



RIIO-ED2 Environmental Action Plan

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Contents

Executive Summary	03
1 Our Strategy for RIIO-ED2	04
Coordination with wider business processes	
United Nations Sustainable Development Goals (SDGs)	
Strategy - stakeholder feedback	
1.1 Core Strategic Business Focus – Becoming a Net Zero Organisation	08
Overview	
Operation of the network	
Losses	
Transport	
Heat	
Communities and consumer vulnerability	
Business Carbon Footprint	
Embodied carbon	
Global Climate Change - Science Based Targets	
1.2 Core Strategic Business Focus – Being Environmentally Responsible	15
Overview	
Pollution Prevention	
Biodiversity	
Waste and Resources	
Supply Chain	
Air Quality	
Visual Amenity	
2 Stakeholder Engagement	17
Overview	
What our stakeholders said	
How we have developed our RIIO-ED2 plans	
Our Social Contract	
Benchmarking	
3 RIIO-ED2 Core commitments and Baseline Requirements	20
3.1 Becoming a Net Zero Carbon Organisation	22
Our Core Commitments	
Our Baseline Requirements	
3.2 Being Environmentally Responsible	32
Our Core Commitments	
Our Baseline Requirements	
4 Managing the Environment	41
Overview	
Our Environmental Management System (EMS)	
Identification of significant environmental impacts	
Impacts from our network during RIIO-ED2	
Management of our RIIO-ED2 impacts	
Management of network activities without intervention	
Appendix	51
Learning from RIIO-ED1	

Executive summary

Our RIIO-ED2 Environmental Action Plan (EAP) sets out all of our RIIO-ED2 ambitions to meet our stakeholders' net zero and environmental responsibility expectations, by reducing our environmental impact and decarbonising our business activities.

We have bold and challenging ambitions to achieve net zero carbon emissions by 2028 ahead of the UK Governments' target of 2050. We are a signatory of the Science Based Target Initiative (SBTi) 'Business Ambition for 1.5°C' committing to set a science-based emissions reduction target for our internal business carbon footprint. As a signatory we are recognised as a committed participant of the United Nations Framework Convention on Climate Change Race to Zero Campaign.



The Plan highlights our Environment Strategy and our RIIO-ED2 ambitions in the following two key areas;



Becoming a net zero carbon organisation.



Ensuring we are environmentally responsible.

Specifically the Plan details the following RIIO-ED2 core commitments in these two key areas which we have co-created with our stakeholders;

Our ambitious commitments for RIIO-ED2 as detailed in our EAP include;



Achieve net zero in our internal business carbon footprint by 2028 (excluding network losses) and follow a verified science based target of 1.5° to limit the climate impact of our activities.



Reduce the volume of oil leaked from fluid filled cable by 50% by 2028 and replace 90km of the worst leaking circuits with non-oil alternatives; putting WPD on track to remove all fluid filled cables by 2060.



Deliver a 20% reduction in SF₆ losses from RIIO-ED1 and collaborate with industry partners to develop technological alternatives to reduce overall volumes of SF₆.



Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage of waste produced.



Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.

This Plan sets out how we intend to meet and report upon our core commitments, our Regulator's baseline requirements for RIIO-ED2 and all of our significant environmental impacts.

In presenting our RIIO-ED2 core commitments, the Plan reviews our associated performance in the previous price control period and sets both this and our RIIO-ED2 aspirations against our overarching company Environment Strategy.

Chapter 2 of this document details how we have engaged with and captured the views of our stakeholders.

Chapters 3 and 4 set out the detail of our RIIO-ED2 core commitments and baseline requirements, demonstrating a more holistic interconnected approach to managing the environment and our impacts during RIIO-ED2.

1 Our Strategy for RIIO-ED2

Our RIIO-ED2 Business Plan and Environmental Action Plan (EAP) have been developed in line with four key principles. Namely that they are;

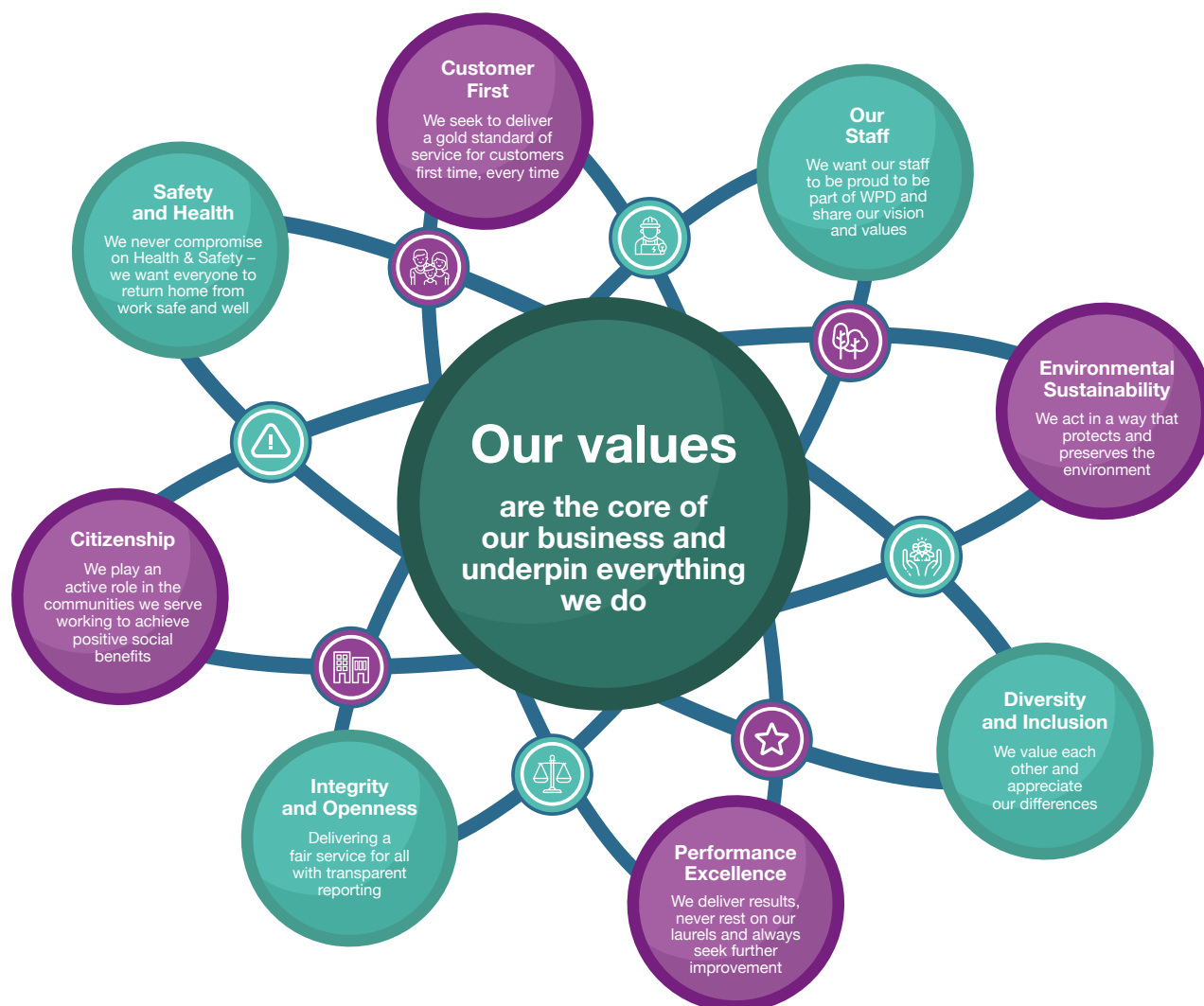


Decarbonisation, environmental sustainability and the protection of the environment are key concerns for WPD and our stakeholders. In this chapter we will explain how we intend to implement our company Environment Strategy and our long term objectives in RIIO-ED2.

In line with our Values, feedback received from stakeholders and our current RIIO-ED2 Business Plan, the Environment Strategy details our long term business aspirations, values and ambitions in the following two core strategic business areas;



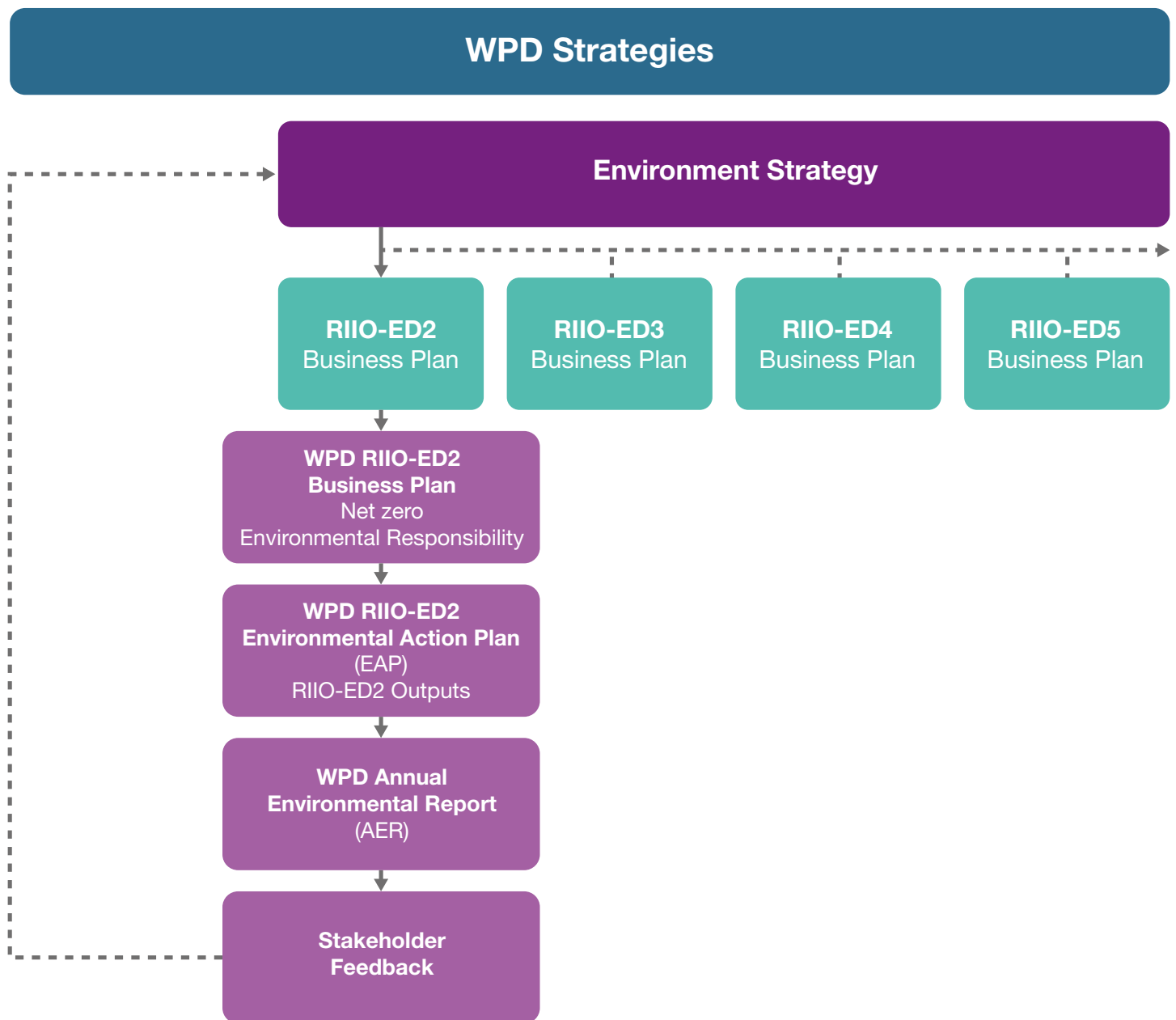
Fig. 1 Our Business Values



Our Environment Strategy - Structure

The structure of the Environment Strategy as shown below embeds our core business environmental ambitions in to not just the RIIO-ED2 price control period but also future price control review periods.

Fig. 2 Our Environment Strategy Structure



This EAP for RIIO-ED2, as an Annex of the Business Plan, presents the methodology and implementation plans to deliver our RIIO-ED2 core commitments, and Ofgem baseline requirements demonstrating clearly how engagement with our stakeholders has influenced their development.

At the end of each regulatory year within RIIO-ED2 a publicly available Annual Environment Report (AER) will be published. This will provide details of how we have performed in our RIIO-ED2 Business Plan and core commitments, Ofgem baseline requirements, the EAP, and ultimately our overarching Environment Strategy.

Coordination with wider business processes

Our Environment Strategy is not a static, stand-alone document. In identifying key issues under each of the core strategic business areas the Strategy incorporates a number of wider business activities, initiatives and strategies.

Becoming a Net Zero Organisation

Focus: Net Zero

Topics



Operation of the Network



Communities



Transport



Business Carbon Footprint



Heat



Embodied Carbon



Global Climate Change

Being Environmentally Responsible

Focus: Environmental Responsibility

Topics



Pollution Prevention



Supply Chain



Biodiversity



Air Quality



Waste and Resources



Visual Amenity

In addition to being guided by our stakeholders in identifying these focus areas we are mindful of the clear interconnectivity of achieving both net zero and being environmentally responsible.

Our Environment Strategy will continue to develop, evolve and improve over time via annual business reporting, future price review periods, stakeholder feedback and the need to address future societal obligations and concerns.

The structure and content of our strategy has been reviewed by WPD senior management as well as a wide-range of stakeholders at bespoke strategic stakeholder events held in early 2021.



All WPD Business Strategies are available at www.westernpower.co.uk

United Nations Sustainable Development Goals (SDGs)

Our Environment Strategy provides details of how we align our two core strategic business ambitions, our RIIO-ED2 core commitments and our business as usual activities with the three most appropriate of the seventeen published UN Sustainable Development Goals (SDGs);



Achieving sustainable cities and communities

To make communities inclusive, resilient and sustainable.



Responsible Consumption and Production

Ensuring sustainable consumption and production patterns. Covid-19 offers an opportunity to develop recovery plans that will reverse current trends and shift our consumption and production patterns to a more sustainable course. A successful shift will mean improvements in resource efficiency, and consideration of the entire life-cycle approach.



Climate Action

Taking urgent action to tackle climate change and its impacts. To limit global warming to 1.5°C as called for in the Paris Agreement.

The three SDGs provide a recognised framework and a benchmark for the implementation of our Environment Strategy during RIIO-ED2 and beyond.

In time we may adopt additional SDG's to augment our strategic position and framework.

Strategy - Stakeholder Feedback

Our Environment Strategy, the two core strategic business areas and the topic areas highlighted have been developed in partnership with our stakeholders.

In February 2021, we held a virtual Environment Strategy stakeholder engagement event where there was a broad consensus that the scope and ambition of our Environment Strategy was appropriate. Stakeholders however suggested we provide further detail on implementation, including targets and timescales. Our aim is to provide detail on implementation within the RIIO-ED2 price review period within this EAP.

Stakeholders were given the opportunity to comment on our two strategic business areas; 'Becoming a net zero organisation' and 'Being environmentally responsible', 87% agreed that our Strategy was focusing on the right areas.

In terms of the focus areas identified under each of the strategic business areas, 90% of stakeholders agreed that WPD had got the right focus areas for 'Becoming a net zero organisation' and 87% agreed that the right focus areas had been detailed for 'Being environmentally responsible'.

With regards to the UN SDGs stakeholder feedback told us that aligning with the United Nations SDGs was widely seen as a good idea. 82% of attendees agreed or strongly agreed that adopting some of the SDGs would add value to our strategy.



87%

of stakeholders agreed that our Strategy was focusing on the right areas.



90%

of stakeholders agreed that WPD had got the right focus areas for 'Becoming a net zero organisation'.



87%

agreed that the right focus areas had been detailed for 'Being environmentally responsible'.

1 Our Strategy for RIIO-ED2

1.1 Core Strategic Business Focus - Becoming a Net Zero Organisation

Overview

We accept that post-industrial increases in global atmospheric carbon dioxide pose the greatest risk to maintaining a healthy, sustainable and balanced environment. For this reason our Environment Strategy recognises achieving net zero as a core strategic business focus area and is committed to becoming a net zero carbon organisation ahead of the current UK Governments' aspiration of 2050.

Furthermore, we are committed to achieving the recently published interim milestone of a 78% reduction from 1990 levels by 2035 as an intervening milestone on the path to net zero by 2050.

The electricity sector is changing rapidly and faces a huge challenge in terms of decarbonisation which is the process of reducing 'carbon intensity', lowering the amount of greenhouse gas emissions produced by the burning of fossil fuels.

We will play a crucial role in the societal transition to a low-carbon economy via increased electrification and the increased use of renewables.

Achieving our commitment to reduce our carbon emissions will help us to facilitate this change and meet the needs of our stakeholders and wider communities.

New challenges will emerge for Distribution Network Operators (DNOs) as the levels of carbon released by both heating and transport activities need to reduce significantly thereby shifting demand from oil and gas to electricity.

The scale and pace of the changes are uncertain but we need to be ready to accommodate the changes when they arise. We aim to find the most efficient ways of addressing the technical challenges of the future electricity network, while at the same time keeping electricity affordable for everyone.

As part of this, we want to understand how we can best support our customers and our communities so that no one is left behind in the energy transition.

Failure to address the climate crisis challenge and the associated risks and opportunities will prove detrimental in terms of meeting our stakeholders' and societal expectations as well as impacting negatively on the future sustainability, integrity and reputation of our business.

To achieve net zero and reduce our carbon impact we need to target the following specific areas;



Operation of the network

The operation of the UK electricity network is changing in a number of significant ways. Many large fossil fuel power stations are closing as they come to the end of their lives and being replaced with smaller, and in many cases renewable forms of electricity generation.

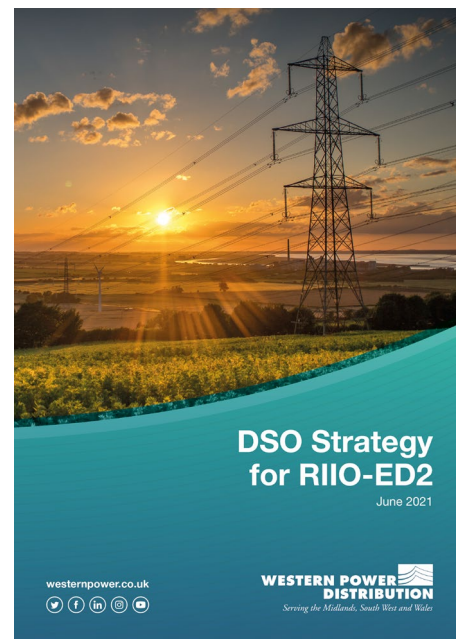
These are often spread around the country, connected directly to the local distribution network rather than the national transmission electricity grid system.

Our industrial, commercial and domestic customers have also embraced government and regulatory incentives to install smaller scale generation at their own premises in the form of solar panels and other technologies. The type of generation deployed is often intermittent in nature, making flows across the electricity network much more complex to predict.

Network requirements are also changing and during RIIO-ED2 we expect to see the rapid adaptation of new forms of electricity demand. Electric vehicles are quickly becoming mainstream. With a typical electric car using a similar amount of electricity as an average domestic home, they have the potential to significantly alter the traditional daily energy usage profiles today's network was designed around.

There are also new technologies emerging, such as battery storage and hydrogen, as well as heat pumps and electric heating that could further disrupt traditional energy use across the country.

To address these new network requirements we have developed concise and detailed strategies;



As a consequence of the changes in how customers consume and produce electricity, throughout RIIO-ED2 all DNOs will have a greater need to forecast and actively manage energy flows across the network at all voltage levels, moving from a traditional role as a DNO (Distribution Network Operator) to a DSO (Distribution System Operator).



Our innovation work focuses on enabling us to facilitate the low carbon transition, so that our network can support the connection of low carbon technologies while remaining safe and reliable. This involves transforming network operation to make it smarter, using our assets in novel ways to make the most out of our existing network and empowering our customers to be part of the transition by facilitating flexibility markets.



Through our innovation projects, we are creating and trialling the new technologies, systems and commercial arrangements we need to transform as a business and become a Distribution System Operator. We have already begun the transformation through the capabilities developed from our projects. This has shaped critical areas of our business including alternative connections, Data and Digitalisation, Flexibility Services and our Network Management System.



Losses

A significant element of future network operation relates to the management of distribution network losses.

Distribution network losses are the difference between the energy which enters the distribution network and the energy which reaches the customer. The fact that a significant proportion of the energy generated will not reach the customer, means more power must be produced to meet demand. The carbon emissions caused by this 'lost' energy accounts for a significant contribution to our wider carbon footprint. A certain amount of energy is always necessary to deliver electricity from one point to another, but as a company committed to reducing our impact on the environment and achieving our net zero ambitions we must endeavour to reduce losses as much as possible.

As the operation and the demand of the network changes throughout RIIO-ED2 the electricity loading will increase, which will in turn increase electrical losses. As described the traditional electricity network was designed for large centralised generators to supply power to the high voltage network which then flows through the low voltage network to customers. However, new renewable energy sources tend to be smaller and well spread out; so they are often connected to the low voltage network and the power may then have to flow back to the high voltage network to reach its customers. This setup was not designed for distributed generation, so it may not be the most efficient.



Network Distribution Losses – 'Greening of the Grid'

In October 2020, the UK Government announced further details on its commitment towards achieving net zero emissions by 2050. Specifically under the 'Build Back Greener' plan the following initiatives were announced;

- **Confirmation that offshore wind will produce more than enough electricity to power every home in the country by 2030, based on current electricity usage, boosting the government target to 40GW.**
- **Creating a new target for floating offshore wind to deliver 1GW of energy by 2030, 15 times the current volume worldwide.**
- **Setting a target to support up to double the capacity of renewable energy providing enough clean, low cost energy to power up to 10 million homes.**

These initiatives plus the development of our role as a DSO and the introduction of more distributed generation will, in time, create a carbon neutral electricity network grid within the UK. Such a network, will still have associated network losses but due to the origin of the electricity generating source i.e. low carbon, any losses sustained will be low or zero carbon in nature, therefore minimising their impact on our Business Carbon Footprint.

However, notwithstanding the detail above throughout RIIO-ED2 our Losses Strategy will be updated annually and detail our approach to losses reduction and all of the interventions we have planned. This will include both programmes of asset replacement that we are undertaking and innovation projects that aim to provide new solutions for loss reduction in the future.



Transport

We are supportive of the Government's Clean Growth Strategy. This sets ambitious targets to have near zero emissions from transport by 2050. A significant challenge and opportunity exists as a large proportion of vehicles will become electric.

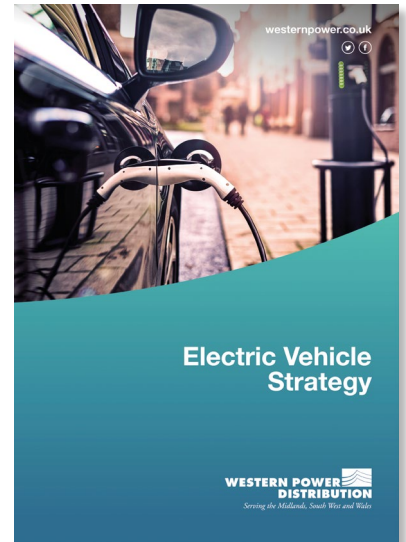
These vehicles will need to be able to charge in a manner that suits the customer but avoid the need for large-scale reinforcement caused by additional significant peaks on the electricity network.

As an owner of a large and varied operational transport fleet we will develop our own programme of low carbon emission vehicle adoption throughout RIIO-ED2.

We also need to consider our own Company Car scheme which is to be adapted to facilitate the removal of combustion engine vehicles by 2025 as well as encouraging the continued adoption of remote working which, within a controlled framework, has proved efficient and effective throughout the Covid-19 pandemic.

**The following Chapters provide further details on our RIIO-ED2 Business Plan core commitments in relation to our transport activities;
Chapter 3 - RIIO-ED2 Core Commitments and Baseline Requirements.**

Further details of our Transport Strategy can be found in our 'Decarbonisation of Transport in WPD' document.



Further details see the WPD Electric Vehicle Strategy at www.westernpower.co.uk/EV



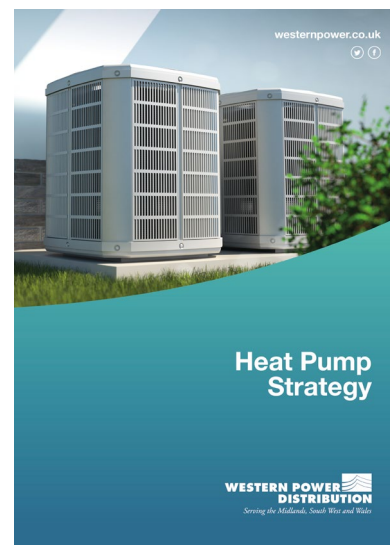


Heat

Providing energy for heating currently accounts for around 32% of all UK carbon emissions. In order to reduce this, we need to increase heating from low carbon electricity and move away from traditional gas solutions.

From 2025, no new homes will be able to be gas heated. This will lead to a significant increase in electrically heated homes creating higher demand on the network.

As existing properties transition to low carbon heating solutions such as Heat Pumps (HP), it is important to understand the impact they will have on the network.



Further details can be found in the WPD Heat Pump Strategy at www.westernpower.co.uk/heatpumps



Communities and consumer vulnerability

The rapid changes in the electricity network are bringing challenges for DNOs but are also introducing new opportunities for our customers. We want to ensure that all of our customers have access to those opportunities so that they can be part of the energy transition.

To do that, we will work with community and local energy groups to understand how we can collaborate together to help our future networks to be flexible and achieve net zero. We will build on our existing community energy work and strengthen the links we have with our communities even more. Most importantly, with the help of local community groups we will focus on understanding how we can best support our vulnerable customers through this transition.

Our innovation projects have shown that communities are interested in understanding better how their local electricity network operates. They are wanting to find ways to participate in the decarbonisation of the energy system in order to benefit their own communities.



Business Carbon Footprint

Since 2010, across each of our four licence areas, we have reported our annual Business Carbon Footprint (BCF) providing clear and transparent information regarding the current state of carbon emissions being produced by our business activities.

Our BCF details the impact that our operational activities have on the environment in relation to tonnes of equivalent carbon emitted.

The data compiled and the figures which we report follow a recognised methodology as described within international business carbon footprint standards, the Greenhouse Gas (GHG) reporting protocol and ISO14064-1.

All of our published BCF data, the methodology, inclusive assumptions and calculations have been verified and data assured for accuracy and compliance with the standards detailed previously.

Our BCF takes account of the energy usage from our offices transport emissions (operational and business), fuel combustion and the release of fugitive emissions (SF₆). The reported data for operational transport (road) and fuel combustion also takes account of a number of our larger contractor emissions.

Under both OFGEM and UK legislative requirements (Streamlined Energy Carbon Reporting – SECR) WPD report on the following carbon emission categories;

Table 1 - Our BCF Reporting

Scope Category	Emission-releasing activity
Scope 1 – Direct emissions	Building energy use - gas
	Operational Transport (road/rail/air/sea)
	Fugitive emissions (SF ₆)
	Fuel combustion
Scope 2 – Indirect emissions from electricity	Building energy use - electricity
	Losses (as detailed in RIGs)
Scope 3 – Other indirect emissions	Business Transport (road/rail/air/sea)
	Contractor operational transport
	Contractor fuel combustion

All of our annual carbon footprints are expressed as tonnes of carbon dioxide equivalent (tCO₂e) which accounts for all six Kyoto* GHG emissions;

- Carbon dioxide (CO₂)
- Nitrous oxide (N₂O)
- Perfluorocarbons (PFCs)
- Methane (CH₄)
- Hydrofluorocarbons (HFCs)
- Sulphur hexafluoride (SF₆)**

The following Chapters provide further details on our BCF performance and our RIIO-ED2 Business Plan and associated core commitments; **Chapter 3 'RIIO-ED2 Core Commitments and Baseline Requirements'**

*Kyoto Protocol – an international agreement that aimed to reduce carbon dioxide emissions and the presence of greenhouse gases (GHG) in the atmosphere.

**WPD also report direct Scope 1 SF₆ emissions at tCO₂e as per Ofgem requirements



Embodied carbon

Embodied carbon is the carbon associated with a material or a product. Whilst a carbon footprint can be used to express the equivalent carbon emitted whilst operating a transformer, the embodied carbon would instead describe the equivalent carbon emitted from the manufacture/use/disposal of the transformer.

Embodied carbon calculations therefore require an understanding of all materials (including extraction), methods of manufacture/construction and other related activities such as storage and transport, in-use and end of life disposal.

Prior to the start of RIIO-ED2 we will establish a methodology to assess and measure the embodied carbon associated with new projects.

The methodology will incorporate procedures to determine the embodied carbon of purchased standard plant equipment, network installation activities, equipment operation and end of life processes.

Further details on our RIIO-ED2 embodied carbon ambitions and our proposed methodology can be found in Chapter 3.



Global Climate Change - Science Based Targets

In 2015 the Science Based Target Initiative (SBTi), a partnership between Carbon Disclosure Project, United Nations Global Compact, the World Resources Institute and World Wildlife Fund, was established to help organisations, such as WPD to address their impact on global climate change.

The SBTi promotes the setting of long-term climate change targets, known as Science Based Targets (SBTs).

A target adopted to reduce greenhouse gas (GHG) emissions is considered to be “science-based” if it is in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. By following a SBT trajectory not only do we demonstrate our commitment to limiting our impact on global warming but we also have a pathway to achieving our operational net zero business carbon footprint.

Prior to the start of RIIO-ED2 WPD will establish a SBT which will be verified by the SBTi. Working towards achieving our SBT will help us to focus our efforts on the transition to the low-carbon economy, embrace new technologies and operational practices and lead on innovation.



1.2 Core Strategic Business Focus - Being Environmentally Responsible

Overview

We recognise that we have a duty to protect the environment in which we work and live and to play our part in ensuring that the regions in which we operate will be environmentally sustainable.

We are mindful of the balanced inter-relationships between environmental and ecological receptors and how these affect socio-economic outcomes for our customers. An holistic approach to managing our environmental impacts, both direct and indirect, in the context of the transition to a low carbon society and our partnerships through the Social Contract is paramount.

As detailed in our Environment Strategy further improvements in environmental protection, resource use, waste management, biodiversity, pollution prevention, supply chain, air quality and visual amenity form key environmental responsibility priorities for WPD.

These priorities will be embedded in current and future Business Plans and align with what our stakeholders have asked us to focus on.

This Chapter considers each of the improvement areas identified under our core strategic business focus area 'Being Environmentally Responsible'.

Chapter 5 explains how we currently manage each of these improvement areas and our environmental responsibilities via our company environmental management system (EMS).



Pollution Prevention

We will continue to see challenges around the use of sulphur hexafluoride (SF₆), the reduction of fluid filled cable leaks, the removal of polychlorinated biphenyl (PCB) contaminated equipment, and the minimising of environmental damage from our network.

SF₆ is a gas which is used throughout the electricity industry as an insulating medium in switchgear, and whilst SF₆ provides many tangible benefits it is a potent greenhouse gas with a high global warming potential. To address this we must continue to work and collaborate with colleagues both in SF₆ manufacturing and in other UK DNOs via the Energy Networks Association (ENA).

We operate and manage a network of over 730km of fluid filled cable (FFC). Occasionally, older cables leak when equipment is damaged, seals deteriorate or as a result of changing ground conditions. When this happens we must continue to take steps to ensure that any damage to the environment is minimised by fixing the leak quickly and the swift removal of contaminated ground.

While PCBs were never specified for use in any of our licenced areas, their use in other electrical applications led to a very small percentage of the equipment in use on our network being unintentionally contaminated during manufacture.

In 2000 a complete ban on the use of PCBs was imposed, but an exemption was made for electricity network transformers which could be left in service until the end of their useful life. This exemption ended in July 2019 when new regulations required the removal of all potentially PCB contaminated equipment by 31 December 2025.

For these reasons we have developed a comprehensive strategy to ensure that all PCB contaminated equipment will be removed from our network by 2025.



Biodiversity

We must continue to minimise the impact of our business activities on UK protected species of flora and fauna. The decline of our native species diversity in the UK is well documented and is of concern. We are conscious that our activities can impact on habitats and therefore species' ability to thrive.

The UK Governments Environment Bill details a requirement for 10% biodiversity net gain on all new projects. We are committed to meeting this requirement through our RIIO-ED2 core commitments and via local partnerships.



Air Quality

Air pollution, especially pollution from nitrous oxides (NOx), sulphurous oxides (SOx) and particulates arising from the use of diesel engines, is well documented and we are supportive of local authority clean air zones.

In order to reduce our impact in this area during RIIO-ED2 we must ensure the successful roll-out of our electric vehicle (EV) van replacement programme, revised company car leasing scheme and increase our use of mobile battery generation where feasible.



Waste and Resources

The topic of waste reduction is not a new one for us and in recent years by working in collaboration with our waste partners we have made good progress in reducing the amount of waste which we send to landfill.

However, during RIIO-ED2 we must focus on reducing the total amount of waste which we dispose of and using resources more efficiently. By working in collaboration with other DNOs and our own Purchasing Department we must actively limit the materials and packaging which we have entering into our business. We will work with manufacturers and suppliers to reduce packaging, develop take back schemes and ensure any residual packaging materials, including single use plastics, are fit for purpose, re-useable or recyclable.



Visual Amenity

Our duty to improve the visual amenity in our protected and valued landscapes is a duty we take very seriously. We are mindful that the improvement of our Areas of Outstanding Natural Beauty (AONBs) not only provides benefit for the local communities which live in or near those areas, but also supports economic welfare by making these areas more attractive to the visitor industry.

Throughout RIIO-ED2 we will continue to coordinate the undergrounding of overhead lines with established steering groups consisting of representatives from AONBs and National Parks to help to identify and prioritise where and when work will take place.

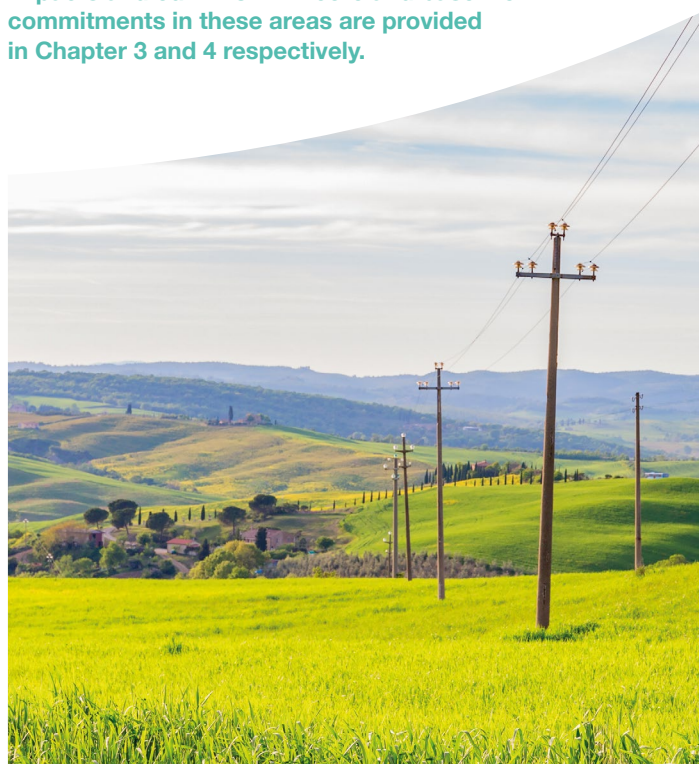
Further details of how we manage the environmental impacts and our RIIO-ED2 core and baseline commitments in these areas are provided in Chapter 3 and 4 respectively.



Supply Chain

During RIIO-ED2 we have to maintain and build upon our relationships with our suppliers and manufacturers to evaluate how goods are resourced, manufactured, packaged, transported and stored, and take into account product and material life cycle analysis as well as the principles of the circular economy.

We should influence our suppliers through driving improvements via DNO collaborations and our Procurement Tender process, providing feedback on developments made to materials, goods and services to ensure that further improvements are possible.



2 Stakeholder Engagement

Overview

Clear and open communication with our stakeholders is at the heart of our strategy and therefore an integral part of our Business Plan for RIIO-ED2.

A clear and consistent message from all of our 2020/21 stakeholder engagement events relates to business and environmental sustainability, specifically inclusive carbon management, emission reduction and our pathway to becoming a net zero organisation before the UK government aspiration of 2050.

What our stakeholders said

Understanding their concerns and priorities for our business and the wider society for the decades ahead is essential for the development of our actions and the initiatives we are planning to implement.

Table 2 - Stakeholder Top Priorities

★	Stakeholder Top Priorities
1	Set a target for zero carbon emissions from your fleet, for example, by 2030
2	Replace smaller vehicles with EVs and larger vehicles with biogas or hydrogen
3	Monitor all transport associated with your business, using telematics, to reduce the number of miles travelled
4	Eliminate the use of SF ₆ and carry out research to find alternatives
5	Use science-based targets to improve biodiversity, aiming for a net gain
6	Put in an ambitious tree replacement programme and promote this good work
7	Ensure buildings are powered by renewable energy
8	Reduce the use of single use plastics



How we have developed our RIIO-ED2 plans

We embrace the opportunity for our stakeholders to share their views on our environmental impacts, this is an essential cross reference for us to ensure we are accounting for the issues that are truly important.

Continual engagement is intrinsic to our business and in line with a view to consulting with our stakeholders right from the outset, we held six roadshow events in 2018/19 as part of our engagement programme, the focus of these events was mainly the RIIO-ED2 planning process.

Initial Stakeholder feedback from these workshops focussed upon the following;



Smarter networks



Our own decarbonisation agenda across all of our activities



Our innovation and transition to DSO



Excellent environmental performance coupled with society and community benefits



Collaboration with Local Authorities to support their net zero aspirations

In February and early March 2020 six further engagement workshops were held. Stakeholders came from a diverse range of backgrounds in terms of knowledge, experience perspectives and level of current involvement with us.

The workshops allowed us to capture a truly representative view of what our stakeholders expect us to deliver and enable a RIIO-ED2 Business Plan built wholly around these expectations. Experts for various areas within WPD participated in the workshops to ensure discussions were focussed and helpful information was made available to the stakeholders at every opportunity. The workshops provided a stage for true collaboration rather than just consulting on a set of ready-made commitments, showing flexibility and the value we attach to the views of, and engagement with our stakeholders. Our stakeholders discussed different topics with facilitators, developed new commitments for RIIO-ED2 and evaluated and attached priorities to these commitments.

Finally an electronic vote was carried out on the different commitments and priorities. The votes were captured and collated by an independent third party and presented in a number of reports grouped by topic, commitment type and popularity, thereby attaching a level of importance assigned to each commitment.

The outputs from these sessions have formed the basis of our RIIO-ED2 core commitments which we have adopted. Via the stakeholder engagement process we have demonstrated clearly how interconnected different areas of our business are.

By coordinating joint planning and decision making we have established beneficial and agreeable core commitments for both us and our stakeholders.

The structure and content of both our Environment Strategy and Environmental Action Plan have additionally been reviewed by a wide-range of stakeholders at bespoke Strategic Environmental stakeholder events held in early 2021. Engagement is at the heart of everything we do and this is demonstrated by the complete transparency of our Plan and the accountability we afford to our stakeholders.

As such we are confident that our environmental strategy and EAP proposals are focused, ambitious and stakeholder led, setting a clear and successful course to achieve net zero whilst being environmentally responsible throughout RIIO-ED2 and future price control periods.

Our Social Contract

We are in the process of producing a Social Contract which will capture and encompass all our engagements and interactions with our interested parties and partners. The combination of this and the UN Sustainable Development Goals will provide the space to capture both issues that matter locally as well as how these fit together with the global bigger picture, positioning us well to assist the communities where it can be most beneficial and needed.

We will report on the development of our Social Contract within the AER.

Further details of our Stakeholder Engagement events and outcomes are provided in our RIIO-ED2 Business Plan.

Benchmarking

In compiling our plans for RIIO-ED2 we felt it important to evaluate our level of ambition against a wider perspective. We found many similarities amongst both the utility sector and the broader business community in terms achieving net zero and managing the environment sustainably and responsibly.

Many large organisations aim to achieve net zero ahead of the UK Government Target of 2050, most targeting 2030-2035. Therefore we consider our own core commitment of achieving net zero for our internal BCF by 2028 to be ambitious and industry leading. There is consensus amongst utilities that the control of releases of harmful substances to the environment must be a key priority. Similarly with the introduction of the Government's Environment Bill many organisations are focussed on ensuring biodiversity net gain is measured and enhanced providing further evidence to us that our RIIO-ED2 approach and ambitions towards biodiversity are well placed.

Managing resource use, waste reduction and the circular economy are common themes in the business ambitions of many business organisations, including utilities. Many target zero waste to landfill and improving the efficiency of resource use but few focus on reducing the amount of waste being produced. Our core commitment to reduce the amount of waste which we produce per £ of total business expenditure could therefore be considered both ambitious and resolute.



3 RIIO-ED2 Core Commitments and Baseline Requirements

Overview

This Chapter details our RIIO-ED2 Business Plan core commitments, wider commitments and the baseline requirements to ensure we achieve net zero and remain environmentally responsible, our two core strategic business ambitions as presented in our Environment Strategy.

Here we set out all of our RIIO-ED2 ambitions to meet our stakeholders' net zero and environmental responsibility expectations, by reducing our environmental impact and decarbonising our business activities.

The Chapter details how we will continue to reduce our environmental impact during RIIO-ED2 by building on our RIIO-ED1 performance which is also presented. Our Plans for RIIO-ED2 involve further reductions in the impact caused by our existing assets (FFC, SF₆, waste) as well as the indirect environmental impact linked to our supply chain management, resource use and understanding of our natural capital assets.

Potential Re-openers

During RIIO-ED2 there is the potential for legislative changes which may impact upon our core commitments and our ability to achieve them.

Areas such as the use of creosote, excavated spoil and the use of SF₆ may all be subject to changes and therefore re-openers may be required.

Our environmental core commitments for RIIO-ED2

Under each core commitment we will provide information on how and why we arrived at the commitment, our current performance in relation to the commitment, and the actions required to deliver the commitment. The benefits to stakeholders in achieving the commitments are presented in Table 3 - Our environmental core commitments for RIIO-ED2.

Table 3 - The customer benefits of our core and wider commitments for RIIO-ED2

Benefit to customer and environment	Our RIIO-ED2 Core and Wider Commitments						
	Reduce BCF	Roll-out EV	PV Installation	Waste Reduction	FFC oil loss reduction	SF ₆ loss reduction	AONB undergrounding
A cleaner more sustainable environment	●	●	●	●	●	●	●
Lower greenhouse gas emissions	●	●	●	●		●	
Healthier, more stable and sustainable ecosystem	●	●	●	●	●	●	
Reduced use of raw materials	●	●	●	●	●	●	
Healthier, safer, cleaner local communities	●	●	●	●	●		●
Healthier and cleaner working environment and improved employee welfare	●	●	●	●	●		●
Increased amenity value from ecological balance and cleaner environment				●	●		●
Reduced noise and reduced atmospheric particulate matter	●	●		●			
Operational cost savings	●	●	●	●	●	●	●
Reduced environmental impact from operations	●	●	●	●	●	●	
Removal of potentially harmful pollutants from the environment	●	●		●	●	●	
Reduced societal burden from waste (including energy wasted)			●	●	●	●	
Increased resource efficiency from materials management circular economy implementation				●		●	

3.1 Becoming a Net Zero Carbon Organisation

We are committed to becoming a net zero carbon organisation twenty two years ahead of the UK government's 2050 target. To meet this target, we will:



Reduce our Operational Business Carbon Footprint (BCF)

Throughout RIIO-ED2, by reducing our internal BCF (excluding network losses and scope 3 emissions), we will remain on track to be a net zero carbon business by 2028.

We will also broaden our understanding of the impact which our Scope 3 indirect emissions (Products, Goods and Services) have on our broader BCF and look to measure these during RIIO-ED2.



Set Science Based Targets (SBTs)

We will engage with the Science Based Target Initiative (SBTi) to ensure that our SBT are valid and effective.

We will not only limit the impact on global carbon emissions and achieve a SBT but will also aim to reach net zero (including network losses) by 2043, seven years ahead of the UK government's target date.



Measure embodied carbon

Embodied carbon is the carbon footprint of a material or a product. It takes into account how much greenhouse gas is released throughout the supply chain and is often measured over the entire life cycle of a product or service.

During RIIO-ED2, we will work collaboratively to measure the embodied carbon associated with our major projects as well as a number of our key operational activities.



Reduce our network losses

Alongside our own operational internal BCF, we also report the carbon emissions associated with our network losses.

These must be accounted for in any SBTs to which we commit.

Our Core Commitment

WPD Business Carbon Footprint (BCF)

Core Commitment 29

Achieve net zero in our internal business carbon footprint by 2028 (excluding network losses) and follow a verified science based target of 1.5° to limit the climate impact of our activities.

Feedback from our stakeholder engagement events has identified that reducing our carbon footprint during RIIO-ED2 in relation to our own activities is the significant issue and should be a key priority for us throughout RIIO-ED2, showing leadership in the industry and society and setting ambitious targets for improvement. Furthermore by adopting a sector-wide methodology of calculating BCF we can ensure consistent and accurate reporting of BCF across our business and amongst other DNOs.

Prior to the start of RIIO-ED2 we will establish a Science Based Target (SBT) which will be verified by the UN Science Based Initiative (SBTi). In collaboration with our external consultants we are in the process of submitting our proposed SBT to the SBTi. We have already carried out the required scoping exercise of our Scope 3 emissions and will be in a position to submit our proposals to the SBTi in Q3 2021.

Working towards achieving our SBT will help WPD to focus our efforts on the transition to the low-carbon economy, embrace new technologies and operational practices and lead on innovation.

By following a SBT trajectory not only do we demonstrate our commitment to limiting our impact on global warming but we also have a pathway to achieving our operational net zero internal business carbon footprint.

In order to meet our SBT we will reduce the following aspects of our BCF over the RIIO-ED2 period;

- **Building Energy Use (Scope 2)**
- **Operational Transport (Road) (Scope 1)**
- **Fugitive emissions (SF₆) (Scope 1)**

Furthermore we will commit to reporting on a wider range of our Scope 3 (indirect emissions) over the course of the RIIO-ED2 period.

We currently report a number of scope 3 emissions including contractor emissions and business mileage (road, rail, air).

We will further extend our understanding of our scope 3 emissions relating to the following;

- **Products, goods and services/water supply/ water treatment/waste disposal/material use/ smaller contractors (e.g. courier)**

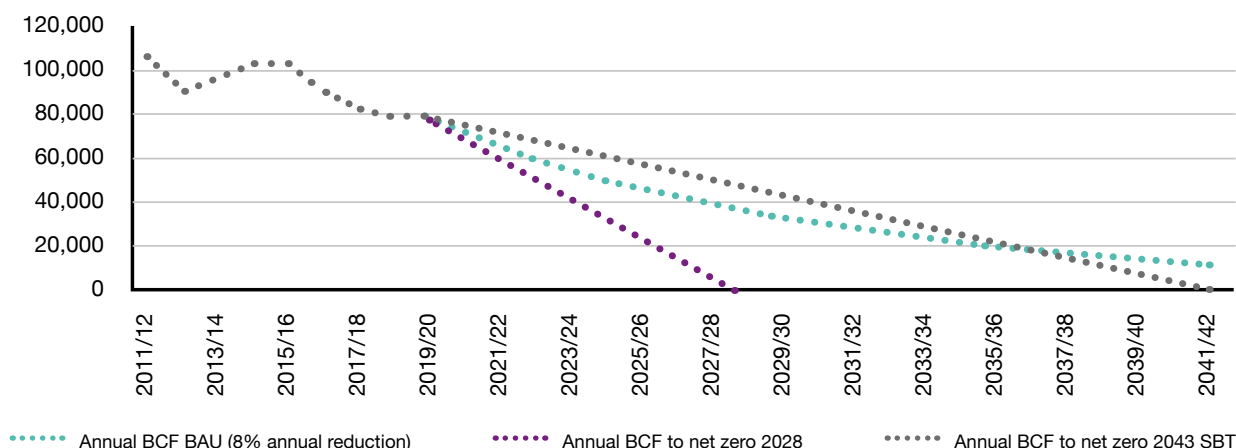
Our progress towards achieving the SBT will be reported on annually to the SBTi and via our Annual Environment Report, which will also contain details of progress against our internal BCF reduction measures detailed below;

In line with this and our commitment to becoming a net zero carbon organisation by 2028, we will:

- **Install low carbon technology (LCT) generation at all suitable depots and offices to produce electricity to meet operational demand.**
- **Purchase all building energy from a renewable source and account for this in our reported BCF.**
- **Reduce energy use in our buildings. By the beginning of RIIO-ED2 we expect the carbon emissions associated with building energy use, which includes electricity, gas, WPD telecoms and substation use, will be approximately 40% lower than current levels.**
- **Ensure that all new WPD offices and depot buildings achieve an 'Excellent' BREEAM rating.**
- **Replace a minimum of 89% of our existing operational fleet with electric vehicles by 2028.**
- **Cut carbon emissions from our operational fleet by 50%.**
- **Install electric vehicle charging infrastructure at all our operational sites and key substation sites.**
- **Include only non-carbon technology cars in our company car scheme by 2025.**
- **Reduce business travel by encouraging more remote working and virtual meetings.**

WPD Business Carbon Footprint (BCF)

Fig. 3 Annual BCF (tCO₂e) (excluding losses) to net zero by 2028, 2043 (SBT 1.5C Scope 1 & 2)



Offsetting

We have received positive feedback from our stakeholders that we should commit to achieving net zero well before the Government target of 2050. The feedback suggests that we should target as earlier a date as possible and actively consider the use of UK based offsetting in the short to medium term, if necessary.

When asked directly if WPD should use offsetting to reduce its carbon emissions in RIIO-ED2, over 50% of our stakeholders gave a positive response, indicating that our stakeholders consider small-scale UK based offsetting is acceptable in order to achieve our core commitment of net zero carbon emissions by 2028.

Our intention for RIIO-ED2 is to develop a broad portfolio of UK based offsetting including habitat creation, for example tree planting, peatland and sea grass restoration, as well as local community based offsetting schemes such as Solar for Schools. All of our offsetting schemes will be UK based within our licence areas and therefore bring direct and tangible benefit to our customers and the communities which we serve.

Throughout the remainder of RIIO-ED1 we will trial a number of the aforementioned schemes and work in collaboration with the Centre for Sustainable Energy and the Carbon Trust. With our stakeholders we will determine the offsetting schemes which would be the most appropriate for use and add most value to our customers should we require them to meet our net zero target of 2028.

Note: Offsetting will not be used against any of the SBT's which we set.

Insetting

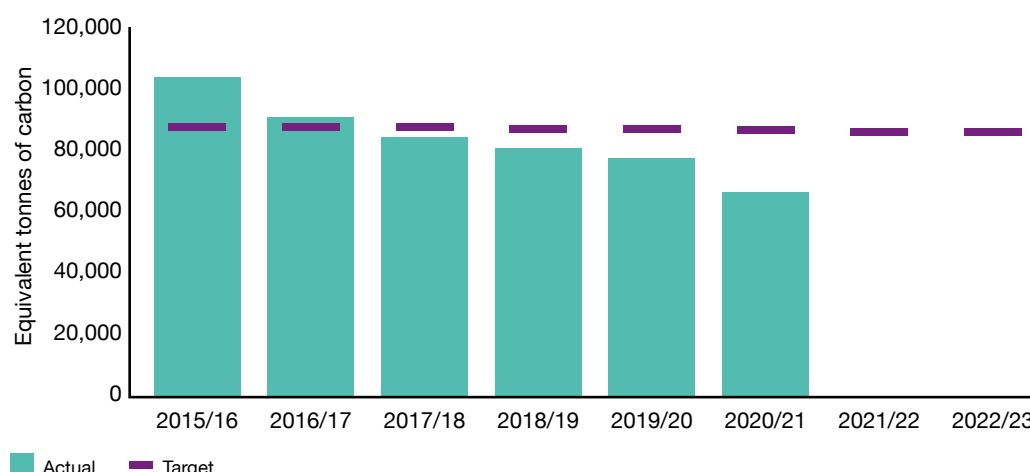
We are also investigating the assessment of our potential carbon insetting activities, for example our low carbon technology (LCT) innovation projects and the potential to work with third parties on the insetting opportunities utilising our existing land portfolio.

RIIO-ED1 Performance – BCF

To date during RIIO-ED1 we have achieved a 27% reduction in our Business Carbon Footprint (BCF) compared 2012/2013.

The following chart shows the reported BCF (including contractor scope 3) throughout RIIO-ED1 to date:

Fig 4 Our annual BCF (tCO₂e) against RIIO-ED1 target



Our Wider Commitments

Business Carbon Footprint – WPD Operational Transport

Wider Commitment

89% of commercial van fleet to be non-carbon vehicles by 2028, lowering annual transport emissions by 10,050 tCO₂e (tonnes of carbon dioxide equivalent).

The equivalent carbon emissions (tCO₂e) from our own Operational Transport fleet accounts for 41% (2019/20 data) of the total WPD Business Carbon Footprint.

It is therefore important that throughout RIIO-ED2 we have a targeted core commitment which specifically aims to reduce the carbon emissions associated with our operational vehicle fleet. Our stakeholders have told us that this is a significant issue for them with 'Replace smaller vehicles with EVs and larger vehicles with biogas or hydrogen' ranked as the second highest priority area for us to action during RIIO-ED2.

Our strategy is to deliver a plan with low emission targets that are demanding in terms of timelines and involve early adoption of new technology to support our net zero commitments, the UK Government ambitions and the demands of our stakeholders. Hence a plan to adopt EV technology for 89% of our transport fleet by the end of 2028; resulting in 100% replacement of WPD's van fleet by the end of 2030, with the exception of larger specialist vehicles.

Following our strategy we expect that at the end of RIIO-ED2 our operational fleet carbon emissions savings will have increased to 10,050 tCO₂e.

The adoption of electric vehicles through RIIO-ED2 is calculated to provide the following cumulative CO₂ savings:

Table 4 - EV adoption carbon savings

Year	tCO ₂ e
2024	4,738.20
2025	7,154.12
2026	8,433.71
2027	9,471.69
2028	10,050.64

Fig.5 Our Business Carbon Footprint

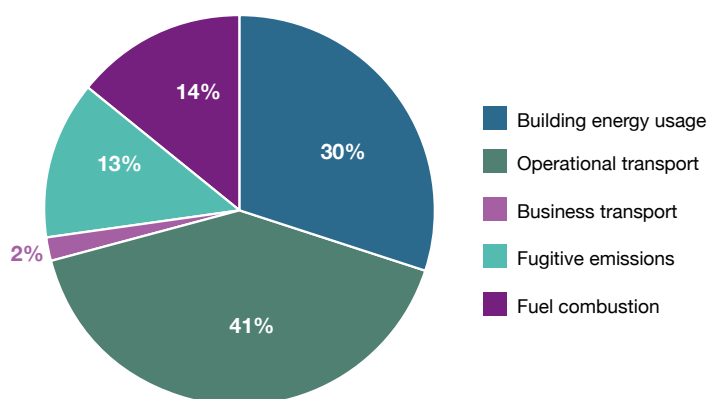
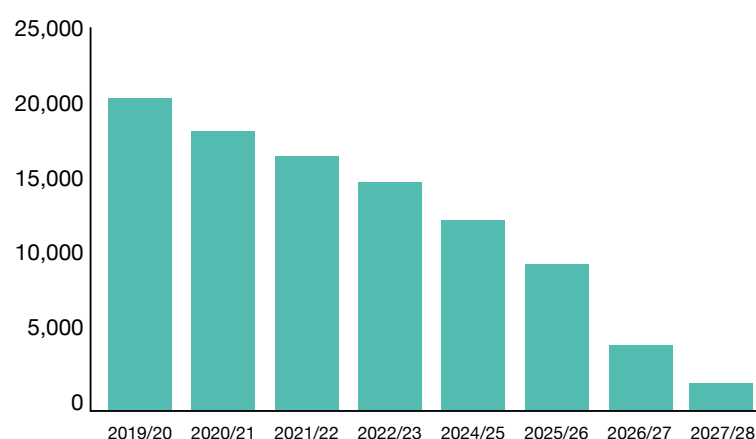


Fig.6 Our RIIO-ED2 trajectory for operational fleet (tCO₂e)



Further details are available in Engineering Justification Paper EJP001 - Fleet Electrification.

Business Carbon Footprint – WPD Operational Transport



Company car scheme

Our company car scheme is to be adapted to facilitate the removal of combustion engine vehicles by 2025. A pure EV Contract Hire Scheme has been commissioned during 2021 benefiting from the reduced Benefit in Kind of electric vehicles.

The ordering of cars with internal combustion engines (ICE) will stop from mid-2022 enabling a natural transfer from the Employee Ownership Scheme to EV Contract Hire Scheme by 2025. There is no capital outlay by our business for either scheme arrangement, although car leases are accounted for on company balance sheets.

Further details of our Electric Fleet roll-out during RIIO-ED2 and Company Car Scheme can be found in our Strategy document entitled 'Decarbonisation of Transport in WPD'.



Business mileage and travel

We will reduce our business travel via the adoption of remote working where practical and in accordance with our policy for working from home.

The combination of this framework for remote working and increased use of video technology for holding virtual meetings will reduce business travel mileage, reduce emissions and time spent travelling.

Team working is critical to our success, it is clear that the business can still operate effectively using virtual and remote practices in a controlled framework, as demonstrated during the Covid-19 pandemic.

Our Wider Commitments

Business Carbon Footprint – WPD Buildings

Wider Commitment

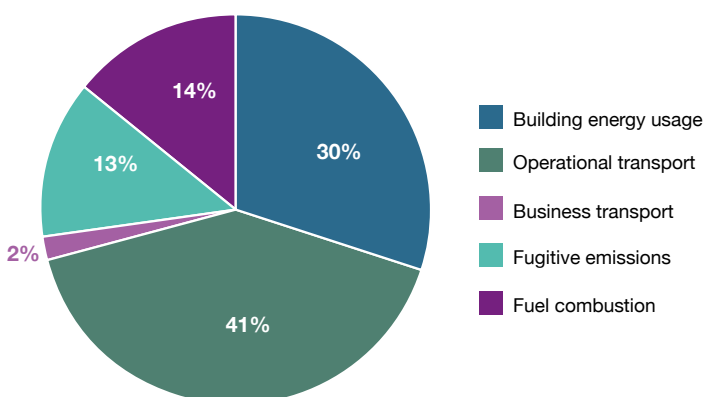
Install renewable local generation at all suitable offices and depots with a capability to save 3000 MWh per year.

The equivalent carbon associated with our building energy use is the second largest contributor to our annual Business Carbon Footprint at 30%.

Our stakeholders also consider ‘Ensuring that buildings are powered by renewable energy’ to be a key priority for us.

Therefore, and similar to our approach with reducing the carbon emissions associated with our operational fleet vehicles, a separate specific wider commitment has been established to install renewable local generation at all suitable offices and depots.

Fig.7 - Our Business Carbon Footprint



Photovoltaic (PV) Generation

We regard solar PV to be an important, cost-effective contributor towards decarbonising our non-operational property portfolio by mitigating electrical import from the national grid. In light of this and our wider commitments we have undertaken an extensive study of our depots and offices to assess their potential for economic PV exploitation in RIIO-ED2.

Solar PV systems generate energy all through the year but in the winter month's production is typically around 20% of the maximum summer output, and throughout the day solar energy production usually peaks at midday. Therefore, the maximum output from a PV array is at midday, mid-summer.

As a licenced electricity distributor, we are not allowed to derive income from power which we have generated which is exported to the grid. With this constraint in mind, the economic justification is weak for us to install an array which generates more than our buildings' power needs, because the surplus will be exported with no financial return.

If peak generation is midday in mid-summer, then it follows that the optimal array size should be calculated against our buildings' peak power requirements at that time. In other words, it is uneconomic to buy an array which generates more power than our buildings can use at midday in mid-summer.

Evidence-based analysis has been undertaken of the total annual consumption of electricity at all of our sites, using half hourly meter readings. Optimised PV designs have been deduced from this information, together with data from site-by-site surveys and proprietary analysis software to calculate designs for PV arrays.

In line with our core commitment our RIIO-ED2 target is to reduce carbon associated with our building energy use by 17% per year.

Working within the economic limitations of the nil-export to grid constraint described above, we have deduced an economic sweet-spot at which both carbon offset and economic return are optimised. The following table provides a summary of the costs and benefits of this proposal for RIIO-ED2:

Table 5 - Costs and benefits of PV installation

Total solar PV generating capacity (at peak periods)	3.152 MW
Total annual generation from solar PV	3,093 MWh
Electrical savings as percentage of total consumption	17%*
Total cost of PV installations	£3.42m
Estimated annual savings (at 13.3p/kWh)	£411,380
Return on investment in	8-9 yrs
Annual CO2 savings	1,452 tonnes/yr

* In respect of the power which we buy from the grid, we will continue to source from suppliers whose generation sources are from sustainable technologies.

Further details are available in Engineering Justification Paper EJP011 - Incorporating Solar PV and Battery Storage in our non-operational sites.

Business Carbon Footprint – Our Buildings

We operate from 60 offices that vary in age and construction. We know that when refurbishment of these buildings takes place, there are opportunities to improve their energy efficiency therefore we will ensure that all new WPD offices and depot buildings achieve an ‘Excellent’ BREEAM rating.

Furthermore in the light of the relatively modest 17% saving in consumption from PV arrays, additional studies are currently underway to identify opportunities to reduce power consumption at our depots and offices.

- We will make sure that heating, air conditioning and other appliances (such as office lighting) are fitted with appropriate controls to minimise consumption at times when areas of our buildings are unoccupied.

This will include a review of all of our fossil-fuelled heating systems to identify candidates which are inefficient and therefore justifying of replacement with a more sustainable alternative.

- We will survey all of our buildings to identify opportunities to make them more energy efficient. In doing this we will identify and prioritise carbon benefit gains against cost value, creating an action plan of carbon saving initiatives to be undertaken during RIIO-ED2.

This could include replacing windows which do not conform to modern thermal performance standards, or other measures to improve the thermal performance of the internal and external fabric of our buildings, such as wall or roof insulation, or the installation of heat recovery systems.



REGO (Renewable Energy Guarantee of Origin) Energy Supply.

REGO certificates certify that the energy supply has been produced from 100% renewable sources (wind, solar, geothermal, tidal etc. and does not include nuclear). We currently procure electricity through a REGO certified tariff across all of our depot locations and unmetered supply across all of our four licence areas.

The continued procurement of electricity via REGO will significantly aid in helping us to reach our carbon reduction targets. During RIIO-ED2 we will continue to work with Ofgem to ensure that our purchase of our electricity through a REGO scheme is acknowledged on our Ofgem annual BCF.

Our Baseline Requirements

Reduction of embodied carbon within our network

Our stakeholders have asked us to look beyond our ‘business as usual’ carbon footprint and to address the embodied carbon in our equipment and services.

Embodied carbon is the carbon footprint of a material or a product. Whilst a carbon footprint can be used to express the associated carbon of operating a transformer the embodied carbon would instead describe the carbon footprint of the manufacture/use/disposal of the transformer.

Embodied carbon calculations therefore require an understanding of all materials (including extraction), methods of manufacture/ construction and other related activities such as storage and transport, in-use and end of life disposal.

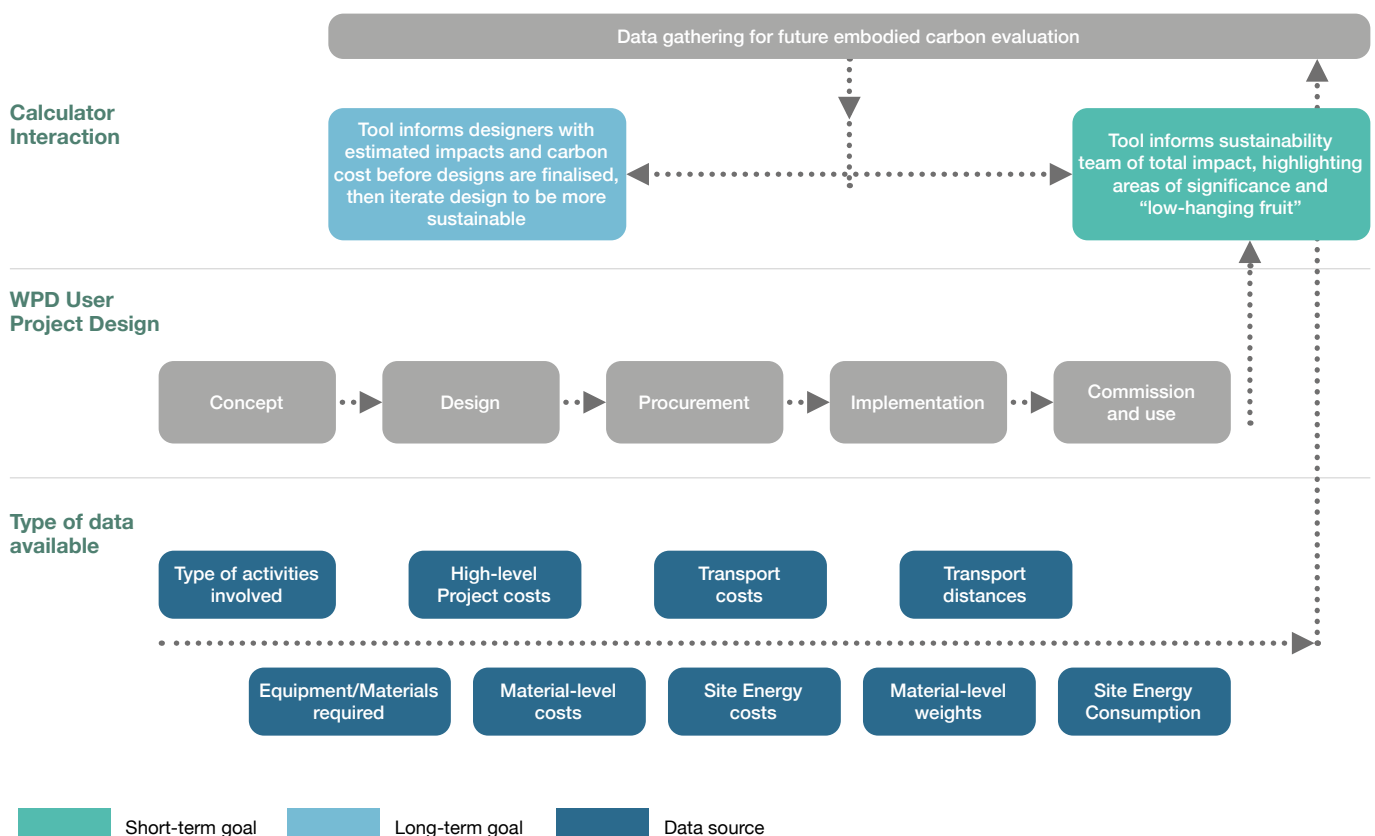
We are establishing a methodology to assess and measure the embodied carbon associated with new projects which we will use during RIIO-ED2.

The methodology incorporates procedures to determine the embodied carbon of purchased standard plant equipment, network installation activities, equipment operation and end of life processes.

The development of the methodology is based on the following 5 step plan:

- 1. Defining the goal** – determines key requirements of the system in terms of how it can meet RIIO-ED2 requirements and aid project designers in making more sustainable decisions.
- 2. User requirements** – understand tool use, beneficial outputs, available data, decision making process and categorisation of different projects.
- 3. Project categorisation** – understand different types of projects, design processes, decision responsibilities and project commonalities.
- 4. Proof-of-concept calculations.**
- 5. Consolidation of method** – analyse different options and solution optimisation.

Fig. 8 Typical project design process alongside the data available at each stage;



Our Baseline Requirements

Reduction of embodied carbon within our network

By the end of RIIO-ED2, all new major infrastructure projects will include a carbon reduction plan, detailing how many tonnes of emitted and embodied carbon are in the equipment, materials and operational activities associated with the project.

This new process will be a challenge for us and our suppliers and we plan to work closely with equipment manufacturers, material providers, stakeholders and employees to share best practice.

We will also share our learning with colleagues across the sector through our links with the ENA and other organisations.

During RIIO-ED2 we will;

- Look to understand and reduce the impact of embodied carbon in our network.
- Establish a carbon reporting template for new projects within remaining years of RIIO-ED1 to establish a referenced baseline for embedded carbon for all new projects, for example kgCO₂ per £ project spend.
- Establish a baseline and an appropriate target to reduce embodied carbon on new major infrastructure projects.
- Monitor and report on embedded carbon in new projects including collaboration with supply chain on addressing challenges to reduce embedded carbon on the network.

Network Losses

At the start of RIIO-ED1 we created a bespoke Losses Strategy. This starting position centred on the IFI funded report produced by SOHN Associates and Imperial College in their 'Management of Electricity Distribution Network Losses'.

The recommendations in this report formed the basis of our Losses work throughout the RIIO-ED1 period. During RIIO-ED1, we also completed the NIA Losses Investigation project, a ground breaking losses project which through a field-work programme, monitored HV and LV networks, using one minute resolution logging to provide comprehensive information about actual power flows, allowing actual losses to be assessed for the specific networks.

For LV feeders, our project utilised the Manx Electricity Network where a single operator provides the functions of generation, distribution and supply giving us a real-time holistic model.

One key finding from the project is that, even with 100% Smart Meter penetration, the accurate measurement of Losses remains a complex task.

During RIIO-ED1 we continue with their Losses Strategy, replacing the pre 1958 transformers, the tapering of LV and 11kV circuits was no longer permitted, likewise the use of small size cables was no longer permitted. This redefined cable sizing policy was incorporated in our Policy documents and was rolled out as business as usual. With transformers we had previously focussed work on transformers of the older large ground mounted units with bigger losses footprints. In 2019 we broadened the losses focus to single phase pole mounted transformers. Single phase transformers are outside of the Eco design transformer legislation, the amorphous cored transformers that have been purchased have reduced the iron losses to 16W compared to the current CRGO transformer iron losses of 65W. This takes us beyond the Eco design standards.

The Government's Clean Growth Strategy and the de-carbonisation of transport, will affect network losses as demands change. Battery Electric Vehicle (BEV) charging is likely to be the first major low carbon technology demand to be seen on the low voltage network, we are currently working with a number of Local Councils to create charging hubs of rapid DC chargers powered by using low loss amorphous cored padmount transformers.

The LV Templates project provided data on the voltages seen on the LV network and concluded that there is scope to reduce the network voltage and remain within the statutory voltage parameters. Reducing the voltage will reduce the overall demand and will contribute to loss reduction. We have completed a programme of voltage reduction in the South Wales area, and results have shown that a 0.88% reduction in primary voltage resulted in an average demand drop of 1.16%.

As a result of this, losses increased in percentage terms but this is because the current has to be slightly higher to deliver the same power, which increases the variable loss, but the power required is lower, therefore overall losses are reduced. Based on these results, during RIIO-ED1 we completed a programme of voltage reduction across 1403 substation sites in all our licence areas.

Stakeholder engagement is hugely important to every part of our business, since 2014 we have held regular losses themed stakeholder engagement events and the details of which can be found in the current version of our Losses Strategy document, which is reviewed yearly. Stakeholders continue to view a reduction in our network losses as important and the issue consistently ranks highly on our stakeholder voting polls.

In RIIO-ED2, we are committed to delivering further reductions in a number of areas by:

- Continuing to invest in the most efficient and low loss transformers in line with the EU Eco Design Regulations and going beyond with amorphous cored transformers.
- Installing cables with larger cross sectional areas, as standard - we will use 300mm² low voltage cable, replacing the use of 185mm².
- Discontinuing the use of smaller transformer sizes on our overhead line networks and removing 25kVA single phase and 50kVA three phase units from our traditional range. Larger transformers mean that losses are reduced as a result of lower energy loss in the transformer core.

Progress on our commitments detailed above will be reported annually via the AER.

During RIIO-ED1 we have been involved with the ENA Technical Losses Working Group, including research completed by the Engineering Consultants WSP who produced a report "Impact of Low Carbon Transition", which shows that loads on the network during RIIO-ED2 could increase as much as 40% as a result of the introduction of Low Carbon Technologies (LCT's) and the UK Government's Clean Growth Strategy, the Energy White Paper and the Future Homes Standard.



We are committed to reducing losses associated with our network and we have published a Losses Strategy which is available on our website at: -

www.westernpower.co.uk/smarter-networks/losses

Furthermore our Losses Strategy provides an introduction to the theory behind losses and the main ways that they can be produced as well as providing descriptions of our approach to loss reduction through asset replacement, improved understanding, stakeholder engagement and revenue protection.

3 RIIO-ED2 Core Commitments and Baseline Requirements

3.2 Being Environmentally Responsible

Overview

We are committed to ensuring our activities do not have a harmful impact on the environment in which we operate - a standpoint shared by our stakeholders.

Our stakeholders have told us that improvements in environmental protection, resource use, waste management, biodiversity, land, air and water quality, reducing leaks from our network equipment, sharing best practice and working collaboratively with other DNOs and organisations including regulators, contractors and suppliers should be key environmental responsibility priorities for us in RIIO-ED2.

To achieve this during RIIO-ED2 we will;



Protect the local and regional environment

from damage when carrying out our activities and from the release of harmful substances. During RIIO-ED2, we will focus on the protection of the natural environment in the communities we serve. We will continue to see challenging targets for SF₆, the reduction of fluid filled cable leaks, the removal of polychlorinated biphenyl (PCB) contaminated equipment and the minimising of environmental damage from our network.



Protect Biodiversity

we will minimise the impact of our business activities on UK protected species of flora and fauna and will also introduce a natural capital assessment tool for all new major infrastructure projects to enhance biodiversity and local amenity value.



Monitor our resource use and reduce waste.

During RIIO-ED2, we will continue to progress towards sending zero waste to landfill and we will monitor our use of resources and reduce the amount of waste material produced per £ of total business expenditure. Working in partnership with our suppliers, service providers and waste contractors, we will look to maximise the reusability of new materials and reduce waste.

We have developed the following core commitments for RIIO-ED2 to ensure that we are environmentally responsible.

Our Core Commitments

Fluid Filled Cables (FFC's)

Core Commitment 30

Reduce the volume of oil leaked from fluid filled cables by 50% by 2028 and replace 90km of the worst leaking circuits with non-oil alternatives; putting WPD on track to remove all oil-filled cables by 2060.

The risks associated with operating FFC and related assets can be reputational, regulatory and financial. The primary risk is associated with the leakage of cable fluid into the environment causing pollution. Leaks typically occur as the cable sheath deteriorates with age, at joint failures or as a result of third-party damage.

We will put in place measures to help reduce the overall number of leaks and the volume of oil lost across our network.

For our stakeholders 'Reduce the number of environmentally harmful leaks of greenhouse gases/oils from our equipment' was ranked 6th of 24 overall.

For these reasons we will reduce the volume of oil leaked from fluid filled cables from our current RIIO-ED1 position by a further 50% and replace over 90km of the poorest performing Extra High Voltage FFC on our network.

The cost of cable replacement (non-oil filled) will provide better value for money in the long-term when considered against continued costs of repairs and remediation; having managed the impact out at source.

To minimise environmental damage and to meet our commitment we will:

- Proactively inject all fluid filled cables that have significant leaks on our network with perfluorocarbon trace (PFT) a benign chemical that allows quick location and repair of leaks.
- Boost our efficiency when dealing with fluid filled cable leaks by improving response times and taking intervention action at an earlier stage.
- Adopt new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cables.
- Select for replacement cables with a history of high leak rates.
- Continue to utilise our central company database as our key reporting tool to capture and report on FFC related data; feeding into our environmental reporting and AER.

Additional mitigation may range from visual inspection or PFT tracing to spot repair, sectional drain and seal or the full extraction of the cable. While taking these actions to further minimise the impact from network leaks on the environment we will also continue to examine and evaluate new technologies which may further improve early leak detection and the management of the FFC network, through continued collaboration with other DNOs within the FFC Liaison group within the Energy Networks Association.

Based upon the cost benefit analysis (CBA) produced for this commitment achieving a 50% reduction in volume of oil leaked from FFC would result in a saving of £0.1M per annum of RIIO-ED2.

Further details are available in Engineering Justification Paper EJP045 - Fluid Filled Cable Replacement.

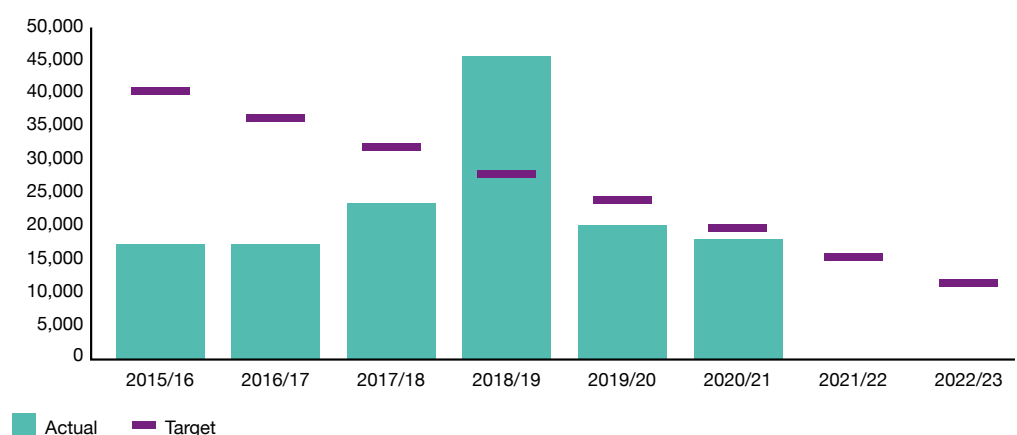
RIIO-ED1 Performance

During RIIO-ED1 to date we have reported 75% fewer FFC leaks.

There has also been a 59% reduction in the total volume of oil from FFC lost, down from 44,582 litres in 2012/13 to 18,411 litres lost in 2020/21.

This is illustrated in the graph opposite:

Fig. 9 Fluid filled (oil) cable leaks vs RIIO-ED1 reduction target



Our Strategy for Sulphur Hexafluoride (SF₆)

Core Commitment 31

Deliver a 20% reduction in SF₆ losses from RIIO-ED1 and collaborate with industry partners to develop technological alternatives to reduce overall volumes of SF₆ on the system.

Sulphur hexafluoride (SF₆) is a gas which is used throughout the electricity industry as an insulating medium in switchgear, SF₆ provides many tangible benefits, however it is a potent greenhouse gas with a high global warming potential (GWP). As such our network equipment is monitored carefully for any leaks and only suitably trained staff as per the regulations are allowed to handle the gas and deal with topping up and maintenance of SF₆ equipment.

Our stakeholder feedback suggests that reducing SF₆ losses is a key priority for us throughout RIIO-ED2, 'Eliminate the use of SF₆ and carry out research to find alternatives' is ranked in the top 5 stakeholder environmental action areas.

During RIIO-ED2 we will reduce our SF₆ losses by a further 20% compared to the reported losses in RIIO-ED1, in order to achieve this we will;

- Continue to work at an industry level with manufacturers to help to develop viable alternatives to SF₆.
- Continue with non SF₆ switchgear installation (where suitable alternatives are identified at all voltage levels).
- Continue to implement the "leak and replace" regime on 11kV distribution assets and a "two leaks and replace" regime on larger or higher voltage assets.
- Investigate potential for SF₆ recycling.

Whilst a 20% reduction may appear a conservative target for RIIO-ED2 it does represent an increase on our RIIO-ED1 commitment. Furthermore the following challenges are associated with this commitment;

- Minimal alternatives to SF₆ currently available.
- Dependence on manufacturers alternative product development.
- Timescales involved in proving efficacy of alternatives to SF₆.

We will report annually on both our SF₆ bank and leakage reduction rates via the AER.

RIIO-ED1 Performance

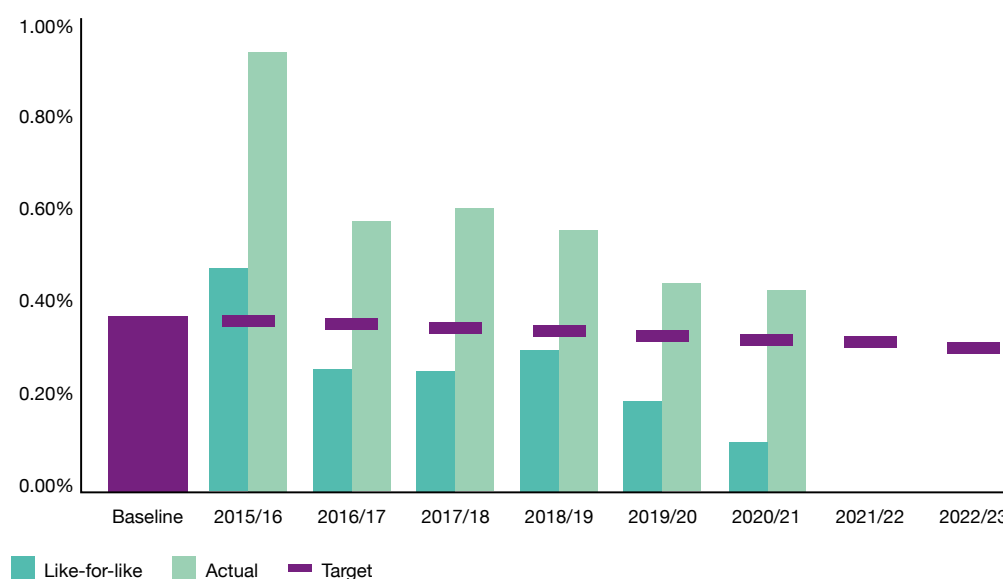
We have reduced the levels of SF₆ loss to the atmosphere during the current RIIO-ED1 period.

The graph opposite shows our performance against the baseline target on a 'like for like' basis.

It also shows our actual level including both manufacturers' returns and ad hoc top-ups.

Both have been more accurately recorded since 2015/16:

Fig. 10 SF₆ Leakage rate (%) Our Total



Monitor our use of resources and reduce waste

Core Commitment 32

Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage of waste produced.

Throughout RIIO-ED1, we have significantly reduced the amount of waste sent to landfill. Our stakeholders told us that we need to continue to strive for better performance in this area so we have carefully considered how we can best achieve this. Rather than just targeting specific waste streams we examined the issue of waste in a more holistic way by targeting our waste production at source, linking this to the wider topic of resource use to identify ways of reducing the waste overall.

Simultaneously we want to keep the focus on driving down landfill disposal with a view to our actions providing the best overall tangible benefit to our stakeholders and the wider environment.

While we have made excellent progress on the reduction of tonnage of waste and waste sent to landfill in RIIO-ED1, for RIIO-ED2 we have selected a specific measurable metric allowing the progress over the price review period to be evaluated in the right context, aligning the increase in work programmes with the production of wastes. In order to accomplish this we have selected the metric of total business expenditure to measure the waste reduction against.

We currently produce 3.0 tonnes of waste per £M total business expenditure (2020/21 figures). By the end of RIIO-ED2, we will reduce this by 0.96tonnes (30%) to 2.24 tonnes of waste per £M total business expenditure.

We will during RIIO-ED2 report progress on our core commitment 32 in terms of the tonnage of waste being sent to landfill, the waste recycled and waste reused as a percentage of the total waste produced via the business environmental reporting and AER.

During RIIO-ED2, we will improve our management of waste and resources through:

- Working with our waste management contractors to find alternative disposal routes for the small amount of our remaining non-hazardous waste being sent to landfill.
- Working with our suppliers through the procurement tender process to align them with our aims of reducing waste and using resources more sustainably. By the end of RIIO-ED2 we will purchase 20% recycled or reused materials as a percentage of total materials purchased.
- Implementing circular economy principles into company purchasing processes.
- Eliminating unnecessary packaging materials and obtain more recyclable alternatives where the packaging is essential for the protection and integrity of the products.
- Working with manufacturers directly to implement manufacturer 'take back' schemes to ensure packaging can have a longer lifespan.
- Investigating alternative materials available for packaging to increase the durability of packaging materials.
- Investigating opportunities to turn waste materials into a resource for third parties.
- Seeking collaboration opportunities within industry and beyond.



Single use plastics

Our stakeholders are keen for us to reduce the amount of single use plastics entering our business. Reducing this waste stream supports not only our commitment of reducing waste overall but also our ambition to use resources more efficiently and sustainably and offers an excellent area for collaboration with our suppliers to reduce the environmental burden.

While good progress has been made with smaller items like vending machine cups further evaluation of our incoming goods is expected to yield more opportunities and examples where items may be substituted.

We will consult with our staff to identify where single use plastics are currently used in our depots and in products used on the network. This will give us a platform from which we will work with our manufacturers and suppliers to obtain more goods made from recycled plastics, eliminate plastic packaging and plastics which cannot be recycled in favour of more suitable materials.

Monitor our use of resources and reduce waste

RIIO-ED1 Performance

During RIIO-ED1 we have shown that we have met the initial target of reducing our waste by 20% from 2015/16 to 2017-18 and we are well on track to meet the 5% reduction per annum until the end of the RIIO-ED1 reporting period.

We have reduced the amount of waste we send to landfill by 83% (down from 2556 tonnes in 14/15 to 430 tonnes in 2020/21), as illustrated in the graph below:



The overall tonnage of waste we produced in 2020/21 has reduced by 1646 tonnes or 25% from our 2018/19 total of 6531 to 4885 in 2020/21.

Fig.11 Tonnage of waste to landfill

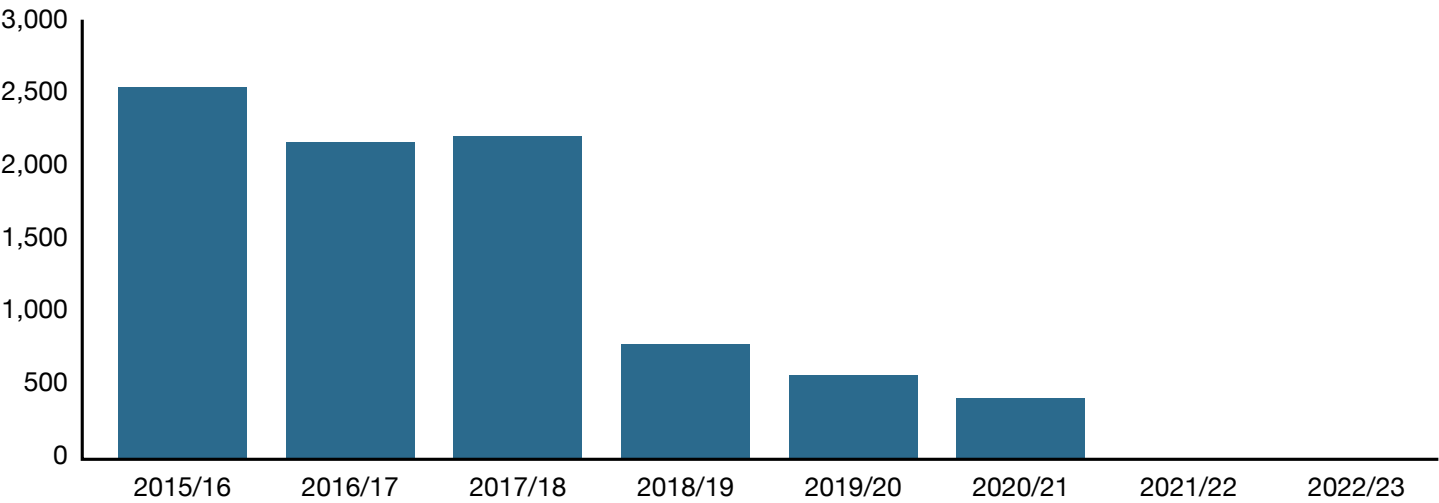
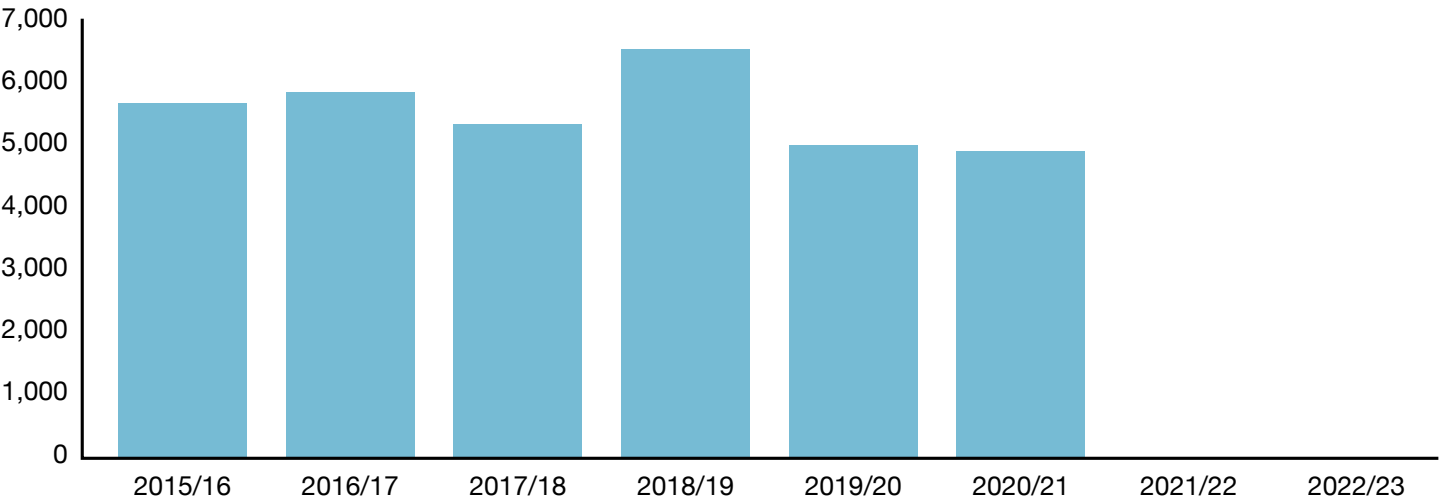


Fig.12 Annual Tonnes of waste



Removing targeted overhead lines in National Parks and Areas of Outstanding Natural Beauty (AONBs)

Core Commitment 33

Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.

While overhead lines are widely accepted as being part of the countryside, there are a number of protected landscapes, including National Parks and Areas of Natural Beauty (“AONB”) across our geographical footprint where removing our overhead lines and replacing them with underground cables would visually improve matters.

We coordinate the undergrounding of overhead lines with established steering groups consisting of representatives from AONBs and National Parks who help us identify and prioritise where and when work will take place.

We provide information and appropriate assistance to relevant stakeholders to help them in the selection and prioritisation of appropriate schemes, understanding associated costings and complete feasibility assessments.

We have always been committed to working with the organisations responsible for National Parks and AONBs.

For RIIO-ED2, we will aim to remove 10km every year and have therefore set ourselves a target of 50km in total.

We will again engage with our Stakeholder organisations to identify and select the most appropriate overhead line sections for undergrounding and apportion timeframes to the scheme during RIIO-ED2. During RIIO-ED2 we will also undertake an amount of small-scale non-AONB undergrounding.

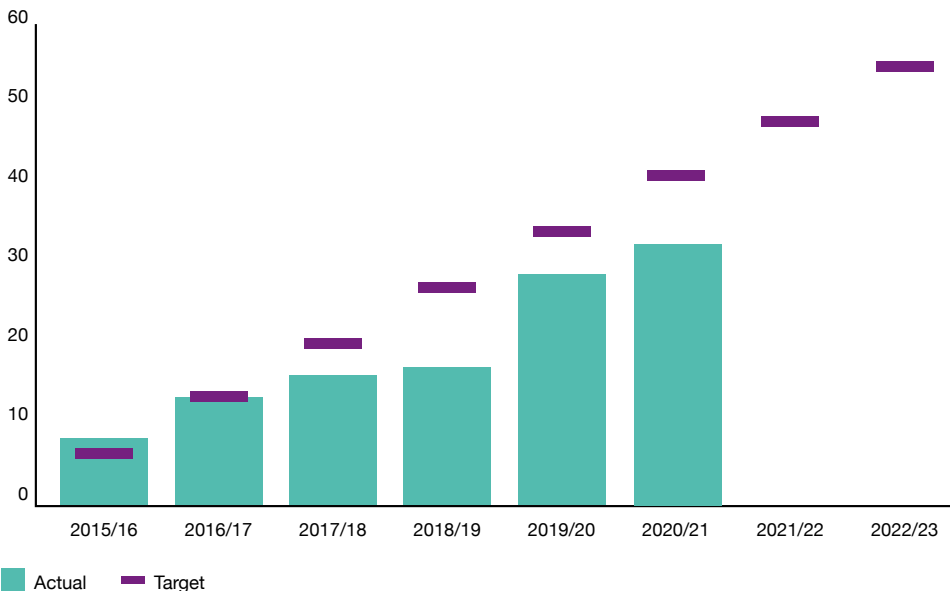
Progress towards meeting our Core commitment 33 over the course of RIIO-ED2 will be reported via the AER.

Further details are available in Engineering Justification Paper EJP015 - Visual Amenity.

RIIO-ED1 Performance

During the RIIO-ED1 period so far we have completed 32.68km (59%) of undergrounding overhead lines within National Parks and AONBs.

Fig.13 Undergrounding for Visual Amenity (km) - RIIO-ED1



Our Baseline Requirements

Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) are a family of Persistent Organic Pollutants (POPs) used in industrial and commercial applications including in electrical equipment such as capacitors and transformers.

They are chemicals of global concern due to their potential for long-range transport, persistence in the environment, ability to bio-magnify and bio-accumulate in ecosystems, and in turn their significant negative effects on human health and the environment.

While PCBs were never specified for use in any of our licenced areas, their use in other electrical applications led to a very small percentage of the equipment in use on our network being unintentionally contaminated during manufacture. As this contamination was both unintended and not requested we have very few records of the assets affected.

Before a full global ban on PCB production was implemented in 1987 any item manufactured in a facility where PCBs were in use was at risk of contamination, so must be assumed to contain PCBs and therefore be registered with the Environment Agency and Natural Resources Wales.

In 2000 a complete ban on the use of PCBs was imposed, but an exemption was made for electricity network transformers which could be left in service until the end of their useful life. This exemption ended in July 2019 when new regulations required the removal of all potentially PCB contaminated equipment by 31 December 2025.

For these reasons and concerns raised by our stakeholders regarding a desire to see a reduction in leaks from our equipment we have developed a comprehensive strategy to ensure that all PCB contaminated equipment will be removed from our network by 2025.

Our Strategy for a PCB Free Network by 2025

Surveys of PCB contamination conducted both in our business and the wider electricity industry show that most of the contaminated oil has already been removed and disposed of by approved methods at sites authorised by the Environment Agency.

We are working in close partnership with all UK DNOs, the Environment Agency/Natural Resources Wales and in consultation with other devolved Agencies to identify and remove remaining PCB contaminated equipment by 31 December 2025 in line with UK Regulation. This partnership is underpinned by a Regulatory Position Statement supported by both environmental regulators and DNOs.

The strategy for identification and removal includes:

- **An accelerated program of testing all ground mounted equipment prior to the end of 2025.**
- **Innovation projects led by us to research and develop in situ PCB testing for energised overhead line equipment.**
- **A UK wide program of statistical analysis pioneered by us and other UK DNOs along with the Environment Agency and Natural Resources Wales to identify, target and remove assets from the UK PCB register.**
- **Targeted replacement of assets that are both potentially PCB contaminated and also do not comply with current high efficiency standards, thereby eradicating PCB risk and reducing Network Losses.**

We will report our progress on the removal of PCB contaminated equipment annually via the AER.





Biodiversity

We are conscious that our activities can impact on habitats and therefore species' ability to thrive and our stakeholders have told us they share our concern. Whilst biodiversity improvements have to be measured over longer timeframes to be certain of improving trends, small measures can nevertheless have a big impact overall.

During RIIO-ED2, we will ensure that our activities have minimal negative impact on UK protected flora and fauna species. We will commit to working with Wildlife Trusts in our region to identify priority habitats and species where improvements are needed and to ensure we can work in partnership with the Wildlife Trusts to support their already ongoing work to maximise the benefit to biodiversity.

We commit to the selection and implementation of a suitable Natural Capital Assessment tool to enable us to assess the impact of new projects with a view to enhancing biodiversity. A natural capital assessment considers the elements of a landscape that directly or indirectly produce value to people, including habitats, species, watercourses, land, air and sea. The assessment identifies the value, both financial and non-financial of these elements before and after any proposed new development. These findings must then be taken into account during the development. During RIIO-ED2 we will work collaboratively with other DNOs and organisations to develop a common approach and share best practice in assessing and capturing natural capital.

By the end of RIIO-ED2, all new major infrastructure projects and new connections will have a biodiversity enhancement plan based upon a natural capital assessment.

In addition to addressing biodiversity in new projects, we will also turn our attention to the land already in our portfolio in the form of our substations. We will during RIIO-ED2 use the natural capital assessment tool to review the ecological value at our network sites and to determine enhancement options for biodiversity, starting with our portfolio of grid and primary sites. These enhancements will target species and habitats identified by Wildlife Trusts in our regions as being at risk.

Progress on the adoption and implementation of the natural capital assessment tool for biodiversity net gain and ecological value will be reported annually via the AER.

We will collaborate with Natural England by implementing a 'generic assent' approval process for low impact works within English SSSIs. This will reduce administrative burdens and therefore costs for both Natural England, ourselves and our customers.

Clean Air and noise

Stakeholder feedback as well as the regulatory environment inform us that air quality is of growing importance to the communities we serve and society in general.

Operating a large white fleet for our operational activities as well as a range of business user cars we are aware of the contribution from these vehicles to local air pollution levels in terms of NO_x, SO_x, particulates and noise.

As stated we are looking to adopt EV technology for 89% of our transport fleet by the end of 2028; resulting in 100% replacement of WPD's van fleet by the end of 2030, with the exception of larger specialist vehicles. Replacement of the van fleet will also have a positive impact on the reduction of noise with the elimination of running diesel engines while stationary.

Similarly we are shifting our company car scheme to EV focus, with diesel engine vehicles no longer being available for selection from Mid-2022. While the combustion engines are still in use driver behaviour systems will be installed in fleet and company cars to monitor driving techniques and reduce emissions through driving style.

In addition to and in line with our Wider Commitment during RIIO-ED2 we will:

- **Investigate options for battery generation for network faults, replacing diesel generators used to restore supplies with battery generators to reduce the air pollution as well as potential noise nuisance from the running of the unit.**
- **Collaborate with local authorities and community groups to improve local air quality.**

The AER will detail any actions we have undertaken to reduce local noise pollution, for example noise enclosures, relating to operational network and associated activities.

Our Baseline Requirements

Supply Chain and Resource use

By working in partnership with our providers and suppliers we have an opportunity during RIIO-ED2 to influence our supply chain and our use of resources to become more sustainable and efficient.

Our suppliers will form a major part of this and we will be looking for their commitment to upholding environmental management standards akin to our own by adopting and cascading an environmental supplier code via certification to ISO14001:2015.

Working towards common goals of reducing carbon contribution and wastes and increasing sustainability in our resource use will be essential. We will expect our key suppliers to offer transparency (including public disclosure) in their processes, resource use and embodied carbon information as well as having their own targets and programmes moving their business towards net zero carbon.

Furthermore, we will require our suppliers to cascade the same expectations and requirements within their own supply chains and report to us progress via our contract management meetings.

By forming effective partnerships we will provide the opportunity to challenge our suppliers on the management of environmental impacts and thereby drive improvements to processes and materials management which benefit both us and the supply chain. These benefits will take the form of value for money impact reduction initiatives or potentially lead to involvement in longer term research into products and materials via the Innovation route.

We will report our progress on our suppliers achieving ISO14001 (the supplier code) as a percentage of our total number of suppliers in our AER.

Our target for the end of RIIO-ED2 is for 80% of our suppliers to meet the supplier code.

Taking into consideration our commitment to reduce waste we have determined that we need to view the issue of waste reduction in a more holistic manner, looking at the 'end to end' whole process embedding the principles of the circular economy.

We will review our activities and the materials and goods which we need. Liaising with our suppliers and manufacturers we will evaluate in collaboration the whole life cycle process, including packaging and disposal. We will influence our suppliers through driving improvements through the Procurement Tender process and provide feedback on materials changed to make further improvements possible.

This will result in smarter, more efficient resource use both for us and our suppliers, working towards establishing circular economy principles into business as usual. The implementation of holistic partnerships with our suppliers will further assist in our wider commitment detailed above to determine embodied carbon from the products used on our network.

Reporting on our resource use will be included as per core commitment 32.

Climate Change Adaptation

As a UK DNO and as part of our RIIO-ED2 Business Plan it is important for us to understand the role that the environment has on how we operate and maintain our network both now and beyond RIIO-ED2.

Further to the UK Climate Change Act and our Business Plan for RIIO-ED2 we have developed a Climate Change Resilience Strategy detailing how the resilience of our operational network will be affected by changes to the local, regional and global climate as per the UK Climate Change Predictions 2018 data (UKCP18) published under the UK Climates Impact Programme.

The main risks that may potentially impact upon our network include;

- **Extreme weather events.**
- **Frequent, more intense flooding.**
- **Significant temperature increases.**



Further details can be found in the WPD Climate Change Resilience Strategy
www.westernpower.co.uk



4 Managing the Environment

Overview

Having detailed our Environment Strategy and our plans for RIIO-ED2 this Chapter of the EAP describes how we manage, mitigate and control our environmental impacts and improve our overall environmental performance.

Following a brief description of our certified environmental management system (EMS) each of our significant aspects is summarised in terms of current and future management approach.

Our Environmental Management System (EMS)

We are certified to ISO 14001:2015, under this Standard our environmental management system is rigorously scrutinised to ensure it is not only fit for purpose but also demonstrates continuous improvement and accountability to interested parties.

Through certification we have embraced the opportunity to address our activities' impacts in a comprehensive manner. We have proven sound identification and management of our activities' environmental impacts through the development and constant review and refinement of our control measures.

Our commitment to continually improve our environmental performance ensures that all areas of the business are keyed in to the environmental management system (EMS) and decision making process. As a result appropriate business outputs address the varied risks posed by the different business activities. In evaluating and challenging our material impact areas during RIIO-ED1 we have identified the best value outcomes for our customers and the environment whilst limiting the financial burden, we will continue this approach throughout RIIO-ED2.

Furthermore, the ISO 14001 standard evaluates our performance within the communities we serve and how we can best work with our interested parties and stakeholders.

We value the standard in providing a robust central framework under which all areas of environmental management can thrive. Our EMS acts as an umbrella for the coordination of environmental factors and issues our wider business planning and decision making processes.

Our EMS aligns with our Social Contract in setting our responsibilities within a local, regional and global context throughout RIIO-ED2 and beyond.

Five key approaches on the new ISO14001:2015



Emphasis on leadership

Greater commitment from the top management.



Focus on strategic fit & risk management

An increased alignment with unique context, strategic direction and risk orientation.



Effective communication & awareness

Driven through a communication strategy and its effectiveness.



Greater protection for the environment

Proactive initiatives, objective measurements and improving environmental performances.



Life cycle perspective

Each stage of the product or service; from development to end of life is on focus.

Identification of significant environmental impacts

Being able to protect the environment begins with understanding the effects our actions and activities have on the environment.

We have a well-established activity register of Environmental Aspects and Impacts, originally produced via employee consultation and interactive workshops.

The Register demonstrates our inclusive and collaborative approach to environmental management. This approach ensures ownership of the impacts within all business areas of the organisation and confidence in the comprehensiveness of the aspects and impacts register based on this process.

On the Register identified impacts are grouped together under the following impact categories:

- **Emissions to air, land or water.**
- **Depletion of resources.**
- **Damage to protected species and habitats.**
- **Damage to flora, fauna, crops and historical features.**
- **Generation of wastes.**
- **Nuisance.**
- **Visual amenity.**

The register is subject to evaluation which determines significance via a number of established criteria audited annually as part of our certification.

Appropriate control measures to address the impacts are detailed and captured in the register.

Significant aspects and impacts identified on the Register formed the basis for the compilation of the RIIO-ED1 Business Plan outputs and they have been similarly considered again to ensure the impacts of our RIIO-ED2 proposals are accurately captured and understood.

It is clear that even routine activities can affect the quality of the environment and with it the amenity value for society. While some impacts, for example minor localised leaks, have a short term effect and can be dealt with locally on a case by case basis, others are on a much wider scale, for example increased carbon emissions and climate change. These impacts affect both geography and society beyond the immediate vicinity of where the impact takes place. This demonstrates the interconnectivity of our decarbonisation and our being environmentally responsible at all societal levels.

This is a responsibility we take very seriously and reducing our impacts, even removing them where possible, is a vital part of our strategy.



Environmental impacts from our network are summarised below:

Failure of our network assets leading to release of harmful substances

Impact from releases of substances such as insulating oil or cable fluid can result in localised contamination of land and surface waters including damage to local habitats and ecosystems, affecting society locally, but also potentially regionally. Where insulating oil contains small quantities of PCBs these releases potentially have a more lasting effect due to the bio accumulative nature of PCBs. Work is currently underway to identify and remove contaminated plant from our network and thereby manage the impact out.

Releases of SF₆ from our network assets contribute a more global impact from greenhouse gas emissions.

Carbon emissions from operations

Our day to day activities generate direct carbon emissions from the energy used in our buildings and substations, our fleet and business transport, and the emissions from SF₆ losses.

Whilst aspects such as fleet transport impact locally in terms of air quality the overall impact can also be viewed on a more global scale as a contributor to climate change which has an effect beyond local boundaries. Further consideration must also be given to the indirect embodied carbon of the equipment, products and services we use on our network, which further contribute to the carbon burden at regional and global scales depending on the products' origins and life cycle.

Generation of waste materials

The reduction of waste at source is the most effective way of minimising the impact on society from waste management.

However we do need to dispose of waste and we have made excellent progress over the course of RIIO-ED1 in diverting waste away from landfill, but not all of the materials can currently be recycled.

This is in part dictated by the recycling industry but also by manufacturers from the raw materials they use to produce items which later become waste.

Overall our impact from landfill and the associated emissions is much reduced, but Refuse Derived Fuel (RDF) incineration emissions from waste processing still form an impact, which is however offset to a degree by the resulting fuel.

Together with recycling of materials the resulting waste impacts can be managed on a more local scale, we work with our waste contractors to avoid the export of waste beyond the UK, thereby limiting the geographic scale of the impact.

Network losses

Network line losses are an inevitable part of our operation. The associated carbon emissions are produced locally and regionally across our network, but contribute to the global impact of climate change, affecting society and environment beyond the reach of our regions.

Visual Amenity

The building of overhead lines, although an essential part of our business, can have an impact on how the landscape looks and therefore affect the amenity values of the open countryside, especially in Areas of Outstanding Natural Beauty, affecting both local people and visitors to the area.

Use of resources

We need resources to operate our network. The impact of resource use depends on a number of variables, for example material source, manufacturing, production, re-use ability, recyclability and as such the resulting impact will vary in environmental, geographical and societal scale. Consideration of the product/material lifecycle, the embodied carbon and the potential for becoming a resource again rather than a waste will all affect the level of impact, its scale and significance.

Impact on habitats and ecosystems from network assets and construction

The delicate balance of ecosystems and the interconnectivity of habitats is well understood as are the impacts that our activities can have.

Capturing just how significant even small changes are in terms of habitat loss or change and how the impact on just one single species can tip the balance on a whole local ecosystem is critically important to maintaining this delicate relationship.



Identification of significant environmental impacts

Impacts from our network during RIIO-ED2

Having evaluated our significant impacts during RIIO-ED1 good progress has been made during this period in the mitigation of these impacts by way of reducing our Business Carbon footprint, improving visual amenity through the undergrounding of overhead lines in AONBs and the reduction of waste sent to landfill. (See details in chapter 3).


Based on our Environment Strategy and its key focus on achieving net zero and being environmentally responsible the impacts identified and focussed on during RIIO-ED1 are still very relevant for the forthcoming RIIO-ED2 period. Details of how we manage these impacts are provided in the next section of this Chapter.


Management of our RIIO-ED2 impacts


Further to progress against our RIIO-ED1 outputs and feedback from recent stakeholder engagement events a number of priority areas for RIIO-ED2 have been identified.


These, together with sharing best practice and working collaboratively within the industry, suppliers and interested parties are a major focus for us during RIIO-ED2. We must ensure that we are looking beyond the easily achievable outcomes and demonstrate our commitment to reducing our environmental impacts.


Key environmental impact improvement areas


- 


Direct and indirect carbon emissions
- 


PCBs
- 

Biodiversity
- 

Resource use and procurement
- 

Fluid filled cable leaks
- 

SF6
- 

Waste reduction and disposal
- 

Protected landscapes



Direct and indirect carbon emissions

As already detailed our operational BCF takes into account a number of direct carbon emission sources, for example building energy use, operational/business transport and fugitive emissions.

For our direct carbon emissions we continue to;

Building Energy Use

- Ensure that all new WPD offices and depot buildings achieve an 'Excellent' BREEAM rating.
- Purchase all building and substation electricity via a REGO tariff.
- Install energy efficient measure where appropriate at all of our depot sites.
- Installation of PV cells on non-operational depot buildings.

Transport

- Roll-out our fleet of EV's with the installation of charging points at our depots.
- Use biodiesel fuel rather than traditional diesel fuel.
- Promote home-working to reduce the number of business miles travelled.
- Roll-out our company car scheme to include options for low carbon fuelled vehicles.
- Roll-out of a company-wide driver behavioural system (DBS).

Fugitive Emissions

- Follow up leak and replace strategy for SF₆ equipment.
- Provide well maintained and efficient air conditioning systems throughout our depots.

Generation

- Encourage the use of small-scale battery generation in local fault situations.
- Ensure temporary generation is minimised when used following supply interruption by restoring supply quickly.

For our indirect carbon emissions we continue to;

Scope 3

- Report on contractor emissions as part of our annual BCF.
- Broaden our reporting to incorporate additional service providers not currently covered in our Scope 3 reporting.
- Incorporate mandatory carbon reporting for all new contract tenders.

Embodied Carbon

- Develop our methodology to capture sources of embodied carbon and work collaboratively via the ENA with other DNOs to develop a sector specific measurement tool.





Fluid Filled Cables (FFC)

Our fluid filled cable network consists of over 730 km of cable at 33kV, 66kV and 132kV. The activity of monitoring and managing the cables sits mainly within our Major Projects Teams.

- FFC leaks are dealt with in line with the requirements of the Fluid Filled Cable Code of Practice agreed between the Environment Agency (EA) and the ENA. We have support in place for the management of resulting impacts from our contaminated land specialist contractors and we liaise closely with the EA and Natural Resources Wales (NRW) to agree proposed actions.
- We utilise perfluorocarbon tagging (PFT) to speed up locating leaks, the PFT can be deployed to display distinct “signatures”, enabling the detection of the correct circuit in areas where several circuits are in close proximity to each other.
- We participate in the Fluid Filled Cable subcommittee within the ENA, where best practice in the management of the fluid filled cable network is shared and new technologies in the field are reviewed.



SF₆

Our network equipment is monitored carefully for any leaks and only suitably trained staff as per the F-Gas Regulations are allowed to handle the gas and deal with topping up and maintenance of SF₆ equipment.

We are closely monitoring market developments on SF₆ alternatives and we are in constant contact with manufacturers regarding said alternatives and substances which could be trialled on our network.

We plan to continue with the implementation of the “leak and replace” regime on 11kV distribution assets and a “two leaks and replace” regime on larger or higher voltage assets.

We have introduced SF₆ detection cameras to help us to identify the source of leaks, quickly and efficiently. These cameras were introduced during RIIO-ED1 and will continue to be a valuable leak minimisation tool throughout RIIO-ED2.

Once SF₆ plant becomes redundant, the gas is extracted and disposed. We are investigating potential opportunities with our asset recovery contractors and manufacturers on the recycling of used SF₆ gas.



PCBs

Following the change in legislation we continue to remove all PCBs from our network by 31st December 2025.

An ENA working group has been set up both at strategic level and as a cohort working group to prove clean cohorts of equipment through statistical analysis. We are actively involved in both groups and are chairing the cohort working group. The model uses information relating to Year of Manufacture (YOM), Manufacturer and test results to identify potentially contaminated equipment. This method has been approved by the Environment Agency. The group is also engaged in the development of innovative methods to test pole mounted equipment for PCB content, such tests are currently impossible without costly and inconvenient interruptions to customer supplies.

During the remainder of RIIO-ED1 and into RIIO-ED2 a programme of oil testing in ground mounted transformers is underway to establish assets where contamination can be eliminated through oil changes. While the pre 1958 ground mounted transformer assets are scheduled to be removed from the distribution network by the end 2023, which was already planned as part of the losses strategy, all assets will have their oil tested to establish contamination levels, this will further inform the statistical model for the determination of clean asset cohorts. For pole mounted equipment the statistical model will form the basis for targeted asset replacement depending on where potential contamination is suspected. This process conforms to an EA Regulatory Position Statement (RPS) published late 2020.



Biodiversity

There is a large body of scientific evidence detailing the continued decline of biodiversity across the UK. We are aware of our responsibility to protect biodiversity in the areas we operate and enhance it wherever possible. During RIIO- ED1, through the engagement of ecological services, we have ensured minimal damage to species and habitats. In RIIO-ED2 we will continue our proactive approach and improve upon our biodiversity management record, enhancing habitats as well as protecting them.

Throughout the remainder of RIIO-ED1 and in collaboration with other DNOs, we will start to establish baselines of species and habitat health in order to build in steps to protect these and ensure they continue to thrive via the use of natural capital assessment tools for our new projects and larger substation sites. This type of assessment considers the elements of a landscape that directly or indirectly produce value to people, including habitats, species, watercourses, land, air and sea, both before and after any proposed new development. These benefits must be accounted for in the project and a project plan produced to capture them.

In the final years of RIIO-ED1 we will also start the assessment of any new major infrastructure projects to enable the implementation of Biodiversity Net Gain to maximise environmental and ecological benefit for the region. A reference point will be provided by local Wildlife Trust endangered and at risk species lists. Furthermore we will review our current land maintenance practices to establish where changes may be required to better support biodiversity protection.



Waste reduction and disposal

We continue to work closely with all of our waste contractors ensuring that where possible waste is diverted from landfill and that we always apply the principles of the waste hierarchy.

During RIIO-ED1 and throughout RIIO-ED2 we continue to target the tonnage of waste we receive and produce across our business employing the principles of the waste hierarchy and reducing the actual tonnage of waste in the first instance before focusing on the amount of waste being reused, recycled or recovered.

We continue to:

- Liaise with our manufacturers and suppliers to identify opportunities to reduce the amount of packaging and embedded waste entering our business.
- Work with our Purchasing Team to ensure that waste reduction initiatives are a key requirement of future contracts where applicable.
- Continue to work with our waste contractors and local depots to identify alternative and innovative disposal routes for our waste, increasing the amount of waste we reuse and recycle to reduce further our reliance on both landfill and recovery disposal.
- Report across the business our waste management performance highlighting areas of improvement to our senior management team.
- Investigate the life cycle analysis (LCA) of materials coming into the business and placed on our network or in our depots. The LCA considers longevity and a cost benefit evaluation to establish the most beneficial balance between resources used, embodied carbon, length of usability and final disposal options.



Resource use and procurement

We continue to identify opportunities to work with and influence our supply chain to consider resource conservation and smarter materials management.

We consider the better use of materials entering our business, specifically how to reduce and eliminate the environmental impact of single use plastic and hazardous substances. Plastic use is a key concern for us and society in general and one which our stakeholders question us about.

We continue to;

- Work with suppliers to eliminate the use of plastic waste from our network and depots.
- Replace fossil fuel use with alternative fuels, such as biodiesel, hydrogen and EV.
- Trial the use of battery generators to replace traditional diesel generation.
- Re-use excavated spoil from highways where appropriate.
- Investigate wood treatment alternatives to replace the use of creosote on our wood poles.
- Investigate the use of alternative pole material, for example composite poles taking account of all LCA aspects.
- Assess all contracts for sustainability criteria, including waste, carbon, LCA and environmental responsibility.





Protected landscapes

We coordinate the undergrounding of overhead lines with established steering groups consisting of representatives from AONBs and National Parks who help us identify and prioritise where work will take place.

We provide information and appropriate assistance to stakeholders to help them in scheme selection including budget costing and feasibility assessments. The years in which funds are spent are dependent on the views of the steering group, and the timescales needed to develop and implement the schemes.

We believe that projects should be selected by stakeholders/interest groups. We implement these projects within the regulatory rules and take into account any technical or planning constraints (such as consents or environmental/planning restrictions).

Our principal stakeholder groups consisting of National Parks and AONBs in our area, along with affiliated organisations (for example 'friends of' groups) and other stakeholders/interest groups such as environmental organisations (CPRE, Natural England, Natural Resources Wales), select projects and put them forward for consideration. Steering Groups are encouraged to ensure that National Parks or AONBs which have previously had little or no investment are encouraged or assisted to bring schemes forward and implement a fair and pragmatic approach in the allocation of funds.

We assist stakeholders as much as possible with information needed to select suitable candidate projects. We work with them to establish the technical viability of proposed projects and we provide high-level cost estimates to assist in high-level decision making about which projects may be suitable for consideration.

Stakeholder feedback, like comments from parish councils for example, is encouraged and collated. It is one of the criteria the Steering Groups consider when selecting schemes and allocating funds.



Management of network activities without intervention

To take account of our legal, moral and societal obligations and having taken stock of our significant environmental impacts, we need to evaluate if our actions sufficiently meet those obligations.

During RIIO-ED1 we have reduced the burden on the environment from our network.

However, we also know that the protection of the environment is more critically important than ever with climate change posing a real threat to many communities and ecological interdependencies being in a delicate state of balance.

Without further intervention the potential exists for further releases from our network to cause serious harm, both to the physical local environment through leaks and transformer oil losses and to the global environment from our carbon emissions.

Furthermore the use of resources is becoming a more pressing issue with society needing to address many of the current unsustainable practices which put an additional strain on natural resources.

We are conscious of the role we can play in leading by example on managing resources smartly and sustainably, resulting in less waste and a better management of the materials our network needs.

For our RIIO-ED2 Business Plan we have used the opportunity to evaluate and address our impacts. With the significant impacts in mind we have re-examined our commitments carefully and discussed them with our stakeholders, feedback from whom has been instrumental to the development of the Plan. The outcome of this process has resulted in a fundamental increase of our ambition shown through our planned commitments to deliver the best possible outcomes for the environment and the communities which we serve during RIIO-ED2.

More details of our Stakeholder consultation and feedback can be found in Chapter 2 and our core commitments in Chapter 3.

Table 6 Assessment of our network's potential environmental impacts in RIIO-ED2 without intervention

Potential network environmental impact RIIO-ED2	Consequence of impact	Without intervention	With intervention
Failure of our network assets leading to release of harmful substances.	Pollution to land, air and watercourses, protected areas and communities.	As assets age and deteriorate there is the potential for pollution from releases to the environment to increase.	Improving our processes and responses to the management of releases from FFC and SF ₆ plant prevents this from occurring. The removal of 90km of FFC from the network manages the potential pollution impact of these worst performing circuits out.
Carbon emissions from operations.	Pollution to air and contribution to climate change.	Buildings energy use will remain constant and show small improvements driven by behavioural change and some modernisation of buildings. Emissions from combustion engine fleet vehicles and generators would increase due to progressing age of fleet and increases in work programmes resulting in more miles driven.	Installation of renewable generation on local depots will reduce emissions from building energy as buildings become self-sufficient for their own energy needs. A transition to low carbon technology vehicles for a large percentage of the operational fleet will proportionately reduce the carbon emissions from transport as will a move to remote working, virtual meetings and a fundamental shift in our approach to the company car scheme as it eliminates the combustion engine choices from the scheme.

Potential network environmental impact RIIO-ED2	Consequence of impact	Without intervention	With intervention
Generation of waste materials.	Contribution to climate change from waste processing and landfilling emissions, unsustainable land use and increased use of natural resources.	Unsustainable burden of waste disposal to landfill continues, materials are not used to maximum efficiency, draining the pool of raw materials and resource, supply chain is not engaged in the materials management process resulting in failure to implement efficient circular economy principles.	Waste diverted from landfill removes the burden to land space and the resulting methane emissions from land fill, eliminating the aspect of contribution to climate change. By implementing circular economy principles working with suppliers waste generation can be reduced at all stages of the goods in process. This results in reduced waste generation from activity and in turn reduced disposal. Multiple use resources are created in the process, improving raw material use and the level of sustainability implemented.
Network losses.	Contribution to climate change.	Network losses continue to occur. Reductions in losses through end of life asset replacement only will not occur quickly and consistently enough to achieve a position of net zero by 2043.	The implementation of an SBT to limit the global temperature increase to 1.5°C ensures that the reduction of the climate change contribution from losses is accelerated to achieve a net zero position by 2043. The removal of less efficient equipment from the network and replacement with lower loss items together with the greening of the Grid ensures that the path to net zero by 2043 can be mapped and implemented in a predictable and controlled manner.
Visual amenity.	Detrimental effect on aesthetics from overhead lines in protected areas.	Unfavourable effect from overhead lines in landscape continue to impact on residents and visitors to the area, resulting in potential decrease of economic benefit to the community.	Undergrounding of overhead lines improves the aesthetics providing unencumbered views of protected landscapes. Although the positive impact from improved enjoyment of landscapes is difficult to quantify, it nevertheless contributes to residents' and visitors' wellbeing and makes the area more attractive through the views and amenity value it offers.
Use of resources.	Increased burden on pool of available raw materials.	Unsustainable use of raw materials continues. Life cycle of materials not fully accounted for.	Focus on collaboration with the supply chain to establish take back schemes and re-usable packaging converts wastes into multiple use resources. This creates opportunities to use raw materials more efficiently to procure more durable and re-usable packaging solutions and to work with other sectors to utilise what would otherwise become waste. Implementing the life cycle analysis increases the level of sustainability implemented.
Impacts on habitats and ecosystems from network assets and construction.	Loss of biodiversity.	Network assets or activity such as construction may disturb biodiversity, this is difficult to quantify. Therefore mitigation measures may not be assured in terms of adequacy to ensure no net loss and potentially quantify a gain.	Establishing biodiversity baselines enables better estimates and quantification of any potential loss from network activity. This in turn allows for better calculations of what measures may be most effective and valuable in specific locations in order to ensure a net gain is achieved. This approach can be used on both new works and existing sites where potentially small measures can bring valuable biodiversity and habitat gains which can be recorded and monitored.

Appendix

Learning from RIIO-ED1

It is important that we note the learning opportunities RIIO-ED1 has provided in informing our approach and the decisions we have made in preparation for RIIO-ED2.

RIIO-ED1 Learning Points

- Keeping a close relationship with our stakeholders is a key component and invaluable for us. We understand where the priorities of our customers and communities lie and continue to support the communities we serve in the transition to a net zero society whilst keeping environmentally responsible behaviour at the forefront.
- Continue to align risks with priorities highlighted by our stakeholders via our Stakeholder Engagement events and Business Plan consultation exercises.
- Co-ordination with our wider business is key to achieving successful outcomes otherwise contributions to target success may not be accurately accounted for. Increasing the information flow and interconnectedness of actions within the different business areas is vital for RIIO-ED2.
- Ensure transparency and consistency throughout.
- Development and change of focus of regulatory framework (both Ofgem and Environmental arena) and our reaction to it. It is important to ensure our approach remains flexible to take account of the changing regulatory landscape and societal expectations.
- RIIO-ED1 provided a good grounding to improve our environmental performance. Many of our RIIO-ED1 environmental outputs brought tangible improvements to our business and the environment. RIIO-ED2 provides an opportunity to broaden our scope and ambition and collaborate more with third parties in areas such as embodied carbon and assessing natural capital values.
- Benefits of holistic approach/interconnectedness to managing outputs - Focussing in one particular area for outputs can potentially result in too narrow a focus or a missed opportunity to link goals and outputs where these are either mutually beneficial or impact on each other naturally. By stepping back to view the bigger picture these links can be better identified and converted into suitable outputs that support each other and also a common goal.
- Inclusivity - Shared ownership of outputs with all business areas working jointly to achieve them. In order for business areas affected by planned outputs to understand their part in achieving them they need to be involved at the earliest opportunity. This knowledge and understanding of their impact on the outputs will ensure a deeper sense of responsibility, ownership and attachment to the outputs' success. We have implemented this in the co-creation approach of our core commitments with both stakeholders and our employees.
- Ensure understanding of metrics and required datasets - The requirement to capture, interpret, normalise and report on data resulting from actions and commitments has forced us to determine much more precisely the purpose and context of our reportable metrics. This will allow us to set certain monitoring parameters much more precisely and assist us during RIIO-ED2 to present even more meaningful data relating to our performance in our core commitments.



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