero carbon by 2035.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| **We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| We will align our offsetting approach to the Oxford Principles for Net Zero Aligned Carbon Offsetting, ensuring high probability of 'Additionality' and low probability of 'Reversibility', delivering additional environmental and social benefits where practical. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers, Supply Chain | |
| We will identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards our carbon reduction targets. | External Stakeholders - Ofgem, Operators | By 2023 |
| We will implement processes for carbon management in relevant business activities, aligned with PAS 2080 Carbon Management in Infrastructure. | External Stakeholders - Supply Chain, Operators | By 2025 |

### 6.10.3 RIIO-ED2 Metrics: Carbon Footprint

*Table 15: RIIO-ED2 Metrics: Decarbonising our networks and assets*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Total Carbon Emissions | $tCO_2e$ | turnover/ profit |
| Total - Scope 1 Carbon Emissions | $tCO_2e$ | turnover/ profit |
| Total - Scope 2 Carbon Emissions (Losses) | $tCO_2e$ | turnover/ profit |
| Total - Scope 2 Carbon Emissions (other) | $tCO_2e$ | turnover/ profit |
| Total - Scope 3 Carbon Emissions | $tCO_2e$ | turnover/ profit |
| Total - Carbon Footprint | $tCO_2e$ | turnover/ profit |

### 6.10.4 RIIO-ED2 Costs and Benefits: Carbon Footprint

*Delivering our RIIO-ED2 Carbon Offsetting strategy will cost £2.53m and offset 101,315* $tCO_2e$

## 6.11 Scope 1: Operational Transport

Our business has signed up to The Climate Group´s EV100 initiative. This is a global initiative bringing together forward-looking companies committed to accelerating the transition to electric vehicles (EVs) and making electric transport the new normal by 2030. Under the agreement, SP Distribution and SP Manweb will electrify our vehicle fleet, of over 800 vehicles, by 2030.

We have successfully piloted the use of small electric vans (see ***Figure 30*** below) and are working with our General Services fleet providers, and our vehicle leasing provider, to bring electric vehicles into our fleet.


*Figure 30: One of the six small electric vans in our pilot*

As a network operator, required to connect customers who wish to charge their electric vehicles and with a fleet of our own, we believe that we are uniquely placed to lead this electrification of transport and our stakeholders agree. We are therefore proposing to accelerate the electrification of our operational fleet, targeting the end of RIIO-ED2, as one of our key decarbonisation ambitions. This ambitious target will require the early adoption of new technology and considerable effort to address the various technological, regulatory and economic challenges, with the associated risks and costs.

Achieving this goal requires the removal of several barriers over the coming years, for example:

- development of technology for larger vehicles, higher load carrying capability, longer travel distances and faster charging.
- HMRC rules covering provision of charging points at employees' homes to allow company vehicles to be charged there (all SP Distribution and SP Manweb employees with vehicles start their working days from home).
- business continuity considerations require the mitigation of the risks associated with full reliance on electricity for our fleet.

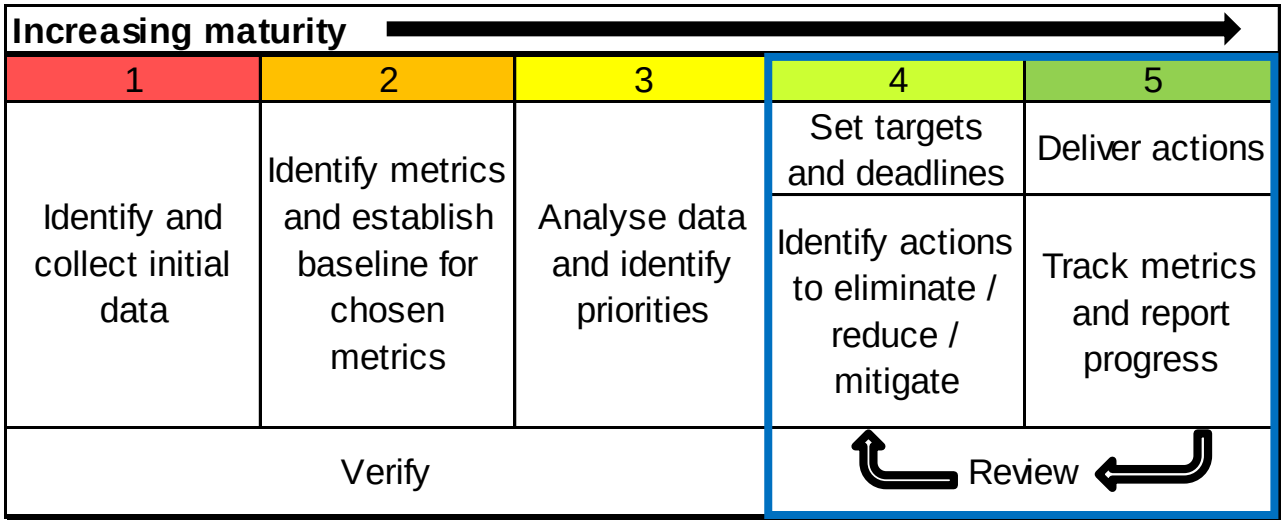
We have created a programme for the decarbonisation of our fleet to meet our 2030 EV100 commitment. Our RIIO-ED2 plans will see us decarbonise all SPEN cars and vans by the end of

2026, with 4x4 vehicles to be decarbonised by the end of RIIO-ED2. As we commence implementation of this programme, we will look for opportunities to accelerate this transition, such as the piloting and early adoption of new vehicle and charging technologies. For further details, please see Annex 5A.1: Non-Op Capex (excluding IT and Equip).

### 6.11.1 How we did in RIIO-ED1: Operational transport

The carbon impact from distribution operational transport has decreased by 15% and related fuel use has reduced by 14% since the start of RIIO-ED1. Improvements to our Network Asset Management System (NAMS) and Vehicle Management System, TrakM8, have also contributed to reductions in operational transport emissions via a reduction in mileage from improved logistical planning of work and encouraging more efficient driving techniques respectively.

**Level of maturity:**




### 6.11.2 RIIO-ED2 Commitments: Operational transport

*Table 16: RIIO-ED2 Commitments: Operational transport*

| **Description of commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will decarbonise our operational fleet by 2030, replacing 100% (over 800) of our cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028.** | **External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers** | By 2028 |
| We will install electric vehicle charging infrastructure for our operational fleet at our sites | External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption. | Continuing business as usual | Throughout RIIO-ED2 |

### 6.11.3 RIIO-ED2 Metrics: Operational transport

*Table 17: RIIO-ED2 Metrics: Operational Transport*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 1 Carbon Emissions- Operational Fleet Fuel Use | litres, $tCO_2e$ | network length |
| Scope 1 Carbon Emissions– Operational Fleet Number of Electric Vehicles | Number | n/a |
| Scope 1 Carbon Emissions- Operational Fleet Number of Chargers Installed | Number | n/a |

### 6.11.4 RIIO-ED2 Costs and Benefits: Operational transport

*To deliver our RIIO-ED2 plans in this area, it will cost £19.023M.*

*The benefit of delivering our plans will be 16,786* $tCO_2e$ *avoided.*

## 6.12 Scope 1: Fugitive emissions ($SF_6$ and other Insulation and Interruption Gases [IIG])

### 6.12.1 Sulphur hexafluoride ($SF_6$) Strategy

The safe, reliable, and sustainable operation of our network is a key priority for us, recognising the role it must play in all aspects of modern society and in achieving decarbonisation.

Achieving decarbonisation on the distribution network will predominantly be realised through connection of low carbon generation, and the replacement of carbon intensive fuel consumption for heating and transport with electric alternatives. Meanwhile, networks must also seek to decarbonise and reduce the carbon impact of the grid itself.

One component of SPEN's business carbon footprint (BCF) arises from leakage of Sulphur Hexafluoride ($SF_6$) gas. This is used extensively in electricity transmission and distribution as an insulator. It also quenches arcs that occur when the current carried by a circuit breaker is interrupted – this helps keep the network stable.

$SF_6$ is a potent greenhouse gas with a Global Warming Potential (GWP) 23,500 times that of $CO_2$[5]. Therefore, one tonne of $SF_6$ is equivalent to 23,500 tonnes of atmospheric $CO_2$.

$SF_6$ has become the primary insulation medium for voltages above 66 kV over the last 40 years. It has also been widely used at distribution voltages down to 6.6/11kV over the last 30 years. $SF_6$ switchgear is typically the most cost-effective solution available, and it has therefore been in consumers' economic interests to adopt $SF_6$ filled equipment.

In recent years, increased understanding of the environmental impacts and the Net Zero challenge has changed the perception of $SF_6$, and the longer-term impact of the cost of carbon emissions is altering life cycle assessments

Over the last 5-years cumulative $SF_6$ emissions on SPENs distribution network represent the equivalent of over 6,000 tonnes of $CO_2$ (ca. 4% of BCF). This is equivalent to driving over 15,000,000 miles in typical passenger car.

It is possible to mitigate this environmental impact by reducing the quantity of $SF_6$ leaking into the atmosphere by replacing leaking equipment and adopting $SF_6$ alternatives. SPEN are pioneering in this area by procuring $SF_6$ equipment with more stringent technical standards and utilising alternatives to $SF_6$.

[5] The Intergovernmental Panel on Climate Change (IPCC) Wg1 AR5 Report Ch 8

Reducing $SF_6$ emissions is an urgent and critical priority, and given the costs and environmental consequences, we are keen to continue to develop and deliver our strategy with the support and input from our stakeholders.

This section sets out our robust and considered strategy for the management of our existing $SF_6$ inventory and our approach to new and replacement assets.

Switchgear on the distribution network must carry out three key functions:

- Fault Interruption: Safely interrupt system faults and keep the system stable and secure.
- Insulation: Carry load and fault currents and be subject to system voltages without insulation breakdown.
- Isolation: Facilitate routine system operations and provide operators and others with a safe isolated environment.

Historically, distribution switchgear has used several different insulation and interruption media including air, high pressure air blast (1950s – 1970s), mineral oil (1900s – 2000s), vacuum (1960s onwards) and $SF_6$ (1980s onwards) to achieve the above requirements in conjunction with other (solid) insulation.

$SF_6$ has long been recognised for its significant safety benefits over mineral oil, particularly when disruptive failures occur. Our long-term switchgear strategy includes the removal of all oil switchgear to be replaced with safer, modern alternatives.

Since $SF_6$ under pressure has a dielectric strength significantly greater than that of air or nitrogen, its recent use in switchgear has also reduced the switchgear size (footprint) while providing improved reliability and lower maintenance demands.

### $SF_6$ Legislation & Regulation

$SF_6$ legislation has been maturing since its incorporation in the 1997 Kyoto Protocol, which set internationally binding emission reduction targets.

Relevant EU & UK regulations addressing F-gases include:

- Regulation (EU) No 517/2014 of the European Parliament (April 2014) and repealing Regulation (EC) No 842/2006
- Fluorinated Greenhouse Gases Regulations 2015 (SI 2015/310)

These regulations place mandatory obligations on operators of equipment containing F-gases, including leak checks on equipment; record keeping; recovery of F-gases; and use of appropriately qualified personnel. Therefore, these measures ensure that $SF_6$ gas and emissions are closely controlled in the UK and within our business operations. We will closely follow the mandatory requirements as result of the legislation.

A review of EU rules on F-Gases is currently underway, and this is expected to result in proposals to revise the regulations before the end of 2021. The revision is to raise ambition and improve implementation and enforcement. SPEN will continue to feed into consultations focussed on current regulation, policy options and expected impacts. The review timeline is detailed below:

- Feedback period: 29 June – 7 Sep 2020,
- 14-week online public consultation Q3/2020,
- Stakeholder workshop in Q1/2021 to receive feedback on preliminary findings,
- Q2/2021 Completion of the Evaluation & Impact Assessment,
- Q4/2021 Proposal for a revision.

This review has potential to impact the plant and equipment standards for the distribution network during RIIO-ED2 period. These changes could significantly increase equipment costs, possibly by up to 30%[6] and could add to equipment accommodation requirements (mainly buildings) to meet Net Zero

[6]REPORT FROM THE EU COMMISSION C(2020) 6635 final

obligations. SPEN intend to respond to this consultation supporting the increased ambition through industry and government bodies (including ENA and DEFRA) in support of the transition away from $SF_6$.

### Management of $SF_6$ emissions from existing assets

$SF_6$ is used mainly in circuit-breakers and Ring Main Units (RMUs) as an insulator and to quench arcs that result from the action of interrupting current.

Plant using this technology was introduced into SPD and SPM distribution networks in the 1980s and due to the strength of $SF_6$ as an insulator it was also deployed at higher voltages (mainly 33kV and 132kV) in ways that significantly reduced the footprint of the plant. At the same time distribution switchgear manufacturers recognised that small volume $SF_6$ RMUs (Secondary substations) would provide a safer, more reliable, and low maintenance alternative to then traditional oil insulated RMU.

These $SF_6$ RMUs were then introduced to SPD & SPM distribution networks in significant numbers (over 9000 in total) beginning in the early 1990s. While we work to ensure that $SF_6$ gas is never intentionally released, it is not technically possible to ensure that no gas is ever lost over the lifetime of an asset.

As with any vessel containing gas, there is an inevitable leakage rate which may change over time as the equipment ages. Although the numbers of $SF_6$ filled units on the SPD and SPM networks are significant, the amount of gas contained in individual units is relatively low. Typically, this is 0.5kg in an 11kV RMU, 0.6kg in a 11kV circuit breaker panel and 4.0kg in a 33kV circuit breaker panel. A breakdown of the number of switchgear units containing $SF_6$ and the related $SF_6$ content (mass in kg) is illustrated in ***Figure 31*** below.

It will be noted that 132kV switchgear (bottom left of the chart), while numerically smaller than other distribution plant, contains significantly more $SF_6$ gas per unit. Some 132kV switchgear panels contain more than 100kg of $SF_6$ per panel and therefore a 10 panel 132kV $SF_6$ GIS switchboard may contain the same volume of gas as 2000 11kV RMUs.

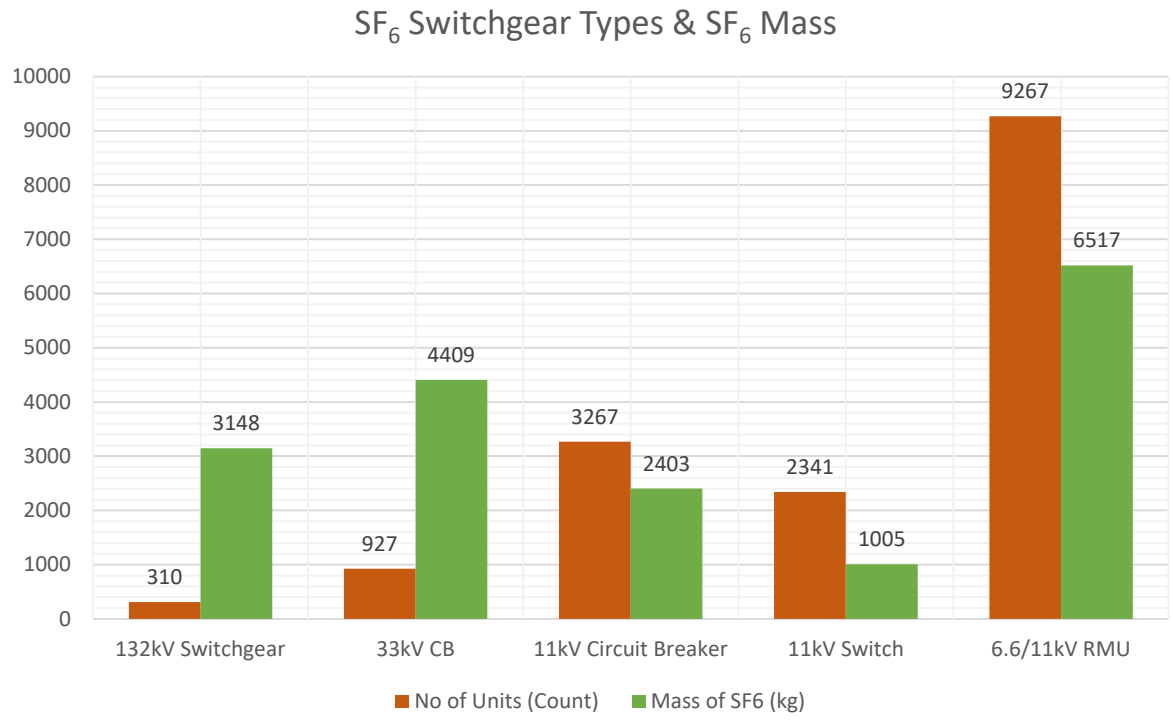



*Figure 31: $SF_6$ Switchgear Volumes SPD/SPM combined, units*

### Approach to New and Replacement of Existing $SF_6$ Assets

To mitigate the environmental impact from $SF_6$ emissions, we will explore all opportunities to utilise alternative insulating gases and insulation at the investment planning stage, incorporating these

alternatives as options within our CBA process where technically feasible. Currently the main suppliers (switchgear manufacturers) have different strategies regarding $SF_6$ alternatives, each with their own strengths and weaknesses. None of the alternative solutions provide the same dielectric strength as $SF_6$ and the manufacturers are working to overcome this challenge. Moving from utilising one gas to a mix of different gases on our network is also a logistical challenge, which we are prepared to face to help us to reduce our reliance on $SF_6$. The current situation concerning the development of $SF_6$ free devices for each of the key network levels is illustrated in the table below.

The use of different formats of medium and high voltage switchgear has historically been driven by several factors including the availability of space for the number of circuits required, the risk from and to the surrounding environment and the economics of the various types of plant available at the time of the substation construction. The common plant arrangements are described below:

- Most secondary substations (6.6kV/11kV) are indoor or enclosed.
- All 11kV primary substation switchgear is effectively indoor.
- 33kV substations are a mixture of indoor/outdoor construction. For example, metal enclosed switchgear for indoor and open busbar for outdoor.
- 132kV substations have traditionally used Air Insulated Switchgear (AIS) but had been increasingly making use of $SF_6$ to reduce the footprint.

It is against this background that the transition from $SF_6$ is being managed. The arrangement and types of switchgear together with the insulation technology are illustrated in ***Table 18*** below.

Where modern $SF_6$ free equipment is now available, we have considered whether otherwise healthy legacy $SF_6$ filled plant should be replaced before its anticipated end of life. Currently, our cost assessments (which include evaluating the cost of carbon) suggest that it is not viable to replace functional (good condition) $SF_6$ assets with like-for-like non-$SF_6$ solutions. However, this will be kept under review as new alternative switchgear is brought to the market and we expect to transition to $SF_6$ free assets throughout RIIO ED2. This anticipated transition is detailed in Annex 4A.10 Substations & Switchgear EHV to LV.

*Table 18: Switchgear and $SF_6$ alternative development*

| **Switchgear/ System Level** | **Legacy Technology** | **Current Technology Interruption** | **Current Technology Insulation** | **$SF_6$ alternatives available?** | **Market Ready Date** | **Cost Change in RIIO-ED2?** |
|---|---|---|---|---|---|---|
| 132kV | Oil/Air Blast | $SF_6$/Alt gas | $SF_6$/Alt gas | Yes [Vac/Alt gas] | Now | ⇧ |
| EHV (33kV) | Oil/$SF_6$ | $SF_6$/Vacuum | Solid/$SF_6$ | No | 3yrs+ | N/A |
| HV Primary (6.6/11kV) | Oil/$SF_6$ | Vacuum | Solid/Air | Yes | Now | ⇔ |
| Secondary HV (6.6/11kV) | Oil | $SF_6$/Vacuum | $SF_6$ | No | 5-8yr | ⇧ |
| Overhead Line Switchgear | Oil/ $SF_6$ | $SF_6$/Vacuum | $SF_6$/Solid | Autoreclosers (Yes) PM Switches (No) | Now – 3 years | ⇔ |

## Switchgear Types and use of $SF_6$

**132kV -** 132kV switchgear is deployed in several formats mainly, outdoor live tank, outdoor dead tank, and GIS (indoor). $SF_6$ has been used in all formats. Whilst switchgear manufacturers are striving to develop $SF_6$ alternatives for all arrangements at 132kV (nominally 145kV), at higher voltages (275kV and 400kV) interruption technologies and techniques are not yet fully developed.

While $SF_6$ alternatives are under development for these formats, currently there are no “dead tank” $SF_6$ free solutions, two “live tank” products have been developed and three GIS products are currently available for pilot application. SPM is currently deploying $G^3$ at Lister Drive 132kV substation in

Liverpool with a 16-panel GIS switchboard which will deliver a reduction in global warming potential (GWP) of over 99% compared to the equivalent $SF_6$ switchboard. It is anticipated that the availability and commercial viability of these products will improve over the RIIO-ED2 period.

*Figure 32: "Dead tank" Circuit Breaker (~36kg $SF_6$) & 132kV GIS Alt Gas Switchboard ($G^3$)*

**33kV** - 33kV switchgear plant has been produced primarily with bulk oil (legacy) and $SF_6$ or $SF_6$/Vacuum media in dead tank (outdoor and indoor) formats. As with 132kV GIS, manufacturers have been able to exploit the excellent dielectric properties of $SF_6$ to shrink the footprint of 33kV plant significantly. While there is confidence that suitable non-$SF_6$ solutions will be developed, it is likely that the civil accommodation for the switchgear will increase, making like-for-like installation a challenge.

*Figure 33: Typical 33kV Circuit Breakers: 33kV Outdoor $SF_6$ Circuit Breaker (2.7kg $SF_6$) & 33kV Circuit Breaker Switchboard ($SF_6$/Vacuum) (~5.1kg $SF_6$ per panel)*

**6.6/11kV Primary Switchgear -** SPD and SPM have been procuring 6.6/11kV gas free products at primary substation level for a number of years having successfully supported the development and application by partner manufacturers.

However, there is a significant population (~1200) of $SF_6$ filled primary circuit breakers and as these units age and seals degrade gas leakage is inevitable. Therefore, we propose to replace 100 $SF_6$ isolatable circuit breaker portions with $SF_6$-free retrofit units throughout the RIIO ED2 period.

*Figure 34: 11kV Primary Switchgear Vacuum retrofit (Nil) & 11kV $SF_6$ Primary Switchgear (~0.5kg $SF_6$)*

**6.6/11kV Secondary Switchgear -** Traditional UK specification Ring Main Units (RMUs) are extremely compact low-cost devices which contain a combination of switches, fuses or circuit breakers in a package that can be mounted on a transformer. Early RMUs used oil as an insulant but once more the dielectric properties of $SF_6$ has facilitated a low cost, low volume, low maintenance device. Alternatives to $SF_6$ – various gas mixes and air variants are anticipated by the middle of the RIIO-ED2 period.

As part of our $SF_6$ strategy, all new circuit-breakers, RMUs and GIS installations will use alternative insulating gases where there are suitable market-ready solutions i.e. type-tested and commercially available. This is supported across the industry and manufacturers are striving to develop $SF_6$ free equipment. The market readiness of this plant is illustrated in the ***Table 18*** above. Currently, there are several concerns over standardisation of alternative gasses for insulation/interruption duties and retrofitting other gasses in place of $SF_6$ (with different electrical and mechanical properties) is not viable. Furthermore, as manufacturers develop new products which may functionally replace $SF_6$, it is not clear whether the new equipment will occupy the same physical space or footprint. However, during the RIIO-ED2 period, the deployment of $SF_6$ equipment will be reduced as much as possible.

*Figure 35: 11kV Packaged Substation, RMU (0.5kg $SF_6$) & Legacy 11kV Oil Filled Ring Main Unit (Nil)*

**11kV Overhead Line Switchgear** - Wood pole 11kV overhead lines are widely used to serve more sparsely populated regions. To be economically viable these lines are often radial and therefore do not provide the same level of supply security as urban networks. To improve the supply security and safety, protection devices have always been fitted to overhead lines. Initially this was achieved through replaceable fuses and then through auto-recloser devices which disconnect faults for a short period and then re-energise the circuit since many rural overhead line faults are transient in nature. More recently pole mounted auto-recloser devices (PMARs) have been used in combination with "smart" devices such as smart fuses and disconnector switches to further improve system performance. As with ground mounted switchgear, auto-reclosers were originally oil filled devices and manufacturers realised that the performance of $SF_6$ gas would lead to significant performance improvements and reliability gains. For a considerable period, the Whipp & Bourne GVR $SF_6$ recloser was installed on both the SPD and SPM networks as the network developed and to replace ageing oil filled PMARs. However, industry development of $SF_6$-free devices, which we actively supported, has resulted in equivalent switchgear such as the NOJA OSM 15 currently being procured for the SPD/SPM networks.

*Figure 36: 11kV NOJA OSM 15 Recloser (solid/vacuum) & 11kV ENTSO Auguste $SF_6$ Switch (1.9kg $SF_6$)*

**Transitioning from $SF_6$ Switchgear**

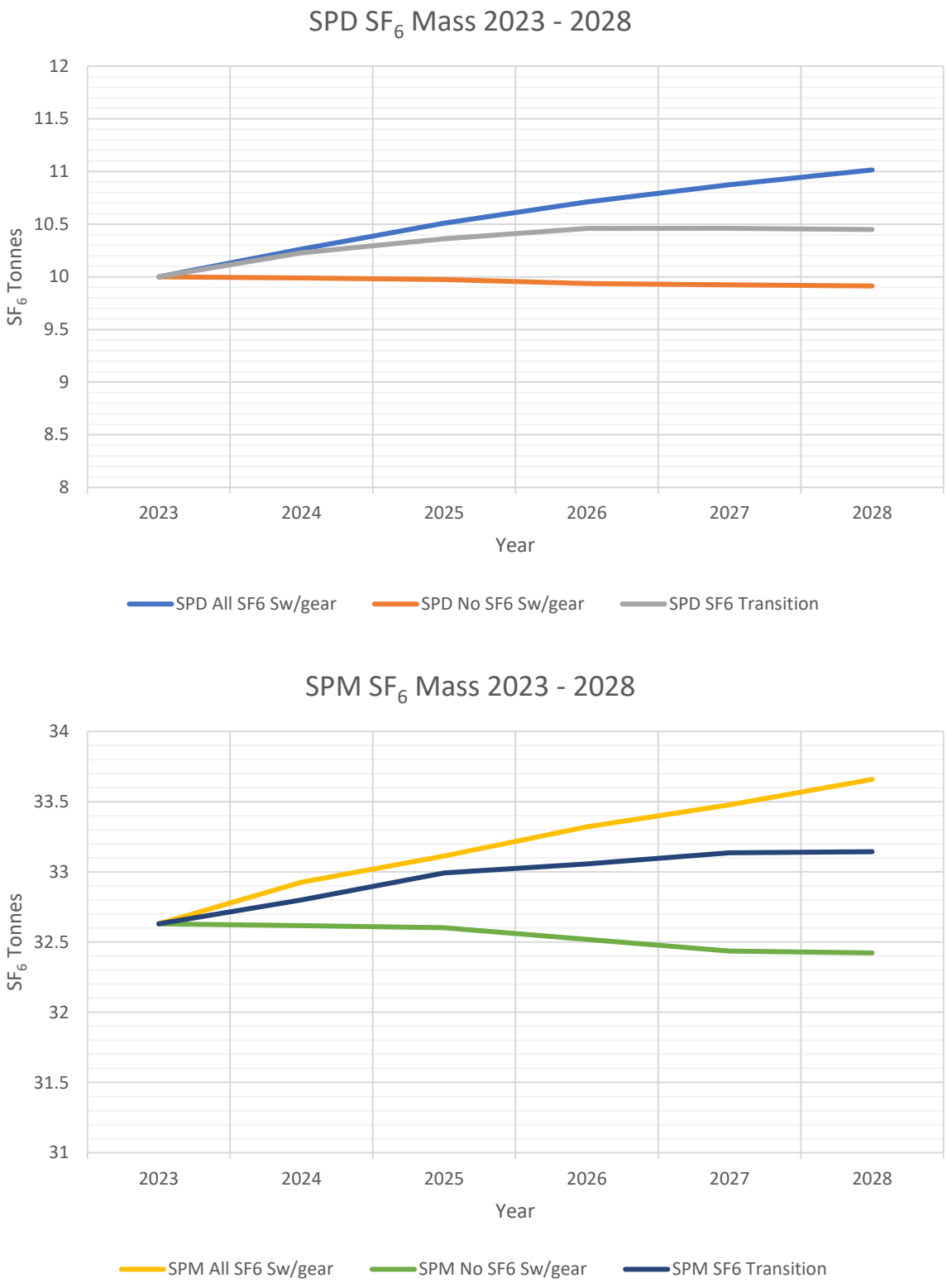



*Figure 37: SPD & SPM $SF_6$ Bank projection with RIIO-ED2 transition to alt. gasses*

It can be seen in ***Figure 37*** above, that the reduction of $SF_6$ and development of alternatives is a journey that all high voltage switchgear manufacturers are undertaking and while significant steps are being taken it will be some time before $SF_6$ ceases to be a feature of new equipment. Nevertheless, we will use all technical and commercial means at our disposal to influence the specification, development, trialling, and deployment of $SF_6$ free plant as a primary position and significant $SF_6$ reduction as a secondary priority. While this is dependent on the speed of response of the switchgear supply chain, it

is likely that the majority of plant purchased will be $SF_6$ free by the end of the RIIO-ED2 period. Since the timing of new $SF_6$ free plant availability is not yet clear, scenarios have been considered for RIIO-ED2 where there is deployment of; a) $SF_6$ switchgear only, b) $SF_6$ switchgear and switchgear refurbishment, and c) No $SF_6$ switchgear and refurbishment illustrated in ***Figure 37***.

### 6.12.2 How we did in RIIO-ED1: Fugitive emissions ($SF_6$ and IIGs)

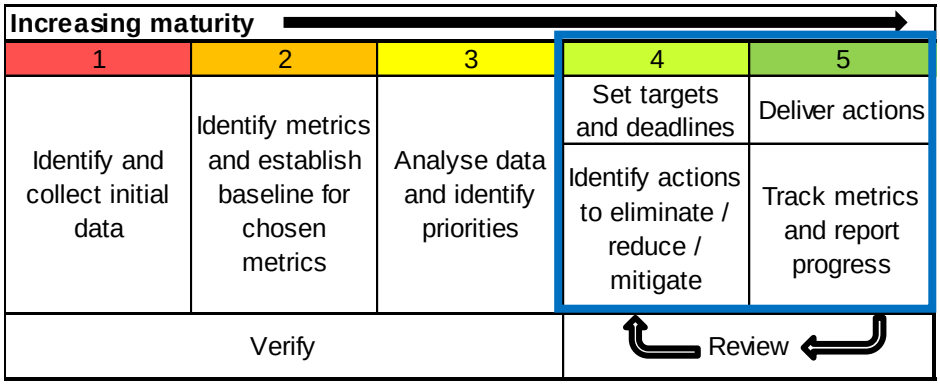
SP Distribution comprises electricity networks below 132kV. SP Manweb comprises networks up to and including 132kV. This results in SP Manweb managing larger equipment with higher amounts of $SF_6$ and therefore differs from SP Distribution in $SF_6$ Bank, how much $SF_6$ is leaked, and how these leaks are managed.

$SF_6$ equipment held by SP Distribution is small and has much of its $SF_6$ held in sealed switchgear containers with no facility to top up. Therefore, where $SF_6$ levels are shown to have dropped below a defined threshold, these items of plant must be replaced.

Since 2013, annual $SF_6$ leakage as a percentage of total volume has remained comparatively low, staying within target at 0.75% of total mass against a target of 0.85%. However, leakage needs to be significantly reduced in order to achieve our 2030 and 2050 carbon reduction targets, despite the likely ongoing increase in volume of $SF_6$ deployed on our network. To reduce leakage, we quickly repair or replace assets, targeting the high leak rate units first and drawing on expert support to utilise the latest approaches and technologies.

Despite a considerable amount of effort spent in attempting to fix leaking assets, SP Distribution's $SF_6$ leakage total increased by 9% in 2020/21 from 2019/20 leakage rates. This was primarily as a result of improvement in the completeness of data collected, and we have included emissions from the small number of top-ups carried out in the reporting year. In 2020/21, $SF_6$ leakage in SP Manweb was 53% higher than 2019/20 figures.

**Level of maturity:**




### 6.12.3 RIIO-ED2 Commitments: Fugitive emissions ($SF_6$ and IIGs)

*Table 19: RIIO-ED2 Commitments: $SF_6$ reduction*

| **Description of commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will reduce our $SF_6$ leakage by 10% over the RIIO-ED2 period compared to RIIO-ED1.** | **External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers** | By 2028 |
| We will use alternatives to insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | External Stakeholders - $SF_6$ Strategy consultation | Throughout RIIO-ED2 |

| | | |
|---|---|---|
| We commit to reporting on total $SF_6$ Bank and leakage reduction rates using a common Distribution Network Operator (DNO) methodology. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | By 2023 |
| We will continue to carefully manage our assets in line with our $SF_6$ Strategy to minimise $SF_6$ leakage, repair leaks quickly, and where this is not possible, replace the asset before its anticipated end of life. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will continue to require manufacturers to provide equipment with a $SF_6$ leakage rate which is half that of the internationally recognised standards, where technically viable. | Continuing Business as usual, External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will drive the development and adoption of $SF_6$ – free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |

### 6.12.4 RIIO-ED2 Metrics: Fugitive emissions ($SF_6$ and IIGs)

*Table 20: RIIO-ED2 Metrics: $SF_6$ reduction*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 1 Carbon Emissions– Sulphur Hexafluoride ($SF_6$) emissions and leakage rate | kg, $tCO_2e$, % | $SF_6$ bank (kg) |
| Scope 1 Carbon Emissions– other IIG emissions | kg, $tCO_2e$ | IIG bank (kg) |
| Scope 1 Carbon Emissions– Total IIG emissions | $tCO_2e$ | Total gas bank (kg) |
| Scope 1 Carbon Emissions– Sulphur Hexafluoride ($SF_6$) Bank | kg, $tCO_2e$, % | $SF_6$ bank (kg) |

### 6.12.5 RIIO-ED2 Costs and Benefits: Fugitive emissions ($SF_6$ and IIGs)

*To deliver our RIIO-ED2* $SF_6$ *Strategy, it will cost £5.159M.*

*The benefit of delivering our* $SF_6$ *Strategy will be a minimum of 1097*$tCO_2e$ *avoided in leakage and avoiding adding a further 2,262kg (51,590* $tCO_2e$*) of* $SF_6$ *to the network by implementing* $SF_6$ *free alternatives.*

## 6.13 Scope 1: Fuel consumption (including red diesel, natural gas and other fuels used in buildings and operations)

We are continually exploring ways to reduce our fuel consumption across the business.

During outages and faults, we provide temporary and portable diesel generators to restore supplies to our customers. We make use of our own fleet of generators and during times of high demand, we temporarily hire generators from our framework providers to make sure we meet our customers' needs. Generator use makes up the vast majority of our red diesel consumption and emissions.

In 2018, we collaborated with a supplier to trial innovative battery powered electric generators in our SP Manweb generator fleet. These trials proved the technical viability of these restoration units to restore supplies to our smaller domestic customers, reducing our dependence on diesel and petrol fuelled units. The innovative generators also delivered other benefits to our consumers, including a reduction in noise pollution, improved air quality and reduced carbon emissions.

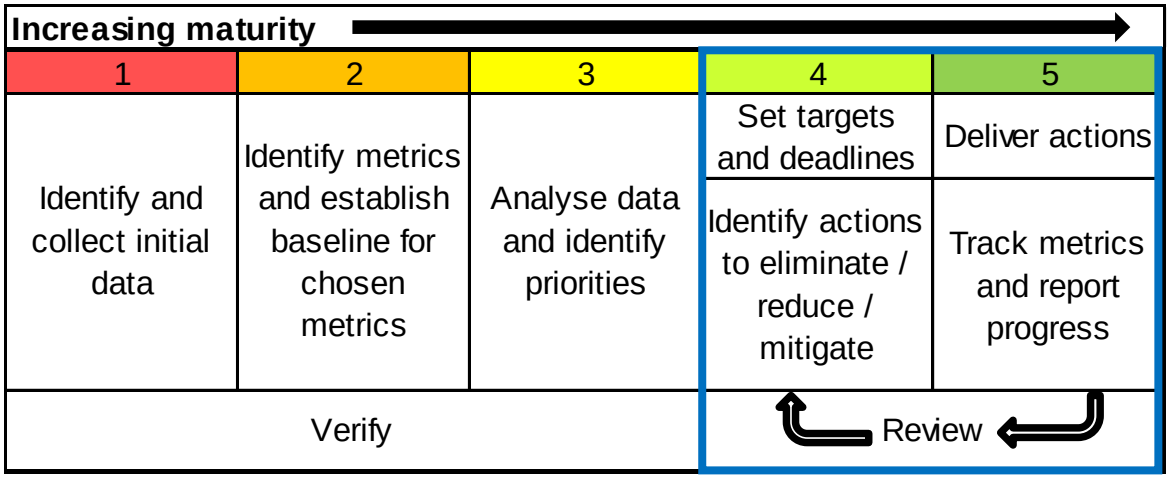
A business case was completed in 2021 following a subsequent trial of a 36kWh lead-acid battery generator unit in SPM, furthering the progress of battery unit utilisation.

During RIIO-ED2, our generator contracts will require us to offer greater flexibility and availability for restoration. To deliver this, we will modernise our generator strategy by exploring the potential for more environmentally sustainable alternatives, such as the battery units previously trialled. We will update our generator hire framework to encourage generator companies to include low carbon solutions in their services. We will review opportunities to partner with our supply chain in the development of new technologies. When feasible, we will work with our supply chain to collaboratively pilot and trial alternative generators in our fleet.

### 6.13.1 How we did in RIIO-ED1: Fuel consumption

As a result of improvements to the completeness of data collected, our red diesel usage throughout RIIO-ED1 has increased by approximately 1,179,000 litres. This has resulted in a reported increase in the total carbon impact of our generator fleet from 233 $tCO_2e$ in 2015/16 to 3,471 $tCO_2e$ in 2020/21. This was primarily as a result of improvement in the completeness of data collected. In 2020/21 we started to include data based on payments made to our generator suppliers, which we were able to obtain back to 2018/19.

**Level of maturity:**




### 6.13.2 RIIO-ED2 Commitments: Fuel consumption

*Table 21: RIIO-ED2 Commitments: Fuel consumption*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will analyse our generator use and set targets for reduction in carbon emissions to be achieved by end of RIIO-ED2.** | **External Stakeholders - Supply Chain, Operators, Expert Reviewers** | By 2023 |

### 6.13.3 RIIO-ED2 Metrics: Fuel consumption

*Table 22: RIIO-ED2 Metrics: Fuel consumption*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 1 Carbon Emissions- Fuel consumption | litres, $tCO_2e$ | network length |

### 6.13.4 RIIO-ED2 Costs and Benefits: Fuel consumption

*Due to the immaturity of alternatives in this area we do not currently have options for which to develop quantified costs or benefits, however we have started to work with our supply chain to identify and pilot alternatives and will collect data on these options during the RIIO-ED2 period, seeking to drive down emissions in this area.*

## 6.14 Scope 2: Buildings energy usage

The electricity that we use in our offices, depots and substations represented the largest portion of our Scope 2 emissions (excluding losses) during RIIO-ED1. Since September 2019, we have purchased green electricity through a Renewable Energy Guarantees Origin (REGO) tariff sourced 100% from UK-based renewable generators via Power Purchase Agreements (PPAs) for the majority of our buildings and substations, we are aiming for all of our offices, depots and substations to be on this tariff by the beginning of RIIO-ED2. All energy used under this tariff has a carbon emissions factor of zero, significantly reducing the carbon footprint of the energy we use at our depots and substations. However, we must continue to focus on reducing the electricity consumption at these sites to ensure that we use the energy efficiently and cost effectively, and so that we free up renewable energy for others to use. We will do this by implementing energy efficiency measures including lighting and heating improvements. We have updated the specifications for our buildings so that when we intervene to replace or repair network assets, we will also bring our buildings up to meet these new improved standards.

#### Substation buildings energy reductions

Network protection and smart control assets are designed for indoor use and housed within substation buildings. These assets are particularly susceptible to environmental setting. Unsuitable conditions can reduce performance and damage assets, leading to extended supply outages and posing risks to our employees and the public. Such failures can lead to increased lifecycle costs ultimately passed onto consumers through use of system charges. We therefore need to ensure the substation building environment is suitable, which we can do through appropriate design, control and upkeep of the building fabric and the heating, lighting, ventilation, and air conditioning systems.

The energy used by building services to achieve the right internal conditions contributes to the overall network losses attributed to the Distribution Network. We are committed to reducing these losses as they are in our control. Timely maintenance and repair of our substation buildings extends the lifespan of the structure and building services as well as preventing damage to internal electrical assets. These programmes aim to prevent early replacement of building structures, building services and electrical assets thereby avoiding the carbon impacts, financial outlay and disturbance to the local community and environment associated with lengthy construction projects.

We have therefore included proposals within our investment plan to reduce energy consumption at substations by refurbishing the building fabric and building services where they have been identified as being in poor condition.

It is known that there is significant potential to improve the energy efficiency performance of our primary substation buildings during RIIO-ED2, to address wastage in both heating and lighting. A study carried out for SP Energy Networks by Napier University in 2018 indicates the scale of current energy demand and the potential energy savings to be achieved through the delivery of specific interventions.

The study assessed five different substation buildings and measured the current demand for heating and lighting. Average annual heating demand was found to be 206 $kWh/m^2/yr$, while for lighting the figure was 8.7 $kWh/m^2/yr$. These figures have been taken as representative of the wider substation buildings estate in order to estimate overall current energy demand.

In order to reduce wasted energy through heat loss, heating controls will be fitted that will maintain the buildings at an appropriate temperature to avoid condensation while allowing operators to temporarily increase temperatures during work visits. Data from the Napier study indicates that this can be expected to result in an overall reduction of 39% in heating energy use.

Lighting controls to improve the energy efficiency of lighting systems will be fitted and data from the Napier study indicate that this can be expected to reduce lighting energy use by 35%.

Over the course of RIIO-ED2, we will visit 260 primary substations in the SP Distribution region, and a further 390 in SP Manweb. Of these, we estimate that 25% will benefit from the energy efficiency improvements described above. In the absence of detailed floor areas of the buildings that we will visit, we have applied representative floor areas of the primary substations in the SPD and SPM areas, which are typically 100 and 60 $m^2$ respectively.

The table below shows the estimated potential heating and lighting savings across the SP Distribution and SP Manweb regions.

*Table 23: RIIO-ED2 Buildings energy saving measures*

| Metric | SP Distribution | SP Manweb |
|---|---|---|
| Number of sites visited during RIIO-ED2 | 260 | 390 |
| Percentage of visited sites affected | 25% | 25% |
| Number of interventions | 65 | 98 |
| Typical internal floor area | 100 | 60 |
| Total floor area affected | 6,500 | 5,880 |
| Current heating demand (kWh/$m^2$/yr) | 206 | 206 |
| Assumed saving from heating controls | 39% | 39% |
| Future heating demand (kWh/$m^2$/yr) | 125.66 | 125.66 |
| Current lighting demand (kWh/$m^2$/yr) | 8.7 | 8.7 |
| Assumed savings from LEDs and controls | 35% | 35% |
| Future lighting demand (kWh/$m^2$/yr) | 5.655 | 5.655 |
| Total current energy demand (MWh/yr) | 1,396 | 1,256 |
| Total future energy demand (MWh/yr) | 854 | 768 |
| Energy savings (MWh/yr) | 542 | 488 |

In addition to the interventions at the primary substations across SP Distribution and SP Manweb, energy efficiency measures will be carried out at the accommodation and switch hall buildings at Rainhill Grid and Frodsham Grid in SP Manweb.

Assuming the same average energy demands as indicated by the Napier study, and applying the heating controls to the accommodation areas, and the lighting upgrades to the accommodation and switch halls, is expected to result in annual energy savings of 118 MWh per year.

It is assumed that these works will be delivered evenly over the five years of RIIO-ED2, achieving overall annual energy savings of 1,148 MWh/yr by the end of the period. Furthermore, it is assumed that these annual savings are maintained going forward.

### Office and depot buildings energy reduction

We need to ensure that our future operating model and the buildings in which our staff are based meet the demands of tomorrow's workforce, attracting and retaining talent, maximising productivity,

and prioritising employee wellbeing. Throughout the pandemic we have examined best practice, analysed productivity, and performance, adapted with our workforce, and listened to their feedback during this period. This will deliver a more flexible and adaptable workplace, whilst remaining resilient to address the challenges of the future.

ScottishPower is committed to shifting to a hybrid working model, which will see a blend of office and home working. This will allow staff to determine, in line with business commitments and deadlines, where they are best to operate from during the working week. In turn the refurbishment of our office spaces will focus on collaboration in the workplace rather than returning to the traditional desk-bound duties 5 days a week. We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to reduce consumption by 11.7GWh over the RIIO-ED2 period. The eight sites earmarked for major investment will become HUBs for the SP Energy Networks business, and in doing so the operating rhythms for staff will then reduce the frequency of travel to the office which also has a significant role in reducing our overall carbon footprint. We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh over the RIIO-ED2 period.

UK Green Buildings Council Net Zero Carbon Buildings Framework was published in April 2019 following an industry task group and extensive consultation process. The framework sets out high level definitions for net zero carbon buildings covering scopes for operational energy and construction emissions, with a whole life carbon approach to be developed in the future. It acts as guidance for achieving net zero and is being developed in consultation with industry to include detail and stricter regulations which will force existing owners and tenants to place sustainability at the heart of all future building/office requirements.

The framework supported the development of our plans and generated energy performance targets for our commercial office buildings. This set the minimum energy efficiency target for buildings seeking to achieve net zero carbon status for operational energy today, based on the performance levels that all buildings will be required to achieve by 2050.

BREEAM encourages the use of intelligent controls and smart metering, which can facilitate maintenance and performance and thus reduce associated costs. Average $CO_{2e}$ saving for a BREEAM assessed building is 22%, whilst a BREEAM Excellent building is expected to reduce carbon emissions by 33%. Therefore, as part of our RIIO-ED2 plans we are committing to achieving an 'Excellent' rating for all new-build construction projects and a 'Very Good' rating for all refurbishment projects during the RIIO-ED2 funding period. This will be embedded in the initial scope of services for all projects and where appropriate, a BREEAM Assessor will be appointed as part of the design team from the outset to ensure sustainability and full life cycle costs form part of the decision making on the design concept through to the physical construction works themselves.

Types of Sustainable Technology to be considered during RIIO-ED2 funding period:

- Solar PV Panels
- Electric Vehicle Parking Solar PV Canopies
- On-site Battery Storage Capacity
- Air-Source Heat Pumps/Heat Recovery Systems
- LED Sensor-activated Lighting Systems
- Thermal Cladding
- Triple Glazing

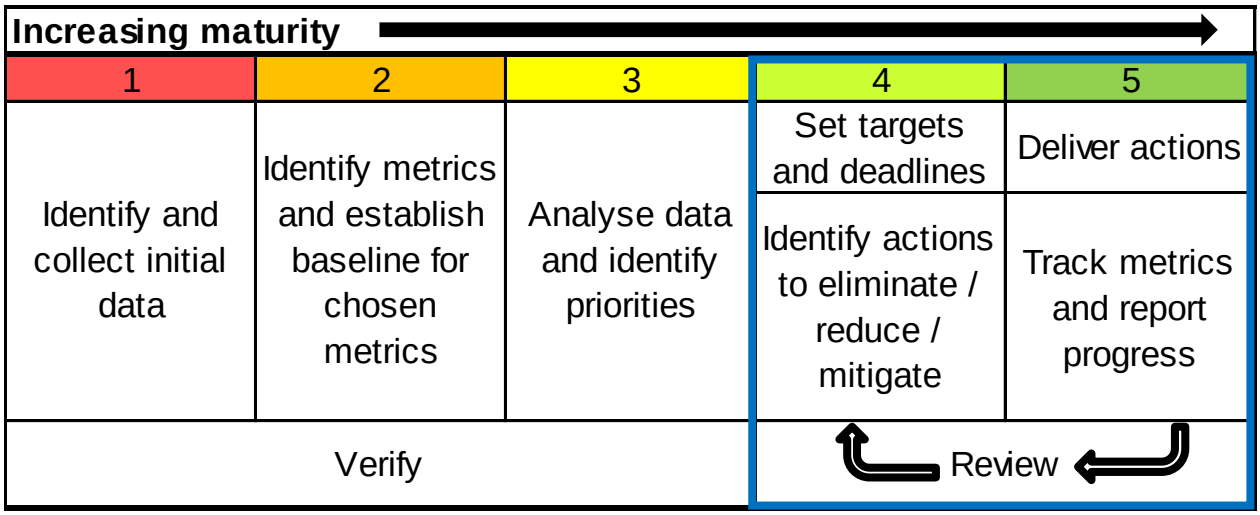
BREEAM also focuses on the health and wellbeing of the people who use our buildings, with the aim to create spaces which promote health and wellbeing for our employees, with the design intent to encourage people use different space types available throughout the day, and to provoke creativity and collaboration. For details of our building refurbishment plans, please see Annex 5A.1: Non-Operational Capex Expenditure.

### 6.14.1 How we did in RIIO-ED1: Buildings energy usage

In line with the Greenhouse Gas (GHG) Protocol, the carbon emission related to any electricity use not covered by the green tariff (unmetered sites, radio base stations and some small substations thereafter) has been calculated using the UK residual mix carbon factor.

The move to the green tariff has reduced our recorded emissions from buildings energy use in SP Distribution from 6,029 $tCO_2e$ in 2018/19 to 218$tCO_2e$ in 2020/21. In SP Manweb it was reduced from 4,918 $tCO_2e$ in 2018/19 to 42 $tCO_2e$ in 2020/21.

**Level of maturity:**




### 6.14.2 RIIO-ED2 Commitments: Buildings energy usage

*Table 24: RIIO-ED2 Commitments: Buildings energy usage*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will continue to purchase green electricity through a 100% UK-based renewable energy tariff backed by Power Purchase Agreements (PPA) for all our buildings. Beyond this, we will reduce our buildings and substations energy consumption by a minimum of 15.2GWh (8%) over the RIIO-ED2 period.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| We will reduce energy consumption by a total of 3.4GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh over the RIIO-ED2 period. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will pilot and monitor renewable generation at substation and/or depot sites to offset building energy demand. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2028 |

### 6.14.3 RIIO-ED2 Metrics: Buildings energy usage

*Table 25: RIIO-ED2 Metrics: Buildings energy usage*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 2 Carbon Emissions- Buildings (Offices and Depots) | kWh, | No. of staff |
| Scope 2 Carbon Emissions- Buildings (substations) | kWh, $tCO_2e$ | No. of buildings, m2 |

### 6.14.4 RIIO-ED2 Costs and Benefits: Buildings energy usage

*To deliver our RIIO-ED2 plans in this area, it will cost £9.425M.*

*The benefit of delivering our plans will be a reduction in our building's energy consumption of at least 15.2GWh over the RIIO-ED2 period. Our energy reduction measures will save at least £0.484M on our electricity bills over the RIIO-ED2 period.*

## 6.15 Scope 2: Carbon impact of network losses

Our Losses Strategy is based upon our vision to consider all reasonable measures that can be applied to reduce losses and adopt those measures which provide benefit for customers. The source of network losses is detailed in Chapter 4A Network Sustainability. Our Losses Strategy can be found in Annex 4A.8: Losses Strategy.

In RIIO-ED2 and beyond, we anticipate that for an efficient, Net Zero Carbon transition distribution network losses will increase as a result of the electrification of heat and transport and the increase of low carbon distributed generation. These additional losses could be considered 'green' or low carbon losses, because they are derived from renewable generation. Therefore, whilst they still have a cost implication to the customer through energy charges, the societal cost of losses – primarily in terms of carbon impact – is changing.

By implementing our Losses Strategy, we will avoid an estimated 36 GWh of network losses during the RIIO-ED2 period, thereby limiting losses to a lower level than would otherwise be the case. Our interventions will continue to limit losses over the total life cycle of the assets, beyond the end of the RIIO-ED2 period.

A summary of our headline actions in RIIO-ED2 are as follows:

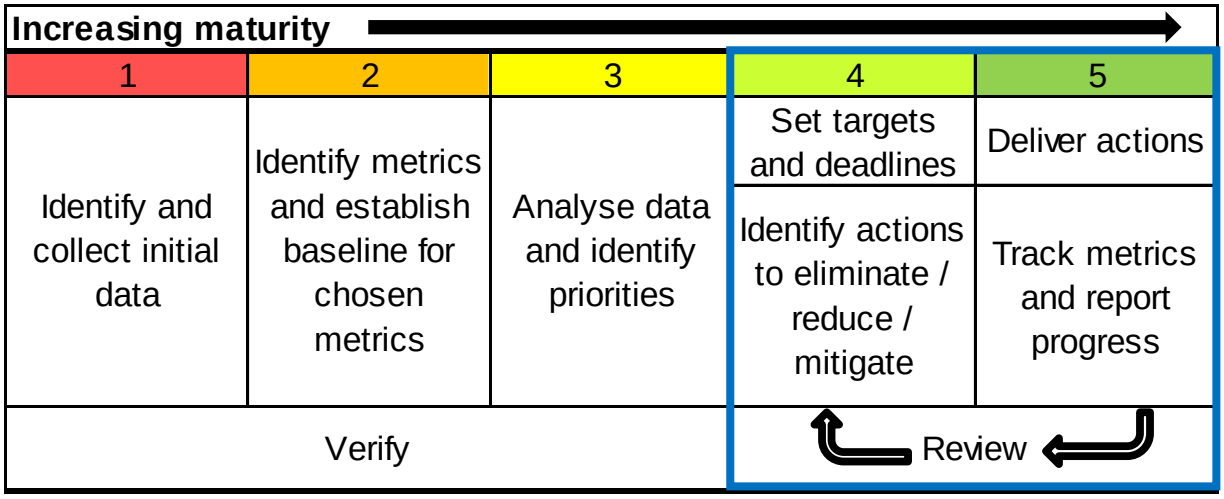
- Continue to replace high loss assets, such as old design transformers, with more efficient new technologies.
- Increase the minimum cross-sectional area of HV and LV cables and overhead lines in conjunction with other works.
- Improve our knowledge and understanding of losses through:
    - Applying our intelligent network algorithms to smart meter data.
    - Increasing metering capabilities, particularly at secondary substations.
    - Improving network modelling.
- Continuation of our use of industry-leading Revenue Protection services.
- Procure a Mobile Asset Assessment Vehicle (MAAV) under a Consumer Value Proposition to detect contact voltages and subsequent network (and customer) losses.
- Continuing our work in our flagship innovation projects investigating DC distribution use cases.
- Continuing to chair the ENA Technical Losses Working Group to work collaboratively on better processes for measuring, managing, and reporting losses.

### 6.15.1 How we did in RIIO-ED1: Network losses

Since 2013, distribution network losses have averaged 6-7% of the total energy transmitted, and the carbon intensity of these losses has steadily decreased. Over RIIO-ED1 we have undertaken a range of activities to manage losses in our network, including replacement of inefficient transformers, increasing cable sizes, and improvements against non-technical losses.

We have reported on these developments annually, and updated our Losses Strategy periodically, to keep it relevant. Full details of our Losses Strategy, performance and initiatives to date can be found in pages 20 to 26 of our Distribution Environment and Innovation Report and within our Annex 4A.8: Losses Strategy.

**Level of maturity:**




### 6.15.2 RIIO-ED2 Commitments: Network losses

*Table 26: RIIO-ED2 Commitments: Network losses*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **In RIIO-ED2, we will continue to implement our Losses Strategy to avoid an estimated 36 GWh of network losses, thereby limiting losses to a lower level than would otherwise be the case.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| We will continue to lead the Energy Networks Association Technical Losses Group to improve industry understanding of losses. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will continue to drive the development and understanding of losses by contributing to the evidence base on the proportion of losses that network companies can influence/control, collaborating with supply chain and industry peers and piloting new technology such as the MAAV. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will continue to consider and minimise network losses throughout all design and connections activities. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will pro-actively target high-loss legacy assets for replacement with modern low-loss alternatives. | External Stakeholders - Environmental Regulators, Operators, Sustainability | By 2028 |

| | | |
|---|---|---|
| | Working Group, Expert Reviewers | |
| We will report on the progress of implementing the losses strategy and associated performance measures. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will use a minimum underground mains cable size of 300mm$^2$ to further reduce losses, where it is cost effective and appropriate to do so. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will continue to use a minimum pole mounted transformer size of 25kVA to further reduce losses on our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |

### 6.15.3 RIIO-ED2 Metrics: Network losses

*Table 27: RIIO-ED2 Metrics: Network losses*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Total - Scope 2 Carbon Emissions (Losses) | $tCO_2e$ | turnover/ profit |

### 6.15.4 RIIO-ED2 Costs and Benefits: Network losses

*To deliver our RIIO-ED2 Losses Strategy, it will cost £13.216m.*

*The benefit of delivering our Losses Strategy will be 6,764* $tCO_2e$ *avoided.*

### 6.15.5 RIIO-ED2 Customer Value Proposition (CVP): Network Loss Reduction and Safety Enhancement Introduction

As part of our overall strategy to reduce losses and enhance the safety of our network, we propose to employ a custom-built vehicle called the MAAV – or Mobile Asset Assessment Vehicle – that detects electromagnetic fields and identifies likely exposed voltages (called 'Contact Voltages'). This can be driven around our licence areas, providing identification or early identification of faults leading to a wide range of benefits including:

- Financial benefits to our customers (i.e. avoided customer losses)
- Environmental benefits (i.e. carbon cost of losses)
- Better reliability of our system (i.e. reduced customer interruptions and customer minutes lost)
- Safety benefits enjoyed by everyone in the areas concerned (i.e. avoided fatal and non-fatal injuries)

The MAAV has highest value in urban areas where there is a high density of street furniture and hence lots of unmetered load, and also a high footfall. Reflecting this dynamic and our stakeholders' feedback we therefore propose to deploy the MAAV in the following areas of our network: Liverpool, Glasgow, Edinburgh, Birkenhead.

We are confident that the MAAV is a proven technology, and the evidence suggests it offers good customer benefit. Furthermore, due to unique resources and proven expertise in resolving LV faults, we believe we are the best agency to own and operate the MAAV technology.

Please find more details on the MAAV proposal in Annex 5C.2: BPI Stage 2: CVPs.

### 6.15.1 RIIO-ED2 Output Delivery Incentive: Reputational (ODI-R): Network Losses Mechanism

As discussed in Section 5.2.2 of our Losses Strategy (Annex 4A.8 Losses Strategy), independent technical experts WSP have worked with the TLWG to produce a report [18] that investigates best practice and makes independent recommendations as to future loss incentive mechanisms. We published key findings as part of our LDR Tranche 3 submission [5].

In line with the guidance in the WSP report, we propose a reputational RIIO-ED2 losses mechanism which builds on the existing RIIO-ED1 framework and recognises the complexity in the measurement and management of losses arising from the Net Zero transition. We will continue to collaborate with Ofgem and the other DNOs to further develop this proposal between Final Plan submission and Daft Determination.

## 6.16 Scope 3: Business transport

As a combined result of travelling less, competitive rail pricing and increased staff awareness of carbon emissions from travel, we have reduced our business travel by 40% since the start of RIIO-ED1. The COVID-19 pandemic has subsequently resulted in a change to our business practices and we have increased IT capabilities to allow for virtual meetings and remote working. We will apply these learnings before and during RIIO-ED2 to ensure we embed as many of these changed practices to reduce our business transport emissions further.

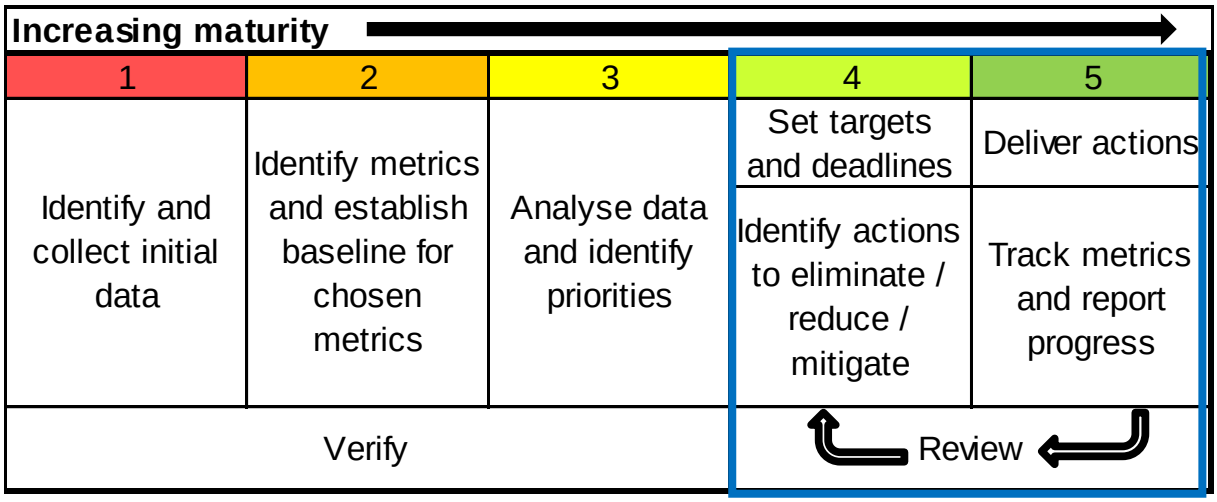
In March 2021, the Scottish Power Group brought in a new business travel policy (***Figure 38***) that will see a reduction of 2,300 tonnes of $CO_2e$ per year across the group. This policy outlines that only essential travel will be permitted, that we will travel by train instead of flying on domestic journeys and that we will fly economy on international flights that are less than 8.5 hours. For our SP Distribution and SP Manweb licences, the switch from flying to trains for domestic journeys will avoid 580 $tCO_2e$ over the RIIO-ED2 period.


*Figure 38: ScottishPower Group new business travel policy 2021*

### 6.16.1 How we did in RIIO-ED1: Business transport

SP Manweb and SP Distribution business travel carbon footprint combined has steadily decreased by 29% throughout RIIO-ED1 – from 2,417 $tCO_2e$ in 2015/16 to 1,724 $tCO_2e$ in 2019/20. This overall reduction is a result of increased staff awareness of carbon emissions from travel, reduced travel, competitive rail pricing and more accurate apportionment between our licences. The Covid-19 pandemic resulted in a 51% reduction in business travel between 2019/20 and 2020/21 reporting years.

**Level of maturity:**




### 6.16.2 RIIO-ED2 Commitments: Business transport

*Table 28: RIIO-ED2 Commitments: Business transport*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will continue to implement our 2021 Business Travel Policy to reduce business travel emissions by at least 580 $tCO_2e$ during RIIO-ED2.** | **Continuing Business as usual, External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |

### 6.16.3 RIIO-ED2 Metrics: Business transport

*Table 29: RIIO-ED2 Metrics: Business transport*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 3 Carbon Emissions- Business Travel | $tCO_2e$ | km travelled |

### 6.16.4 RIIO-ED2 Costs and Benefits: Business transport

*There are no additional costs being requested as a reduction in travel will result in a reduction in our costs.*

*The benefit of delivering our plans will be 580 $tCO_2e$ avoided.*

## 6.17 Scope 3: Capital Carbon

As the UK electricity mix is decarbonised, the carbon emitted as a result of the infrastructure we build and maintain will account for an increasing percentage of our carbon footprint. Preliminary assessments have indicated that the capital carbon associated with infrastructure development accounts for c.50% (or more) of our total Scope 3 carbon footprint and c.20% (or more) of our overall carbon footprint, including losses. In order for us to reduce our carbon footprint in line with Scope 3 carbon reduction targets, we must embed carbon management principles into our business processes and decision making to reduce embodied carbon and other capital carbon emissions associated with the development of our infrastructure. We must demonstrate leadership throughout our value chain to

realise the required reductions and collaborate and share best practices with other client organisations to encourage industry best practice. Please see Section 5.4 Supply Chain Sustainability for more details on how we will engage with our supply and value chain.

During RIIO-ED1 our focus was primarily on reducing Scope 1 and 2 carbon emissions and delivering the significant reductions shown in ***Figure 29***, we are now turning our attention to our Scope 3 emissions. To this end we have identified PAS 2080, a standard for Carbon Management in Infrastructure, as the most relevant standard on which to base our action plan for embodied carbon and other capital carbon emissions.

Throughout RIIO-ED2, we will adopt the principles of the PAS2080 Carbon Management in Infrastructure standard and will quantify and set reduction targets for embodied carbon and other capital carbon emissions. We will work with our design teams and supply chain to identify carbon hotspots and reduce carbon by following the carbon reduction hierarchy: build nothing, build less, build clever, build efficiently (***Figure 39***). We will deploy a low carbon concrete on all our 132kV projects during the RIIO-ED2.

Our supply chain will play an important role in developing low carbon solutions for our network. Please see ***Table 11*** for our commitment on engaging early with suppliers in the development of projects to enable them to propose environmental improvements at concept and design stages.

In addition to setting our Scope 1 and 2 targets, we have set a Science-Based Target for our indirect Scope 3 carbon emissions aligned with the most ambitious pathway (limiting temperature rise to 1.5$^{o}$C). To drive the reduction of our Scope 3 emissions during RIIO-ED2 we propose to create a new Carbon Specialist role to work with our supply chain and contractors to deliver actual reductions during the price control period. We believe that this role could deliver 100 kt$CO_2$e reduction during RIIO-ED2. This ambitious carbon reduction target, which goes beyond Ofgem RIIO-ED2 baseline expectations, SBTi requirements and the ScottishPower Group Scope 3 target, is supported by our customers and stakeholders, who were consulted through carbon specific RIIO-ED2 workshops.

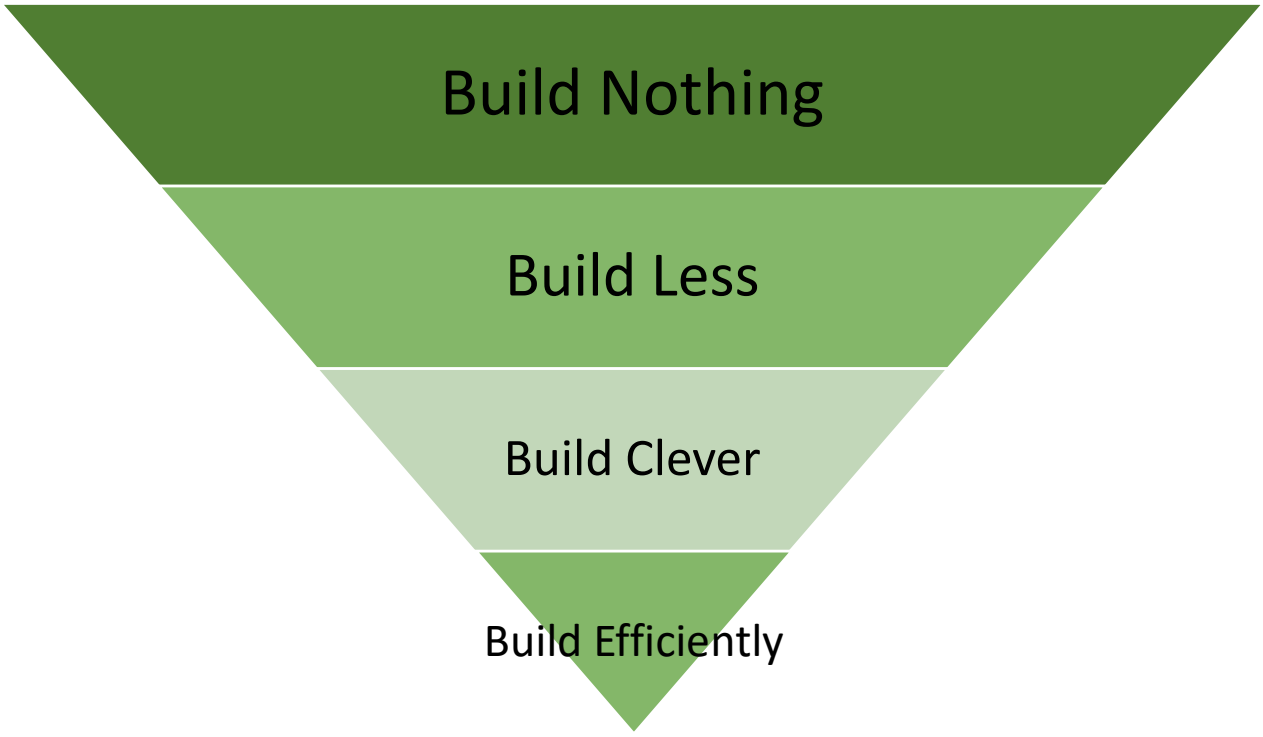



*Figure 39: PAS2080 Principles Hierarchy*

By embedding carbon management at all stages in the lifecycle of our projects, we will reduce carbon while maintaining value for money and supplier diversity.

We will conduct a gap analysis in advance of RIIO-ED2 to inform the creation our action plan and will collaborate with our supply chain and other DNOs to introduce an carbon measurement tool for

embodied carbon and other capital carbon emissions and develop metrics to track performance. We will then pilot the measurement tool and metrics on selected RIIO-ED2 projects, to inform ongoing actions and to establish a baseline which will be used to prioritise areas for carbon reduction activities and the setting of a carbon reduction target(s) for delivery post-RIIO-ED2.

During RIIO-ED1 we worked to increase the number of contractors reporting their emissions and targeted our top 20 contractors, by value, to obtain accurate data. We thereby developed an understanding of the impacts of our supply chain, which has allowed us to consider methods to reduce contractor emissions.

As part of our work to improve the data received from our contractors, we have implemented SmartWaste – an online environmental reporting tool designed to monitor and report on areas such as waste generation and carbon impacts. This online tool allows us to collect, store and report data on our contractors. All of our Overhead Line (OHL) and Cable contractors have been required to enter their data to SmartWaste since January 2021. During RIIO-ED2 all contractors will be required to provide waste data to us through the SmartWaste platform. This requirement will be embedded within contracts.

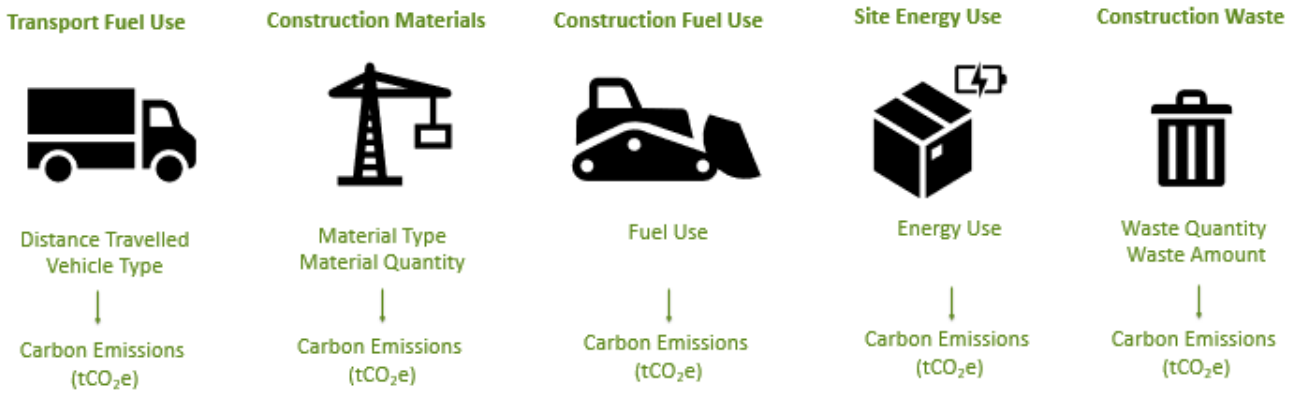



*Figure 40: Sources of contractor emissions*

For other activities to improve the sustainability of our supply chain, please see above Section 5.4 Supply Chain Sustainability.

### 6.17.1 How we did in RIIO-ED1: Capital carbon

Our recent analysis of our Scope 3 carbon footprint indicates that embodied carbon and other capital carbon emissions associated with the infrastructure we build and maintain accounts for c. 50% (or more) of our total Scope 3 emissions and c. 20% (or more) of our total carbon footprint.

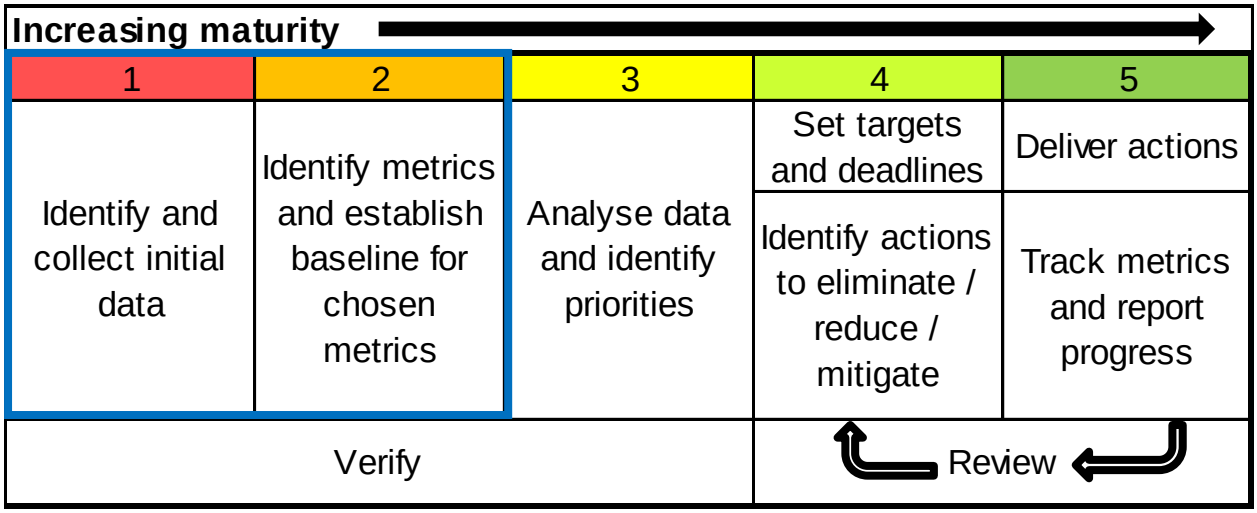
Throughout RIIO-ED1, assessment of embodied carbon and other capital carbon emissions have been considered through standalone innovation projects. In 2020, we undertook a distribution specific carbon life cycle assessment for our LV Engine project, using a systematic approach to understand the whole life carbon footprint. This Ofgem funded Network Innovation Competition (NIC) project aims to implement a globally innovative network trial of smart transformers that will connect Low Carbon Technologies (LCTs).

During RIIO-ED1 we also carried out a Life Cycle Assessment (LCA) of the network connection for a windfarm. While this project was a transmission network connection, the learnings are equally valuable to our distribution networks. The LCA showed that the majority of carbon emissions associated with a network connection are associated with raw materials and manufacturing, accounting for c. 40% of whole life emissions. The total capital carbon emission associated with building the infrastructure required (the connection), accounted for over 80% of the project's whole life environmental impacts.

Our Kilgallioch and LV Engine Projects demonstrated best practice methodologies for whole life carbon quantification and significantly improved our understanding of embodied carbon and other capital carbon emissions. The ambition for RIIO-ED2 is to move from a model where embodied carbon and other capital carbon emissions are quantified on a case by case basis, to a model where carbon emissions are more accurately quantified and managed as standard.

Over the course of RIIO-ED1 we have increased the number of contractors providing us with their emissions data from seven in 2015/16 to 26 in 2019/20. We require contractors to use SmartWaste and are supporting them as they begin this process of data sharing.

**Level of maturity:**




### 6.17.2 RIIO-ED2 Commitments: Capital Carbon

*Table 30: RIIO-ED2 Commitments: Capital Carbon*

| **Description of commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will require strategic suppliers to set Science-Based Targets within 5 years, aiming for 80% of our supply chain by value.** | **External Stakeholders - Supply Chain, Operators** | by 2028 |
| We will create a new role in RIIO-ED2 to drive actual reduction in Scope 3 carbon emissions in our supply chain by approximately 100k $tCO_2e$ | External Stakeholders - Supply Chain, Operators | By 2023 |
| We will introduce a measurement tool for embodied carbon and other capital carbon emissions to establish a baseline and a set a target to reduce carbon on new projects during RIIO-ED2. | External Stakeholders - Supply Chain, Operators | By 2023 |
| We will work collaboratively with our stakeholders, including the other Distribution and Transmission Network Operators, throughout RIIO-ED2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| We will monitor and report on embodied carbon in new projects. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |

### 6.17.3 RIIO-ED2 Metrics: Capital Carbon

*Table 31: RIIO-ED2 Metrics: Capital Carbon*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Scope 3 Carbon Emissions - Capital Carbon including embodied carbon in new projects | $tCO_2e$ | total cost of new projects, £ |
| Scope 3 Carbon Emissions - Capital Carbon in new projects | breakdown by life cycle stage, % | |
| Scope 3 Carbon Emissions - Contractor emissions | $tCO_2e$ | TBC |

### 6.17.4 RIIO-ED2 Costs and Benefits: Capital Carbon

*To deliver our RIIO-ED2 plans in this area, it will cost £0.435M.*

*The benefit of delivering our plans will be 100,000 $tCO_2e$ avoided.*

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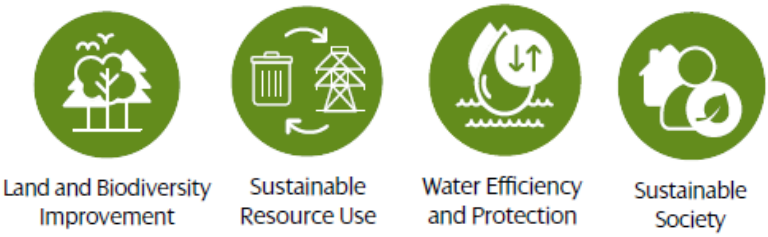
# 7. Reducing our Network's Environmental Impacts




While we deliver the low carbon transition and reduce our own carbon impact, we must also prevent pollution, protect and enhance biodiversity, use resources sustainably and encourage our supply chain to optimise their environmental impacts. Protection of the environment is a key component of how we operate our business. Within this section we describe the opportunities for addressing our key material impact areas identified within Section 3, and the mitigation we have included within our Investment Plan.

**The key material impact areas include:**

- Degradation of land, natural habitats and biodiversity;
- Pollution of the local environment;
- Use of resources and the production and disposal of waste;
- Visual amenity.

## 7.1 Ofgem Baseline Expectations

***Resource use and waste***

- *Update procurement processes to embed Circular Economy principles.*
- *Adopt targets for:*
    - *Zero waste to landfill by 2030.*
    - *Recycled and reused materials as a percentage of total materials by 2030.*
- *Commit to reporting on actual waste to landfill, recycling, and reuse as a percentage of total*

***Biodiversity/natural capital***

- *Adopt appropriate tool to assess net changes in natural capital from different options for new connections and network projects.*
- *Adopt appropriate tool to monitor the provision of ecosystem services from network sites and report annually.*

***Fluid-filled cables***

- *Adopt a target for reductions in the volume of fluid (oil) used to top up cables.*

***Noise pollution***

- *Commit to reporting on actions taken to reduce noise pollution.*

***Polychlorinated Biphenyls (PCBs)***

- *Commit to reporting on the volume of PCB-contaminated equipment on the network.*

## 7.2 Our Vision (extract)

**Sustainable resource use**

- The principles of a circular economy and efficient use of resources will be embedded in our business. The materials required for network construction and operation will come from sustainable sources. We will produce zero waste, with the components of all end-of-life assets being reused or recycled into new products.

**Land and biodiversity improvement, water efficiency and protection**

- We will protect and continually enhance the biodiversity around our assets and support national and local strategies. Our decision-making will incorporate the principles of Natural Capital Assessment to ensure that levels of natural assets are at least protected, and where possible, enhanced.

**Sustainable society**

- We will have a net-positive impact on the environment and the communities in which we operate. We will collaborate with national and local stakeholders to understand their needs and maximise the positive social and economic impacts of our operations on communities, including education, skills, and employment.

## 7.3 Our Goals

| | Sustainable Resource Use | Land and Biodiversity Improvement |
|---|---|---|
| *2023* | Divert 95% of waste from landfill | |
| *2026* | | No Net Loss on named RIIO-T2 Major Projects Schemes |
| *2028* | | 500 Biodiversity Units created across our ED2 work programme<br>10% Enhancement across 25 Hectares of our distribution network |
| *2030* | 100% waste recycled or re-used (excluding compliance waste) | |
| *2035* | | |
| *2040* | Zero Waste | |

*Figure 41: SP Energy Networks Sustainable Business Strategy: Summary of key goals and rationale*

## 7.4 Our Objectives (extract)

**Prevention of Pollution**

Identify, risk assess and address high risk legacy land contamination by the end of RIIO2.

Eliminate Polychlorinated Biphenyls (PCBs) from our network in line with legislation and the statistical approach agreed with the environment agencies, by end 2025.

Reduce oil leakage from our network and reduce the total volume of oil in our network assets.

Retrofit oil containment measures to substation assets without such protection.

- Install oil containment bunds at 203 primary and grid transformers in ED2.
- Implement T2 oil risk mitigation programme of works.

**Land and Biodiversity Improvement**

Assess and minimise visual amenity and ecological impact when designing, constructing, managing and maintaining our network.

Implement management processes for invasive and non-native species on our land and along our network by 2023.

Deliver biodiversity and natural capital enhancement in the geographical areas covered by our network.

- Implement a methodology to measure biodiversity and embed consideration of biodiversity impacts in business decision-making by the middle of our RIIO2 price controls.
- Achieve no net loss in biodiversity across the T2 work programme.
- Deliver 500 biodiversity units across the ED2 work programme to move beyond mitigation to enhancement.
- Deliver 10% enhancement of biodiversity across 25 hectares of our land and along our distribution network during ED2.
- Incorporate natural capital assessment in our business decision making processes by the middle of our RIIO2 price controls.
- Deliver a net positive impact on natural capital values across our transmission network by 2026.

**Sustainable Resource Use**

Become a fully circular and 'zero waste' business by 2040.

- Divert 95% of waste from landfill by end 2023 and 100% by end 2030.
- Introduce life cycle assessment and circular economy principles to business processes by the middle of our RIIO2 price controls.
- Identify and implement resource use and waste metrics, quantify baselines and set improvement targets by the end of RIIO2.
- Identify priority resource input and waste streams and implement actions to reduce.

*Figure 42: SP Energy Networks Sustainable Business Strategy: Prevention of Pollution, Land and Biodiversity Improvement and Sustainable Resource Use objectives*


*Figure 43: SP Energy Networks Sustainable Business Strategy: Water efficiency and protection and Sustainable Society objectives*

## 7.5 Preventing pollution

We operate and maintain linear infrastructure, which is routed through, or adjacent to, a wide range of culturally or environmentally sensitive landscapes and structures, ranging from pristine to degraded habitats. While we provide the network connections and services that customers require, we recognise the need to minimise any negative effects these activities could have on the environment and communities as far as is reasonably practicable.

Throughout the life of our assets, we not only meet the requirements of government policies and legislation but strive to move 'beyond compliance' by integrating fair and responsible environmental practices with socio-economic considerations.

Many of our assets are designed to have a lifetime of over 40 years and therefore much of our network was constructed several decades ago, before the introduction of the high levels of environmental protection that we now build in as standard. We are therefore progressively working to bring these older sites up to current standards. To support the development of our RIIO-ED2 investment plan, a comprehensive programme of civil inspections was undertaken to inform a condition-based asset risk assessment, identifying a number of bunds and drainage systems requiring refurbishment and upgrade.

### Priority impacts for preventing pollution

In line with the requirements of ISO14001, we continuously review our environmental risks and impacts and seek to prioritise and reduce them. This process has informed the development of our RIIO-ED2 programme of measures to prevent pollution. Priority areas we have identified include:

- Construction sites and substation drainage systems
- Fluid-filled cables
- Noise pollution
- Oil leaks
- Polychlorinated biphenyls (PCBs)
- Use of hazardous materials including asbestos and creosote poles

### Depot Yards Environmental Upgrades

Our depots are key assets distributed through our licence areas and in line with continuous improvement we are undertaking a review and assessment of the environmental protection arrangements at our depots in order to identify and address gaps against current best practice. This includes reviewing compliance with current regulatory requirements for the storage of wastes, fuels and insulating oils and the arrangements to prevent pollution from day-to-day activities and during incidents. The improvements identified range from upgrading the installed equipment, amending practices and training for staff.

### Creosote poles

Wooden utility poles are used extensively across our electricity distribution network to support overhead line conductors and other plant. Wooden poles are traditionally treated with creosote as a preservative, providing each pole with an approximate lifespan of 55 years. There are millions of these poles in Great Britain. However, it is now recognised that creosote is hazardous to the environment and research is currently underway to identify an environmentally friendly alternative.

Creosote for amateur use was banned in the UK in 2003 and industrial creosote now has to conform to certain formulation restrictions. Eventually, a full ban will occur which will cause severe disruption to the supply of timber overhead line supports, unless an alternative solution is in place. UK energy infrastructure provision will become more expensive unless a replacement preservative type, which can provide similar efficacy, is in place.

We piloted innovative solutions to this problem in our Operational Assessment of Composite Poles[7] project, by investigating the use of composite (as opposed to wood) poles. From this project, we identified copper biocide as a commercially available and environmentally friendly alternative to creosote treatment. We have been rolling out the use of copper biocide poles in public areas since 2015. While the project focused on composite poles, many learnings are applicable to engineered poles of other materials, such as plastic or concrete.

We are keen to explore other innovative and long-lasting alternatives to creosote. To achieve this, our industry leading APPEAL project[8] is evaluating the environmentally friendly alternative treatments that will maximise the life of wooden electricity poles. Accelerated aging tests of wooden timber stakes, treated with environmentally friendly alternatives to creosote, are currently in progress. Early results are showing great promise, and if successful, the result of this project will provide a greener energy system for our customers, and directly inform procurement policy for overhead line supports.

## *7.5.1 How we did in RIIO-ED1: Preventing pollution*

Over the RIIO-ED1 period we have achieved full reporting of environmental incidents, by staff and contractors, and reduced the number and severity of reported incidents. Our commitment to comply with environmental legal requirements is the foundation for all activities to reduce environmental

[7] Operational Assessment of Composite Poles project (NIA_SPEN0019)
[8] Environmentally Acceptable Wood Pole Pre-treatment Alternatives to Creosote (APPEAL) project (NIA_SPEN0008). UK Power Networks, Scottish and Southern Energy and Northern Powergrid are collaborators.

impacts. We are on a trajectory towards our goal of zero regulatory interventions and zero notifiable environmental breaches.

*Table 32: SPD RIIO-ED1 Incident performance*

| SPD RIIO-ED1 Incident Performance | | | | | |
|---|---|---|---|---|---|
| **Category** | **2015/16** | **2016/17** | **2017/18** | **2018/19** | **2019/20** |
| Environmental regulatory interventions | 0 | 1 | 1 | 0 | 0 |
| Notifiable environmental breaches | 1 | 1 | 2 | 0 | 0 |

*Table 33: SPM RIIO-ED1 Incident performance*

| SPM RIIO-ED1 Incident Performance | | | | | |
|---|---|---|---|---|---|
| **Category** | **2015/16** | **2016/17** | **2017/18** | **2018/19** | **2019/20** |
| Environmental regulatory interventions | 1 | 0 | 0 | 0 | 2 |
| Notifiable environmental breaches | 0 | 2 | 0 | 2 | 0 |

We concluded a three-year Environmental Training Programme this year, designed to increase staff knowledge levels to ensure they have the required competence to deliver environmental compliance as it relates to their role. We have an internal engagement plan which ensures that we are regularly communicating environmental requirements and improvement opportunities to staff to drive improved understanding and ongoing action.

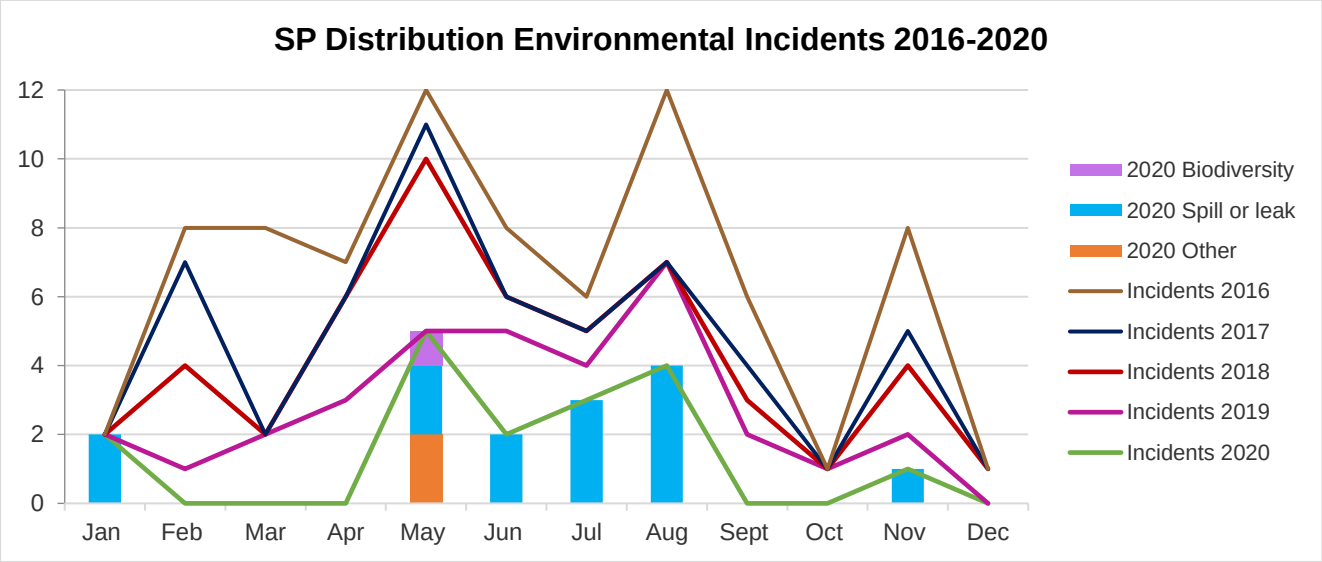



*Figure 44: SP Distribution Environmental Incidents 2016-20*

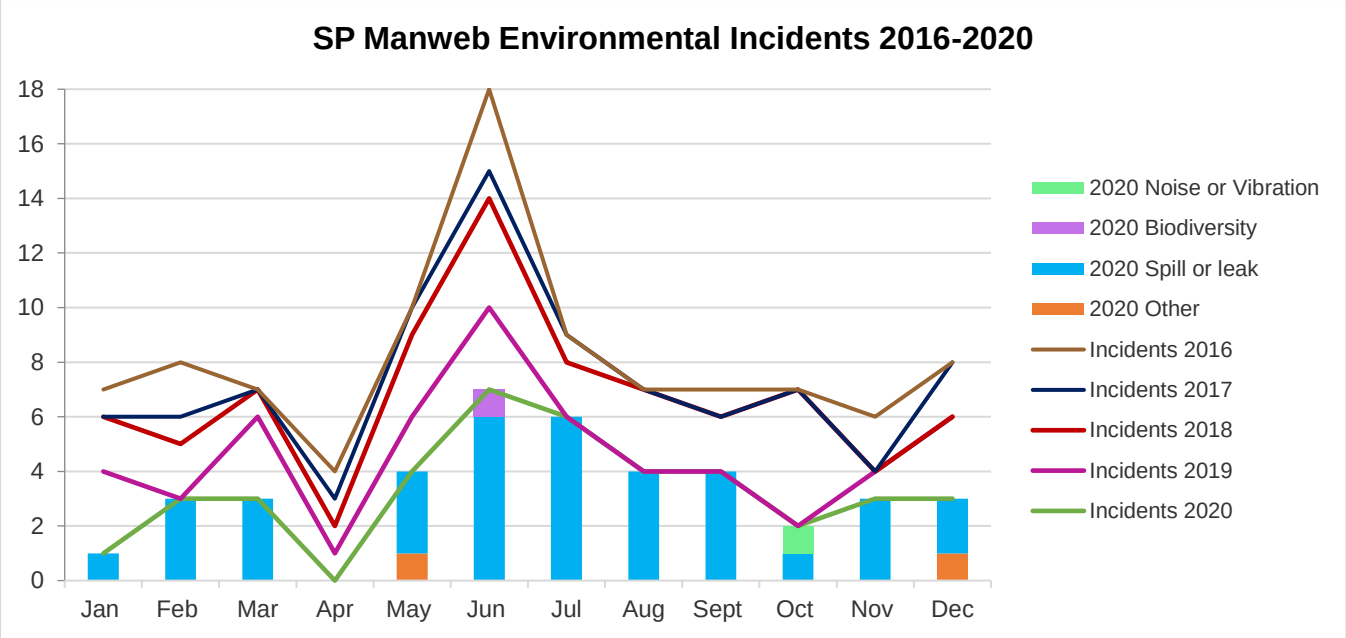



*Figure 45: SP Manweb Environmental Incidents 2016-20*

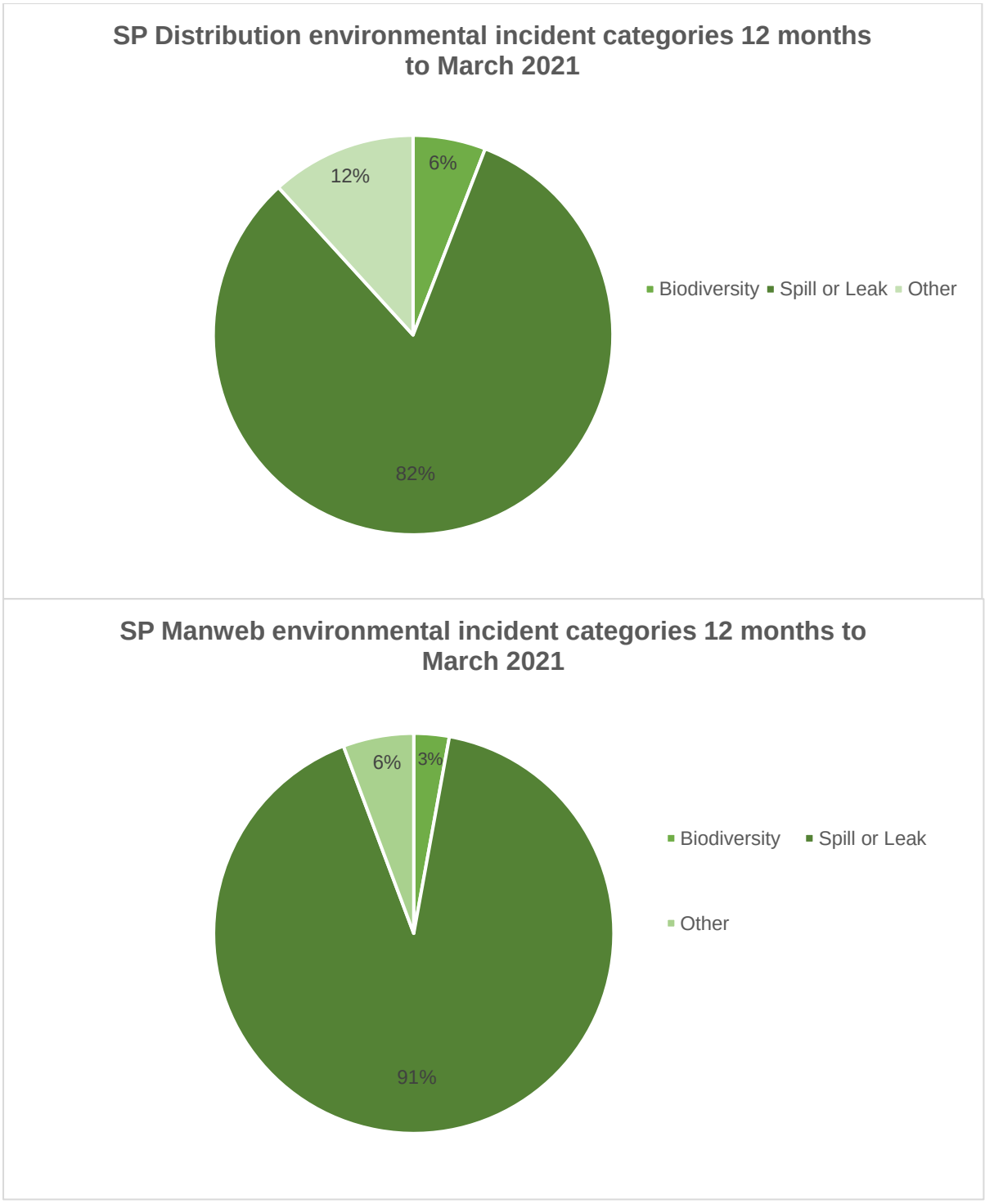


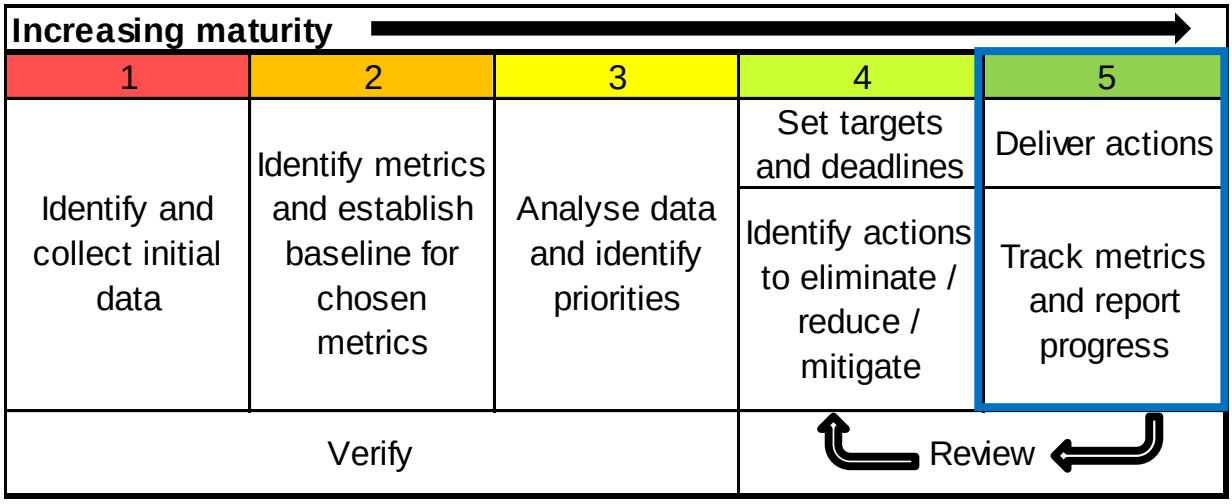

*Figure 46: SP Distribution and SP Manweb environmental incidents categories 12 months to April 2021*

Our most common incidents arise relate to the escape of fuel or oil from vehicles or equipment. We have dedicated significant effort to addressing these types of incidents, working with our contractors to ensure these are dealt with using the spill kits provided on site or by calling out our emergency spill response contractor and as a result of these responses to incidents they rarely result in environmental damage.

Occasionally we have an incident relating to disturbance to or damage of the local ecology, despite the survey work we do in advance of arriving on site. We continue to work to ensure our staff and contractors are aware of the local ecology and the controls in place to ensure disturbance is minimised and legal requirements are met.

**Level of maturity:**

Our level of maturity for the prevention of pollution is:




### 7.5.2 RIIO-ED2 Commitments: Preventing pollution

*Table 34: RIIO-ED2 Commitments: Preventing pollution*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will continue to target zero environmental regulatory interventions and notifiable breaches.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| **We will implement Pollution Prevention Plans at 100% of our RIIO-ED2 132kV projects.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |

### 7.5.3 RIIO-ED2 Metrics: Preventing pollution

*Table 35: RIIO-ED2 Metrics: Preventing pollution*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Regulatory interventions | number | turnover/ profit |
| Notifiable incidents | number | turnover/ profit |
| Environmental complaints | Number of | £ Expenditure |
| Pollution Prevention Plans implemented | Number of | number of 132 kV projects |
| Pollution mitigation measures implemented | Number of | total number of planned mitigation |

| | | |
|---|---|---|
| | | measures (in PPPs) |
| Quantity of pesticides applied | kg | Area of land (ha) |

### 7.5.4 RIIO-ED2 Costs and Benefits: Prevention pollution

*To deliver our RIIO-ED2 plans in this area, it will cost £2.596m*

*The delivery of our plans will ensure that we are compliant with environmental regulation and legislation within our depots and yards.*

*By using copper biocide poles we will be able to reduce the amount of creosote poles that are on our network and the associated adverse environmental impacts.*

## 7.6 Preventing oil pollution

To support the development of our investment plan, a comprehensive programme of civil inspections was undertaken across the network. This identified a number of transformer bunds and associated oily water drainage systems which are in a deteriorated condition and do not comply with current standards. Without intervention, these assets will degrade to a point where they cannot be repaired and will fail.

Transformer bunds and their associated oily water drainage systems are installed around oil filled transformers to prevent oil entering the environment. The primary function of the bund is to contain oil. Bunds have traditionally been constructed of concrete or brick with an oily water drainage system.

Our investment plan includes a programme of intervention which prioritises sites based on:

- The Health Index of the transformer bunds and oily water drainage systems;
- The environmental risks identified through a desktop review of the environmental sensitivity of each site;
- Alignment with our transformer replacement and refurbishment programmes to drive cost efficiency.

#### High-density polyethylene (HDPE) bunding

Our site interventions, outlined in engineering justification paper ED2-NLR(A)-SPEN-002-ENV-EJP, will use an alternative bunding solution, to repair, replace or retrofit bunds. Where a bund is being retrofitted around an existing transformer, we now adopt a new and more innovative HDPE bund solution which is lower cost, quicker and more adaptable to existing transformer layouts. The HDPE solution can also be adopted to repair existing bunds which are no longer oil / watertight.

HDPE bunding will provide a range of environmental and cost efficiency benefits we cannot achieve using traditional concrete bunding. These benefits will be delivered through the entire life cycle of the bund:

- Embodied carbon: The lower volume of concrete required for HDPE bunding will provide significant embodied carbon savings.
- Emissions: Where feasible, the sump pump and control system will be powered by solar panels, eliminating the emissions associated with bund drainage systems
- Sustainable Resource Use: The use of innovative HDPE bunding solution allows for the re-use of the bund asset should the transformer be decommissioned. The HDPE bund system can be modified suit an alternative arrangement or even relocated to alternative site

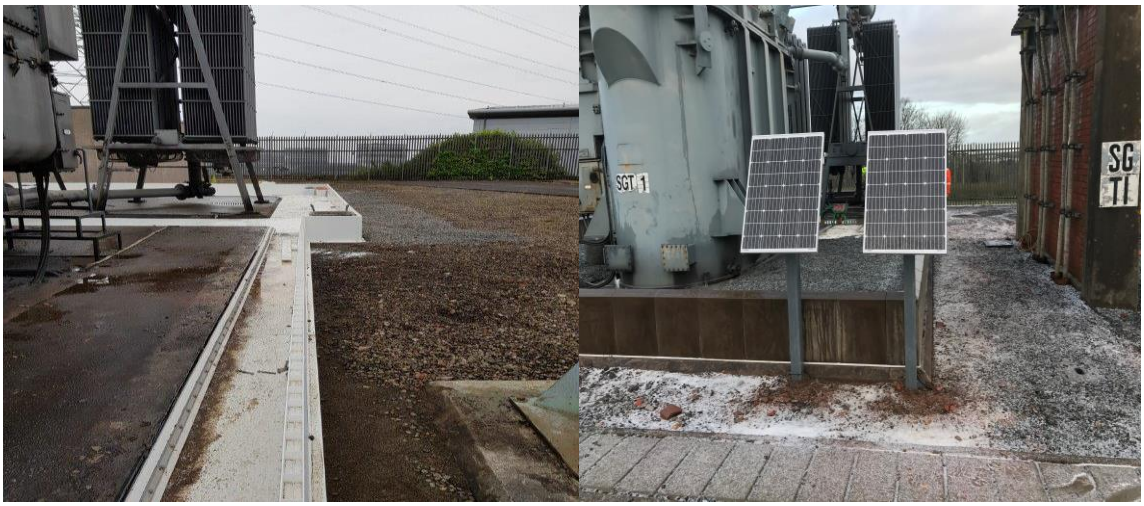



*Figure 47: HDPE bunding and solar panels*

**Innovation Project - Oil Regeneration**

As part of a RIIO-ED1 Network Innovation Allowance (NIA) project, we have been trialling an innovative oil regeneration process for transformers. We have developed a method to test oil moisture and acidity whilst keeping our transformers online, eliminating the need to transport oil to mobile testing units. This innovative process is a quicker, safer way to chemically analyse transformer oil, and it delivers additional benefits including reduced costs, extended asset life and lower carbon footprint. This innovative analysis technique will be rolled out in RIIO-ED2 to slow asset ageing by reducing the need for oil regeneration and replacement.

### 7.6.1 How we did in RIIO-ED1: Preventing oil pollution

Over the RIIO-ED1 period we have intervened at 136 sites- 66 SPM operational sites, 64 SPD Operational sites and 4 SP Distribution Non-Operational sites, as part of our oil mitigation schemes.

### 7.6.2 RIIO-ED2 Commitments: Preventing oil pollution

*Table 36: RIIO-ED2 Commitments: Preventing oil pollution*

| | | |
|---|---|---|
| **We will use low carbon alternatives to concrete bunding for our RIIO-ED2 retrofit projects where technically feasible.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will implement a programme to identify, risk assess and address high risk legacy land contamination. | Continuing business as usual | Throughout RIIO-ED2 |

### 7.6.3 RIIO-ED2 Metrics: Preventing oil pollution

*Table 37: RIIO-ED2 Metrics: Preventing oil pollution*

| Metric | Unit | Normalisation Factor |
|---|---|---|

| | | |
|---|---|---|
| Oil top ups | Litres | Total volume of oil (litres) |
| Number of primary transformers without bunds or other containment | Number<br><br>Volume of oil | Total no. of transformers<br>Total volume of oil |

### 7.6.4 RIIO-ED2 Costs and Benefits: Preventing oil pollution

*To deliver our RIIO-ED2 plans in this area, it will cost £14.033M.*

*The environmental benefits of at least 4,400 litres of oil spillage will have been avoided through this solution, over RIIO-ED2.*

## 7.7 Leakage from fluid filled cables

SP Energy Networks owns and operates a number of underground fluid filled cables, which were historically installed as an alternative to overhead lines. There are 28.9km of fluid filled cables within SP Distribution and 158.94km within SP Manweb.

Fluid filled cables have been part of the network since the 1930's and were traditionally filled with a heavy mineral fluid with low biodegradability. The fluid used has been improved and since 1986 top-ups to cables have been made using a light synthetic biodegradable fluid.

Fluid filled cables are monitored by pressure alarm systems. An alarm from one of these systems indicates a drop in pressure and a potential leak from the cable. Once the alarm is triggered, detecting the exact point of the leakage can prove difficult, especially when the leaks are small. Traditionally, fluid leak location has been conducted via freezing the cable fluid with liquid nitrogen and then monitoring the cable pressure either side of the freeze or by tagging with Perfluorocarbon PFT tracer.

During RIIO-ED2, we will replace over 19km of the highest priority cable in our SP Manweb area. This represents the best intervention after several unsuccessful interventions to stem leaks, lengthy circuit outages needed to ascertain source of leaks and the proximity of the cable circuit to water courses. Full details of this work can be found in RIIO-ED2 engineering justification paper ED2-NLR(A)-SPM-001-UG-EJP Bootle-Kirkby 132kV Cable Modernisation.

### 7.7.1 How we did in RIIO-ED1: Leakage from fluid filled cables

At the start of RIIO-ED1 we identified several small leaks within SP Manweb which cumulatively resulted in a 2% leakage rate. To combat this, we set ourselves an ambitious RIIO-ED1 commitment to reduce this volume of leakage by 50% and adopted an ongoing policy of strategic leak repair management alongside targeted asset replacement.

In 2018/19 we had a catastrophic failure due to third party damage to our cable that significantly increased our leakage in that period. As a direct result of strategic repair and targeted asset replacement, we have reduced leaks by 85% since reporting year 2015/16.

In 2019 we took the innovative approach of employing sniffer dogs to locate leaks within our cables. The dogs successfully located 3 of the 5 leaks in one of our cables in Liverpool. This method is efficient, environmentally friendly and has proved very cost effective.

*Figure 48: Jack the Sniffer Dog*

### 7.7.2 RIIO-ED2 Commitments: Leakage from fluid filled cables

*Table 38: RIIO-ED2 Commitments: Leakage from fluid filled cables*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres (10%) by replacing 19.429km of our leakiest fluid filled cable.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| We will adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |

### 7.7.3 RIIO-ED2 Metrics: Leakage from fluid filled cables

*Table 39: RIIO-ED2 Metrics: Leakage from fluid filled cables*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Fluid filled cable top up | Litres | Total km of cable |

### 7.7.4 RIIO-ED2 Costs and Benefits: Leakage from fluid filled cables

*To deliver our RIIO-ED2 plans in this area, it will cost £16.871m*

*The environmental benefits of 3,490litres of oil leakage have been avoided through this solution, over RIIO-ED2.*

## 7.8 Polychlorinated biphenyls (PCBs)

PCBs are a group of synthetic chemicals with good dielectric properties and low flammability. They were commonly used in insulating oil in electrical apparatus including transformers, liquid filled cables, high and low voltage capacitors, switches etc., manufactured prior to 1987.

PCBs have long been recognised as posing a threat to the environment because of their toxicity, persistence, and tendency to bio-accumulate, that is, ability to build up in the bodies of animals, particularly at the top of the food chain. Increasingly high levels have been found in the body fats of fish, birds and mammals and have been linked with harmful effects such as liver damage and a reduced ability to fight infection.

The Stockholm Convention on Persistent Organic Pollutants[9], an international environmental treaty signed in 2001, became effective from May 2004. To implement this treaty, the European Commission published the Persistent Organic Pollutants (POPs) Regulation (EC No 850/2004) and subsequently a recast version which entered into force in June 2019[10]:

*"Member States shall identify and remove from use equipment (e.g. transformers, capacitors or other receptacles containing liquid stocks) containing more than 0.005% PCBs and volumes greater than 0.05dm$^3$, as soon as possible but no later than 31 December 2025."*

Note 0.005% PCBs by weight is equivalent to 50ppm or 50mg/kg. As for 0.05dm$^3$, this equates 50ml.

The hard deadline of 31 December 2025 and the volumetric threshold of 0.05dm$^3$ (50ml) are significant changes. These changes were also enforced in the UK through the joint legislation for England and Wales and a separate Scottish Statutory Instrument[11, 12].

Due to legacy manufacturing processes, PCBs could have been introduced to the oil in electrical network assets, even though the electricity industry never directly specified PCBs as an insulating medium. The biggest challenge is the volume of pole mounted transformers as these assets are generally sealed; and there is little historical testing data due to their design and deployment at the top of wood poles.

Working with the Energy Networks Association and the environment agencies, we have developed a statistical classification model based on ISO 2859-1[13], with the aim of assessing the contamination risks of pole mounted transformers and providing targeted interventions across the industry. This model has been peer reviewed, approved[14, 15] and is being used by all Distribution Network Operators (DNOs).

In line with the revised legislation summarised above, and implementing the SPEN-led statistical model, we have included in our RIIO-ED2 Investment Plan a programme of £55.878m (SP Distribution: £23.515m and SP Manweb: £32.364m) to remove PCBs as soon as possible from our network, and no later than by 31 December 2025. This will target all remaining assets that are at a high risk of PCBs contamination (summarised in ***Table 40*** below). In addition to pole mounted transformers, a proportion of poles will also need to be replaced because of pole condition and the need for stronger poles. Protection upgrades will be needed too to ensure continued safe operation of the network; this involves replacing a proportion of the overhead line smart links (sectionalisers).

The percentages of pole mounted transformers needing to be replaced are 29.1% and 33.5% respectively for SP Distribution and SP Manweb if compared with the volume of poled mounted transformers that were originally in-scope for removal due to PCBs (prior to the implementation of the statistical assessment approach). Our targeted intervention will therefore contribute towards minimising costs and outages to customers, while preserving the environment and meeting legislative

[9] Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, available from: https://treaties.un.org/doc/Treaties/2001/05/20010522%2012-55%20PM/Ch_XXVII_15p.pdf.
[10] Regulation (EU) 2019/1021 of the European Parliament and of the Council on Persistent Organic Pollutants (Recast), 20 June 2019, available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1021andfrom=EN.
[11] *The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) (Amendment) Regulations 2020*, UK Statutory Instruments, No. 489, 1 July 2020.
[12] *The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (Scotland) Amendment Regulations 2020*, Scottish Statutory Instruments, No. 434, 14 February 2021.
[13] ISO 2859-1 Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection, International Organization for Standardization (ISO), 1999.
[14] *Transformers Containing PCBs: New Rules – Regulatory Position Statement RPS 246*, Environment Agency, 2021.
[15] *Regulatory Decision RD083 – Transformers Containing PCBs: New Rules*, Natural Resources Wales, 2021.

compliance. In anticipation of a Net Zero future, opportunities to strategically uprate or upsize the transformers will also be captured to facilitate the uptake of low carbon technology.

Apart from pole mounted transformers, our PCBs management plan also extends to ground mounted transformers. Unlike transformers that are deployed up on poles, ground mounted transformers can be oil sampled and tested. As we have already completed a company-wide programme in the 1990s to identify and remediate oil filled assets with levels of PCB >50ppm, our strategy for RIIO-ED2 will focus on the remaining ground mounted units made prior to 1987 or with an unknown year of manufacture that are yet to be tested or with uncertain test records, and those assets that are now brought into scope by the reduced limits in the recast legislation. We will also replace a known contaminated capacitor bank connected to our 33kV network in the SP Manweb licence area.

*Table 40: Summary of assets to be replaced to ensure removal of PCBs from our network*

| Asset removal and testing | SPD | SPM | Total |
|---|---|---|---|
| 6.6/11kV pole mounted transformer asset removal | 3,423 | 5,197 | 8,620 |
| 6.6/11kV pole asset removal | 1,305 | 2,747 | 4,052 |
| 6.6/11kV switchgear – other (sectionalisers) asset removal | 217 | 343 | 560 |
| 33kV capacitor bank | 0 | 1 | 1 |
| Oil testing of power and instrument transformers | 525 | 1,084 | 1,609 |

### 7.8.1 How we did in RIIO-ED1: Polychlorinated biphenyls (PCBs)

During RIIO-ED1, we had been working towards a gradual removal of contaminated equipment (containing more than 0.005% or 50ppm of PCBs) at end of life and targeting equipment with fluid volumes greater than 5L. As per the EU and UK legislations that came into full force, any equipment that contains PCBs above the threshold or may contain such a level (where for example the asset is pre-1987[16] and cannot be tested due to its sealed nature) must now be removed from the network by the end of 2025 at the latest, or must be confirmed to be PCB free via testing or changing the oil.

At the time of writing, SPEN are also considering the volume needed to be undertaken in RIIO-ED1. Subject to outcomes from engagement with the regulators, stakeholders and manufactures/suppliers, and if source of funding is secured, a portion of the volume of pole mounted transformers in ***Table 40*** will be replaced in RIIO-ED1. The volume in RIIO-ED2 will thus be adjusted accordingly, while ensuring compliance by no later than 31 December 2025.

### 7.8.2 RIIO-ED2 Commitments: Polychlorinated biphenyls (PCBs)

*Table 41: RIIO-ED2 Commitments: Polychlorinated biphenyls (PCBs)*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.** | **Continuing business as usual** | By end of 2025 |
| We will report on volumes of PCB contaminated equipment on and removed from the network. | Continuing business as usual | Throughout RIIO-ED2 |

### 7.8.3 RIIO-ED2 Metrics: Polychlorinated biphenyls (PCBs)

*Table 42: RIIO-ED2 Metrics: Polychlorinated biphenyls (PCBs)*

| Metric | Unit | Normalisation Factor |
|---|---|---|

[16] Pre-1987 units are assumed to be contaminated as per guidance from: GOV.UK, *Polychlorinated biphenyls (PCBs): registration, disposal, labelling,* 2019.

| | | |
|---|---|---|
| PCB Contaminated Equipment removed from network | number | % of total number |
| PCB Contaminated Equipment on the network | number | % of total number |

### 7.8.4 RIIO-ED2 Costs and Benefits: Polychlorinated biphenyls (PCBs)

*To deliver our RIIO-ED2 plans in this area, it will cost £55.878m.*

*The targeted approach undertaken will ensure SP Energy Networks achieve legislative compliance while minimising environmental impacts, as well as the costs and disruptions to customers. The strategic upsizing of transformers will also ensure a single efficient intervention on the network to accommodate low carbon technology uptake.*

### 7.8.5 RIIO-ED2 Bespoke Uncertainty Mechanism: Polychlorinated Biphenyls Volume Driver

In 2019, a new European environmental legislation[10] came into force which requires us to remove all oil filled assets with more than 50ppm and >50ml of PCBs by 31 December 2025 at the latest. This requirement has also been enforced in the UK via the UK Statutory Instrument 489 (2020) and the Scottish Statutory Instrument 434 (2021)[11, 12].

During RIIO-ED1, SP Energy Networks have led extensive analysis and investigation work across the industry to understand what this legislation means for our asset base, and to develop an efficient, and consistent approach to achieve industry compliance. We have developed an industry-wide statistical model via the ENA that leverages data from all GB DNOs to better understand the risk of PCBs contamination and supports a targeted and coordinated approach towards PCBs management.

Using this model, we have calculated the volumes of pole mounted transformers (PMTs) as well as the associated HV poles and switchgear items that must be replaced by 31 December 2025 in SP Distribution and SP Manweb. This model is continuing to be updated as a significant volume of asset inspection and testing is ongoing nationally. In addition, as with all models, there are likely to be variances in actual replacement volumes due to the margin of error within asset and test data. We therefore consider there to be a significant level of uncertainty regarding the required final level of interventions.

We are therefore proposing a volume driver to adjust our RIIO-ED2 allowances for the actual numbers of PMTs, poles and switchgear items we replace to mitigate potential PCB contamination. We believe our proposed volume driver is the best way to minimise risk to consumers by ensuring they only pay the efficient costs of our compliance with PCBs legislation and asset replacement requirements. Further information can be found in Annex 5B.1: Uncertainty Mechanisms.

## 7.9 Management of noise impact

Substation transformers typically generate a noise level ranging from 60 to 80 dBA. Transformer noise will transmit and dissipate at different rates depending on the transformer size, voltage rating and design. This can sometimes cause a nuisance to nearby neighbours.

The use of generators can also occasionally be a nuisance to our customers. During outages, we provide temporary generators to our customers to maintain their supplies. If customers voice concerns regarding the noise or vibration of generators, we offer solutions to reduce or eliminate this. We can replace the generator with a less noisy unit or remove the generator altogether if this is the customer's preference.

We operate a 24-hour customer helpline where customers, contractors and staff can report problems on the network – including issues related to noise. We log all these enquiries in our customer complaints system and pass them to regional contactors, with actions to take and deadlines for doing so.

Within the UK, noise nuisance is covered by Part III of the Environmental Protection Act 1990. The management of noise pollution and any noise complaints lies with the local authority (LA) councils. The LA councils are duty bound to investigate any noise complaint and where proven to exceed acceptable limits can issue an abatement notice. When issued with an abatement notice SP Energy Networks must act to reduce the noise to below acceptable limits or face potential legal, financial, and reputational sanctions.

It is proposed to allow for intervention at 3 sites per year in each licence within the RIIO-ED2 period. This expected volume of intervention is based on the assessment of interventions undertaken in DPCR5 and RIIO-ED1 which show a downward trend as Network assets are replaced / noise intervention are undertaken. There will be a natural run rate of noise complaints as the transformer fleet ages alongside land use changes adjacent to existing substations.

Noise complaints are often linked to older transformers within the networks. Older units can be less efficient and have higher losses than modern installations. It is proposed, where justified, to replace noisy assets if the asset is approaching end of life, rather than installing noise barriers. This in turn provides an associated benefit of reducing the losses associated with the asset.

### 7.9.1 How we did in RIIO-ED1: Management of noise impact

In reviewing operational complaints with respect to noise, most issues relate to aging assets and the use of temporary power generators that power emergency maintenance works and customers who are off supply, rather than ongoing issues related to static assets. Where issues are highlighted with our static assets, SP Energy Networks has a good track record in mitigating the effects. The solutions are often relatively straightforward once these are known to us.

In 2020/21 reporting year we received three enquiries in SP Manweb in relation to noise from our equipment, and no enquiries in SP Distribution. In each of these cases an inspector promptly visited the location and conducted a full investigation. Our customer services and field teams worked together to keep customers fully informed at each stage of the process.

### 7.9.2 RIIO-ED2 Commitments: Management of noise impact

*Table 43: RIIO-ED2 Commitments: Management of noise impact*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| We will continue to report on noise pollution incidents and actions taken to reduce them. | Continuing business as usual | Throughout RIIO-ED2 |

### 7.9.3 RIIO-ED2 Metrics: Management of noise impact

*Table 44: RIIO-ED2 Metrics: Management of noise impact*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Environmental complaints | Number of | £ Expenditure |

### 7.9.4 RIIO-ED2 Costs and Benefits: Management of noise impact

*To deliver our RIIO-ED2 plans in this area, it will cost £1.694m.*

## 7.10 Land and biodiversity protection and enhancement

A 2019 Global Assessment Report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) found that human activity is driving a decrease in biodiversity across the globe. Worldwide, around 25% of species are threatened with extinction and natural ecosystems have declined by almost 50% in relation to their previous conditions. Without intervention, this will reduce the resilience of ecosystems to further climate changes, as well as causing significant consequences to human industry. Terrestrial ecosystems currently remove 30% of anthropogenic carbon emissions, reducing this therefore would endanger our attempts to limit global warming

It is government policy that planning decisions in England should minimise impacts on and provide net gains for biodiversity (National Planning Policy Framework 2021). Similarly, in Scotland and Wales the delivery of biodiversity enhancement is one mechanism to achieve the wider biodiversity objectives set out in the Planning (Scotland) Act 2019 and Edition 10 of Planning Policy Wales. In addition, the Environment Bill, published by the UK Government in January 2020 includes proposals to make BNG a mandatory requirement within the planning system in England. Once enshrined in law it will require all developments under the scope of the Town & Country Planning Act in England to achieve a minimum 10% net gain in biodiversity units relative to the site's baseline biodiversity value

Conservation and promoting protection of ecosystems is part of the Iberdrola group sustainability strategy and our goal at group level is to achieve "No Net Loss" of biodiversity by 2030, working to ensure that new facilities deliver a net positive impact on biodiversity, where reasonably possible.

Iberdrola has joined the initiative Call to Action promoted by the Business for Nature platform. This platform urges governments to act now to reverse biodiversity loss in this decade, with overarching goals similar to those outlined by the United Nations Conference on Biological Diversity in ***Figure 49*** below. The Call to Action declaration, which was adopted on 21 September 2020 to coincide with the 75th anniversary of the United Nations, was presented at the UN Biodiversity Summit on 30 September and has the backing of more than 560 companies from 54 countries with a combined turnover of US$4 trillion and that employ 9.5 million people across all sectors.

### RIIO-ED2 Biodiversity Enhancement

We mitigate biodiversity loss most significantly through our actions to maximise the utilisation of our network and connect low carbon generation for societal decarbonisation. This leads to benefits in terms of climate change mitigation, avoidance of additional land use and reductions in pollution. While we do this, we also protect and enhance the ecosystems we operate within, mitigating the ecological impacts of construction by aiming for 'no net loss' and avoiding the introduction or spread of invasive non-native species. Our stakeholders have emphasised the value of us enhancing the biodiversity at our sites, where operationally appropriate to do so.

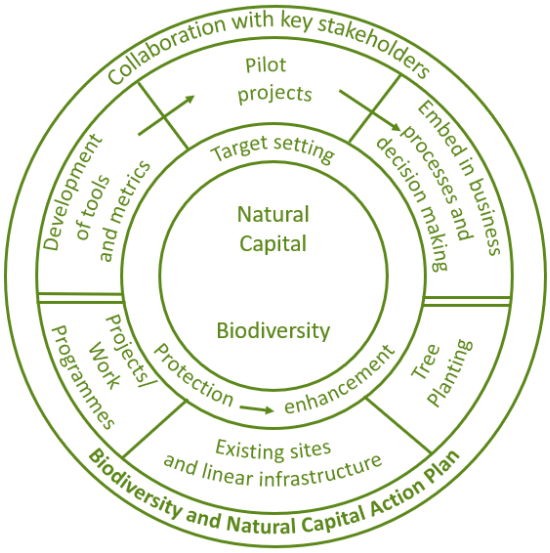
We are proposing to enhance biodiversity across our networks, on specific projects and programmes, by 500 biodiversity units over the RIIO-ED2 period. We will also pilot biodiversity enhancement initiatives across 25 hectares of our non-operational land and existing linear infrastructure. We are proposing that this be funded via baseline totex allowance with clawback provisions. Please see Section 7.10.6 Bespoke Allowance with Clawback: Biodiversity Enhancement for information on the costs associated with these works

In recognition of the importance of biodiversity, we have identified land and biodiversity improvements as one of our six Sustainability Drivers, as set out in our 2021 Sustainable Business Strategy. We have set ambitious objectives within our 2021 Sustainable Business Strategy including the implementation of a methodology to measure biodiversity and make relevant business decisions to deliver biodiversity enhancement.


*Figure 49: Convention on Biological Diversity (2019) Biodiversity and the 2030 Agenda for Sustainable Development*

### 7.10.1 Biodiversity and Natural Capital Action Plan

Our aim in RIIO-ED2 is to create a stakeholder led Biodiversity and Natural Capital Action Plan for our network and, at the same time, develop, embed and trial a robust enhancement methodology. This will allow us to set realistic, cost-efficient targets for positive impact, and stay flexible enough to align our targets with any new UK, Welsh and Scottish legislation. During the RIIO-ED2 period we will adopt appropriate tools to assess the net changes in natural capital on all new connections and networks projects, as well as monitoring the ecosystem services from networks sites and reporting on these annually.




**Biodiversity and Natural Capital Action Plan will lay out our approach to:**

- Ongoing national and local engagement – identifying stakeholders, frequency and type of engagement, key engagement nodes
- Partnerships and pilot projects for protection and enhancement
- Baseline assessment of sites and natural assets across our networks
- Projects subject to the planning regime
- Programmes not subject to the planning regime
- Land management
- Tailoring our approach to location, habitat and ecosystem services

*Figure 50: Biodiversity and Natural Capital Action Plan Overview*

Our strategic Biodiversity and Natural Capital Action Plan will capture national level strategies and targets across all three countries in which we operate. It will include:

- Mapping of UK, Country specific and regional requirements and priorities with flexibility to incorporate emerging Scottish and Welsh Policy.
- Stakeholder engagement plan at national and local levels for strategic and operational, practical operational guidance.
- Operational guidance for projects, operations and land management.

- Formal partnerships with nature-based organisations to inform our strategy development and works planning.

A current lack of robust data, and proven tools, on biodiversity and natural capital across our portfolio precludes the setting of biodiversity or natural capital enhancement targets at this time. Our aim in RIIO-ED2 is therefore to create a baseline dataset and develop, embed and trial a robust biodiversity measurement methodology to facilitate the delivery of biodiversity protection (or 'no net loss') moving to enhancement (or 'net gain') where possible by the end of RIIO-ED2. This will enable us to set realistic, cost efficient targets for future enhancement whilst retaining the flexibility required to align our targets with developing legislation across the nations in which we operate.

We will collaborate with our stakeholders and other Distribution Network Operators to develop and pilot a common approach and robust methodology to measure and drive improvements in biodiversity and the value of natural capital.

**Natural Capital Assessment**

In 2021 we have worked in collaboration with transmission and distribution network operators and a wider network of over 25 organisations on the development and piloting of a natural capital tool. The NATURE Project is Innovate UK funded and led by WSP consultants. The first phase of the NATURE Tool is now available and free to use. For further information on this project please see https://nature-tool.com.

We continue to collaborate with the other DNOs, TOs and other infrastructure stakeholders to develop Nature Capital tools to refine the tool in order to make it fit for purpose to provide both high level Natural Capital assessment for the optioneering phase of works and more detailed assessment for our larger projects and programmes of work.

**Tree and Vegetation Management**

Managing vegetation growth in and around our assets is an important aspect of maintaining the safe and reliable operation of our network. We will align our vegetation management policies with our Biodiversity and Natural Capital Action Plan process, our emerging Carbon Offsetting strategy and our Climate Resilience Strategy, engaging with local stakeholders, with the aim of ensuring that our impacts are mitigated in full and we take advantage of all opportunities to enhance and restore nature

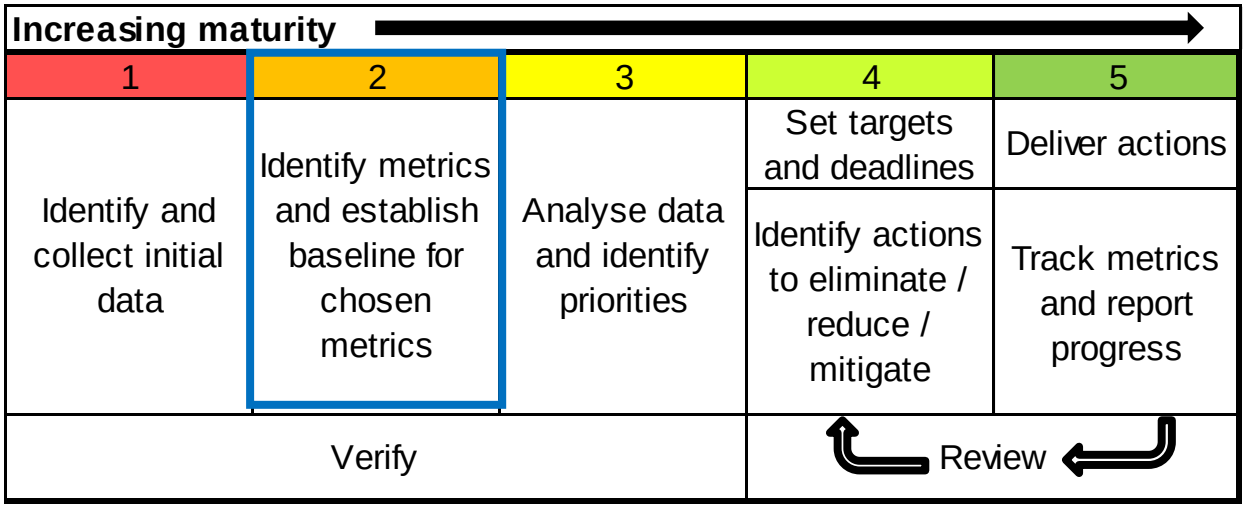
### *7.10.2 How we did in RIIO-ED1: Land and biodiversity protection and enhancement*

Our routing and environmental impact assessment process considers a range of environmental factors, including biodiversity, alongside technical constraints and licence requirements. This process is currently under review and we are developing a bespoke approach recognising our role in delivering both fixed site and linear infrastructure across all our licence areas. This new process, which will be a central pillar in our approach, will be embedded ahead of RIIO-ED2.

**Case study: North Shropshire Electricity Distribution Network Improvements Project**

We are working with the Shropshire Wildlife Trust, Canal and Rivers Trust and the Environment Agency's biodiversity officer to identify locations for habitat enhancement works as part of a Habitat Improvement Scheme. Opportunities to create and enhance connecting habitat for threatened invertebrates, water vole and otter are being developed in partnership with these organisations. This process followed the accepted 'Mitigation Hierarchy' approach, seeking first to avoid or minimise habitat loss or damage, particularly in higher value habitat features such as woodlands, ponds, mature trees, species-rich hedgerows before considering the need to provide on-site compensation or offset habitats. Enhancements, as part of a Habitat Improvement Scheme have also been identified in partnership with the agencies involved. For more detail on our current biodiversity activities and performance please see page 32 of our Distribution Environment and Innovation Report.

**Level of maturity:**




### *7.10.3 RIIO-ED2 Commitments: Land and biodiversity protection and enhancement*

*Table 45: RIIO-ED2 Commitments: Land and biodiversity protection and enhancement*

| **Description of commitment/Deliverable** | **Driven By** | Timeline |
|---|---|---|
| **We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities and local wildlife groups** | **External Stakeholders - Environmental Regulators, Ofgem, Operators** | By 2028 |
| **We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | by 2028 |
| We will implement a Biodiversity & Natural Capital Action Plan process to guide local operation implementation with the aim of increasing environmental value across our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| We will collaborate with stakeholders, including other DNOs, throughout RIIO-ED2 to develop and pilot robust methodologies and tools for delivering Biodiversity and Natural Capital assessment. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| We will identify, and subsequently monitor and annually report, metrics to track the levels of biodiversity and value of natural capital and ecosystem services on our sites and the achievement of our targets. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |

### 7.10.4 RIIO-ED2 Metrics: Land and biodiversity protection and enhancement

*Table 46: RIIO-ED2 Metrics: Land and biodiversity protection and enhancement*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Land monitored (area) | Hectares | % total hectares |
| DEFRA Biodiversity Metric 3.0 (or equivalent) biodiversity value for each area monitored | Biodiversity Units | |
| Biodiversity Baseline Value for each new project | Biodiversity Units | Baseline Biodiversity Value |
| Biodiversity Value increase from baseline for each new project | % change | project cost, biodiversity mitigation cost |
| Total Biodiversity Value increase from baseline for all new projects. | % change | project cost, biodiversity mitigation cost |
| Natural Capital for each new project | metric (tbc) | Baseline Natural Capital Value |

### 7.10.5 RIIO-ED2 Costs and Benefits: Land and biodiversity protection and enhancement

*To deliver our RIIO-ED2 plans in this area, it will cost £8.020M.*

*Our RIIO-ED2 plans in this area will deliver £85.197m in wider societal benefits over 30 years.*

### 7.10.6 Bespoke Allowance with Clawback: Biodiversity Enhancement

We are proposing to enhance biodiversity across our networks on projects and programmes by 500 biodiversity units over the RIIO-ED2 period. We will also pilot biodiversity enhancement initiatives across 25 hectares of our non-operational land and existing linear infrastructure. We are proposing that this be funded via allowance with clawback provisions. The costs of which are as follows:

| Cost Type | SPD | SPM | Total SPEN |
|---|---|---|---|
| Biodiversity Enhancement (Projects & Programmes of work) | £ 2,916,667 | £ 4,583,333 | £ 7,500,000.00 |
| Biodiversity Enhancement (Non-Operation land and existing linear infrastructure) | £ 194,444 | £ 305,556 | £ 500,000.00 |
| **Total** | £ 3,111,111 | £ 4,888,889 | £ 8,000,000.00 |

We are confident that the proposed Biodiversity Enhancement proposal will result in significant benefits for our customers and communities. We believe the upfront cost of £8m TOTEX allowance requested is fully justified and will provide our customers with a return on investment and will support the biodiversity across our network.

## 7.11 Enhancing visual amenity

Visual amenity is considered in the planning of new assets or replacement works, but in some cases, pre-existing distribution infrastructure has a direct visual impact upon the surrounding environment and the stakeholders who access it. This can be because settlements have developed around existing assets, because people are accessing landscapes in new or different ways, or simply because visual amenity was not seen as a priority when certain historical assets were installed.

Visual amenity complaints received normally involve existing infrastructure and are about vegetation management, graffiti, littering etc. These are dealt with in our maintenance plans.

As part of the design process we look to minimise the visual impact of replacement OHL's and sub stations. Where our old lines go through tree belts, we look to route the replacement line in the same area so that we reduce the trees that need to be removed yet maintain resilience/safety clearances. For new and/or replacement Ground Mounted Substations we can match the building with the local stonework and plant and maintain screening.

Visual amenity will be embedded in and considered in our Climate Resilience Strategy, please see Annex 4A.7: Climate Change Resilience Strategy, and in our Biodiversity and Natural Capital Action Plan that will be created before the beginning of RIIO-ED2. ***Figure 51*** below shows the before and after of OHL undergrounding work in Clwydian Range.

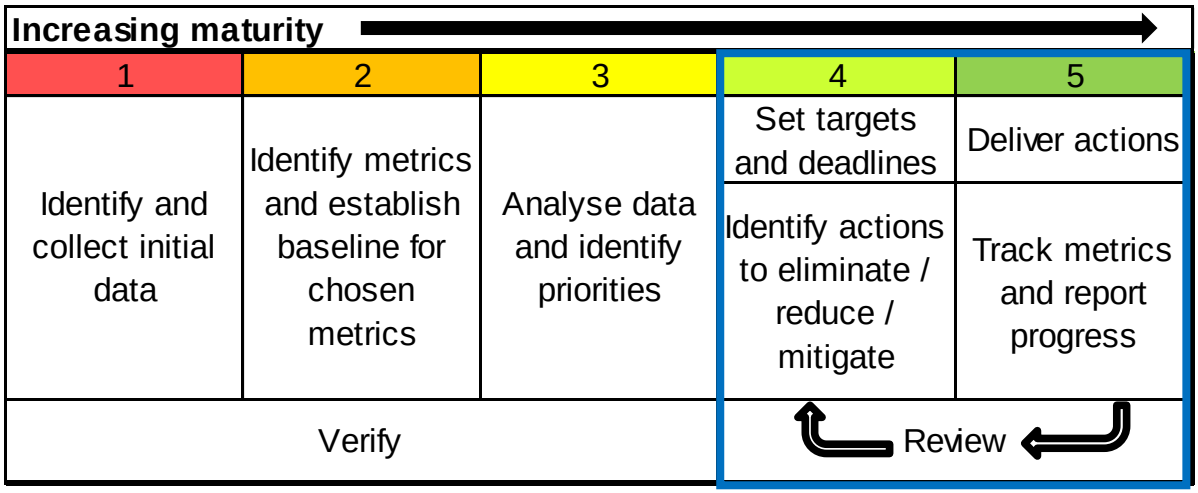
*Figure 51: Clwydian Range Before and After Undergrounding of OHL*

### 7.11.1 How we did in RIIO-ED1: Enhancing visual amenity

We have examined the visual impact of our network within the landscape areas eligible under the RIIO-ED1 visual amenity incentive and collaboratively developed a range of visual amenity improvement initiatives. Using this visual amenity fund, our approach is to proactively underground overhead lines that have the greatest level of impact in nationally designated and protected landscapes.

Details of our visual amenity performance and initiatives to date are outlined on pages 9 and 10 of our Distribution Environment and Innovation Report.

**Level of maturity:**




### 7.11.2 RIIO-ED2 Commitment: Enhancing visual amenity

*Table 47: RIIO-ED2 Commitments: Enhancing visual amenity*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will remove 35km of overhead lines in Areas of Outstanding Natural Beauty National Parks, and National scenic areas.** | **External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators** | By 2028 |

### 7.11.3 RIIO-ED2 Metrics: Enhancing visual amenity

*Table 48: RIIO-ED2 Metrics: Enhancing visual amenity*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Overhead lines Undergrounded | km | |

### 7.11.4 RIIO-ED2 Costs and Benefits: Enhancing visual amenity

*To deliver our RIIO-ED2 plans in this area, it will cost £4.622m.*

## 7.12 Sustainable resource use and waste reduction

We are working to embed the principles of a circular economy and will follow an appropriate, recognised standard such as the BS8001 circular economy implementation framework.

In line with the waste hierarchy, 'reduce, re-use, recycle', we're placing additional focus on:

- Avoiding waste generation by designing out waste
- Keeping materials in use at the highest value for as long as possible
- Managing any remaining waste to maximise its re-use or segregation for recycling.

To achieve our sustainable resource use goals, it's vital we have effective sustainable procurement processes and collaborate effectively with our supply chain. By the end of RIIO-ED2 we will be diverting 98% of our waste from landfill, in line with achieving our 2030 target of 100% diversion by

2030.This commitment goes further than current legislation in pace for England, Wales and Scotland Please see Section 5.4 Supply Chain Sustainability for further details on how we are working with our supply chain

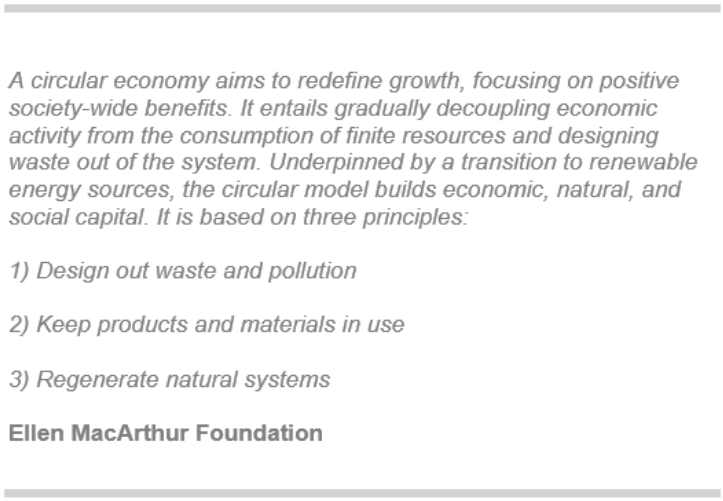



*Figure 52: Principles of a Circular Economy, Ellen MacArthur Foundation*

### Waste Reduction and Minimisation

We have analysed our waste streams and, while the quantities and proportions of the different types of waste significantly vary year on year as they are very project and site specific, we have identified our priority waste streams as:

- Soils and stones
- Scrap metal/ end of life electrical equipment
- Concrete
- Cables/conductor
- 'General' waste

Data will continue to be a key focus, as we must have good data to inform prioritisation and target setting, and measurement of success. We are now looking to further apply the waste hierarchy (***Figure 53***) to move from focusing on increasing recycling to designing out waste.

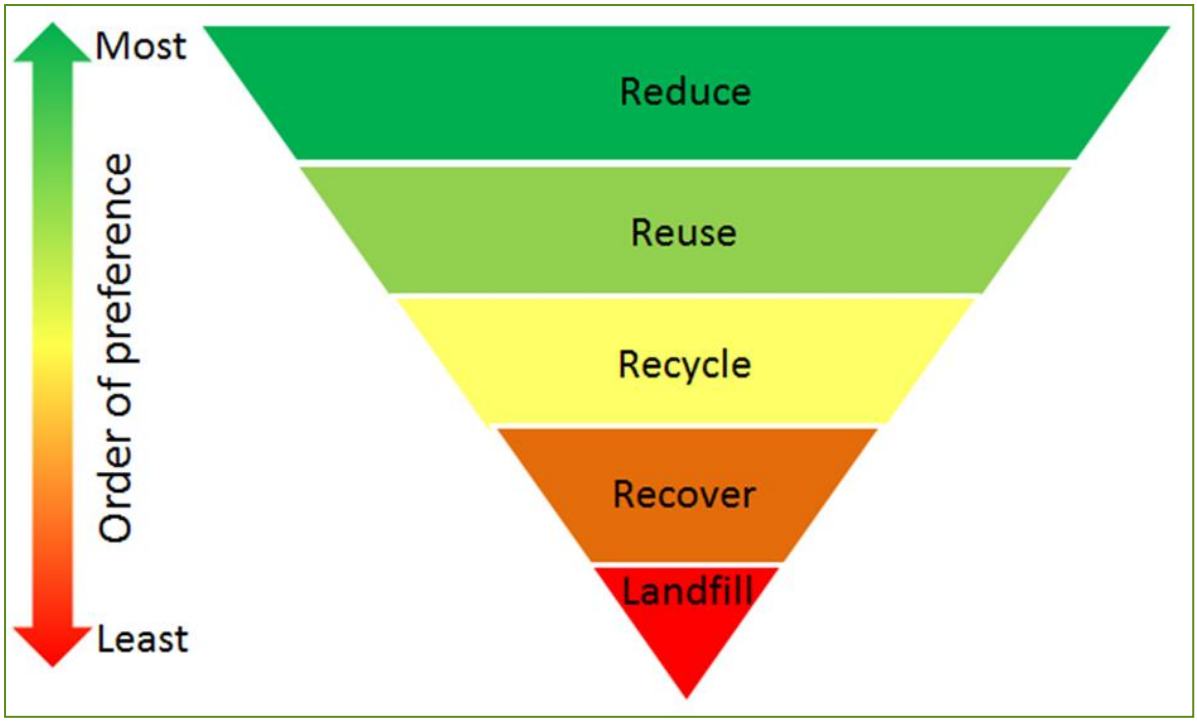



*Figure 53: Waste hierarchy*

This will require us to change our focus from how we manage resources (rather than treating them as waste) – primarily being about which bin the material goes into, to revising business processes to include considerations regarding resource use and end of life impacts. Resources must be kept in use, at the highest value, for as long as possible. This makes economic as well as environmental sense and we expect that many changes will pay for themselves.

Although we understand our waste streams and quantities and have been increasing our recycling rate steadily over recent years, we have yet to embed considerations of resource use and waste minimisation in our processes. We have yet to quantify the resources we use (inputs). This will be required to achieve our waste Goals and we propose to follow BS8001:2017 Circular Economy to guide our delivery.

### Sustainable Resource Use

Regarding resource use, we reduce the use of natural resources by committing to decarbonisation and by utilising more efficient, cleaner technologies and processes. We aim for greater efficiency and effectiveness in resource use through designing for longevity, ease of repair, disassembly, refurbishment and remanufacturing. We research into developing new technologies and devise solutions for keeping materials in use for as long as possible, at as high a value as possible. Working with our suppliers and contractors throughout RIIO-ED1 has resulted in many solutions being piloted, such as the trial of the reuse of plastic buckets for jointing resin. This project has the potential to save over £29,000 each year from mixed recycling costs and save up to 220 tonnes of carbon dioxide equivalent ($tCO_2e$). Please see Chapter 6 Decarbonising our Energy Network for more information on our carbon reduction plans for RIIO-ED2.

We are members of the Major Infrastructure Resources Optimisation Group (MI-ROG) and founder members of its sister group the Scottish Infrastructure Circular Economy Forum (SICEF). MI-ROG was founded in 2013 as a forum for the UK's infrastructure operators to collaborate across the circular economy theme and to meet the challenge of delivering major infrastructure in a constrained economy.

SICEF was formed in 2017 with the Mission Statement:

> *"Jointly applying circular economy principles to member's organisations and major infrastructure development projects with the aim of:*

*Optimising resource use through the project's life cycle;*

*Embedding collaboration between projects and members;*

*Partnering with key suppliers and contractors; and*

*Sharing knowledge and best practice on the circular economy."*

For further details of our performance on sustainable resource use and waste reduction please see page 29 of our Distribution Environmental and Innovation Report.

We strive to create opportunities to stimulate a circular economy; implementing processes to ensure that wastes are avoided where possible and those that are inevitable are considered as resources with a value that can be reused and recycled. The principles of a 'circular economy' are:

- Keep resources in use for as long as possible;
- Extract the maximum value from resources while in use;
- Recover and regenerate products and materials at end of life;
- Keep products, components and materials at their highest utility and value at all times.


*Figure 54: Circular economy model*
*Source: https://www.crns.org.uk/about-us/circular-economy/*

### Carbon from Waste

In order to achieve our ambitious carbon reductions targets, set out in Section 6 Decarbonising our Energy Network we must consider the carbon from waste produced. Our analysis shows that 519.5t$CO_2$e was associated with our waste in 2020, by working with our supply chain (Please see section 5.4 Supply Chain Sustainably) and following the principals of BS8001 we will reduce carbon from waste by 37% which equates to 746t$CO_2$e over the RIIO-ED2 period,

## *7.12.1 How we did in RIIO-ED1: Sustainable resource use and waste reduction*

During RIIO-ED1 we worked to improve the quality and completeness of our waste data, identifying the metrics required and including requirements to report waste quantities and fate in our contracts. We continue to work with our contractors to ensure that we receive good data covering all of our waste streams.

In 2019/20, 92% of waste was diverted from landfill (***Table 49***). and we are on track to meet our 2023 target of 95% of waste diverted from landfill.

During RIIO-ED1 we diverted on average 87% of our operational waste from landfill. Our RIIO-ED1 focus has been on the delivery of our waste Goal of 95% landfill diversion by 2023, with communications to drive improved waste segregation, audits of contractors and collaboration with our own waste contractor and some key suppliers to increase recycling rates.

We also introduced enhanced environmental requirements within our procurement processes. For further details of our performance on sustainable resource use and waste reduction, please see page 29 of our Distribution Environment and Innovation Report.

The Tables below shows our annual waste totals, with the variability being a result of both significantly varying investment programmes and data quality issues.

*Table 49: RIIO-ED1 Waste performance*

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| Total waste (tonnes) | 81692 | 105704 | 147635 | 142559 | 196116 |
| Avoided landfill (%) | 90% | 86% | 88% | 87% | 92% |

*Table 50: RIIO-ED1 Waste performance*

| | Licence | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Total waste (tonnes) | SPD | 21739 | 53572 | 84159 | 72538 | 142444 |
| Avoided landfill (%) | SPD | 64% | 74% | 85% | 76% | 89% |
| Total waste (tonnes) | SPM | 59953 | 52132 | 63476 | 70021 | 53671 |
| Avoided landfill (%) | SPM | 99% | 99% | 91% | 98% | 99% |

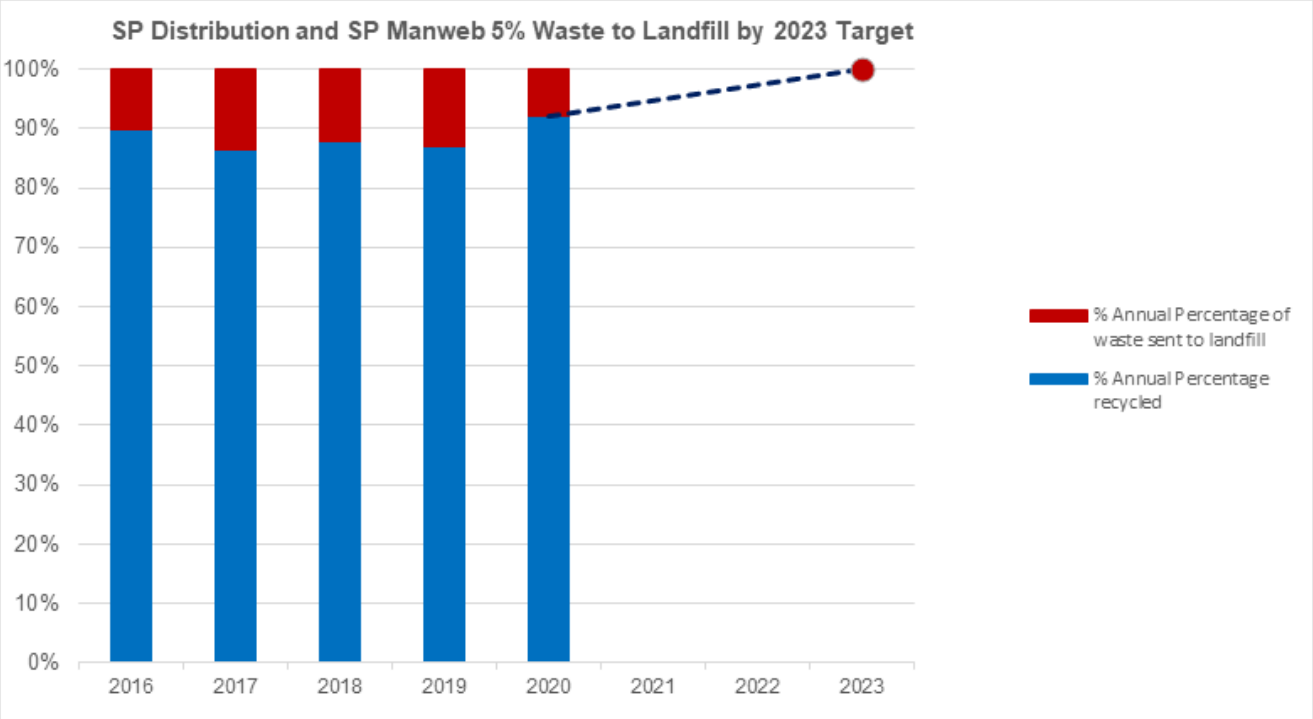
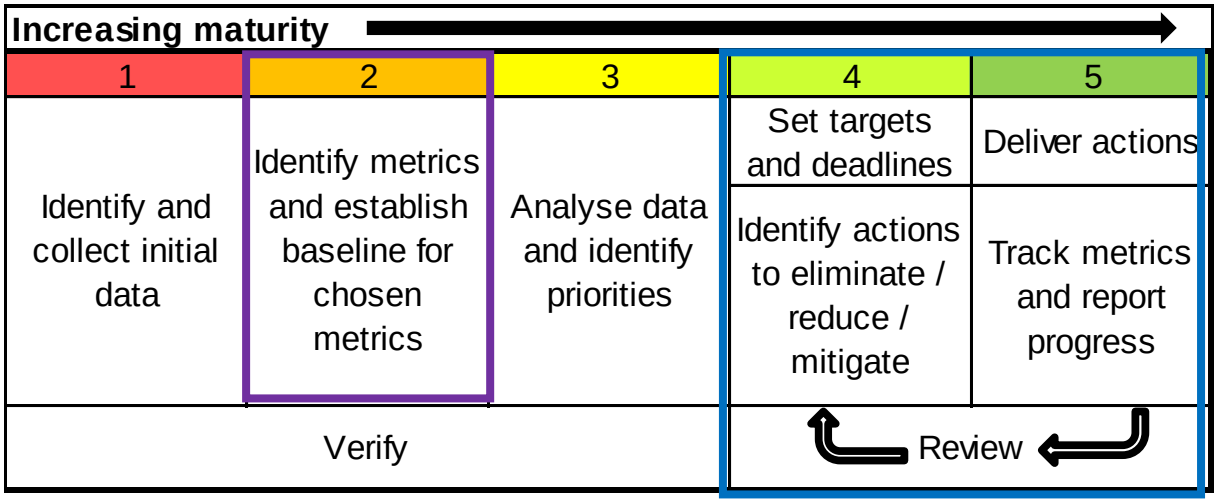



*Figure 55: Distribution Waste to Landfill Performance*

**Level of maturity:**




**Purple** box – Sustainable Resource Use

**Blue** box – Waste Reduction

### *7.12.2 RIIO-ED2 Commitments: Sustainable resource use and waste reduction*

*Table 51: RIIO-ED2 Commitments: Sustainable resource use and waste reduction*

| Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|
| **We will divert 100% of our waste from landfill by 2030, excluding compliance waste.** | **External Stakeholders - Sustainability Working Group, Circular Economy Forum** | Throughout RIIO-ED2 |

| | | |
|---|---|---|
| **We will establish a baseline and targets for waste reduction per £1m of total annual expenditure, to be achieved by the end of RIIO-ED2 and 2030 in line with our zero waste to landfill date.** | **External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers** | By 2023 |
| We will continue to collaborate with environmental/ waste regulators, other infrastructure companies and our supply chain to drive sustainable resource use and waste minimisation in order to meet our RIIO-ED2 and Sustainability Goals. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| We will implement metrics to measure the sustainability of our resource use, with the aim of establishing a baseline to enable target setting during RIIO-ED2. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2025 |
| We will continue to report on actual waste to landfill, recycling and reuse as a percentage of total and we will commence reporting on all new waste and resource use metrics. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| We will set targets for recycled & reused materials as a % of total input materials to be achieved by end RIIO-ED2 and 2030. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2023 |
| We will follow an appropriate, recognised standard such as BS8001 to embed circular economy principles where relevant throughout our business processes. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |

### 7.12.3 RIIO-ED2 Metrics: Sustainable resource use and waste reduction

*Table 52: RIIO-ED2 Metrics: Sustainable resource use and waste reduction*

| Metric | Unit | Normalisation Factor |
|---|---|---|
| Total weight of waste produced | tonnes | per £ project value |
| Fate of waste | % weight | |
| Types of waste | % weight | |
| Recovery rate for types of wastes | % weight | |

### 7.12.4 RIIO-ED2 Costs and Benefits: Sustainable resource use and waste reduction

*To deliver our RIIO-ED2 plans in this area, it will cost £0.060M.*

Carbon avoided over the course of RIIO-ED2 746 tCO2e

### 7.12.5 Uncertainty Mechanism: Environmental Legislation Re-opener: Hazardous waste disposal

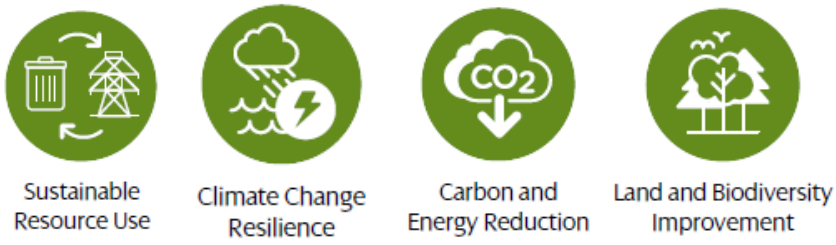
Work driven by the Environment Agency (EA) has indicated that more emphasis should be placed on Technical Guidance to the Waste Regulations to ensure the correct levels of testing and disposal option of hazardous waste is carried out during excavations by utilities.

With the support of the Environment Agency, Streetworks UK have been coordinating testing and analysis in this area with a view to recommending an updated methodology to determine when sampling and testing should be undertaken. It is expected this will be incorporated into reinforced Technical Guidance from 2023.

This is expected to impact the volume of Waste Classification Testing, Waste Acceptance Criteria Testing and additional disposal costs associated with hazardous materials from our excavation works.

Given the uncertainties around regulatory guidance which impacts the volumes of both testing and additional disposal costs, an uncertainty mechanism is required to manage the risks in this area.

# 8. Supporting the Net Zero Transition




The energy generation system is changing, moving from a traditional centralised model reliant on fossil fuels, to a decentralised Net Zero model focused on low carbon renewable generation.

Demand for electricity is also changing, with the UK, Welsh and Scottish Governments setting ambitious targets to decarbonise sectors such as transport and heat. Our network must be prepared for these changes in demand and generation.

Whilst we drive this transition, we must ensure that none of our customers are left behind, recognising that those communities and customers who are least likely to have access to low carbon vehicles or heating will frequently also be the most vulnerable in society.

We have developed our plans to align with the UK, Welsh and Scottish Government's Energy Strategy and ensure we are playing our part in meeting the ambition for Net Zero greenhouse gas emissions by 2050 and 2045 respectively.

## 8.1 Just Transition

The link between the drivers of change and the social impact places the Just Transition at the heart of our RIIO-ED2 plans. Our stakeholders have told us that this is how important this is to them. We are committed to turning this purpose into action, helping to deliver wider benefits and positive social outcomes in our communities.

We have engaged thoroughly with key stakeholders in developing our just transition proposals, co-creating our plans and proposals and tailor them to local needs.

We are committing to developing our Just Transition Strategy with our stakeholders. We will launch a consultation on our strategy in 2022, with a view to publishing by the start of ED2 in 2023.

We believe delivering a just transition means more than ensuring that the energy transition does not harm some consumers but extends to enabling all consumers to take advantage of the opportunities that the Net Zero transition brings. Please see Annex 1.4 Supporting a Just Transition for further information.

## 8.2 UN Conference of the Parties 26 (COP26)

The COP is an annual event where world leaders come together to agree a collective action plan and set targets that can be enforced fairly, in the global fight against climate change. In 1995 the 1st COP was held in Berlin and since then the urgency for action against climate change has grown in importance. Countries have yet to agree on how the Paris Agreement will operate going forward and COP26, will allow countries to discuss and decide on a path forward.

COP26 was the biggest summit the UK has ever held, with many describing it as the most significant climate change summit of all time. ScottishPower as a principal partner supporting COP26 demonstrates that we are invested in the success of the conference and its outcomes and our participation reinforces our absolute commitment to tackling climate change.

COP26 is an important global stage to showcase what has already been achieved in the UK on the journey to Net Zero and to learn from others about the steps needed to ensure we all meet our

climate change targets. For more information on what ScottishPower is doing in the lead up to COP26 please see our website: https://www.scottishpower.com/pages/countdown_to_cop26.aspx

## 8.3 Edinburgh Climate Compact

We have signed up to the Edinburgh Climate Compact to support the city's ambition of reaching Net Zero by 2030. By signing up to the Compact as a City Climate Champion, we are committing to reducing our greenhouse gas emissions through our operations, influence and leadership, transport and buildings. Our collaboration on the Compact with leading organisations in the city will encourage other businesses to show their support and help make a collective difference to Edinburgh's emissions.

## 8.4 Sustainable Glasgow Green Economy Hub Charter

Sustainable Glasgow is a partnership of organisations in Glasgow working to accelerate action on climate change and achieve the City's ambition of Net Zero for 2030. The Sustainable Glasgow Green Economy Hub Charter is for organisations who are committed to being leaders in the race to Net Zero and dedicated to delivering a sustainable Glasgow together. Through ScottishPower Group's efforts as a founding signatory of the Charter, we are driving, promoting and celebrating our actions to reduce climate emissions. From SP Energy Networks' role on the Sustainable Glasgow Board, we are in a prime position to support the local economy and SMEs in their Net Zero journeys.

## 8.5 Liverpool City Region Built Environment Board

With the current commitments to both reduce carbon emissions in construction and energy use of buildings across the region, the Liverpool City Region LEP built environment board is a strategic group of industry experts who are committed to enabling a low carbon future for the built environment of the Liverpool City Region.

SP Energy Networks is represented on this group of leading figures from a wide range of business types including construction, architecture, engineering, social enterprise and property development plus representation from universities and local authorities.

In addition to the low carbon commitments of this group, investment in infrastructure and enabling new development for regeneration is also important for long term economic prosperity of the area. SP Energy Networks also bring expertise and advice to inform new electrical connection requirements to the distribution network, which may be required for new developments and to enable increasing amounts of low carbon technologies within construction

## 8.6 Whole Systems

Whole System means going beyond the traditional scope of the electricity network, to create and realise the opportunities of an integrated, cross-vector energy system, and developing new ways of working and thinking to enable this. By adopting a Whole System strategy, we will take a holistic approach to identifying and creating value for customers, our business, and the whole energy system, enabling a more efficient, and just transition to Net Zero.

Our robust strategy will embed Whole System thinking across our entire business, from innovation and investment decision-making, to collaboration with industry partners, stakeholders, customers and parties beyond the electricity sector. Our strategy is preparing us for the uncertainty inherent in the many potential pathways to decarbonisation, ensuring that we can create customer value while enabling a Net Zero transition and striving to tackle fuel poverty, protect the environment, and the improve the wellbeing of our communities. Please see Annex 4A.26: Whole System Strategy

## 8.7 Climate Change Resilience Strategy

Our Climate Resilience Strategy (CRS) will outline how we can maintain a safe and resilient network in response to the future uncertainties around Climate Change.

Climate resilience is a key element in enabling the transition to Net Zero by 2050. The changing role of the Distribution Network Operators (DNO) to a Distribution Systems Operator (DSO) means that operations and activities will become more important to national electricity supplies, with any potential climate-related impacts on the network having a greater consequence on the day-to-day activities of customers.

Building on our 2015 Climate Change Adaptation Report – Round 2 Update and work undertaken by the Energy Network Association (ENA) alongside other DNOs in the UK, this report considers United Kingdom Climate Projections 2018 (UKCP18) data to provide an updated assessment of our network and business risks. In-turn, these risks then inform adaptation pathways for developing a strategy of solutions that build on current practices and investment, further adapting our network and business operations to mitigate against potential future impacts. For further information please see Annex 4A.7 Climate Change Resilience Strategy.

## 8.8 Net Zero Fund

With growing momentum in the race to Net Zero, as a network provider we understand that we have a critical role to play in helping our customers and communities to achieve a fair and just transition – and crucially, we want to be part of a fair and just transition for all our customers and communities. Network companies are a key enabler in the Net Zero transition by ensuring that our network investment can match ambitions, through facilitating low carbon projects, bring benefits to our society and our electricity system as a whole. We are therefore proposing a Distribution Net Zero Fund to facilitate low carbon projects within our licence areas. Please see Annex 5C.7: Distribution Net Zero Fund for more information on this fund.

## 8.9 Community Energy Strategy

Community energy refers to the delivery of community-led renewable energy, energy demand reduction and energy supply projects, whether wholly owned and/or controlled by communities or through partnership with commercial or public sector partners (Community Energy England).Community energy projects can include the local generation of renewable power or heat, the collective purchasing or peer-to-peer trading of energy, energy efficiency improvements or low carbon community transport and EV charging (The Environmental Audit Committee).With democratic control, shared benefits and active participation at its core, community energy supports the major shifts in culture and infrastructure needed to reduce the impact of climate change and increase security of local energy supply (Community Energy England).

Community Energy is critical to ensuring we achieve net-zero and a just transition however, given the current pace of change, it has not yet been formally considered as a core area of activity for DNOs. As such, Ofgem have not yet issued specific guidance on how we should operate in this area or draw down funding for our activities. Through baseline funding, will aim to support a minimum annual growth rate of community energy projects of 4-8% across SPD and SPM. We have also suggested an Output Delivery Incentive funding framework that we and our stakeholders feel will best allow us to facilitate an annual growth rate of 10-34% by applying additional resource to our proposed commitments. Please see Annex 4B.3: Community Energy Strategy for further details of our plans.

## 8.10 Innovation

Innovation will help us facilitate the Net Zero transition, as society becomes increasingly reliant on electricity. Our Distribution Future Energy Scenarios (DFES)[17] forecast that up to 1.5m electric vehicles and 700k heat pumps will connect to our networks by 2030, potentially requiring investment

[17] https://www.spenergynetworks.co.uk/pages/distribution_future_energy_scenarios.aspx

in our low voltage (LV) network at 12 times the level we have seen in the last 10 years of investment. Innovation therefore must be at the heart of the Net Zero transition, as we facilitate the electrification of generation, transport and heat, enable whole-system opportunities to be realised and deliver a fair and just transition for every customer. For more information please Annex 2.1: Our Innovation Strategy.

## 8.11 Enabling the path to Net Zero

As society decarbonises to Net Zero, our customers are increasingly turning to electric vehicles (EVs) and heat pumps for their transport and heating. We are also going to see a further leap in renewable generation to power these new low carbon technologies, and experience more dynamic and complex power flows as customers become increasingly active participants in the energy system. These customer-led changes are far beyond what the network is designed for. They will result in higher network utilisation, more dynamic power flows, and more complex whole-system interactivity. To address this, we need to deliver a step-change in network capacity, operability systems, and whole system coordination. Please see Chapter 4A: Develop a network that's ready for Net Zero of our Business plan and Annex 4A.2: Load Related Expenditure Strategy: Engineering Net Zero.

# Appendix A: Environmental Commitments mapped to business plan data tables

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| Delivering a More Sustainable Network | Achieving the sustainability step-change | **We will embed environmental sustainability considerations in our business processes whilst maintaining and continually improving our ISO14001 certified Environmental Management System. This will enable us to achieve 'beyond compliance' environmental performance and our sustainability goals.** | SPD | C4/C13 | £ 0.33 |
| | | **We will continue to provide transparent reporting of our environmental and sustainability performance by publishing an annual report of our progress against all environmental and sustainability commitments – in line with metrics and a format developed in collaboration with the other DNOs.** | | C9 | £ 0.90 |
| | | **We will improve the quality of environmental data collected and analysed at all stages of the asset lifecycle, investing in enhanced IT systems and formalising data sharing collaborations with key stakeholders.** | | CAI - (P&T) | £ 0.05 |
| | | **We will continue to ensure that our staff, contractors and suppliers have the skills and knowledge to allow us and our supply chain to move beyond compliance and achieve our Sustainability Goals, by identifying and ensuring delivery of appropriate environmental training.** | SPM | C4/C13 | £ 0.33 |
| | | We will embed a process for Initial Environmental and Sustainability Reviews (IESRs) for all relevant projects, to identify potential environmental issues and opportunities at the earliest stage. | | C9 | £ 0.93 |
| | | | | CAI -TBC (P&T) | £ 0.05 |
| | Supply chain sustainability | **We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2** | SPD | Costs embedded in all other areas of EAP | |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | **suppliers (by value) meeting these standards.** | | | |
| | | We will increase consideration of environmental sustainability in our procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum. | | | |
| | | We will continue to be a Supply Chain Sustainability School Partner, requiring contractors and suppliers for all new contracts to become members and undertake relevant sustainability and environmental training. | | | |
| | | We will engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages. | **SPM** | | |
| | | We will engage with suppliers throughout the duration of their contracts to continue to reduce impacts and optimise benefits. | | | |
| **Decarbonising Our Network** | **Decarbonising our network and assets – strategic commitments** | **We will deliver efficient and economic actions to reduce our scope 1, 2 & 3 business carbon footprint by 67.2% by 2035 from a 2018/19 baseline, in line with validated Science-Based Targets aligned to a 1.5 c pathway.** | **SPD** | CV.22 | £ 1.26 |
| | | **We will minimise our carbon footprint to achieve Net Zero carbon by 2035.** | | | |
| | | **We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses.** | | | |
| | | We will align our offsetting approach to the Oxford Principles for Net Zero Aligned Carbon Offsetting, ensuring high probability of 'Additionality' and low probability of 'Reversibility', delivering additional environmental and social benefits where practical. | | | |
| | | We will identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards our carbon reduction targets. | **SPM** | CV.22 | £ 1.27 |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | We will implement processes for carbon management in relevant business activities, aligned with PAS 2080 Carbon Management in Infrastructure. | | | |
| | **Scope 1 Emissions** | **We will decarbonise our operational fleet by 2030, replacing 100% (over 800) of our cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028.** | **SPD** | C11 | £ 6.49 |
| | | We will install electric vehicle charging infrastructure for our operational fleet at our sites | | C6 | £ 3.41 |
| | | We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption. | **SPM** | C11 | £ 5.90 |
| | | | | C6 | £ 3.23 |
| | | **We will reduce our $SF_6$ leakage by 10% over the RIIO-ED2 period compared to RIIO-ED1.** | **SPD** | CV7/CV 9/CV22 | £ 2.24 |
| | | We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | | | |
| | | We commit to reporting on total $SF_6$ Bank and leakage reduction rates using a common Distribution Network Operator (DNO) methodology. | | | |
| | | We will continue to carefully manage our assets in line with our $SF_6$ Strategy to minimise $SF_6$ leakage, repair leaks quickly, and where this is not possible, replace the asset before its anticipated end of life. | **SPM** | CV7/CV 9/CV22 | £ 2.92 |
| | | We will continue to require manufacturers to provide equipment with a $SF_6$ leakage rate which is half that of the internationally recognised standards, where technically viable. | | | |
| | | We will drive the development and adoption of $SF_6$ – free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable. | | | |
| | | **We will analyse our generator use and set targets for reduction in carbon emissions to be achieved by end of RIIO-ED2.** | **SPD/SPM** | **N/a** | **N/a** |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | Scope 2 Emissions | **We will continue to purchase green electricity through a 100% UK-based renewable energy tariff backed by Power Purchase Agreements (PPA) for all our buildings. Beyond this, we will reduce our buildings and substations energy consumption by a minimum of 15.2GWh (8%) over the RIIO-ED2 period.** | **SPD** | C5 | £ 4.35 |
| | | We will reduce energy consumption by a total of 3.4GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | | CV10/CV14 | £ 0.49 |
| | | We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh over the RIIO-ED2 period. | **SPM** | C5 | £ 4.10 |
| | | We will pilot and monitor renewable generation at substation and/or depot sites to offset building energy demand. | | CV10/CV14 | £ 0.49 |
| | | **In RIIO-ED2, we will continue to implement our Losses Strategy to avoid an estimated 36 GWh of network losses, thereby limiting losses to a lower level than would otherwise be the case.** | **SPD** | CV21 | £ 9.95 |
| | | We will continue to lead the Energy Networks Association Technical Losses Group to improve industry understanding of losses. | | | |
| | | We will continue to drive the development and understanding of losses by contributing to the evidence base on the proportion of losses that network companies can influence/control, collaborating with supply chain and industry peers and piloting new technology such as the MAAV. | | | |
| | | We will continue to consider and minimise network losses throughout all design and connections activities. | | | |
| | | We will pro-actively target high-loss legacy assets for replacement with modern low-loss alternatives. | **SPM** | CV21 | £ 3.26 |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | We will report on the progress of implementing the losses strategy and associated performance measures. | | | |
| | | We will use a minimum underground mains cable size of 300mm2 to further reduce losses, where it is cost effective and appropriate to do so. | | | |
| | | We will continue to use a minimum pole mounted transformer size of 25kVA to further reduce losses on our network. | | | |
| | **Scope 3 Emissions** | **We will continue to implement our 2021 Business Travel Policy to reduce business travel emissions by at least 580 $tCO_2e$ during RIIO-ED2.** | **SPD/SPM** | **N/a** | **N/a** |
| | | **We will require strategic suppliers to set Science-Based Targets within 5 years, aiming for 80% of our supply chain by value.** | **SPD/SPM** | C9 | £ 0.38 |
| | | We will create a new role in RIIO-ED2 to drive actual reduction in Scope 3 carbon emissions in our supply chain by 100k $tCO_2e$? | | CAI - (P&T) | £ 0.03 |
| | | We will introduce a measurement tool for embodied carbon and other capital carbon emissions to establish a baseline and a set a target to reduce carbon on new projects during RIIO-ED2. | | | |
| | | We will work collaboratively with our stakeholders, including the other Distribution and Transmission Network Operators, throughout RIIO-ED2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice. | | CAI - (P&T) | £ 0.03 |
| | | We will monitor and report on embodied carbon in new projects. | | | |
| **Reducing our Networks Environmental Impacts** | **Preventing pollution** | **We will continue to target zero environmental regulatory interventions and notifiable breaches.** | **SPD** | C5 | £ 1.30 |
| | | **We will implement Pollution Prevention Plans at 100% of our RIIO-ED2 132kV projects.** | | CV10 | £ 0.85 |
| | | **We will reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres (10%) by replacing 19.429km of our leakiest fluid filled cable.** | | CV22 | £ 32.94 |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | **We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites.** | | | |
| | | **We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.** | | | |
| | | **We will use low carbon alternatives to concrete bunding for our RIIO-ED2 retrofit projects where technically feasible.** | **SPM** | C5 | £ 1.30 |
| | | We will adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables. | | CV22 | £ 37.63 |
| | | We will continue to report on noise pollution incidents and actions taken to reduce them. | | CV7a | £ 16.87 |
| | | We will report on volumes of PCB contaminated equipment on and removed from the network. | | CV8 | £ 0.20 |
| | | We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | | | |
| | | We will implement a programme to identify, risk assess and address high risk legacy land contamination. | | | |
| | | We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles | | | |
| | **Land and biodiversity improvement** | **We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities and local wildlife groups** | **SPD** | CAI - (P&T) | £ 0.01 |
| | | **We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity.** | | | |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | We will implement a Biodiversity & Natural Capital Action Plan process to guide local operation implementation with the aim of increasing environmental value across our network. | | | |
| | | We will collaborate with stakeholders, including other DNOs, throughout RIIO-ED2 to develop and pilot robust methodologies and tools for delivering Biodiversity and Natural Capital assessment. | | M.21 | £ 3.11 |
| | | We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals. | | | |
| | | We will identify, and subsequently monitor and annually report, metrics to track the levels of biodiversity and value of natural capital and ecosystem services on our sites and the achievement of our targets. | **SPM** | CAI - (P&T) | £ 0.01 |
| | | We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature. | | M.21 | £ 4.89 |
| | **Visual amenity** | **We will remove 35km of overhead lines in Areas of Outstanding Natural Beauty National Parks, and National scenic areas.** | **SPD** | CV20 | £ 1.88 |
| | | | **SPM** | CV20 | £ 2.74 |
| | **Sustainable resource use and waste reduction** | **We will divert 100% of our waste from landfill by 2030, excluding compliance waste.** | | | |
| | | **We will establish a baseline and targets for waste reduction per £1m of total annual expenditure, to be achieved by the end of RIIO-ED2 and 2030 in line with our zero waste to landfill date** | | | |
| | | We will continue to collaborate with environmental/ waste regulators, other infrastructure companies and our supply chain to drive sustainable resource use and waste minimisation in order to meet our RIIO-ED2 and Sustainability Goals. | **SPD** | CAI - (P&T) | £ 0.03 |
| | | We will implement metrics to measure the sustainability of our resource use, with the aim of establishing a baseline to enable target setting during RIIO-ED2. | | | |

| BP Header | Chapter | Commitment / Deliverable | Licence Area | Location of Cost | Cost (£m) |
|---|---|---|---|---|---|
| | | We will continue to report on actual waste to landfill, recycling and reuse as a percentage of total and we will commence reporting on all new waste and resource use metrics. | **SPM** | CAI - (P&T) | £ 0.03 |
| | | We will set targets for recycled & reused materials as a % of total input materials to be achieved by end RIIO-ED2 and 2030. | | | |
| | | We will follow an appropriate, recognised standard such as BS8001 to embed circular economy principles where relevant throughout our business processes. | | | |

# Appendix B: Our RIIO-ED2 Initiatives

The table below shows our RIIO-ED1 performance across both our SPD and SPM licences. It also shows our predicted RIIO-ED2 performance.

If we do not implement the initiatives below, we will not be able to deliver our RIIO-ED2 targets or the consumer and environmental benefits in the table below.

| Impact Area | DNO Deliverables/Initiatives | Licence Area | ED1 | | | ED2 | | | | | *Environmental Action Plan* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Start ED1 | ED1 to date | ED1 forecast | ED2 Target | ED2 Delivery Date | Relevant performance measure (units) | Costs (£m) | Consumer and environmental benefits | *Page/section reference* |
| **BCF** | Decarbonising our Network - Net Zero Carbon Target and Carbon Neutrality - Carbon Offsetting | SPD | n/a | n/a | New for RIIO-ED2 | 50507.36 | By end of ED2 | $tCO_2e$ Offset | 1.263 | 101,315 $tCO_2e$ will be offset during RIIO-ED2 and there will be a SROI of £91.63 by 2050 | Section 6.7 |
| | | SPM | n/a | n/a | | 50807.40 | | | 1.270 | | |
| | Decarbonising our Network and Assets - Scope 1 emissions - Fleet decarbonisation and charging | SPD | 3784.92 | 2653.95 | 'Increase the use of electric vehicles and charging points' | 160.08 | 2028 | Fleet Emissions ($tCO_2e$) | 9.860 | 16,786 $tCO_2e$ of emissions will be avoided over RIIO-ED2 | Section 6.11 |
| | | SPM | 2691.66 | 2823.12 | | 171.20 | | | 9.122 | | |
| | Decarbonising our network and assets | SPD | 18.240 | 1138.153 | 'Exceed the IEC international standards for | 1116.705 | 2028 | Fugitive Emissions ($tCO_2e$) | 2.237 | 1097 $tCO_2e$ will be avoided via leakage | Section 6.12 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | - Scope 1 emissions - $SF_6$ Strategy | SPM | 681.036 | 1584.486 | $SF_6$ switchgear by specifying a maximum leak rate five times more stringent for 36kV and below, and twice as stringent for higher voltages' | 1390.044 | | | 2.923 | reduction of $SF_6$ over RIIO-ED2 and 2262 kg of $SF_6$ (51590 $tCO_2e$) will avoid being added to the network. | |
| | Decarbonising our network and asset - Scope 2 emissions - Office and depot refurbishment | SPD | 3519214.83 | 3409532.61 | 'Monitor and reduce energy used within our substations, invest in lower carbon buildings and reduce energy use in existing buildings' | 2867530.11 | 2028 | Energy Consumption (kwh) | 4.350 | Energy consumption across offices, depots, and substations will be reduced by at least 15.2 GWh over RIIO-ED2 | Section 6.14 |
| | | SPM | 6140830.00 | 4684637.70 | | 923235.73 | | | 4.100 | | |
| | Decarbonising our network and assets - Scope 2 emissions - Substation building refurbishment | SPD | 17764656.00 | 17813549.00 | Monitor and reduce energy used within our substations, invest in lower carbon buildings and reduce energy use in existing buildings' | 17271546.50 | 2028 | Energy Consumption (kwh) | 0.488 | | Section 6.14 |
| | | SPM | 12032680.00 | 12074456.00 | | 11468564.23 | | | 0.488 | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | Decarbonising our network and assets - Scope 2 emissions - Losses strategy. | SPD | 564796.18 | 282099.40 | 'Install lower loss transformers to reduce losses by 50% at more than 1,100 of our secondary substations' | 234149.17 | 2028 | Emissions from Losses ($tCO_2e$) | 9.954 | 6764 $tCO_2e$ of emissions via losses will be avoided over RIIO-ED2 | Section 6.15 & Annex 4A.8 Losses Strategy |
| | | SPM | 470971.61 | 242691.12 | | 185823.61 | | | 3.262 | | |
| | Decarbonising our network and assets - Scope 3: Business Transport | SPD | 1489.16 | 406.81 | 'Utilise low carbon alternatives to travel, through the use of technology and smarter ways of thinking' | 910.91 | 2028 | Emissions from Business Travel ($tCO_2e$) | - | 580 $tCO_2e$ of emissions will be avoided during RIIO-ED2 | Section 6.16 |
| | | SPM | 928.31 | 437.05 | | 919.21 | | | - | | |
| | Decarbonising our network and assets - Scope 3: Embodied Carbon (We will create a new role in RIIO-ED2 to drive reduction of scope 3 emissions) | Central role covering SPD and SPM | N/a | N/a | New for RIIO-ED2 | 100000.00 | 2028 | $tCO_2e$ Avoided | 0.375 | 100,000 $tCO_2e$ will be avoided over RIIO-ED2 | Section 6.17 |
| **Preventing Oil Pollution** | Reducing our environmental impacts - Preventing Oil Pollution | SPD | 3402.00 | 7272.00 | 'Install oil containment around all new and high-risk plant containing high volumes of oil' | 3071.50 | 2028 | Total Oil Leakage (l) | 9.421 | 4,400 litres of oil spillage will be avoided over RIIO-ED2 | Section 7.6 |
| | | SPM | 13600.00 | 2120.00 | | 322.00 | | | 4.638 | | |

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| **Fluid-filled cables** | Reducing our Network's Environmental Impacts - Leakage from Fluid Filled Cables - Fluid filled cable replacement | SPM | 13600.00 | 2067.00 | 'Reduce oil leaks by 50% through replacement of poorly performing 132 kV cable in SPM' | 322.00 | Total by End of RIIO-ED2 | Total Volume of Oil Leakage (l) | 15.782 | 3490 litres of oil spillage will be avoided over RIIO-ED2 | Section 7.7 |
| **PCBs** | Reducing our environmental impacts - Preventing Pollution - Management of Persistent Organic Pollutants (POPs) - Polychlorinated Biphenyls (PCBs) - Persistent organic pollutant remedial asset changes | SPD | n/a | n/a | New for RIIO-ED2 | 5018.00 | Total by End of ED2 | Number of Asset Changes | 23.500 | Ensures that SPEN will comply with legislation by eliminating PCBs on the network | Section 7.8 |
| | | SPM | n/a | n/a | | 8380.00 | | | 32.333 | | |
| **PCBs** | Reducing our environmental impacts - Preventing Pollution - Management of Persistent Organic Pollutants (POPs) - Polychlorinated Biphenyls (PCBs) - Persistent organic pollutant oil testing | SPD | n/a | n/a | New for RIIO-ED2 | 525.00 | Total by End of ED2 | Number of Oil Changes | 0.015 | | Section 7.8 |
| | | SPM | n/a | n/a | | 1084.00 | | | 0.030 | | |

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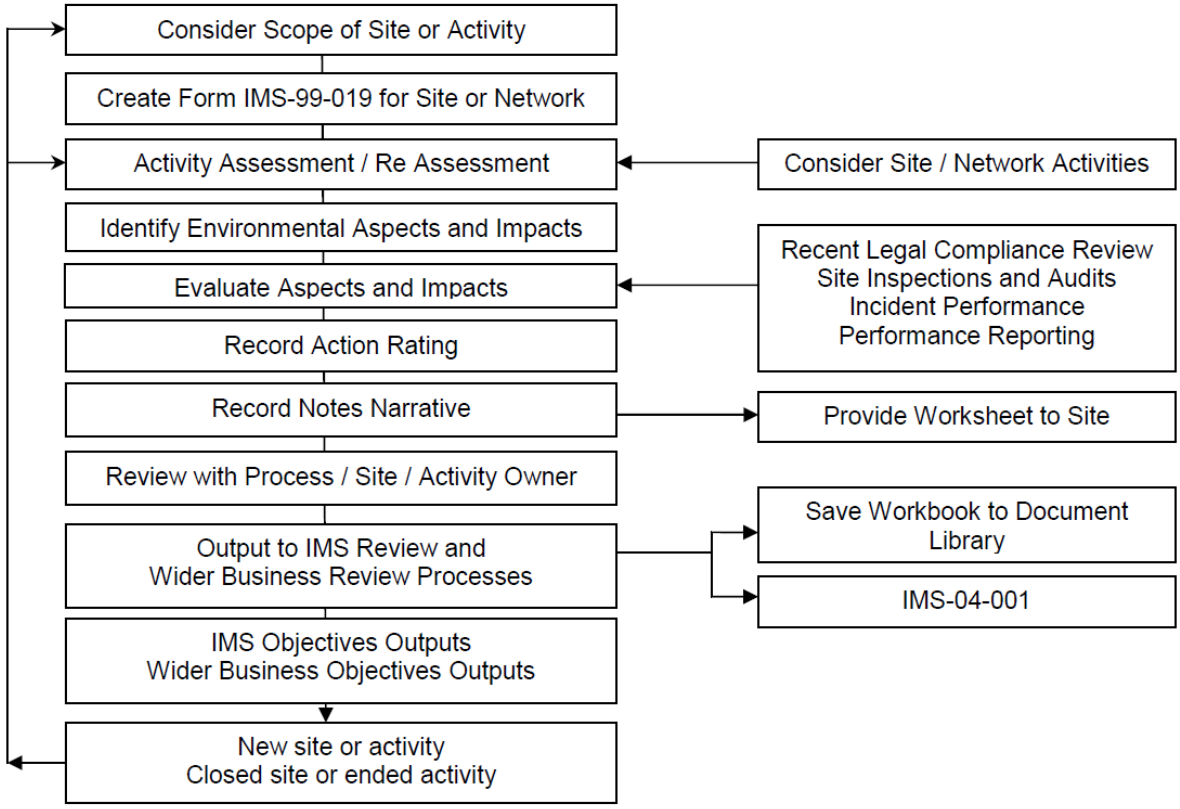
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Noise pollution** | Reducing our environmental impacts - Preventing Pollution - Noise pollution | SPD | 0.00 | 7.00 | - | 15.00 | Total by End of ED2 | Number of Interventions | 0.847 | Reduce potential disruption to the public from noise from infrastructure | Section 7.9 |
| | | SPM | 0.00 | 19.00 | - | 15.00 | | | 0.847 | | |
| **Biodiversity and Natural Capital** | Reducing our Network's Environmental Impacts - Land and Biodiversity Protection and Improvement | SPD | n/a | n/a | New for RIIO-ED2 | 194.44 | 2028 | Number of Biodiversity units created | 2.917 | | Section 7.10 |
| | | SPM | n/a | n/a | | 305.56 | | | 4.583 | | |
| | Reducing our Network's Environmental Impacts - Land and Biodiversity Protection and Improvements. | SPD | n/a | n/a | New for RIIO-ED2 | 9.72 | 2028 | Area of non-op land enhanced (ha) | 0.194 | | Section 7.10 |
| | | SPM | n/a | n/a | | 15.28 | | | 0.306 | | |
| **Visual Amenity** | Reducing our environmental impacts - Enhancing visual amenity | SPD | 0.00 | 0.16 | 'Underground 85 km of Overhead Lines in Areas of Outstanding Natural Beauty' | 15.00 | End of ED2 | Total km of OHL Undergrounded | 1.906 | | Section 7.11 |
| | | SPM | 0.00 | 14.36 | | 20.00 | | | 2.745 | | |
| **Resource use/waste** | Reducing our Network's Environmental | SPD | 63.705% | 89.327% | 'Divert 95% of waste from landfill by 2023' | 98.571% | 2028 | % of Waste Recycled | 0.030 | | Section 7.12 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Impacts - Sustainable Resource Use and Waste Reduction. | SPM | 99.258% | 99.014% | | 99.718% | | | 0.030 | | |

# Appendix C: Environmental aspects and Impacts (A&I) assessment process and SPD and SPM A&I REGISTERS

The approach to identify the significant environmental impacts associated with SP Energy Networks activities is essentially a risk assessment. The process is detailed in our Environmental Aspects and Impacts Assessment Procedure, IMS-04-011 A&I Assessments Procedure, and is summarised below:

The flow chart below has been copied from our procedure for identifying significant Aspects and Impacts and shows the high-level process followed:




SP Energy Networks annually assesses its' operational sites in line with the Environmental Aspects and Impacts Assessment Procedure and document the results in Aspects and Impacts Workbooks (referenced IMS-99-019 in the above process flow). The Aspects and Impacts Workbook is pre-populated with common SP Energy Networks activities and their associated aspects and impacts as listed here (but new ones can be added as required):

1. Use of electricity
2. Use of liquid and gaseous fuels
3. Transport of materials, equipment and people to, from and between sites
4. Production, storage and disposal of waste
5. Fugitive emissions of gasses to air
6. Fugitive emissions of polluting solids or liquids to land and water
7. Wildlife and biodiversity

8. Climate and weather effects
9. Use of raw materials and natural resources
10. Visual impact
11. Noise and vibration
12. Restricted harmful substances
13. Competence
14. Design and Procurement of Equipment, Materials, Works, and Services
15. Customers and other third-party effects impact and influence on networks operation.

The annual review allows SP Energy Networks to include any changes that have taken place at the site/business area, to identify any related new Aspects (and associated Impacts) and to take out any previously identified Aspects if they are no longer present.

The Significance of the environmental impact is assessed using a scoring system built into the workbook and detailed in the Environmental Aspects and Impacts Assessment Procedure:

A. Likelihood of Consequence Occurring (**LH**) - Score 0 to 5
B. Severity of Potential Environmental Impact (**SE**) - Score 0 to 5
C. Legal Compliance (**LE**) – Score 0 to 5
D. Stakeholder Interest (**SI**) - Score 0 to 10
E. Control Effectiveness (**CE**) - Score 0% to 100%

Elements A to E will be assessed awarding an appropriate score to each element, utilising the Scoring Matrix included in IMS-99-019.

**Total Score = LH x SE x LE + SI**

**Residual Score = Total Score – (Total Score x CE)**

Residual Score will be classified as follows:

| | |
|---|---|
| **0 - 19.9** | Low significance (No Action Required) |
| **20 - 39.9** | Medium significance (Consider Action and Monitor Performance) |
| **>40** | High significance (Action is Required via Agreed Programme) |

In-built conditional formatting in green, amber and red automatically indicates significance grading.

The Residual Score thresholds identified above are subject to annual review as part of the continual improvement process.

An initial risk score is calculated by entering scores A to D above in the workbook. Consideration is then given to the Controls that are in place (and documented in the A&I Workbook) and their effectiveness, with a score being attributed (E above). The final (residual) risk score is then calculated by the workbook with a traffic light system deployed to show the Impact significance assessment clearly.

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Use and losses of electricity | Planning, Design, Procurement Construction, Operation and Maintenance and Disposal of Network Assets. | Substations, Control Centres and Other Buildings, Heating, Ventilation, Lighting and Control Systems | 5 | 3 | 4 | 0 | 60 | **Use of Electricity -** Energy use checks in site inspections. ESOS related energy audits. Compliance with CRC and RRP reporting requirements. Building standards documents: **SUB-03-017, 025, 026, 034**. **ASSET-01-021** Asset Inspection and Condition Assessment Policy Substation inspections, staff awareness campaigns (energy efficiency posters). **Losses** - Implementation of losses strategies via network innovation projects, BCF reporting and compliance with RIIO-ED1 improvement and reporting requirements. **Transmission Losses Strategy**. Installation of lower loss (eco-design) transformers. | 20% | 48.00 | |
| Use of liquid and gaseous fuels | Planning, Design, Procurement, Construction, Operation, Maintenance and Disposal of Plant and Equipment | All mobile and fixed plant including generators, fuel tanks, excavators, pumps, breakers, grinders, dumper trucks, tractors | 5 | 3 | 3 | 0 | 45 | Containment in regulatory compliant storage systems.Responsible use by competent staff. BCF Reporting meeting RRP RIGS and CSR requirements. Employee awareness campaigns (energy efficiency posters). Project and contractor inspections.Procedures:ENV-04-017 Transport ProcedureHandS Handbook, Environment HandbookENV-04-006 Environmental Training Procedure SMS-04-021 Contractors' Health, Safety and Environmental Standard | 40% | 27.00 | |
| Transport of materials, equipment and people to, from and between worksites. | Selection, Procurement, Operation, Maintenance and Disposal of Trucks, Vans, Cars | Vehicles - Vans, trucks, cars, trains, aircraft | 5 | 3 | 3 | 0 | 45 | Containment in regulatory compliant storage systems.Responsible use by competent staff. BCF Reporting meeting RRP RIGS and CSR requirements. Employee awareness campaigns (energy efficiency posters). Project and contractor inspections.Procedures:ENV-04-017 Transport ProcedureHandS Handbook, Environment HandbookENV-04-006 Environmental Training Procedure SMS-04-021 Contractors' Health, Safety and Environmental Standard | 40% | 27.00 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Production of waste | Construction, Operation, Maintenance, Demolition and Disposal of Materials and Equipment for the Network Use. | All assets | 5 | 4 | 4 | 5 | 85 | SPEN Staff - Application of the waste hierarchy to design out waste, control and containment of waste at the point of production, during transport, temporary storage and downstream disposal. Maximisation of avoidance, segregation, recovery, re use, recycling. Compliance with requirements of waste related permits, licenses, consents, registrations, authorisations and records.Compliance with Eco Design regulations relating to transformers.Inclusion of contractual conditions in contracts for service providers. Contractors - Adherence to all contractual requirements including requirements, Contractor and project inspections.Procedures:ENV 04 012 Waste Management ProcedureSMS-04-021 Contractors' Health, Safety and Environmental StandardHandS Handbook, Environment Handbook. | 20% | 68.00 | |
| Fugitive emissions of gasses to air | Equipment design, installation, operation, maintenance and disposal. | $SF_6$ Switchgear and some air conditioning plant | 4 | 5 | 4 | 5 | 85 | Design and selection of best practice low loss equipment, development and implementation of engineering standards for equipment management. Monitoring and reporting of loss volumes in line within regulatory requirements. Regulatory compliant levels of awareness, (specialist) training and competence. Emergency response to disruptive failures containing hazardous substances. Compliance with engineering standards for equipment installation, maintenance and disposal. Contractors - Adherence to all contractual requirements including requirements.Contractor and project inspections.Guidance and Procedures: SWG-14-002 $SF_6$ Gas Switchgear Equipmentswg-14-006 Precautions When Working with $SF_6$ GasTRANS-04-003 Transmission Operations $SF_6$ Gas Usage and Recording ENV-04-013 Materials Management ENV-04-014 Environmental Incident Reporting. SMS-04-021 Contractors' Health, Safety and Environmental StandardHandS Handbook, Environment Handbook. | 20% | 68.00 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Fugitive emissions of polluting solids or liquids to land and water. | Design, procurement, planning, construction, operation and maintenance. | Construction equipment, staff and contractors, generators, fluid filled cables, transformers and auxiliary equipment, switchgear, tanks, pumps, material stores and drainage systems. | 4 | 4 | 4 | 5 | 69 | Design and selection of equipment, development and implementation of engineering standards for equipment management.Compliance with legislative requirements. Monitoring and reporting of reportable incidents in line within regulatory requirements. Regulatory compliant levels of awareness, training and competence. Emergency response to incidents including disruptive failures and events containing polluting substances. Contractors - Adherence to all contractual requirements including requirements, Contractor and project inspections.Procedures and Guidance:Substation design standards: SUB-03-017, 025, 026, 034. ENV-04-013 Materials Management ENV 04 012 Waste Management ProcedureENV-04-014 Environmental Incident Reporting. SMS-04-021 Contractors' Health, Safety and Environmental StandardHandS Handbook, Environment Handbook. | 30% | 48.30 | |
| Wildlife and biodiversity | Network design, planning, construction, operation, maintenance, and demolition. | Overhead lines, underground cables, subsea cables, substations. | 4 | 4 | 4 | 5 | 69 | Effective identification of wildlife constraints during asset construction design and planning. Undertaking environmental surveys and working under conditions of required licenses for works to minimise impacts. Working with stakeholder wildlife groups to undertake enhancements beyond legal requirements to provide improvements.Use of suitably qualified staff/consultants to undertake activities where required. Competence/Awareness of staff including Environmental Expresses and other communications. Procedures and Guidance:TRANS-04-004 Transmission Projects, Development, Planning and Delivery ProcessTRANS-11-009 to 012ENV-04-006 Environmental Training ProcedureSMS-04-021 Contractors' Health, Safety and Environmental RequirementsHandS Handbook, Environment Handbook. | 20% | 55.20 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Climate and weather effects | Network planning, design, construction, operation, maintenance and replacement, stakeholder and regulator communications and co-ordination. | All assets | 3 | 3 | 3 | 5 | 32 | Climate change risk assessment for storms, temperature extremes and floods. Resilient designs and secondary protective features, liaison with external emergency planning and response agencies. Network emergency planning and response exercises, staff training and extension of resources.Provision of standby generators. Procedures and Guidance:Design Specifications: SUB-03-017, 018, 025, 026, 034. Flood Response Procedures: EMP-04-104, EMP-04-121SMS-04-021 Contractors' Health, Safety and Environmental RequirementsHandS Handbook, Environment Handbook. | 40% | 19.20 | |
| Use of natural resources (direct control) | Planning, Design, Procurement Construction, Operation and Maintenance and Disposal of Network Assets. | All assets | 5 | 4 | 2 | 0 | 40 | Environment Procedures:ENV-04-013 Materials ManagementENV 04 012 Waste Management ProcedureHandS Handbook, Environment Handbook. Design standards: SUB-03-017, 025, 026, 034. Overhead line manual, ohl-04-018, OHL-17-001.SMS-04-021 Contractors' Health, Safety and Environmental Requirements | 20% | 32.00 | |
| Visual impact of network assets | Design, Planning, Construction, Operation and Maintenance. | Overhead lines, substations, other buildings masts and structures. | 4 | 2 | 2 | 0 | 16 | Consideration in design and planning, stakeholder consultations.Asset maintenance regimes, customer complaint management procedures. Development and provision of non-standard solutions for problem sites and regulatory agreements regarding undergrounding of assets in sensitive locations. Implementation of Visual Amenity Policy/Strategy.Procedures:TRANS-04-004 Transmission Projects, Development, Planning and Delivery Process, TRANS-11-009 to 012. Contractors - Contract requirements, reporting requirements, SMS-04-021. HandS Handbook, Environment Handbook. Visual Amenity Policy/Strategy. | 40% | 9.60 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Noise and vibration | Design, Planning, Construction, Demolition, Operation and Maintenance. | Construction equipment, staff and contractors, transformers and auxiliary equipment, switchgear, pumps and fans, OHL insulators. | 3 | 2 | 3 | 0 | 18 | Consideration in design and planning, stakeholder consultations, Asset maintenance regimesCompliance with planning consent requirementsCustomer complaint management procedures. Development and provision of non-standard solutions for problem sites. Response to complaints and regulatory notices leading to investigation and site-specific survey. Inclusion in site specific risk assessment for construction works and adoption of localised controls. Contractor and project inspections.Procedures and Guidance:Substation and transformer design standards: SUB-03-017, 025, 026, 034. TRAN-03-020, 021, 022, 024. Contractors - SMS-04-021 Contractors' Health, Safety and Environmental RequirementsHandS Handbook, Environment Handbook. Contractor and project inspections. | 70% | 5.40 | |
| Electric and magnetic fields | Design, Planning, Construction, Operation and Maintenance. | Underground cables, overhead lines, transformers, switchgear, RF transmitters. | 4 | 4 | 3 | 0 | 48 | Compliance with public reference levels by the use of standard asset design and construction. Provision of response to public enquiries via customer call backs and surveys. Monitoring of regulatory developments and best practice via the ENA. Inclusion of the position response materials in planning statements. **Procedures:**ENV-04-011 Electric and Magnetic Fields (EMFs) Enquiries | 70% | 14.40 | |
| Restricted harmful substances | Design, Operation and Maintenance | Transformers, switchgear, wood poles and substations. | 3 | 4 | 4 | 5 | 53 | Surveys to identify PCB's and asbestos. Undertaking of isolation, identification, registration and removal programmes. Work with stakeholders to inform, educate and shape legislative requirements. Disposal in line with legislative requirements.Work with stakeholders to identify BAT alternatives. Procedures:ENV-04-003 Sustainability ReportingHandS Handbook, Environment Handbook. SMS-04-021 Contractors' Health, Safety and Environmental Requirements | 40% | 31.80 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Competence | Training, awareness and communications. | Staff and contractors | 3 | 4 | 4 | 5 | 53 | Environmental training needs assessment, training provision in line with company procedures.Inclusion in personal objectives. Environmental Expresses and other communications.HandS Handbook, Environment Handbook. Contractor and project inspections.Procedures and Guidance:ENV-04-006 Environmental Training ProcedureIMS-04-008 Training and Related Arrangements SMS-04-021 Contractors' Health, Safety and Environmental RequirementsHandS Handbook, Environment Handbook. | 20% | 42.40 | |
| Design, Manufacture, Distribution of Materials, Resources and Services. | Design, Manufacture, Distribution, Selection and Procurement, Construction, Operation, Maintenance and Disposals. | All Assets and Direct and Indirect Services | 4 | 3 | 3 | 0 | 36 | Undertaking of lifecycle assessment where cost effective. Inclusion of compliant standards in product / service specification. Support for development of low emission alternate products and services. Promotion of extension of asset lifecycle by effective maintenance, refurbishment and reuse. Inclusion of disposal hierarchy meeting or exceeding legislative in disposal contracts, effective internal waste segregation. Monitoring and reporting regarding scope 2 and 3 emissions. Undertaking innovation projects to develop new lower emission best practice. Contractor and project inspections. Supplier factory inspections.**Procedures and Guidance:**Projects - TRANS-04-004, TRANS-11-009 to 012. Environment Procedures - ENV-04-013 Materials Management Contractors - SMS-04-021 Contractors' Health, Safety and Environmental RequirementsContractor Management Improvement Programme. | 20% | 28.80 | |

| | SPM Network Activities SPEN (2020) | | Last Assessment Date: | | | | | 24/04/2020 | Assessed By: | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aspect** | **Activity Types** | **Asset Type(s)** | **Likelihood (L) (1 to 5)** | **Severity (S) (1 to 5)** | **Legal Risk (1 to 5)** | **Stakeholder Drivers SD (1 to 10)** | **Total Score (F4*G4*H4+I4)** | **Control Outline** | **Control Effectiveness (CE) (1 to 100)** | **Residual Score (J4) -(J4*N4)** | **Significance (Threshold x)** |
| Customers and other third-party effects impact and influence on networks operation. | Design, Planning, Construction, Operation, Customer Service, Maintenance and Disposal. | All Assets | 3 | 3 | 3 | 0 | 27 | Liaison and information exchange with customers and other parties adjacent to our network's assets. Site specific risk assessment and provision of non-standard controls where required. Use of planning consultation systems in consideration of developments adjacent to our networks. Asset inspection, maintenance, security and alarm and control systems. Exchange of network plans with other networks operators. Tight control of activities during outbreaks of agricultural and species diseases. **Procedures and Guidance:** Design standards: SUB-03-017, 025, 026, 034 ASSET-01-023 Substation Security PolicyENV-04-020 Bio Security Guidance Contractors - Contract requirements, SMS-04-021 | 70% | 8.10 | |

# Appendix D: RIIO-ED2 Engineering justification papers and cost benefit analyses used to inform the riio-ed2 environmental action plan

This Appendix details the RIIO-ED2 Engineering Justification Papers (EJPs), and the RIIO-ED2 Cost Benefit Analysis (CBA) submissions that were used to inform development of our RIIO-ED2 Environmental Action Plan. The use of EJPs and CBAs to inform our EAP meets requirement 3.30 of the Ofgem RIIO-ED2 Business Plan Guidance:

*"We expect that EAPs will draw together the direct carbon impacts claimed in any relevant Engineering Justification Papers (EJPs) and Cost Benefit Analysis (CBA) submissions (for example losses, Electric Vehicle fleet) and will include a list of all such submissions where:*
*• carbon reduction is the main driver of the proposal*
*• carbon reduction contributes to a substantial part of the benefits claimed by the projects."*

| EAP Section | RIIO-ED2 Engineering Justification Paper, Annex or Strategy Paper | RIIO-ED2 Cost Benefit Analysis |
|---|---|---|
| 6.10 Offsetting Strategy | ED2-NLR(A)-SPEN-005-ENV-EJP | |
| 6.11 Scope 1: Operational Transport | Annex 5A.1: Non-Operational Capex Expenditure<br>Annex 5A.1: Cost Assessment | |
| 6.12 Scope 1: Fugitive emissions ($SF_6$ and other Insulation and Interruptible Gases [IIG]) | ED2-NLR(A)-SPEN-002-SWG-EJP Primary Switchgear<br>ED2-NLR(A)-SPEN-001-SWGTX-EJP Secondary Substations<br>ED2-NLR(A)-SPEN-003-SWG-EJP EHV Switchgear<br>ED2-NLR(A)-SPM-006-SWG-EJP RVS 300 $SF_6$ 132kV Switching Isolator Modernisation<br>ED2-NLR(A)-SPM-007-SWG-EJP Lister Drive 132kV Switchgear Modernisation - Circuit Transfers<br>ED2-NLR(A)-SPEN-004-SWG-EJP - SF6 Primary (11/6.6kV) Switchgear Refurbishment<br>RIIO-ED2 IP0 Asset Management – EHV and HV Switchgear<br>Annex 4A.4: Network Asset Risk Strategy<br>Annex 4A.5: Network Performance Strategy<br>Annex 4A.10: Substations Switchgear; EHV to LV | ED2-NLR(A)-SPEN-002-SWG-CBA<br>ED2-NLR(A)-SPEN-001-SWGTX-CBA<br>ED2-NLR(A)-SPEN-003-SWG-CBA |
| 6.14 Scope 2: Buildings energy usage | ED2-NLR(A)-SPM-001-CIV-EJP Frodsham & Rainhill Grid Building Refurbishment<br>ED2-NLR(A)-SPEN-002-RES-EJP Civils<br>Annex 5A.1: Non-Operational Capex Expenditure<br>RIIO-ED2 IP0 Non-Asset Civils Condition Driven<br>RIIO-ED2 IP0 Non-Asset Flooding / Fire / Asbestos<br>Annex 4A.15: Condition Driven Civils & Flooding | ED2-NLR(A)-SPM-001-CIV-CBA |
| 6.15 Scope 2: Carbon Impact of Network Losses | ED2-NLR(A)-SPEN-004-ENV Losses<br>RIIO-ED2 Secondary Substations IP1<br>Annex 4A.4: Network Asset Risk Strategy<br>Annex 4A.5: Network Performance Strategy<br>Annex 4A.6: SPD DFES – Key findings – May 21 | ED2-NLR(A)-SPEN-004-ENV-CBA-EHV-Transformers<br>ED2-NLR(A)-SPEN-004-ENV-CBA-HV-Transformers |

| EAP Section | RIIO-ED2 Engineering Justification Paper, Annex or Strategy Paper | RIIO-ED2 Cost Benefit Analysis |
|---|---|---|
| | Annex 4A.6: SPD DFES – Main report – May 21<br>Annex 4A.6: SPM DFES – Key findings – May 21<br>Annex 4A.6: SPM DFES – Main report – May 21<br>Annex 4A.8: Losses Strategy<br>Annex 4A.12: Pilots and Light Current<br>Annex 4A.15: Condition Driven Civils & Flooding<br>Annex 4A.21: LV Network Monitoring Strategy | |
| 7.6 Preventing oil pollution | ED2-NLR(A)-SPEN-002-ENV-EJP Environmental - Oil Pollution<br>ED2-NLR(A)-SPM-001-TX-EJP - CV8 - Refurbishment No NARM | ED2-NLR(A)-SPEN-002-ENV-CBA |
| 7.7 Leakage from fluid filled cables | ED2-NLR(A)-SPM-001-UG-EJP Bootle Grid - Kirkby Grid 132kV Fluid Filled Cable Replacement<br>RIIO-ED2 IP0 LV, HV & EHV Cables<br>Annex 4A.4: Network Asset Risk Strategy<br>Annex 4A.5: Network Performance Strategy<br>Annex 4A.11: Cable Modernisation<br>Annex 4A.13: OHL and ESQCR | ED2-NLR(A)-SPM-001-UG-CBA |
| 7.8 Polychlorinated biphenyls (PCBs) | ED2-NLR(A)-SPEN-003-ENV-EJP Management of Persistent Organic Pollutants (POPs) - Polychlorinated Biphenyls (PCBs) | ED2-NLR(A)-SPEN-003-ENV-CBA |
| 7.9 Management of noise impact | ED2-NLR(A)-SPEN-001-ENV-EJP Environmental - Noise Pollution | N/A - as activity is regulatory/legal requirement with ongoing programme |
| 7.11 Enhancing visual amenity | ED2-NLR(O)-SPEN-001-ENV-EJP SPEN Visual Amenity<br>RIIO-ED2 IP0 LV OHL<br>Annex 4A.4: Network Asset Risk Strategy<br>Annex 4A.5: Network Performance Strategy<br>Annex 4A.13: OHL and ESQCR | N/A - incentivised |

# Appendix E: Environmental Commitments mapped to Ofgem Baseline expectations

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| Achieving the sustainability step-change | • DNOs will be required to embed environmental considerations into their business plans through an Environmental Action Plan (EAP) and to publish an Annual Environmental Report (AER). | **We will embed environmental sustainability considerations in our business processes whilst maintaining and continually improving our ISO14001 certified Environmental Management System. This will enable us to achieve 'beyond compliance' environmental performance and our sustainability goals.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | | **We will continue to provide transparent reporting of our environmental and sustainability performance by publishing an annual report of our progress against all environmental and sustainability commitments – in line with metrics and a format developed in collaboration with the other DNOs.** | **Continuing business as usual – Ofgem, Operators** | Throughout RIIO-ED2 |
| | | **We will improve the quality of environmental data collected and analysed at all stages of the asset lifecycle, investing in enhanced IT systems and formalising data sharing collaborations with key stakeholders.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | | **We will continue to ensure that our staff, contractors and suppliers have the skills and knowledge to allow us and our supply chain to move beyond compliance and achieve our Sustainability Goals, by identifying and ensuring delivery of appropriate environmental training.** | **External Stakeholders - Supply Chain** | Throughout RIIO-ED2 |
| | | We will embed a process for Initial Environmental and Sustainability Reviews (IESRs) for all relevant projects, to identify potential environmental issues and opportunities at the earliest stage. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers | By 2023 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| **Supply chain sustainability** | Ÿ Adopt high standards of environmental management in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs<br>Ÿ Adopt target of more than 80% of suppliers (by value) meeting code in RIIO-ED2.<br>Ÿ Commit to reporting on actual percentage of suppliers (by value) meeting code. | **We will further enhance environmental sustainability standards and performance metrics in our contracts by 2023 and will collaborate with our supply chain to target more than 80% of RIIO-ED2 suppliers (by value) meeting these standards.** | **External Stakeholders - Ofgem, Supply Chain, Environmental Regulators, Operators** | By 2028 |
| | | We will increase consideration of environmental sustainability in our procurement processes in line with ISO20400 Sustainable Procurement Standard, including a carbon metric as a minimum. | External Stakeholders - Environmental Regulators, Supply Chain, User Group, Operators | By 2023 |
| | | We will continue to be a Supply Chain Sustainability School Partner, requiring contractors and suppliers for all new contracts to become members and undertake relevant sustainability and environmental training. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| | | We will engage with suppliers early in the development of projects to enable them to propose environmental improvements at concept and design stages. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2025 |
| | | We will engage with suppliers throughout the duration of their contracts to continue to reduce impacts and optimise benefits. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| **Decarbonising our network and assets – strategic commitments** | Business carbon footprint (BCF)<br>Ÿ Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.<br>Ÿ Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.<br>Ÿ Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero.<br>Ÿ Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions. | **We will deliver efficient and economic actions to reduce our scope 1, 2 & 3 business carbon footprint by 67.2% by 2035 from a 2018/19 baseline, in line with validated Science-Based Targets aligned to a 1.5 c pathway.** | **External Stakeholders - Ofgem, Operators** | Throughout RIIO-ED2 |
| | | **We will minimise our carbon footprint to achieve Net Zero carbon by 2035.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | | **We will achieve Carbon Neutrality by 2023 for our Scope 1 & 2 business carbon footprint excluding Losses.** | **External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | | We will align our offsetting approach to the Oxford Principles for Net Zero Aligned Carbon Offsetting, ensuring high probability of 'Additionality' and low probability of 'Reversibility', delivering additional environmental and social benefits where practical. | External Stakeholders - Environmental Regulators, Sustainability Working Group, Expert Reviewers, Supply Chain | |
| | | We will identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards our carbon reduction targets. | External Stakeholders - Ofgem, Operators | By 2023 |
| | | We will implement processes for carbon management in relevant business activities, aligned with PAS 2080 Carbon Management in Infrastructure. | External Stakeholders - Supply Chain, Operators | By 2025 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| Scope 1 Emissions | Business carbon footprint (BCF)<br>Ÿ Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.<br>Ÿ Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.<br>Ÿ Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero.<br>Ÿ Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions. | **We will decarbonise our operational fleet by 2030, replacing 100% (over 800) of our cars and vans with electric alternatives in line with the Iberdrola EV100 commitment and will seek to further accelerate this to 2028.** | **External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers** | By 2028 |
| | | We will install electric vehicle charging infrastructure for our operational fleet at our sites | External Stakeholders - Sustainability Stakeholder Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption. | Continuing business as usual | Throughout RIIO-ED2 |
| | Sulphur Hexafluoride ($SF_6$)<br>Ÿ Commit to implementing a strategy in RIIO-ED2 to manage $SF_6$ on their network. This should include economic and efficient actions to reduce leakage rates and where appropriate, economic and efficient $SF_6$ asset replacement.<br>Ÿ Adopt a target for $SF_6$ leakage reduction.<br>Ÿ Commit to reporting on total $SF_6$ bank and leakage reduction rates using a | **We will reduce our $SF_6$ leakage by 10% over the RIIO-ED2 period compared to RIIO-ED1.** | **External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | | We will use alternatives to $SF_6$ insulating gas for all new circuit breakers, Ring Main Units and Gas Insulated Switchgear installations at all voltages, where there are technically feasible market-ready solutions. | External Stakeholders - $SF_6$ Strategy consultation | Throughout RIIO-ED2 |
| | | We commit to reporting on total $SF_6$ Bank and leakage reduction rates using a common Distribution Network Operator (DNO) methodology. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | By 2023 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | common DNO methodology. | We will continue to carefully manage our assets in line with our $SF_6$ Strategy to minimise $SF_6$ leakage, repair leaks quickly, and where this is not possible, replace the asset before its anticipated end of life. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will continue to require manufacturers to provide equipment with a $SF_6$ leakage rate which is half that of the internationally recognised standards, where technically viable. | Continuing Business as usual, External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will drive the development and adoption of $SF_6$ – free technologies, collaborating with supply chain and industry peers and piloting new technologies where technically viable. | External Stakeholders – Environmental Regulators, Operators, $SF_6$ Strategy consultation, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | Business carbon footprint (BCF)<br>Ÿ Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.<br>Ÿ Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.<br>Ÿ Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero.<br>Ÿ Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions. | **We will analyse our generator use and set targets for reduction in carbon emissions to be achieved by end of RIIO-ED2.** | **External Stakeholders - Supply Chain, Operators, Expert Reviewers** | By 2023 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| Scope 2 Emissions | Business carbon footprint (BCF)<br>Ÿ Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.<br>Ÿ Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.<br>Ÿ Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero.<br>Ÿ Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions. | **We will continue to purchase green electricity through a 100% UK-based renewable energy tariff backed by Power Purchase Agreements (PPA) for all our buildings. Beyond this, we will reduce our buildings and substations energy consumption by a minimum of 15.2GWh (8%) over the RIIO-ED2 period.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | | We will reduce energy consumption by a total of 3.4GWh at 650 of our primary substations by applying our recently updated civil specifications (including improvements to heating, lighting and insulation). | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will refurbish 8 of our strategic office and depot sites, implementing energy efficiency measures to achieve BREEAM ratings of 'excellent' for new build and 'very good' for refurbishments, to reduce consumption by 11.7GWh over the RIIO-ED2 period. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will pilot and monitor renewable generation at substation and/or depot sites to offset building energy demand. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | By 2028 |
| | Losses<br>Ÿ Develop and commit to implementing a strategy to efficiently manage both technical and non-technical losses on the DNO's network over the long term. This should include specific actions and performance measures to track | **In RIIO-ED2, we will continue to implement our Losses Strategy to avoid an estimated 36 GWh of network losses, thereby limiting losses to a lower level than would otherwise be the case.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |
| | | We will continue to lead the Energy Networks Association Technical Losses Group to improve industry understanding of losses. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | the impact of actions in RIIO-ED2.<br>Ÿ Commit to reporting on the progress of implementing the losses strategy and associated performance measures.<br>Ÿ Contribute to the evidence base on the proportion of losses that network companies can influence/control. | We will continue to drive the development and understanding of losses by contributing to the evidence base on the proportion of losses that network companies can influence/control, collaborating with supply chain and industry peers and piloting new technology such as the MAAV. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will continue to consider and minimise network losses throughout all design and connections activities. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will pro-actively target high-loss legacy assets for replacement with modern low-loss alternatives. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | By 2028 |
| | | We will report on the progress of implementing the losses strategy and associated performance measures. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will use a minimum underground mains cable size of 300mm2 to further reduce losses, where it is cost effective and appropriate to do so. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will continue to use a minimum pole mounted transformer size of 25kVA to further reduce losses on our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| **Scope 3 Emissions** | Business carbon footprint (BCF)<br>Ÿ Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20XX without relying on international GHG offsetting, that is in line with Net Zero.<br>Ÿ Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2.<br>Ÿ Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science- | **We will continue to implement our 2021 Business Travel Policy to reduce business travel emissions by at least 580** $tCO_2e$ **during RIIO-ED2.** | **Continuing Business as usual, External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | Throughout RIIO-ED2 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | based target and Net Zero.<br>Ÿ Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions. | | | |
| | Embodied carbon<br>Ÿ Commit to monitoring and reporting on embodied carbon in new projects.<br>Ÿ Commit to collaborating with DNO's supply chain on addressing challenges to reduce embodied carbon in the network.<br>Ÿ Commit to establishing baseline and a target to reduce embodied carbon on new projects during RIIO-ED2 | **We will require strategic suppliers to set Science-Based Targets within 5 years, aiming for 80% of our supply chain by value.** | **External Stakeholders - Supply Chain, Operators** | by 2028 |
| | | We will create a new role in RIIO-ED2 to drive actual reduction in Scope 3 carbon emissions in our supply chain by 100k $tCO_2e$? | External Stakeholders - Supply Chain, Operators | By 2023 |
| | | We will introduce a measurement tool for embodied carbon and other capital carbon emissions to establish a baseline and a set a target to reduce carbon on new projects during RIIO-ED2. | External Stakeholders - Supply Chain, Operators | By 2023 |
| | | We will work collaboratively with our stakeholders, including the other Distribution and Transmission Network Operators, throughout RIIO-ED2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| | | We will monitor and report on embodied carbon in new projects. | External Stakeholders - Supply Chain, Operators | Throughout RIIO-ED2 |
| **Preventing pollution** | Fluid-filled cables<br>Ÿ Adopt a target for reductions in the volume of fluid (oil) used to top up cables.<br>Noise pollution<br>Ÿ Commit to reporting on actions taken to reduce noise pollution.<br>Polychlorinated Biphenyls (PCBs)<br>Ÿ Commit to reporting on the volume of PCB-contaminated equipment on the network. | **We will continue to target zero environmental regulatory interventions and notifiable breaches.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | | **We will implement Pollution Prevention Plans at 100% of our RIIO-ED2 132kV projects.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability** | Throughout RIIO-ED2 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | | | **Working Group, Expert Reviewers** | |
| | | **We will reduce the volume of fluid (oil) used to top up our pressurised cables by around 3,490 litres (10%) by replacing 19.429km of our leakiest fluid filled cable.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | | **We will continue to proactively minimise the impacts of noise resulting from the construction, maintenance and operation of our electrical infrastructure and take timely action to rectify noise complaints from our plant and sites.** | **Continuing business as usual** | Throughout RIIO-ED2 |
| | | **We will eliminate PCBs from our network by the end of 2025, in line with legislation and the risk-based industry approach agreed with the environmental regulators.** | **Continuing business as usual** | By end of 2025 |
| | | **We will use low carbon alternatives to concrete bunding for our RIIO-ED2 retrofit projects where technically feasible.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | By 2028 |
| | | We will adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will continue to report on noise pollution incidents and actions taken to reduce them. | Continuing business as usual | Throughout RIIO-ED2 |
| | | We will report on volumes of PCB contaminated equipment on and removed from the network. | Continuing business as usual | Throughout RIIO-ED2 |
| | | We will upgrade existing or install new bunds at 203 of our Primary and Grid transformers as part of our RIIO-ED2 programme of oil mitigation measures, where adequate bunding is not in place. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will implement a programme to identify, risk assess and address high risk legacy land contamination. | Continuing business as usual | Throughout RIIO-ED2 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | | We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles. | External Stakeholders - Supply Chain, Operators, Expert Reviewers | Throughout RIIO-ED2 |
| **Land and biodiversity improvement** | Biodiversity/natural capital<br>Ÿ Adopt appropriate tool to assess net changes in natural capital from different options for new connections and network projects.<br>Ÿ Adopt appropriate tool to monitor the provision of ecosystem services from network sites and report annually. | **We will deliver 10% enhancement of biodiversity on 25 hectares across our existing network, on our non-operational land and existing linear infrastructure through collaboration with landowners, communities and local wildlife groups** | **External Stakeholders - Environmental Regulators, Ofgem, Operators** | By 2028 |
| | | **We will deliver 500 biodiversity units across our RIIO-ED2 work programme to not only fully mitigate our impacts but enhance local biodiversity.** | **External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers** | by 2028 |
| | | We will implement a Biodiversity & Natural Capital Action Plan process to guide local operation implementation with the aim of increasing environmental value across our network. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| | | We will collaborate with stakeholders, including other DNOs, throughout RIIO-ED2 to develop and pilot robust methodologies and tools for delivering Biodiversity and Natural Capital assessment. | External Stakeholders - Environmental Regulators, Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will engage with UK and devolved governments with the aim of influencing biodiversity and natural capital policy to facilitate delivery of our biodiversity and natural capital goals. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | Throughout RIIO-ED2 |
| | | We will identify, and subsequently monitor and annually report, metrics to track the levels of biodiversity and value of natural capital and ecosystem services on our sites and the achievement of our targets. | External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers | By 2023 |
| | | We will form strategic partnerships with local ecological protection organisations to support our activities to improve habitats for wildlife and to support people's access to nature. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |
| **Visual amenity** | • To retain the RIIO-ED1 undergrounding allowance in Areas of Outstanding Natural Beauty and National Parks.<br>• Maintain the RIIO-ED1 methodology | **We will remove 35km of overhead lines in Areas of Outstanding Natural Beauty National Parks, and National scenic areas.** | **External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators** | By 2028 |

| Header and drivers | Ofgem Baseline Expectation | Description of commitment/Deliverable | Driven By | Timeline |
|---|---|---|---|---|
| | for calculating the funding pot. | | | |
| **Sustainable resource use and waste reduction** | Resource use and waste<br>Ÿ Update procurement processes to embed Circular Economy principles.<br>Ÿ Adopt targets for:<br>o Zero waste to landfill by 2030.<br>o Recycled and reused materials as a percentage of total materials by 2030.<br>Ÿ Commit to reporting on actual waste to landfill, recycling and reuse as a percentage of total | **We will divert 100% of our waste from landfill by 2030, excluding compliance waste.** | **External Stakeholders - Sustainability Working Group, Circular Economy Forum** | Throughout RIIO-ED2 |
| | | **We will establish a baseline and targets for waste reduction per £1m of total annual expenditure, to be achieved by the end of RIIO-ED2 and 2030 in line with our zero waste to landfill date** | **External Stakeholders - Environmental Regulators, Customer Engagement Group Operators, Sustainability Working Group, Expert Reviewers** | By 2023 |
| | | We will continue to collaborate with environmental/ waste regulators, other infrastructure companies and our supply chain to drive sustainable resource use and waste minimisation in order to meet our RIIO-ED2 and Sustainability Goals. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| | | We will implement metrics to measure the sustainability of our resource use, with the aim of establishing a baseline to enable target setting during RIIO-ED2. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2025 |
| | | We will continue to report on actual waste to landfill, recycling and reuse as a percentage of total and we will commence reporting on all new waste and resource use metrics. | Continuing business as usual, External Stakeholders - Environmental Regulators, Circular Economy Forum, Sustainability Working Group | Throughout RIIO-ED2 |
| | | We will set targets for recycled & reused materials as a % of total input materials to be achieved by end RIIO-ED2 and 2030. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | By 2023 |
| | | We will follow an appropriate, recognised standard such as BS8001 to embed circular economy principles where relevant throughout our business processes. | External Stakeholders - Sustainability Working Group, Environmental Regulators, Ofgem, Operators | Throughout RIIO-ED2 |
| | | We will continue to collaborate with other DNOs and our supply chain to develop innovative alternatives to creosote wood poles. | | |

# Appendix F: Stakeholder Engagement Strategy

## Engagement Strategy and Planning

### Mission statement and principles

Developed in 2013 and updated regularly since then, the SP Energy Networks Stakeholder Engagement Strategy provides principles, approach and supporting tools and processes to deliver against the following compelling mission statement:

*'Our engagement places our customers at the centre of what we do. With a tailored and locally focused approach, we will prioritise the wants and needs of all in a consistent manner across our business. We will deliver safe, reliable services, sustainable value, and a better future, quicker.'*

Our strategy embeds, at its core, the four principles of the AA1000 stakeholder engagement standard – inclusivity, materiality, responsiveness and impact. These ensure we engage at all levels, with a specific focus on those who are hard to reach; determine the most relevant and significant issues for us and our stakeholders; act on the outcomes of our engagement, making the necessary changes to our business; and then measure the results. Embedding these principles is important to our business because good engagement with stakeholders helps us to improve impact, reduce inefficiencies, create greater socio-economic value and reduce risk. Most importantly, effective engagement leads to tangible action in our business and benefits for customers and stakeholders.

Recognising the interconnectedness of transmission and distribution network issues and the prevalence of common stakeholders across both distribution and transmission, this holistic strategy provides a framework for effective and consistent engagement at a whole-system level, regardless of voltage or licence.

The strategy lays out five underpinning principles:

- **Inclusive** – We engage all customers and stakeholders impacted through our work, with a specific focus to ensure those who may be hard to reach are given a voice.
- **Authentic** – Our engagement works to understand significant issues affecting our customers and stakeholders, before acting on them in a meaningful way.
- **Tailored** – The approach we take to engagement ensures that each initiative is planned and delivered in the most appropriate way for the specific purpose and stakeholders in question.
- **Value-for-money** – An inherent focus, we prioritise efficient spending on engagement activities, aiming to maximise the overall customer benefit.
- **Innovative** – We aim to better our approach each year, continually looking for new methods to improve how we engage and deliver against wants and needs.

### Process

Through a nine-step process, the strategy enables us to identify the purpose and specific stakeholders for each engagement, provide tailored engagement, then capture and act upon the feedback we receive, closing the feedback loop by confirming stakeholder satisfaction with the quality of engagement.

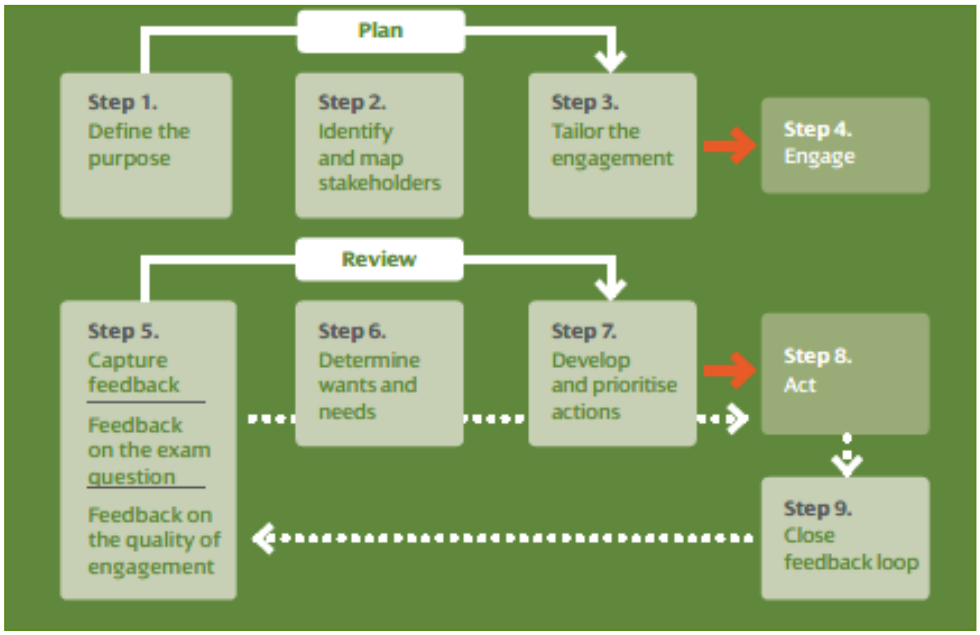



*Figure 56: SP Energy Networks stakeholder engagement process*

We continually improve this process, resulting in recent changes including:

- Improving the feedback, we collect via our online stakeholder engagement tracker (Tractivity) and the ease with which it can be recorded.
- Improving our monthly reporting process to enhance the visibility of engagement that has taken place and highlight its importance within the business.

### Key engagement topics

Of the 11 specific topic categories laid out in the SP Energy Networks Stakeholder Engagement Strategy, six are directly linked with sustainability and the decarbonisation of the network and society:

- Sustainability
- Connections
- Electric Vehicles
- Future Smart Network
- Heat
- Smart Communities

The other five categories relate to the ways in which we optimise our positive impact while we carry out decarbonisation activities.

- Customer Service and Social Obligations
- Recruitment
- Resilience
- Safety
- Visual Mitigation

The engagement strategy mandates specific engagement by SP Distribution and SP Manweb on all of these topic categories, whilst enabling engagement to sit within a centrally orchestrated framework that encourages resource efficiency and best practice sharing between our licences and central functions.

### Stakeholder Engagement Plans

The Stakeholder Engagement Process described above is used to create annual Stakeholder Engagement Plans for all key topic areas listed above, enabling us to define the purpose of our engagement, identify and prioritise stakeholders and tailor engagement to meet their needs. These plans are held within our online stakeholder management system and continue to evolve as each year progresses. For the purposes of this document, the following text focusses on sustainability engagement planning carried out in the last two years.

### Defining the purpose

All engagement is carried out with a clearly defined purpose in mind, related to the overall aims of our business.

At the start of 2018, we conducted in-depth research with customers to refresh our understanding of what our customers wanted from a network operator and the key values they expect us to hold. We held six discussion groups – one with women, one with men, one with non-adopters of new technology, one with early adopters of new technology, one with participants with children and one with participants aged 60+. We looked for key themes or points arising, asked why these were important and enquired what those mean for them, their local area and their families. We tested a series of messages with innovative, 'dial testing', to capture real-time reactions and sentiments, to see what themes received a positive reaction from participants.

The results were revealing – customers wanted a better future, quicker:

- **Better** – Clean growth, better public services
- **Future** – A stronger, independent economy, a richer, fairer future
- **Quicker** – Personal freedom

We took the results from this research and structured our engagement approach in distribution around these three themes:

- **Better** – A sustainable network (our sustainability strategy and building key partnerships for global impact, community initiatives).
- **Future** – A resilient network (leading the way with new technology, outage flexibility, system restoration).
- **Quicker** – An innovative network (digital substations, connecting to the network quicker, future energy scenarios).

### Challenges and opportunities

We identified the key challenges, opportunities and enablers for our business to deliver against these three themes, including:

- **Recent legislative, regulatory and governmental changes** – Government Environmental Plans, Government Net Zero targets, Environment Bill 2020, Industrial Strategy, Clean Growth Strategy, Ofgem RIIO-2 Price Controls, Ofgem Decarbonisation Action Plan.
- **Climate change and sustainable development** – Intergovernmental Panel on Climate Change Special Report 15, Scottish Government Climate Change Plan, UK Government National Adaptation Programme, United Nations 2030 Agenda for Sustainable Development.
- **Decarbonisation of energy** – Committee on Climate Change Progress Report to Parliament 2019, UK Government Clean Growth Strategy, Scottish Government Energy Strategy, Welsh Government Consultation on Decarbonisation.

- **Decarbonisation of transport and heat** – UK Government Road to Zero Strategy, Scottish Government Energy Strategy, BEIS/Ofgem call for evidence on decarbonisation of heat – 'A future framework for heat in buildings', Committee on Climate Change report – UK Housing: Fit for the Future.
- **Decentralisation, digitalisation and democratisation** – Ofgem/BEIS Upgrading our Energy System – Smart Systems and Flexibility Plan, Open Networks Project.
- **Biodiversity** – UN Convention on Biological Diversity, Mainstreaming international biodiversity goals for the private sector, DEFRA UK Biodiversity Indicators 2018, DEFRA Biodiversity Metric 2.0, The Living Planet Report 2018.
- **Resources and land use** – Planetary Boundaries, Environment Bill 2020, Land Use: Policies for a Net Zero UK, Making Things Last: A Circular Economy Strategy for Scotland.
- **Customer and shareholder value** – Scottish Government: The Just Transition Commission, Energy Consumers' Missing Billions.
- **Network and whole system trends** – ESO Future Energy Scenarios (FES), Industry Best View Scenario, ESO Electricity Ten Year Statement (ETYS), ESO Network Options Assessment (NOA).

### Enablers

- **Stakeholder engagement** – Effective and timely engagement with relevant stakeholders is essential in enabling us to act decisively to reduce environmental impact whilst driving the rapid decarbonisation, decentralisation, digitalisation and democratisation of the energy sector.
- **A common language** – The United Nations Sustainable Development Goals provide a common platform and vocabulary for countries and organisations to align their focus and target their sustainability ambitions for maximum positive impact. Our understanding of, and our alignment with, both the goals and the aspirations of our key stakeholders is central to the prioritisation of our activities.
- **Data and target setting** – Effective target setting, and data management is an essential enabler on the journey to becoming a sustainable networks business.
- **RIIO-2 price controls** – Our ability to deliver the sustainable networks business of the future relies upon the capacity of the RIIO-2 framework to support investment and decision making that will result in long-term socio-economic and environmental benefits for all customers and stakeholders.
- **Innovation Strategy** – Sustainability cannot be achieved without innovation, and innovation must provide sustainable solutions. Our need to move towards more sustainable practices stimulates innovation by setting a high premium on fresh ideas, stimulating creativity in our business, and encouraging us to appreciate our whole value chain in decision-making.
- **Open Networks Project** – Outcomes from this project will heavily influence our ability to enable exponential uptake of low carbon technologies and manage our network assets better in real time, potentially reducing impacts across all of our sustainability drivers.
- **Seed funding** – Funding is needed to support communities in moving towards a green economy, the low carbon network transition and environmental benefit.

### Identifying and prioritising stakeholders

With a clear purpose defined, we then identified the key stakeholders best placed to provide the insight required and help us achieve our objectives. To do this, we formed an understanding of the existing knowledge levels of our stakeholders on our proposed topics of engagement.

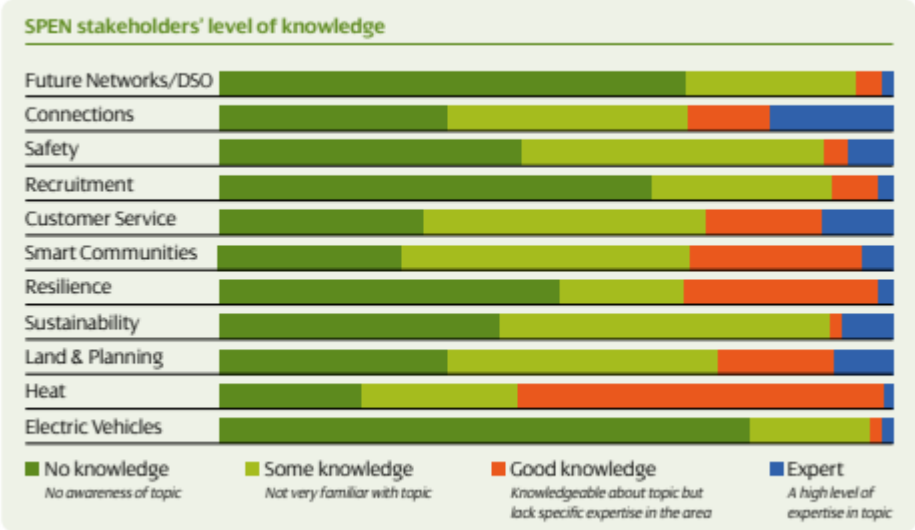



*Figure 57: SP Energy Networks stakeholders' level of knowledge*

We identified and prioritised specific stakeholders to engage with:

*Table 53: Sustainability stakeholders identified*

| | | |
|---|---|---|
| **Key Stakeholders** | | |
| 2030Hub | Network Rail | SSEN Distribution |
| Cheshire East Council | National Farmers Union Scotland | SSEN Transmission |
| Denbighshire County Council | North Wales Wildlife Trust | Supply Chain Sustainability School |
| Energy Saving Trust | Northumberland County Council | Sustainability First |
| Environment Agency | Scottish Environment Protection Agency (SEPA) | Sustainable Scotland Network |
| ENWL | Scottish Government | Thames Water |
| Glasgow City Council; Carbon Management Team | Scottish Power | UK Power Networks |
| Keep Scotland Beautiful | Scottish Wildlife Trust | Welsh Government |
| National Grid | SGN | West Cheshire & North Wales Chamber of Commerce |
| Natural Resources Wales | Shropshire Wildlife Trust | Western Power Distribution |
| NatureScot | SSE | Zero Waste Scotland |
| **Informed Stakeholders** | | |
| AECOM | EIC; EIC (Energy Innovation Centre) | National Energy Action (NEA) |
| Ashton Hayes Community Energy Company | Electralink | Power Networks Demonstration Centre |
| Balfour Beatty; Balfour Beatty Power T&D | Energy & Utility Skills | Prysmian Group |
| Bangor University | Energy Skills Partnership | RWE Renewables; RWE |
| BEAMA Limited | Energy Systems Catapult | S&C Electric Company |
| Buccleuch Estates | Environmental Solutions Providers UK Ltd | Savills; Savills (UK) Limited |
| Centre for Energy Policy, University of Strathclyde | Glasgow Caledonian University/ BEAM | Schneider Electric; Schneider OEM |
| Community Woodlands Association | Glasgow Community Energy | Siemens Energy |
| CONNORS BUILDING & RESTORATION LTD | Ground Source Heat Pump Association | Siemens; Siemens Transmission & Distribution Ltd |

| | | |
|---|---|---|
| Construction Scotland Innovation Centre | Hawick Community Council | St Andrews Environmental Network |
| DCWW/welsh water | Heriot Watt University; Heriot-Watt University | Transport for Edinburgh; Transport for Edinburgh Ltd |
| Decarbon8 University of Leeds | Institute of Welsh Affairs | University of Edinburgh |
| E.ON | IQA | Water to Water |
| EA Technology; EA Technology Ltd | Kelvatek | West Lothian College |
| Edinburgh Chambers of Commerce | Mentone Energy Consultancy Ltd | |
| Edinburgh University | National Energy Action | |
| **Broad Interest Stakeholders** | | |
| B&Q; B&Q Limited | Dyer & Butler Ltd | Icebreaker One |
| Bio pharma spec | Elliott Group | Morlais |
| Cala Homes Scotland Ltd; CALA Group Ltd | Euskills | New Digital Business; NDB Ltd |
| D&G Electrical services (UK) Ltd | FCE Projects Ltd | PassivSystems |
| Delta-EE | FES Ltd | Pennon Group |
| Doble Engineering Company | Field Dynamics | Piclo |
| DT Hughes Contractors Ltd; DT Hughes Building Contractors Ltd | Fundamentals Ltd | Zühlke Engineering |

### Tailoring the engagement

We then tailored our plans for engagement to ensure that it delivered maximum value. This involved tailoring content and before, during and after each engagement to enable full inclusivity and accessibility and pitch the information presented and the questions asked at the most appropriate level for the particular stakeholders. It also involved tailoring our engagement methods to reach a wide and varied stakeholder base using the most appropriate engagement vehicle.


*Figure 58: Example methods of engagement*

Methods used for sustainability engagement include:

- Conferences / summits
- Consultations
- Forums
- Newsletters

- Online stakeholder community
- Project or activity specific engagement
- Reports and action plans
- Surveys
- Working groups
- Workshops

RIIO-ED1 Business-as-usual sustainability engagement

Business-as-usual sustainability engagement is carried out in line with the strategy and plans described above.

Our Sustainability Governance Structure (excerpt shown below), describes the business-as-usual role that external engagement plays in the development and delivery of our Sustainable Business Strategy and shows how the external engagement and internal governance processes interact.

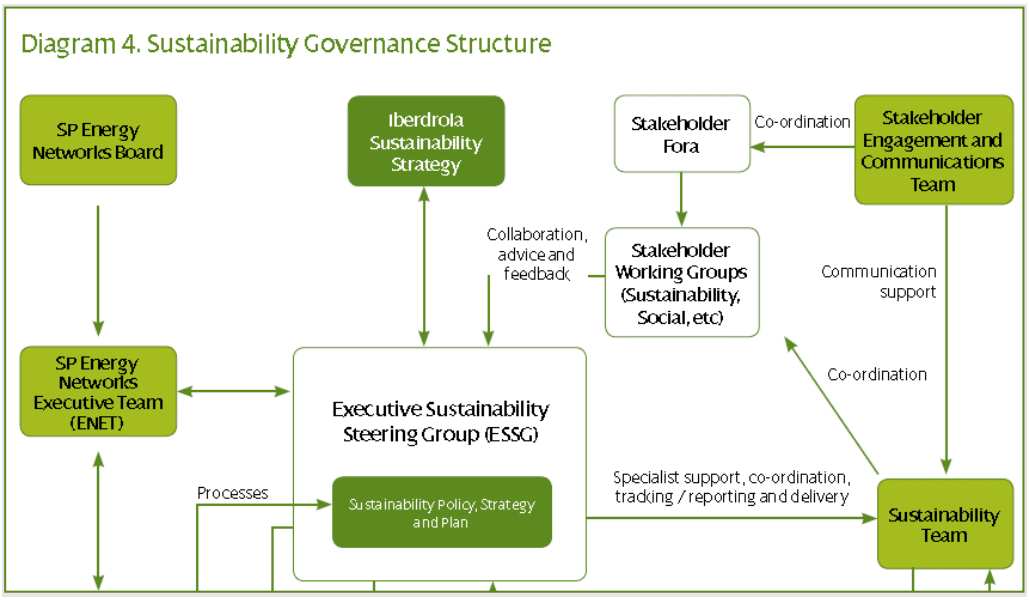



*Figure 59: Excerpt from SP Energy Networks Sustainability Governance Structure*
*Showing engagement and governance interactions. Please see SP Energy Networks Sustainable Business Strategy 2020 page 26, Diagram 5 Sustainability Governance Structure for the full diagram (excerpt is from top right-hand corner).*

Sustainable Business Strategy development

Everything we do begins with stakeholder engagement. That's why we consult with all of our stakeholders, internally and externally, to help shape our Sustainable Business Strategy. We have embedded this into our process, providing a platform for us to discuss important sustainability issues with stakeholders and deliver on what matters most to them.

### Internal stakeholder engagement

The Sustainability Team consult on the Strategy, its Drivers and Objectives with both office and field-based staff. This helps determine how their roles can contribute to achieving the desired outcomes and identify new Sustainability Objectives and Improvement Actions for the period to 2023 and beyond.

The Sustainability Team then identifies colleagues with particular skills or interests that can help in delivering the Strategy. Through training, coaching and guidance from the Sustainability Team, those colleagues become Ambassadors for Sustainability.

They will assist in the delivery of Objectives related to their activities and support location-specific roll-outs of initiatives that may not be directly related to their current role.

We maintain engagement with the Ambassadors throughout the year to communicate targets, initiatives and results. This is done through individual face-to-face discussions, group sessions, a Yammer portal and ad-hoc emails and telephone calls.

### External stakeholder engagement

Our external engagement on the Strategy is in line with the SPEN Stakeholder Engagement Strategy. Engagement is facilitated through the Sustainability Stakeholder Working Group (SSWG), which includes representatives from organisations with strategic interests in sustainability in the licence areas where we operate. The organisations represented mostly have national or UK-wide reach but may include regional bodies. Membership of the group will evolve as our Strategy continues to develop.

We manage Working Group participation in a variety of ways to fit stakeholder needs. Approaches include face-to-face group meetings, bilaterals on specific issues, focused workshops and use of our online community interface. We have held workshops in Scotland and England to guide the development of this strategy and we consult annually on our Transmission and Distribution reports.

We engaged extensively with the SSWG during 2020, reviewing our Sustainable Business Strategy to ensure that we had accurately identified the key environmental issues associated with our business activities. For details of the ways in which stakeholder engagement supports the continual development of the strategy, and information about the most recent stakeholder-led changes to our Sustainable Business Strategy, please see page 41 of SP Energy Networks Sustainable Business Strategy 2020.

#### Other business-as-usual sustainability engagement

Examples of other business-as-usual sustainability engagement include:

- **Quarterly Connections Panels** – engaging customers, developers, and interested parties on SP Distribution and SP Manweb's activities as a DNO and how we see the landscape evolving. The engagement informs how we innovate to remove barriers to low carbon transition.
- **Innovation project engagement** – Overviews of projects, presentations project partners and development-focused breakout sessions.
- **Online Stakeholder Community** – blogs, Q&A and conversations with interested stakeholders.
- **Strategic Stakeholder Panel –** expert strategic direction from a broader range of stakeholders, particularly where on cross-cutting topics requiring wider insights.

# Glossary of Terms

| Abbreviation | Definition |
|---|---|
| Absolute Zero | Eliminating all emissions across Scopes 1-3 without the use of carbon removal or offsetting. |
| Biodiversity Unit | A unit of measurement. Metrics assign all habitats a unit value according to their relative biodiversity value. Defra definition is Baseline biodiversity units = Distinctiveness x Condition x Significance x Connectivity x Area in hectares (or length in km) |
| Bunds | Impermeable structure constructed below and around plant or tanks containing oil or other substances hazardous to the environment. Includes where necessary bund dewatering system with associated oily water / hydrocarbon treatment |
| Business Carbon Footprint (BCF) | Terminology used to describe our carbon footprint when including Scope 1 & 2 carbon emissions (excluding losses), business travel, and contractor emissions. |
| Capital Carbon | Analogous to capital cost and can be used to describe the carbon associated with creation, refurbishment and/or end of life treatment of an asset. Capital carbon of new projects includes embodied carbon of materials and equipment, in addition to transport and energy use in the construction of the asset and emissions associated with site waste. |
| Carbon | Used as shorthand for greenhouse gas emissions (see below) |
| Carbon Dioxide Equivalent ($CO_2e$) | A metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential. |
| Carbon Footprint | Total greenhouse gas emissions caused directly and indirectly by a person, organisation, event, or product measured in Carbon Dioxide ($CO_2$). This also contains other greenhouse gases (such as $SF_6$ below) converted into $CO_2$ equivalent. |
| Carbon Neutral | Making or resulting in no net release of CO2e into the atmosphere. Can be achieved through carbon offsets. Can apply to specific products or services instead of the whole company. |
| Circular Economy | See Zero Waste (below) |
| Compliance Waste | Specific, potentially hazardous, waste that must be specially disposed of/handled separately for safety reasons |

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| DNO | Abbreviation for District Network Operator, who is licensed by Ofgem to develop, operate, and maintain local electricity distribution network. There are 14 licensed distribution network operators (DNOs) in Britain owned by six different companies. Each DNO is responsible for a regional distribution services area. |
| Embodied Carbon | Embodied carbon is the total carbon generated to produce a built asset.<br>This may refer to individual materials and components (e.g. concrete, switchgear etc) or may refer to the creation of an infrastructure asset as a whole. |
| Greenhouse Gas Emissions (GHG) | Emissions from gases that absorb and emit radiant thermal, causing the greenhouse effect |
| Global Warming Potential | Global warming potential is the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide. |
| ISO14001 | International Organisation for Standardisation 14001. Defines criteria and maps out a framework for companies to create an effective Environmental Management System. |
| Kilowatt-hour (kWh) | A unit of energy equivalent to one kilowatt (or 1000 watts) of power sustained for one hour.<br>Kilowatt-hours are also the unit in which customer energy bills are expressed. |
| Low Carbon Transition | The evolution from a fossil fuel powered economy to an economy based on renewable and low carbon energy use that therefore has a minimal output of greenhouse gas emissions. |
| Megawatt-hour (mWh) | A unit of energy equivalent to one megawatt (or 1,000,000 watts) of power sustained for one hour. |
| Natural Capital | Natural capital can be defined as the world's stocks of natural assets which include geology, soil, air, water, and all living things. It is from this natural capital that humans derive a wide range of services often called ecosystem services, which make human life possible. |
| Net Zero | Achieving a scale of value-chain emission reductions consistent with the depth of abatement achieved in pathways that limit warming to 1.5°C with no or limited overshoot and;<br>Neutralising the impact of any source of residual emissions that remains unfeasible to be eliminated by permanently removing an equivalent amount of atmospheric carbon dioxide' |
| NGO | Abbreviation for non-governmental organisation, an organisation that tries to achieve social or |

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| | political aims but is not controlled by a government. |
| Operational Carbon | Carbon associated with the operation of an asset over the asset lifecycle |
| Polychlorinated Biphenyls (PCBs) | PCBs are a group of synthetic chemicals with good dielectric properties and low flammability used to insulate oil in electrical apparatus such as transformers, liquid filled cables, high and low voltage capacitors, switches etc., manufactured prior to 1987. PCBs are a threat to the environment because of their toxicity, persistence and tendency to bio-accumulate have been linked with harmful effects such as liver damage and a reduced ability to fight infection. |
| RIIO-ED1 | Abbreviation for Revenue = Incentives + Innovation + Outputs for Electricity Distribution 1. RIIO ED1 is the price control framework set by out Regulator Ofgem, that sets the outputs that the 14 DNOs need to deliver for their customers and the associated revenues the DNOs are allowed to collect for the eight-year period from 1 April 2015 to March 2023. |
| RIIO-ED2 | Abbreviation for Revenue = Incentives + Innovation + Outputs for Electricity Distribution 2. RIIO ED2 is the price control framework set by out Regulator Ofgem, that sets the outputs that the 14 DNOs need to deliver for their customers and the associated revenues the DNOs are allowed to collect for the five-year period from 1 April 2023 to 31 March 2028. |
| RIIO-T1 | Abbreviation for Revenue = Incentives + Innovation + Outputs for Transmission 1. RIIO T1 is the price control framework set by out Regulator Ofgem, that sets out what the 3 TOs are expected to deliver and details the regulatory framework that supports both effective and efficient delivery for energy customers over the eight years from 1 April 2013 to 31 March 2021. |
| Science-Based Targets | Targets adopted by companies to reduce Greenhouse Gas emissions that are calculated in line with the methodology laid out by the Science-Based Targets Initiative, in line with one of the reduction trajectories featured in the Paris Agreement. |
| Scope 1 Carbon Emissions | Direct GHG emissions – from sources owned or controlled by the company |
| Scope 2 Carbon Emissions | Indirect carbon emissions from the generation of purchased electricity, steam, heating and cooling consumed. For electricity network companies, network losses are included in Scope 2. |
| Scope 3 Carbon Emissions | All other indirect emissions that occur within the value chain |

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| $SF_6$ | Abbreviation for Sulphur Hexafluoride, the most carbon intensive greenhouse gas in the world, used extensively as an electrical insulator since the 1980s when the industry moved away from using oil in mass quantities for safety reasons. Use of SF6 prevents fire/explosion from catastrophic failure of plant and reduces the risk of oil pollution incidents on out network but has a global warming potential 23,500 times that of carbon dioxide. |
| SPD | Abbreviation for ScottishPower Distribution, a wholly owned subsidiary of SP Energy Networks responsible for the distribution of electricity in central and southern Scotland (33 kV and below). |
| SPEN | Abbreviation for ScottishPower Energy Networks, holder of the SPT, SPD, and SPM licences awarded by Ofgem, the regulator of the gas and electricity sector. |
| SPM | Abbreviation for ScottishPower Manweb, a wholly owned subsidiary of SP Energy Networks responsible for the distribution of electricity in North Wales and in Merseyside, Cheshire, and North Shropshire in England (132 kV and below). |
| SPT | Abbreviation for ScottishPower Transmission, a wholly owned subsidiary of SP Energy Network responsible for the transmission of electricity in central and southern Scotland (132 kV and upwards). |
| SROI | Social Return on Investment is an outcomes-based measurement tool that helps organisations to understand and quantify the social, environmental and economic value they are creating. |
| SSWG | Abbreviation for Stakeholder Sustainability Working Group, formed by SPEN in 2017 comprising of invited SPEN stakeholders and SPEN representatives to guide SPEN. |
| Sustainable Networks Business | SPEN has identified this as managing out triple bottom line – a process to manage out financial, social and environmental risks, obligations and opportunities. These three impacts are sometimes referred to profits, people, and planet. |
| $tCO_2e$ | tonnes (t) of carbon dioxide ($CO_2$) equivalent (e) |
| TNO | Abbreviation for Transmission Network Operator, permitted to develop, operate, and maintain a high voltage system within their own distinct onshore transmission areas. These are National Grid Electricity Transmission plc (NGET) for England and Wales, ScottishPower Transmission Limited for southern Scotland and Scottish Hydro Electric Transmission plc for |

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| | northern Scotland and the Scottish Islands groups. |
| Whole Life Carbon | Sum of GHG emissions from all stages of the life cycle of a product or asset |
| Zero Waste | An alternative to the traditional linear economy (make, use, dispose), in which resources are kept in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life as opposed to sending to landfill. Also referred to as Circular Economy. |

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