electricity north west

Bringing energy to your door

Annex 13: Environmental Action Plan

December 2021

Annex 13
Environmental action plan

December 2021

electricity north west
Bringing energy to your door

About Electricity North West

Electricity North West Limited is one of 14 electricity distribution network operators (DNOs) in Great Britain. We are responsible for maintaining and upgrading 56,000km of network and nearly 500 major substations across the region. We supply the electricity to the diverse communities in the North West of England which extends from Macclesfield all the way up to Carlisle.

We are regulated by the Office of Gas and Electricity Markets (Ofgem) who provide DNOs with their licence to operate and it is Ofgem's principal duty to protect the interests of existing and future customers.

Our current price control began in 2015 and runs to 2023. It's referred to as RIIO-ED1. In full, that stands for Revenue = Incentives + Innovation + Outputs, Electricity Distribution 1. Under this framework, the outputs and targets are fixed until the next price control, RIIO-ED2, which will run from 2023 until 2028.

Work is already underway to set the framework for RIIO-ED2 that applies to all electricity distribution network companies. The framework will determine what RIIO-ED2, which begins on 1 April 2023, looks like.

The period of time which the RIIO-ED2 price control covers will see significant change in the way electricity is generated, consumed and stored, driving innovation across the whole energy system both now and into the future.

electricity north west
Bringing energy to your door

Contents

1. Welcome

Welcome to our environmental action plan (EAP) which sets out our strategy to meet our stakeholders expectations by becoming a Net Zero Carbon organisation by 2038 and looking after our natural environment. Our stakeholders have asked us to provide leadership within the region in which we operate and to be an exemplar across multiple areas.

This EAP demonstrates the steps we will take between 2023-2028 as we progress to our longer-term goals.

The North West of England is geographically diverse, from the serene landscapes of the Lake District, Peak District and Yorkshire Dales national parks, to the bustling urban centres in the south of our region. It encompasses coastline, mountains, lakes, moorland, freshwater, woodland and the green spaces of our towns and cities, and provides habitat for a wide range of flora and fauna.

Our region's role in the industrial revolution was pivotal to the growth and technology we see today, but it has come at a cost to our environment. Inaction now would contribute to the acceleration of climate change caused by greenhouse gas emissions, a decrease in the natural biodiversity of our landscape, an increase in pollution from the leakage of contaminants and the further depletion of natural resources.

It is clear from UK government policy, our regional local authorities and our stakeholders that we must achieve decarbonisation rapidly to avoid the worst impacts of climate change.

We have already made great strides to improve our performance and limit the impact of our operations on the environment. But we simply cannot stop there. We need to go further. Our customers and stakeholders have clearly indicated that we should show more ambition than the government's aspiration to achieve Net Zero carbon by 2050.

In this EAP, we have set out our responsibilities to the environment and the steps we will take during RIIO-ED2 to continue our decarbonisation journey, reduce the wider environmental impacts of our network activity and also to look after our environment. We hold ourselves to account on progress and ambition in these areas and the commitments set out in this EAP demonstrate how we will lead the way in RIIO-ED2 and beyond.

It has been written to reflect our views and those of our customers and stakeholders and as such exceeds the baseline requirements of Ofgem's RIIO-ED2 business plan guidance. By taking the actions set out in this plan, we believe we will become a leader in sustainability within the North West.

We hope you find the contents of this document useful and informative.

Steve Cox

Engineering and Technical Director

The UK is on a transformative journey to decarbonise. Global leaders established the Paris Climate Change agreement in 2015 which agreed that rapid decarbonisation is critical if we are to limit global warming. Since then the scientific evidence has led to the overwhelming consensus that we need to limit global warming to 1.5°C and that there is a global carbon budget remaining to give us a good chance of meeting this goal.

The UK's Climate Change Act enshrines this commitment and carbon budget approach and has set a target for the UK to meet net-zero by 2050. It is recognised that to meet this target carbon savings need to made at scale and pace from now and that ideally carbon should be removed from the atmosphere as soon as practically possible.

As the region's electricity distribution network operator (DNO), we believe we have a vital and strategic role to play to decarbonise and protect the North West's natural environment. We will lead by example by becoming Net Zero in our own operations by 2038, reducing own our impacts on the natural environment and helping others to achieve their own Net Zero carbon ambitions; a view that is driven by our customers and stakeholders.

The EAP goals are of foremost importance within our RIIO-ED2 business plan; the theme of Net Zero is front and centre throughout our submission.

Our EAP has been developed in line with the four environmental focus areas as set out in our responsibility framework. The framework has been developed in accordance with our company purpose of 'Together we have the energy to transform our communities', and our principles of being switched on, adaptable and taking pride. It demonstrates how we consider social, environmental and economic impacts in all our activities and ensures that we adopt a responsible approach to everything we do.

'Our environment' is one of three key impact areas of the framework and is divided into four focus areas which reflect issues that are important to our business, our customers and our colleagues:

- Enhancing biodiversity and ecosystems
- Optimising waste and resource use
- Driving down our carbon emissions
- Helping customers and colleagues drive down emissions.

Our strategy builds on from the focus in RIIO-ED1 and has been co-created with customers and stakeholders whilst taking into account affordability. It is split into two key areas.

- Becoming Net Zero (2038)
- Looking after our environment

Our responsibility framework

2. Our Strategy

Becoming Net Zero (2038)

We have set out our responsibilities and the goals we will take during RIIO-ED2 to continue our decarbonisation journey, including the use of science based targets (SBTs). Our ambitious goals (seven of which are focused on becoming Net Zero) will enable us to become Net Zero within our own operations by 2038, to minimise the amount of embodied carbon within new infrastructure, and to remove assets containing potentially harmful greenhouse gases.

We have engaged extensively with our customers and stakeholders to understand their priorities around decarbonisation. They have clearly indicated that we should drive our emissions down and achieve Net Zero carbon in our own operations by 2038. They have provided steer, such as the need to develop strategies to manage equipment containing greenhouse gases and making a concerted effort to manage electrical distribution losses, but the overall direction given is that we need to lead by example, accelerate actions to achieve Net Zero and that we are trusted to work out the best path the reach Net Zero by 2038.

To achieve Net Zero and reduce our carbon impact we will target some of the following areas:

- Transport
- Network operation
- Business carbon footprint
- Embodied carbon
- Asset greenhouse gas leak reduction

In line with our established carbon budgets, we need to reduce our internal business carbon footprint excluding losses to an average of 8,175 tCO_2e by the end of RIIO-ED2. This will be key to hitting our Net Zero target by 2038.

Our approach to decarbonise during RIIO-ED2 is to show leadership and to be an exemplar organisation across multiple areas.

In order to get to Net Zero by 2038, we need to have made progress across all of the different areas of our operation. The actions shown in this Environmental Action Plan will take us to where we need to be by the end of RIIO-ED2 and ensure that the overarching goal, Net Zero by 2038, is reached.

The goals we have set are based on:

- **Feedback** – what have our customers and stakeholders told us during engagement?
- **Cost** – how much will each initiative cost, would the initiative offer value for money compared with alternative options, and should the goal be financed in a single regulatory period or spread out across multiple price controls?
- **Deliverability** – what can be delivered by 2028?
- **Impact** – how will the goal reduce our carbon emissions and lead us towards Net Zero by 2038?
- **Carbon budgets** – what impact will the goal have on our RIIO-ED2 carbon budget be?
- **Leadership** – will the goal enable us to become an exemplar organisation and show others in our region what can be done?

Our seven goals around becoming Net Zero will lead us to achieve the following during RIIO-ED2:

Buildings energy	• Converting five sites to Net Zero carbon during RIIO-ED2 will reduce our BCF by ~582 tCO_2e per year • This will add to the two Net Zero carbon sites developed in RIIO-ED1, accounting for >65% of overall buildings electricity consumption excluding substations and a total reduction on ~673 tCO_2e per year
Fleet	• The conversion of a proportion of our operation transport to EVs will save ~988 tCO_2e per year
Lease cars	• The conversion of our company lease cars to EVs will save ~535 tCO_2e per year • The continuing incentivisation scheme for colleagues to choose EVs for their private vehicles should make further carbon reductions, including on associated business mileage
Electrical distribution losses	• Annual savings of 8GWh through proactive replacement measures, equating to 1,698 tCO_2e per year, against a backdrop of increasing losses overall
Sulphur hexafluoride	• A reduction of ~340 tCO_2e per year through reducing our leakage rate of sulphur hexafluoride (SF_6) to no more than 0.3% of the total inventory on the network

All assumed carbon reductions are calculated using the BEIS July 2021 conversion factors; calculations will be made using the current dataset and so are likely to vary during RIIO-ED2.

Looking after our natural environment

Whilst there are clear local and national drivers to move towards Net Zero, we must not lose focus on the wider natural environment. We have committed to 14 goals within our EAP which will ensure that we reduce the wider environmental impact of our activities during RIIO-ED2. We will replace cables that have the potential to leak oil to the environment, replace equipment that has the potential to leak harmful persistent organic pollutants, enhance further our focus on biodiversity and natural capital across our operations, and further embed the circular economy throughout our organisation.

In order to realise these commitments, we will provide environmental awareness training to our Wider Leadership Team so that each team within our organisation is equipped with a sufficient understanding of how their actions can impact the environment.

Full details on our 14 natural environment goals are shown in section 8. The headline commitments are as shown below:

Waste and recycling	• Become more resourceful and send no more than 5% of our waste to landfill • Increase our recycling rate to at least 70%
Water consumption	• Reduce the amount of water consumed per colleague
Biodiversity	• Enhance 100 sites using biodiversity initiatives and look to achieve a measurable net gain from 2025 • Plant 10,000 trees per year • Begin to track the impact of network projects on natural capital
Fluid-filled cables	• Reduce the average leakage rate to less than 25,000 litres per year • Continue to use sophisticated leak detection methods and replace cables most at risk from severe leaks
Polychlorinated biphenyls (PCBs)	• Remove all equipment containing more than 50ppm of PCBs from our network

3. Meeting stakeholder expectations

Throughout RIIO-ED1 we have engaged extensively with stakeholders around key environmental subject areas such as decarbonisation and the transition to Net Zero, undergrounding for visual amenity (UVA) and support for community and local energy.

We have been supported by our sustainability advisory panel, a group of regional specialists that provide strategic support and challenge, and our UVA panel who provide strategic input to our undergrounding projects. Our annual regional strategic workshops have also provided valuable insight and highlighted the environmental differences and decarbonisation progress across the various counties in our region.

The development of our EAP has been further informed by the views and acceptability of our customers, as well as our stakeholders.

Our overall RIIO-ED2 engagement strategy submission contains in-depth details of the journey from high-level concepts through to our comprehensive plans, and the central role that customers and stakeholders have played in helping to shape them. The key findings from our engagement are summarised below. A high-level mapping of the insights gained from our stakeholder engagement against our EAP goals is provided in Appendix A.

Customer connection phase

During our first customer connection phase of our RIIO-ED2 business planning engagement we held qualitative focus groups with a diverse range of customers to deepen our understanding of their attitudes and expectations.

Customers told us that:

- Minimising our direct environmental impact is something that should be happening anyway as it is within our direct control and is encapsulated within being a good corporate citizen
- We have a duty to maintain our network in an economical and efficient way, to preserve amenity, and to conserve and enhance the natural beauty, wildlife and the cultural heritage of designated landscapes.

This is particularly important in the North West where we have three national parks and four Areas of Outstanding Natural Beauty (AONBs) wholly or partially within our region. The undergrounding of overhead lines initiative draws support from some customers, as shown below, though this scheme is an example of activities that do not draw universal support.

> "Environmentally wise, it would be a lot nicer and a lot prettier to underground wires. I mean you come down the M6 and you look to your right going past Shap and there is just pylon, pylon, pylon. I thought they were meant to be getting rid of these. I just think they should keep this area pretty."
>
> (domestic customer, Kendal)

In our stakeholder priorities research, we heard that:

- To support the transition to a Net Zero carbon economy we should lead by example and improve environmental performance in our day-to-day operations through greener work-sites, offices and vehicles
- Achieving the significant and rapid reductions needed for our region to make a fair and equitable contribution to meeting UK climate change targets would require more radical local action and as an anchor institution in the North West we have an important role to play in supporting this
- We should think beyond the asset by doing more to address complaints from residents near our substations by increasing biodiversity and attracting pollinators in urban areas, thereby reducing vandalism and ultimately giving communities spaces to take pride in.

KEY INSIGHTS FROM OUR CUSTOMER AND STAKEHOLDER ENGAGEMENT
Consumers and wider stakeholders expect us to lead by example – accelerating action to minimise our business carbon footprint
We should think beyond the asset by increasing biodiversity in urban areas
Traffic congestion caused by streetworks is not only an irritation but adds to noise and air pollution
Electricity pylons cause an impact on the natural beauty of designated areas
Most consumers feel that 'green thinking' and reducing environmental impact is an important area to focus on and expect it to be appropriately represented in the business plan as part of Electricity North West being a good corporate citizen

3. Meeting stakeholder expectations

Electricity in my life phase

The next phase of our engagement, 'electricity in my life', built on the evidence base collected to date. Four options for our business carbon footprint target for RIIO-ED2 were presented to our sustainability advisory panel with a view to making a recommendation on which target to adopt.

The options discussed were:

- **Option 1:** Net Zero carbon emissions from our operations by 2050, to align with the UK's legal target
- **Option 2:** Net Zero carbon emissions from our operations by the midpoint between 2038 and 2050 to enable the realisation of local area ambitions on the timing of carbon neutrality
- **Option 3:** Overall carbon emissions from our operations reach Net Zero by 2050 and 2038 for operations within Greater Manchester
- **Option 4:** Net Zero carbon emissions from our operations by 2038, to align with the Greater Manchester target, end of the RIIO-ED4 price control and the start of the UK's seventh carbon budget.

The panel unanimously supported option 4 and challenged why we had only included scope 1 and 2 emissions (see Goal 1 for explanation of these terms) given the impact of scope 3 emissions. There was appetite among stakeholders for us to show leadership and go above and beyond Ofgem's current requirements. This has been taken into consideration as we have developed our plan.

Option 4 was further tested with customers. The proposal was ranked ninth against 23 competing initiatives, indicating broad appeal.

KEY INSIGHTS FROM OUR CUSTOMER AND STAKEHOLDER ENGAGEMENT

Customers and wider stakeholders expect us to lead by example – accelerating action to achieve Net Zero carbon emissions from our operations by 2038
Three quarters (76 per cent) of people said they were either very or fairly concerned about climate change

Customer insight

In developing our EAP, it was important for us to ensure that any environmental improvements were valued by the customers who would ultimately pay for them. A cost-themed meeting was held with the plugged-in public panel, a broadly representative sample of people from across our area who have helped provide public input into our RIIO-ED2 business planning process.

Members were presented with a series of 11 potential activities to improve environmental performance, including an indication of the likely impact on customer bills.

Potential environmental activities presented to a plugged-in public panel

More than £1 on average annual bill	Tens of pence on average annual bill	A few pence on average annual bill
• Proactively increase the capacity of the network to enable new technologies such as electric vehicles to connect	• Only buy electric vehicles from now on • Reduce the risk of oil leakage from some of our cables by replacing them early • Invest to reduce electricity lost during transmission • Move overhead lines underground in areas where they spoil the view • Install electric vehicle charging points in areas that don't have them • Reduce our own carbon footprint quickly by refurbishing our buildings and depots • Proactively cut dead or dying trees that may affect overhead lines instead of waiting for the landowner to do so • Share more of the cost of connecting renewable energy generation across all customers	• Improve biodiversity at our substations through planting schemes etc • Extend the community energy fund to help community groups to develop local generation schemes

3. Meeting stakeholder expectations

The proposal to proactively increase the capacity of the network represented the most material bill impact but was the most popular with 30% of individual participants. However, the results also demonstrated that there is a clear role for investing more to reduce losses (25%). Panel members felt this kind of 'wastage' should be reduced as far as possible. Proactively cutting dead or dying trees that may affect overhead lines was the third most popular activity.

Following further debate the top three priorities remaining unchanged.

In a subsequent environment themed meeting of the plugged-in public panel three environmental initiatives were presented and considered to understand which, if any, the panel felt was most important and may require further engagement:

- Reducing the environmental impact of oil leakage from cables
- Reduce the environmental impact of cutting down trees
- Move cables underground in areas of outstanding natural beauty.

69% of the panel said that doing more to reduce the impact of oil leakage from cables is important and only 9% indicated it was unimportant.

78% of the panel said that doing more to reduce the environmental impact when trees are cut down is important and only 8% indicated it was unimportant.

In comparison, 54% of the panel said that doing more to put cables underground in areas of outstanding natural beauty is important with 24% indicating it was unimportant.

> "Trees play an important role in the wildlife in this country, so while it is essential for the network not to be damaged from trees, there needs to be a balance that protects biodiversity."

> "When a tree is cut back, another should be planted as swiftly as possible."

Our 'direct environmental impact' was ranked fifth most important thematic priority overall by the plugged-in public panel. Those members who placed value on reducing our business carbon footprint tended to emphasise the urgency needed to tackle climate change and the responsibility of energy companies to play a leading role in this.

Panel members acknowledged that while we are taking some positive action to reduce our environmental impacts, there is more that could be done.

KEY INSIGHTS FROM OUR CUSTOMER AND STAKEHOLDER ENGAGEMENT

Customers trust us to work out the best path to reach Net Zero by 2038, however want to see a concerted effort to reduce losses

Proactively protecting overhead lines from trees rather than waiting for landowners to fulfil this role was perceived as important because "prevention is better than cure".

Sweating the detail

During the final 'sweating the detail' phase of our RIIO-ED2 business planning engagement, customer acceptability of our overall business plan was checked in acceptability testing. This focused on seven thematic propositions within the business plan and the detailed propositions within them. It was also used to understand customers' perception of the affordability and value for money having seen the plan and bill impact.

Understanding of the environmental proposals was very high, demonstrating that those engaged were aware of what the proposals were setting out to do.

Overall, 84% of customers found the environmental proposals acceptable. A breakdown by proposal and impact area is shown below.

High-level outcome of affordability testing for environmental proposals

Proposal	Impact area	Understand	Yes	No
Significantly reduce the carbon impact of our own operations by electrifying our vehicle fleet and reducing emissions from our buildings	Business carbon footprint	95%	82%	3%
Reduce leaks from fluid-filled cables	Fluid-filled cables	97%	79%	3%
Move overhead lines in national parks and Areas of Outstanding Natural Beauty underground	Visual amenity	95%	79%	4%
Replace electricity cables and equipment to ensure more efficient distribution of electricity	Distribution losses	96%	87%	1%
Implement a new management approach for a potent greenhouse gas found in some equipment	Sulphur hexafluoride	89%	81%	2%
Increase our biodiversity programmes around our substations	Biodiversity	96%	86%	3%

Separately, our online community (a selection of our customers who respond to questions online) was presented with environmentally focused questions. They told us we should:

- Aim to increase biodiversity by 10% when enhancing green spaces and not because we are required to do so by legislation
- Reduce our leakage rate target for fluid-filled cables in line with the amount of cable removed
- Require our supply chain to meet high standards of environmental management, but we should lead the way with this and motivate others
- Consider the use of audits on our supply chain to ensure that they are meeting high environmental standards, although there were mixed comments on this
- Do more to recycle as much waste as possible and reduce the amount of waste we produce
- Require our supply chain to reduce their carbon emissions (there was a mixed response on whether this should apply to the whole supply chain or just those with higher emissions).

Customer and stakeholder insight

This insight has proved invaluable in the development of our EAP and business plan and our engagement has demonstrated high levels of support from our customers and stakeholders for the implementation of environmental improvements. It has also highlighted areas where there is an expectation for us to go further with scope three emissions reductions in carbon reporting, biodiversity and leading the North West to Net Zero.

Our EAP has been developed using the findings from the research explained above, and by working in partnership with our sustainability advisory panel, who have willingly given additional time to provide input, review and insight as the plan was developed.

Further detail on our customer research findings is provided within Annex 2 of the overall Business Plan.

4. Our goals

Our future goals are focused on 'becoming Net Zero' and 'looking after our natural environment'.

In this document we set out the details of each of our 21 goals, our activities to deliver each goal and the benefits these will bring to the environment.

Our goals have been developed following extensive research and analysis and stakeholder engagement, and align with the focus areas of our responsibility framework. They also align with the United Nations Sustainable Development Goals (SDGs) which were adopted by all member states in 2015.

We see particular synergies with five of the goals which are focused on environmental action:

- Affordable and clean energy
- Sustainable cities and communities
- Responsible consumption and production
- Climate
- Life on land.

Progress against our goals will be provided throughout RIIO-ED2 in our annual environmental reports. A summary of our goals can be seen below. We have also set out our proposal for an environmental scorecard to form the basis of a financial incentive (ODI-F) in RIIO-ED2 within Appendix E.

Our environmental action plan goals

Becoming Net Zero

Goal 1: Become a leader in the reduction of carbon emissions and achieve Net Zero carbon by 2038

Goal 2: Adopt science-based targets to help limit global warming to 1.5 °C degrees above pre-industrial levels

Goal 3: Take responsibility for our major scope 3 emissions and include them in our science-based targets

Goal 4: Manage our electricity distribution losses and achieve reductions of 8GWh per year throughout RIIO-ED2

Goal 5: Maintain a leakage rate of less than 0.3% for our total bank of sulphur hexafluoride equipment

Goal 6: Baseline the embodied carbon within new projects by the end of 2023/24 and set reduction targets

Goal 7: Achieve the Carbon Literacy gold standard

Looking after our natural environment

Goal 8: Enhance environmental management standards through our supplier code and target at least 80% of our supply chain to meet this code

Goal 9: To be responsible consumers of resources and reduce the amount of waste produced by the end of RIIO-ED2

Goal 10: Divert 95% of our waste away from landfill by the end of 2025 and reuse or recycle 70% of our waste by the end of RIIO-ED2

Goal 11: Reuse and recycle at least 85% of waste excavated for installation and repair

Goal 12: To be responsible consumers of water and reduce the water consumption per colleague during RIIO-ED2

Goal 13: Adopt an appropriate tool to assess changes in natural capital from different options for network projects

Goal 14: Enhance biodiversity and natural capital across 100 sites during RIIO-ED2 and plant 10,000 trees per year

Goal 15: Maintain a leakage rate of less than 25,000 litres per year

Goal 16: Remove overhead lines from national parks and areas of outstanding natural beauty

Goal 17: Take action to reduce noise pollution

Goal 18: Phase out the use of diesel and petrol vehicles which produce emissions of NOx and other air pollutants

Goal 19: Remove equipment contaminated by polychlorinated biphenyls from our network by the end of 2025

Goal 20: Train more colleagues on the requirements of our Environmental Permits for oil recycling through a CMS to reduce risks of environmental harm

Goal 21: Provide training to our wider leadership team to enhance environmental awareness

electricity north west
Bringing energy to your door

5. Progress during RIIO-ED1

During the first six years of RIIO-ED1, between 2015 – 2021, we have made notable improvements in our environmental performance and have significantly reduced our carbon footprint. The key areas where we have seen improvement are detailed below. Our progress during RIIO-ED1 is detailed within our annual environmental reports.

RIIO-ED1 AREAS OF PROGRESS

42% reduction in our business carbon footprint	An average saving of over **4,865 tonnes** of CO_2 equivalent per year	**42.6km** of overhead lines undergrounded in National Parks and Areas of Outstanding Natural Beauty	**78.5km** of oil-filled cables removed	**123 GWh** reduction in electrical distribution losses of, equivalent to 28,667 tCO_2e

6. Our approach

6.1 Supporting the transition to Net Zero carbon

Rapid decarbonisation is critical if we are to avoid the worst impacts of climate change. A key focus area of our EAP is therefore the transition to Net Zero and the decarbonisation of our network.

The role of an electricity distribution network operator will change significantly in the Net Zero economy. Electricity distribution is no longer one directional (from generator to consumer). With the uptake of low carbon technologies such as electric vehicles and the increase in customers generating their own energy, the flow of power on the network will become increasingly multidirectional and more complex.

As a responsible business we have to change the way we operate but also influence and challenge the behaviour of our colleagues, customers and stakeholders and ensure they have the necessary tools, skills and information to reduce their own environmental impact.

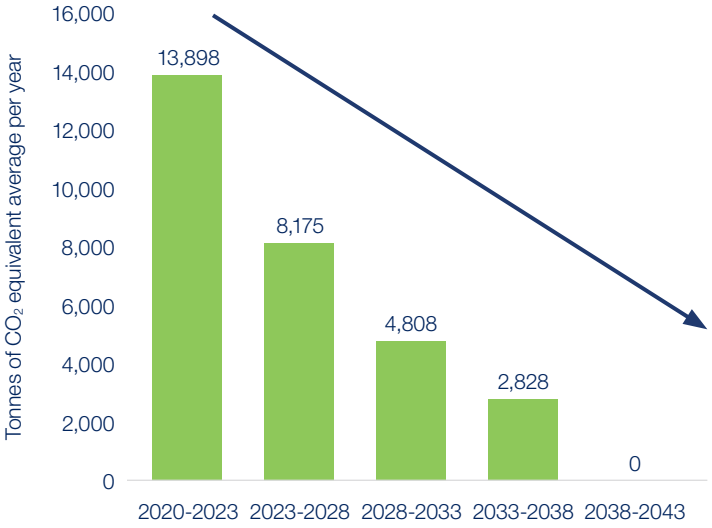
Working with our Sustainability Advisory Panel, we have taken a carbon budget approach to reducing our emissions with the aim of reaching Net Zero carbon by 2038, aligning ourselves with the Greater Manchester target, the end of the RIIO-ED4 price control and the start of the UK's seventh carbon budget. A carbon budget is the cumulative amount of carbon dioxide (CO_2) emissions permitted over a period of time to keep global temperatures within a certain temperature threshold.

Our carbon budget[1] for own internal carbon footprint excluding losses will support the aspirations of our regional councils who are also planning to reach Net Zero sooner than 2050; Lancashire has set a target of 2030, Cumbria 2037 and for Greater Manchester the target is 2038.

However, our commitment to the environment extends beyond our carbon emissions performance and recognises our role in optimising waste, including plastic and resource use and increasing our commitment around biodiversity and ecosystems.

You can find out more about how we are supporting the transition to Net Zero on our website, and our 'community and local energy strategy' and 'electric vehicle strategy' within Annexes 23 and 10 of our RIIO-ED2 Business Plan.

Our carbon budget from 2020 – 2038



6.2 Significant environmental impacts arising from network activity

In order to prioritise action areas and to set objectives and targets to improve environmental performance, we first need to understand the potential impact of our activities on the environment. This is monitored as part of our UKAS-certified ISO 14001 environmental management system.

The activities are assessed according to the likelihood and severity of their impact to provide a total risk rating. These ratings are combined with Ofgem's requirements and stakeholder feedback to inform the actions of our EAP. Further details on the assessment are provided in Appendix D.

The activities with the highest impact are shown below. The table also indicates which of the relevant goals look to address these impacts.

[1] Covering our internal business carbon footprint excluding losses.

Our key environmental impacts

Activity	Environmental aspect	Environmental impact	Risk	Goals
Network operation	Electrical distribution losses	Contribution to climate change	H	4
Transportation	Use of fossil fuels (internal combustion engines)	Contribution to climate change	H	1,2
Transportation	Emissions to air – NOx, SO_2, $PM_{2.5}$, VOCs	Reduction in air quality	H	18
Plant operation	Resource consumption, emissions to air – SF_6	Contribution to climate change	H	2,5
Network operation, maintenance and construction	Release of contaminants to land – oil	Contamination of ground, impacts on health and the environment	H	15,19,20
Network operation, maintenance and construction	Use of raw materials	Depletion of natural resources, embodied carbon	H	6,8,9
Network operation, maintenance and construction	Waste generation	Depletion of resources, contribution to climate change	H	9,10,11
Transportation	Tyre wear particles through friction	Pollution of water courses and land through microplastics	H	-
Electricity use in buildings	Emissions to air – CO_2	Contribution to climate change, resource consumption	M	1,2
Network operation, maintenance and construction	Failure to identify and manage impacts on land	Loss of habitat, reduction in biodiversity	M	13,14
Network operation, maintenance and construction	Release of contaminants to land – creosote	Contamination of ground, impact on health and the environment	M	9,10
Network operation, maintenance and construction	Release of contaminants to water – creosote	Pollution of watercourses, impact on health and the environment	M	9,10
Network operation, maintenance and construction	Release of contaminants to water – oil	Pollution of watercourses, impacts on the environment	M	15,19,20
Office activities and dust suppression	Water consumption	Depletion of natural resource, increased carbon footprint	M	12
Use of cooling equipment	Emissions to air – HFC gases	Contribution to climate change	M	1,2
Oil storage and reprocessing	Emissions to air – VOCs	Reduction in air quality	M	18,20
Impact on traffic congestion	Emissions to air – NOx, SO_2, $PM_{2.5}$, VOCs	Contribution to climate change, impact on health and the environment	M	18
Use of overhead lines	Obstacle	Obstacles on flight paths of migratory birds	M	16
Use of overhead lines	Visual amenity	Visual impact on the landscape	M	16
Network operation, maintenance and construction	Noise and vibration	Nuisance to residents and wildlife	L	17

6.2.1 Opportunities and challenges for addressing material impact areas

The table below provides a high-level overview of the challenges and opportunities, as well as the coordination with wider business planning. Cost has not been shown within the table as this is a challenge that crosses over all areas.

Activity	Environmental aspect	Opportunities	Challenges	Goal	Coordination with wider business planning
Electricity use in buildings	Emissions to air – CO_2	Renewable energy & low carbon technologies (LCT); building fabric enhancements; certified green-energy tariffs	Licence conditions impacting connection of LCTs; difficulty accurately measuring energy consumption at substations	1	Development of two exemplar Net Zero sites in RIIO-ED1 with a further five in RIIO-ED2
Operational transportation	Use of fossil fuels (internal combustion engines)	Transition to electric vehicles; increased driver efficiency	Viability of alternatives to internal combustion engines for larger vehicles; fleet replacement cycles	1	Cross directorate action plans and monitoring as part of the ISO 14001 and ISO 50001 environment and energy management systems;
Business transportation	Use of fossil fuels (internal combustion engines)	Transition to electric vehicles; incentivising colleagues to move away from internal combustion engines; remote working; virtual meetings	Availability to suitable charging points as uptake of electric vehicles increases; fleet/vehicle replacement cycles	1	
Plant operation	Emissions to air – SF_6	Collaboration with other DNOs to accelerate availability of alternative technologies; responding to leaks effectively	Viability of alternative technology at different voltage levels for cost and practicality	5	See ENV EJP 2 SF_6 gas Mitigation Programme; forms part of corporate risk register
Network operation	Electrical distribution losses	Innovation; targeted interventions; reactive interventions	Some losses are unavoidable; theft of electricity (non-technical); long-term legacy of network infrastructure	4	Losses Strategy; forms part of corporate risk register
Network operation, maintenance and construction	Use of raw materials (embodied carbon)	Collaboration with other DNOs to exert pressure on supply chain; collaboration with the supply chain	Relative infancy meaning baseline data is limited; no established tool for measuring embodied carbon within a DNO setting; ensuring that quality is not compromised;	6	Forms part of our procurement processes, responsibility framework and project decisions
Supply chain management	Use of fossil fuels / resources Emissions to air - CO_2	Collaboration with other DNOs; collaboration with the supply chain	Ensuring essential parts of the supply chain are not discounted through inability to meet requirements; matching our environmental standards to those of the supply chain	8	Our Supply Chain Charter and Responsibility Framework
Network operation, maintenance and construction	Use of resources; waste generation	Collaboration with the supply chain; transition to the circular economy; internal auditing	Waste treatment capacity constraints; unavoidability of some waste streams	9,10, 11	Responsibility Framework; forms part of corporate risk register
Network operation, maintenance and construction	Failure to identify and manage impacts on land (loss of habitats, impact on biodiversity)	Potential benefits to social value resulting from enhancements; reduction on vegetation maintenance programmes	Anti-social behaviour on enhanced sites; enhancements cannot compromise safety or network operation	13,14	Biodiversity working group with attendees from multiple directorates, with executive sponsorship; forms part of corporate risk register

Activity	Environmental aspect	Opportunities	Challenges	Goal	Coordination with wider business planning
Network operation	Release of contaminants to land and water – oil (fluid-filled cables)	Innovation in leak detection; potential increases in network resilience through replacements	Ageing assets making cables more susceptible to leaks; leaks from such cables can result in a large environmental impact;	15	Built into the asset replacement programme with monthly reporting to the executive leadership team; forms part of corporate risk register
Network operation, maintenance and construction	Noise and vibration	Transition to electric-powered tools and equipment; replacement of assets with lower noise emissions	Requirement to keep the network flowing; siting developments around existing electrical infrastructure	17	Code of Practice 353; forms part of corporate risk register
Network operation	Release of contaminants to land and water – oil (PCB-contaminated)	Collaboration with other DNOs and Environment Agency; potential to increase network capacity during asset replacements; potential to reduce losses through asset replacements	Not all assets containing PCBs have been identified; relatively short period of time to identify and remove all PCB-contaminated equipment (end of 2025)	19	Built into asset replacement programme; forms part of corporate risk register
Transportation	Emissions to air – NOx, SO2, $PM_{2.5}$, VOCs	Transition to electric vehicles; increased driver efficiency	Viability of alternatives to internal combustion engines for larger vehicles; fleet replacement cycles	18	Forms part of corporate risk register
Use of overhead lines	Visual amenity	Reduction in visual intrusion; increased network resilience	Wider environmental impact of schemes to underground overhead lines	16	This is driven by stakeholders; forms part of corporate risk register

6.3 The role of innovation

At Electricity North West, we consider innovation to be a key enabler to help us to meet our broader objectives and to address the challenges facing the electricity industry.

Our innovation strategy describes how innovation will help to address the challenges of the transition to Net Zero, while maintaining a safe and reliable network and ensuring that the most vulnerable in our communities can benefit from changes we make elsewhere in the energy industry.

The document outlines:

- Five principles that support our innovation decision-making
- Our innovation themes which ensure our plans are aligned with the energy industry and supported by stakeholders
- Our innovation life cycle, which ensures we take a fit-for-purpose approach to delivering our projects and ensuring their rapid transition to business as usual.

Our Smart Street and CLASS projects are just two examples of our successful innovation projects that will support the transition to Net Zero.

Our Smart Street project trialled innovative voltage control techniques to enable our networks and customers' appliances to perform more efficiently and make it easier to adopt low carbon technologies onto the electricity network.

CLASS (Customer Load Active System Services) uses voltage control at substations to manage electricity consumption at peak times.

7. Becoming Net Zero

The decarbonisation of our network is essential if we are to meet our ambitions for Net Zero. Our overall approach is to be an exemplar across multiple areas and provide leadership within the region in which we operate.

There are several steps we will take in order to become a Net Zero organisation and much of this is already underway. The headline actions are shown below but more detail is provided in goals 1 – 7, including how we will reduce emissions that occur indirectly.

KEY ACTIONS TO ACHIEVE NET ZERO IN OUR OWN OPERATIONS

Buildings energy Goal 1	Transportation Goal 1	Distribution losses Goal 4	SF_6 leaks Goal 5
• Conversion of one depot per year to a Net Zero site through enhancements to building contents, fabric and renewable generation • Improving efficiency of environmental control within substations	• Transition to electric vehicles (54% of fleet by the end of RIIO-ED2) • Reduced business travel through the use of virtual meetings and efficient working • Continue incentivising colleagues to transition to electric vehicles	• Revised strategy to manage losses through asset replacements, network planning and innovation • Identify savings of 8GWh per year throughout RIIO-ED2	• Strategy to manage SF6 equipment, respond to leaks and accelerate availability and viability of strategy non-GHG alternatives • Reduce leaks of SF6 to below 0.3% of total bank

In this section, we set out our goals, commitments and the associated benefits for the decarbonisation of our network in RIIO-ED2 and beyond.

Within the section we refer to Net Zero carbon and science-based targets (SBTs):

- Net Zero – Net Zero refers to achieving a balance between the carbon emitted into the atmosphere and the carbon removed from it. This balance (Net Zero) will happen when the amount of carbon we add to the atmosphere is no more than the amount removed. The practice of offsetting can be used to balance out any residual emissions, though every effort should be made to reduce emissions as much as possible rather than relying on offsetting practices
- Science-based targets – SBTs are an absolute reduction in carbon emissions from a baseline year. The reduction must be in line with what science tells us is necessary to restrict global warming to 1.5°C above pre-industrial levels. Unlike Net Zero strategies, SBTs do not allow for carbon offsetting to count towards emission reductions.

Ultimately, our Net Zero within our own operations by 2038 commitment is the overarching goal. However, the adoption of SBTs shows a clear, accountable and public commitment to reduce our absolute emissions in line with what science tells us is necessary to keep global temperature rise below 1.5°C by 2050. Our SBTs incorporate a broader range of scope 3 emissions, whereas our Net Zero commitment is based upon our controllable internal business carbon footprint.

electricity north west
Bringing energy to your door

Goal 1: Become a leader in the reduction of carbon emissions and achieve Net Zero carbon within our own operations by 2038

Customer and stakeholder insights:

- Customers trust us to work out the best path to reach Net Zero by 2038
- Consumers and wider stakeholders expect us to lead by example – accelerating action to achieve Net Zero carbon emissions from our operations by 2038
- In order to support the transition to a Net Zero carbon economy we should improve environmental performance in our day-to-day operations through greener work-sites, offices and vehicles
- The majority of consumers are concerned about climate change

Our strategy:

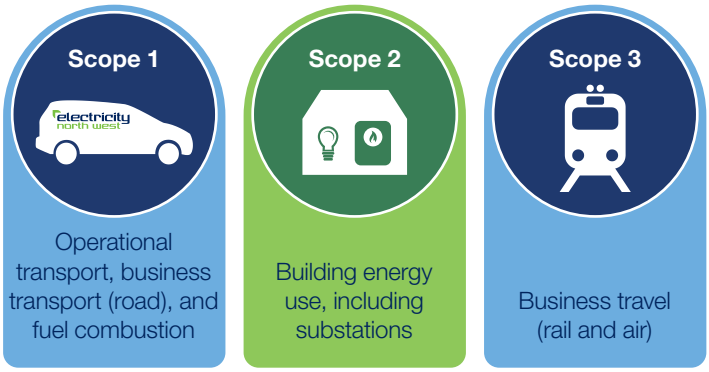
- To enable us to reach the Net Zero carbon target, we need to focus on multiple areas in an efficient manner within RIIO-ED2 so that we meet our carbon budgets. We also need to ensure that we do not leave ourselves with too much to do in RIIO-ED3 and RIIO-ED4. By making steps across all areas of our direct business carbon footprint, it also provides the ability to be an exemplar organisation and demonstrate what can be achieved across the goals

The emission of greenhouse gases from human activities is unsustainable and urgent action is required to limit further and irreversible degradation of the environment. As a distribution network operator, we play a key role in enabling our customers to adopt low carbon technologies and reduce their emissions but we must also acknowledge and reduce the impact of our own operations.

Net Zero refers to achieving a balance between the carbon emitted into the atmosphere, and the carbon removed from it. This balance (Net Zero) will happen when the amount of carbon we add to the atmosphere is no more than the amount removed.

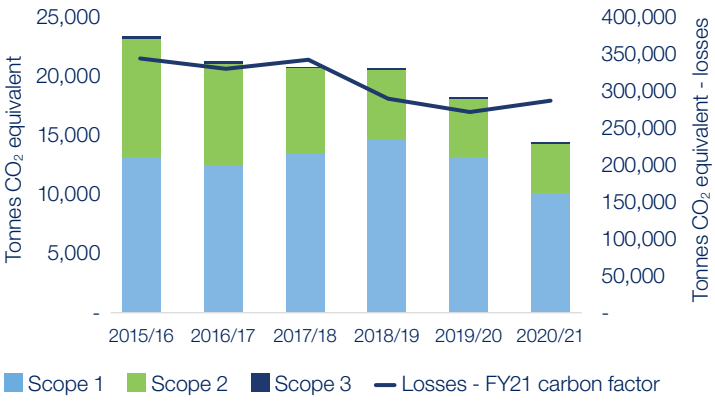
RIIO-ED1 progress

Our business carbon footprint, excluding electrical distribution losses, has reduced from 24,515 tCO_2e in 2015 to 14,090 tCO_2e by 2021 (42%). The business carbon footprint (BCF) reported in RIIO-ED1 is divided into three areas, or scopes. Scope 1 is the emissions directly from operations owned or controlled by Electricity North West Limited, scope 2 is the indirect emissions from purchased electricity, and scope 3 is the indirect emissions occurring in our value chain. During RIIO-ED1, our scope 3 emissions have included only business travel by rail and air.



Reductions have been achieved through activities such as the refurbishment of our buildings by installing more energy efficient equipment. This investment, along with continued promotion of energy efficiency with colleagues, is driving down electricity usage in our buildings. We have also seen reductions in some of our operational transportation and begun to roll out electric vehicles (EVs) across both our operational and lease car fleet. Our progress is illustrated below.

Our business carbon footprint during RIIO-ED1



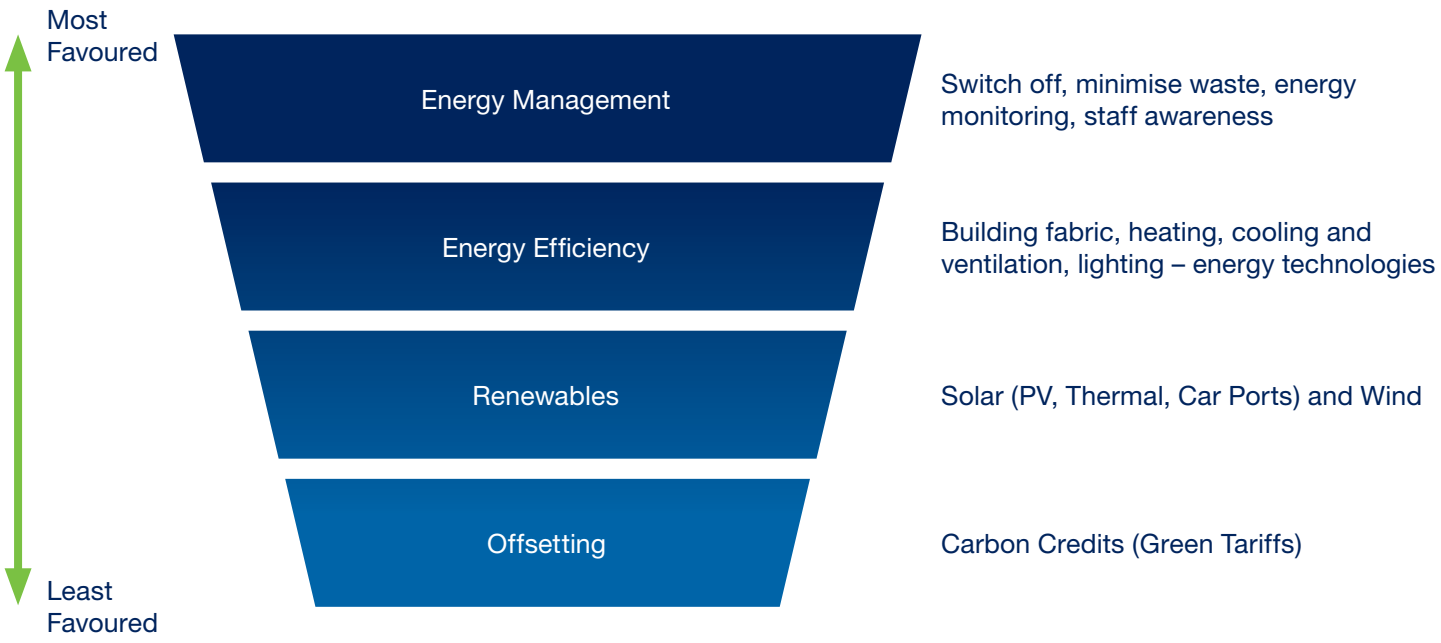
7. Becoming Net Zero

Our RIIO-ED2 action plan to reduce our business carbon footprint

To meet our target of achieving Net Zero internal carbon emissions by 2038, we have committed to take actions now and during RIIO-ED2:

Buildings energy	• Convert one site to Net Zero carbon each year during RIIO-ED2, saving 512,213 kWh of electricity consumption and a reduction of ~582 tCO_2e per year. • This will add to the two Net Zero carbon sites developed in RIIO-ED1, accounting for >65% of overall buildings electricity consumption excluding substations and a reduction of ~673 tCO_2e per year
Fleet	• Convert 54% of our overall fleet to electric vehicles by the end of RIIO-ED2, saving ~1,524 tCO_2e per year • Equates to 574 vehicles based on current size of commercial and lease car fleet • Increase conversion to EVs should viable EVs become available prior to or during RIIO-ED2
Lease cars	• Convert all company lease cars to electric vehicles prior to the start of RIIO-ED2 • Continue to incentivise colleagues to choose EVs for their private vehicles
Mobile generators	• Investigate the use of lower emission biodiesel fuels and battery-powered sources for mobile generators
Sulphur hexafluoride	• Maintain a leakage rate of sulphur hexafluoride (SF_6) of no more than 0.3% of the total inventory on the network (see goal 5), saving ~340 tCO_2e per year

During RIIO-ED2, we will convert an additional five depots or offices to be a Net Zero carbon site. This will use a combination of building fabric enhancements, on-site renewable power generation and behavioural changes. In meeting this commitment we will, by the end of RIIO-ED2, have converted nearly half of our office and depot locations to Net Zero carbon sites; these account for 65% of our buildings energy consumption (excluding substations). We will follow the energy hierarchy shown below on all other non-operational sites, converting all depots and offices to Net Zero sites by 2038.



electricity north west
Bringing energy to your door

As EVs and other non-internal combustion engine (ICE) technology develops we will accelerate the transition away from ICE vehicles. This will be done at the point at which it becomes cost neutral or cost beneficial, so as not to overburden bill payers. Based on current and proven vehicle technology, we will convert 54% of our overall fleet to electric vehicles by the end of RIIO-ED2, equating to 574 vehicles. Of this, around 300 vehicles will be converted to EVs prior by the end of RIIO-ED1

We recognise that our framework contractors for streetworks activities have a significant contribution to our overall carbon emissions. We will include the operational transport and other fuel emissions from these contractors within our reported internal BCF and work with them to reduce their own environmental impact (see goals 3 and 8). This could lead to reductions of around 600 tCO_2e per year.

We will continue to incentive colleagues to choose EVs for their private vehicles, as shown below.

Our colleague electric vehicle incentive scheme

We have listened to our colleagues and have responded by providing an incentive package which supports them to make the change to electric vehicles:

- We have fitted over 100 free charging points at depots and offices. Charging is free to all colleagues.
- We are offering colleagues who purchase an EV interest-free loans to help with the cost of an electric vehicle home charger. As an additional incentive, the company has made a one-off payment of £150 towards the charger for colleagues.
- We have made a range of EVs available to colleagues through our car scheme provider, irrespective of whether colleagues are entitled to a company car.
- For those colleagues who are eligible for a cash allowance we have increased this for colleagues who choose an EV or plug-in hybrid.
- We have increased the price limit for our cycle to work scheme whilst making interest-free loans available to those purchasing public transport season tickets

The use of mobile generators currently accounts for ~300 tCO_2e per year as an average over RIIO-ED1. The use of mobile generators is essential to maintain electricity supplies to customers during planned or unplanned network maintenance and repairs. However, we will investigate the use of lower emission biodiesel fuels and battery-powered sources for mobile generators.

We will only use offsetting once all other options have been exhausted; we do not anticipate the use of offsetting during RIIO-ED2.

7. Becoming Net Zero

Our RIIO-ED2 commitments
• We will report progress against our targets annually, using a common DNO methodology
• We will achieve our business carbon footprint reduction targets in line with our carbon budgets
• We will show leadership by sharing our journey through case studies and communications to other businesses and stakeholders on their own decarbonisation journeys
• We will use economic and efficient actions to reduce controllable BCF
• We will convert five depots to Net Zero carbon during RIIO-ED2
• We will replace vehicles using internal combustion engines with electric vehicles once it becomes cost neutral or cost beneficial over the whole life cost
Why?
• A significant proportion of our BCF is from transportation, particularly operational road transport. We will need to transition our entire fleet away from internal combustion engines (ICE) by 2038 to meet our Net Zero ambition. By moving to electric vehicles at the point it becomes cost neutral or cost beneficial will result in 54% of our total vehicle fleet being non-ICE vehicles by the end of RIIO-ED2, delivering a reduction in our business carbon footprint of around 1,524 tCO_2e per year by the end of RIIO-ED2
• The work required to change a building into a Net Zero carbon construction can necessitate changes to the building fabric and the installation of on-site renewable energy, often at a significant cost. In order to meet our 2038 ambition, we need to be making some of the changes during RIIO-ED2 to allow costs to be spread over multiple price control periods. By converting an additional depot/office per year to be Net Zero carbon, we anticipate a reduction in our annual BCF of 673 tCO_2e per year by the end of RIIO-ED2
• These actions will be required to meet our RIIO-ED2 carbon target and our 2038 Net Zero ambition and our science-based targets (see goal 2)
Our longer-term vision
• To be a leader in the reduction of BCF and to achieve Net Zero carbon emissions by 2038
Benefits
• A reduction in greenhouse gas emissions and emissions of air pollutants • Supports the development of low carbon, renewable energy generation • A reduction in the consumption of non-renewable energy • Meeting customer and stakeholder expectations • Evidential progression towards our Net Zero carbon emissions 2038 goal
Metric
• Tonnes of CO_2 equivalent emitted (tCO_2e), sub-categorised to provide granular data

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current			Scope 1 and 2 consumption data has been robustly analysed. Action plans have been created and will be refined further		
By 2028				We will have met our ED2 commitments and be on track to reach our long-term goal. Action plans will be required for further BCF reductions in ED3	

Goal 2: Adopt science-based targets to help limit global warming to 1.5°C degrees above pre-industrial levels

Customer and stakeholder insights:

- Customers and wider stakeholders expect us to lead by example, accelerating action to minimise our business carbon footprint
- We should adopt the higher level target of 1.5°C degrees (as opposed to well-below 2°C)

Our strategy:

- Adopting science-based targets (SBTs) is an Ofgem requirement for RIIO-ED2. We will create SBTs in line with the customer and stakeholder insights and the SBTi criteria

The 2015 Paris Agreement saw world governments commit to limit the rise of global temperatures to well-below 2°C above pre-industrial levels and to pursue efforts to limit global warming to 1.5°C. In 2018, it was recognised that limiting global warming to 1.5°C was the only way to prevent the worst effects of global warming.

Science-based targets (SBTs) are clearly defined pathways that show companies by how much and how quickly they must reduce their greenhouse gas emissions. There are five steps to setting a SBT:

Commit	Develop	Submit	Communicate	Disclose
Submit a letter establishing your intent to set a science-based target	Work on an emissions reduction target in line with the SBTi's criteria	Present your target to the SBTi for official validation	Announce your target and inform your stakeholders	Report company-wide emissions and progress against targets on an annual basis

7. Becoming Net Zero

RIIO-ED1 progress

The reductions we have made in our business carbon footprint are shown under goal 1. In addition, we have joined the Race to Zero campaign and submitted a letter to the science-based target initiative (SBTi) setting out our intent to set a science-based target (July 2021).

We have worked with credible knowledge experts to establish our wider scope 3 emissions beyond what we currently record and worked with them to develop our SBTs.

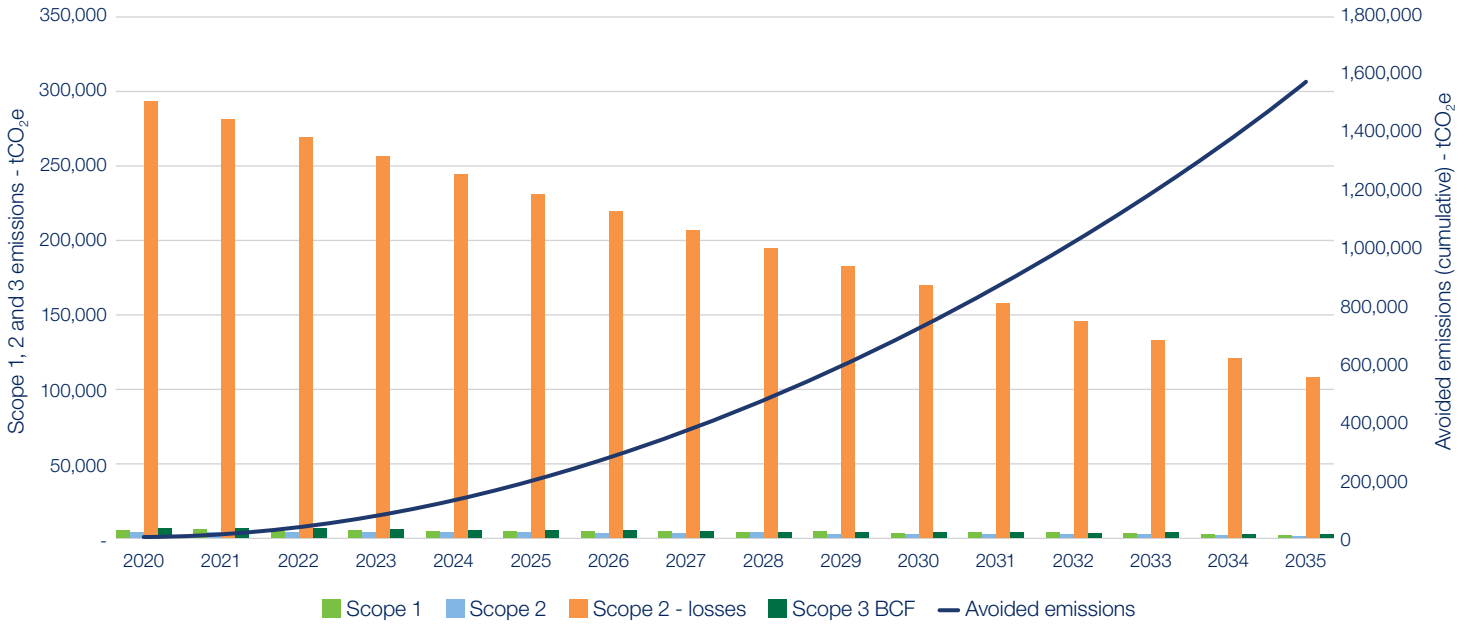
Our RIIO-ED2 action plan for science-based targets

To help to avoid the worst effects of climate change, and to meet our stakeholders' expectations, we have set our science-based targets in line with a 1.5°C future. We have used FY2020 data (April 2019 – March 2020) as our baseline year following advice from credible knowledge experts and plan to deliver on our SBTs within 15 years from the baseline, i.e. by 2035. To be clear, this is not a Net Zero target; this will be met by 2038 (see goal 1). Achieving our SBTs will mean an absolute reduction in our scope 1 and 2 emissions of 63% by 2035 (see goal 3 for details on scope 3 emissions) and the avoidance of 471,509 tonnes of CO_2 equivalent (tCO_2e) emissions by the end of RIIO-ED2 and 1,571,696 tCO_2e emissions by 2035. This includes wider scope 3 emissions than are currently reported.

Baseline year	Trajectory	Percent reduction	Avoided emissions	Target year
2020	1.5°C	63% absolute reduction	1,571,696 tonnes CO_2 equivalent by 2035	2035

We have finalised our SBTs and will present our targets to the science-based target initiative (SBTi) for official validation in early 2022. We will publicly disclose our emissions and track process annually through our annual environmental report. We will not rely on international greenhouse gas offsetting as part of our SBTs.

The projected emissions from our SBTs are shown in the chart below.



electricity north west
Bringing energy to your door

Our RIIO-ED2 commitments
• We will adopt SBTs for scope 1, 2 and 3 emissions (see goal 3 for scope 3 emissions)
• We will identify, and subsequently monitor, metrics to track progress towards our science-based carbon reduction targets throughout RIIO-ED2
• We will avoid emissions of 471,509 tonnes of CO_2 equivalent by the end of RIIO-ED2
Why?
• Signing up to SBTs aligned with a 1.5°C future is a clear commitment of providing leadership in taking ambitious climate action, adding transparency and further credibility
Our longer-term vision
• To meet our full SBTs and avoid 1,571,696 tCO_2e emissions, contributing towards limiting global warming to no more than 1.5°C above pre-industrial temperatures to avoid the worst impacts of climate change
Benefits
• Contribution to limit global warming to 1.5°C above pre-industrial levels by avoiding emissions of 1,571,696 tCO_2e by 2035
• A clear indication to our customers and stakeholders of our commitment to reduce our business carbon footprint in line with scientific data
• A clearly defined pathway to the decarbonisation of our network
Metric
• Tonnes of carbon dioxide equivalent (tCO_2e) by scope
• Cumulative avoided emissions by scope

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current		We have analysed our emissions data, created reduction targets and submitted our SBT application to the SBTi			
By 2028				We will have met our targets for ED2 and be on track to meet our SBTs. Action plans required for further progress in ED3	

7. Becoming Net Zero

Goal 3: Take responsibility for our major scope 3 emissions and include them in our science-based targets

Customer and stakeholder insights:

- There was appetite among stakeholders for us to go beyond the minimum requirements and include our scope 3 emissions in our science-based targets
- We should require our supply chain to meet high standards of environmental management and to reduce their carbon emissions

Our strategy:

- We will take responsibility for our major scope 3 emissions and include them in our science-based targets

Scope 3 emissions are indirect emissions that occur in a company's value chain. This includes the embodied carbon within purchased goods and services, business travel by air and rail, colleague commuting, waste disposal and transportation and distribution. Although these emissions are not directly controlled by us, they are incurred as a result of our activities. As an example, an item of switchgear is manufactured because there is a market for it.

RIIO-ED1 progress

We recognise that our current reporting of scope 3 emissions is not comprehensive and is not an accurate reflection of the amount of carbon emitted indirectly as a result of our network. Our stakeholders have also indicated that we must include more on scope 3 emissions or risk being left behind, misrepresenting our carbon emissions, or failing to meet our Net Zero carbon target.

In order to influence the wider value chain and to reduce the associated emissions, we have used credible knowledge experts to help ascertain the emission hotspots in our supply chain. Through this work, it is apparent that our scope 3 emissions do not cross the threshold for automatic inclusion in our SBT process.

Our scope 3 emissions, which account for 19.8% of our business carbon footprint based on 2019/20 data, or 27.6% based on 2020/21 data. The scale of scope 3 emissions shown against scope 1 and 2 as well as losses, a separately reported scope 2 emission, is shown in the treemap below.

Our RIIO-ED2 action plan for scope 3 emissions

Although they do not require inclusion in our science-based targets based on SBTi criteria, we have included them based on our ambition to be a leader for Net Zero in the North West and the direction given to us by customers and stakeholders.

Our targets around scope 3 emissions are two-fold:

1) We will work with our top 10 suppliers so that they can themselves develop science-based targets by 2026 to reduce their scope 1 and 2 emissions
2) We will reduce our non-supply chain scope 3 emissions by 63% by 2035.

The progress against both targets will be reported on annually.

Our RIIO-ED2 commitments
• We will include the scope 3 emissions that are the largest contributors to our overall business carbon footprint in this boundary of our SBTs
• We will engage with suppliers to reduce these emissions in line with the 1.5°C SBT trajectory
Why?
• Our stakeholders have told us that we should include scope 3 emissions within our SBTs so that we do not lose sight of our overall business carbon footprint and can provide guidance and leadership to our supply chain
Our longer-term vision
• To influence our employees and our supply chain and drive down scope 3 carbon emissions as much as possible
• To reduce non-supply chain scope 3 emissions by 63% by 2035
• To encourage the majority of our suppliers to produce science-based targets for emissions reductions
Benefits
• A reduction in our overall indirect business carbon footprint
• Demonstrates leadership to others
• Supports our supply chain to transition to Net Zero carbon status
Metric
• Our scope 3 emissions in tCO_2e

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current		We have assessed our scope 3 emissions and included targets within our SBTs			
By 2028				We will be tracking progress against our scope 3 emissions as part of our SBTs and formulating action plans for ED3	

7. Becoming Net Zero

Goal 4: Manage our electricity distribution losses and achieve savings of 8GWh per year by the end of RIIO-ED2

Customer and stakeholder insights:

- We should replace electricity cables and equipment to ensure more efficient distribution of electricity
- We should make a concerted effort to manage losses on our network

Our strategy:

- We will achieve savings of 8GWh per year by the end of ED2 through proactive replacement of equipment

When electricity is generated not all of the electrical energy which flows through the power network reaches the customer. This is because power networks use up some of the energy in the process of transporting the electricity to customers. The energy used in transportation, known as losses, costs customers money and contributes to carbon emissions.

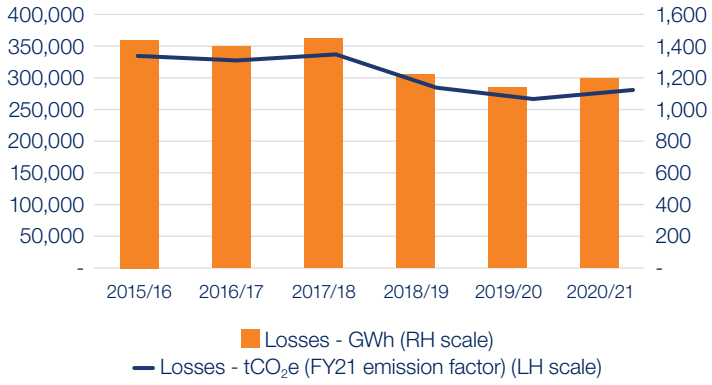
Losses can be divided into technical and non-technical. Technical losses occur as a direct result of the physical characteristics of the electrical equipment used to distribute electricity and are usually lost in the form of heat. Non-technical losses relate to energy which cannot be accounted for, such as errors in measuring energy and theft.

We act on behalf of our customers to determine the appropriate balance between spending money on reducing losses and saving money for customers by lowering the energy lost during transportation. Our industry regulator, Ofgem, helps us to determine this balance by providing guidance on the value that we should place on saving losses when making its calculations. This includes some of the wider benefits such as lower carbon and greenhouse gas emissions.

RIIO-ED1 progress

Our distribution losses have reduced from 667,982 tCO_2e in the first year of RIIO-ED1 to 283,209 tCO_2e in 2020/21 and account for over 90% of overall carbon equivalent emissions each year. This has been achieved through the opportunistic replacement of assets with more efficient equivalents, including modern lower loss transformers and installing larger, lower loss cables across the network and the lowering of the carbon emission factor calculated by BEIS each year.

The amount of losses incurred through RIIO-ED1 and the equivalent carbon emissions using the 2021 carbon emission factor are shown in the chart below.



We have reduced losses by 122.96 GWh in RIIO-ED1 through a variety of techniques, as shown in the table below:

Techniques used to reduce losses in RIIO-ED1

Programme/project title	RIIO-ED1 2015/16 – 2020/21 GWh
Standardise use of 300mm² high voltage cable	31.22
Standardise use of 300mm² low voltage cable	13.3
Proactive replacement of pre-1990 1000kVA transformers	17.61
Proactive replacement of pre-1990 800kVA transformers	11.21
Opportunistic primary transformer replacement	6.45
Opportunistic 200kVA pole-mounted transformer replacement	0.58
Relevant theft of electricity action	42.59
Total	**122.96**

Our RIIO-ED2 action plan for electrical distribution losses

As part of our losses strategy, we have identified a number of priorities for managing technical and non-technical losses. These priorities are detailed within our losses strategy. We will report on the progress of implementing the losses strategy and associated performance measures throughout RIIO-ED2 within the Annual Environment Report.

We will also contribute to the knowledge base for best practice on losses management by reviewing several innovation projects currently ongoing within Electricity North West. We will review their impact on losses management and the validity of delivering into a business as usual solution.

Our full losses strategy is available on our website.

Through proactive replacement measures, we will identify savings of 8GWh per year in losses against a backdrop of increasing losses overall. This is a decrease on the reductions from RIIO-ED1 (20.5GWh per year) as we are forecasting an upswing in electricity demand and therefore maintaining current losses will be a challenge. Additionally, many of the low-hanging fruit opportunities have been utilised during RIIO-ED1.

Our RIIO-ED2 commitments
• We will use cost-efficient network interventions to manage losses
• We will, through our interventions, deliver low loss replacements with industry standard eco equipment and lower loss equivalents
• We will undertake the most efficient replacement of equipment on a proactive basis where economically advantageous
• We will opportunistically use low loss equipment when undertaking asset replacement due to health or network expansion
• We will contribute to the evidence base on the proportion of losses that network companies can influence/control
Why?
• Losses is the most significant contributor to our business carbon footprint. Our customers and stakeholders have told us that we should make a concerted effort to manage losses. As demand on the network increases, it is vital that we use cost-efficient network interventions to do this
• Losses ultimately cost consumers money
Our longer-term vision
• To eliminate losses as much as possible whilst maintaining a secure and resilient supply to our customers as we transition the network to Net Zero carbon
Benefits
• Targeted and economically justified intervention will deliver costs benefits for our customers
• Manage carbon losses within our network
Metric
• GWh reduction in losses through proactive interventions

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current		We have worked to our first losses strategy to reduce losses throughout RIIO-ED1. We have created a revised losses strategy for RIIO-ED2.			
By 2028			We will have completed our RIIO-ED2 goals. Management of losses will be a continual process and as new technology is developed, it may lead to greater reductions in losses. This may necessitate a further iteration of our losses strategy for RIIO-ED3.		

7. Becoming Net Zero

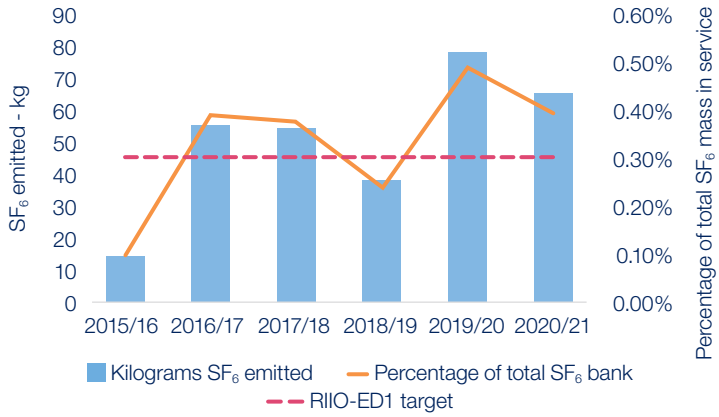
Goal 5: Maintain a leakage rate of less than 0.3% for our total bank of sulphur hexafluoride equipment

Customer and stakeholder insights:

- We should implement a new management approach for a sulphur hexafluoride (SF_6) that is found in some of our equipment
- Our stakeholders noted that a sector-wide approach may be the best way forward
- Our stakeholders also noted that a strategy may need to account for the different viability of alternatives at different voltage levels
- Our stakeholders also noted that setting a target for RIIO-ED2 requires the strategy to be developed

Our strategy:

- We will collaborate with other DNOs and transmission organisations through the Energy Networks Association (ENA) to produce a strategy to accelerate the viability of alternatives to switchgear containing SF_6.
- Setting a target around leakage rates is an Ofgem minimum requirement. As assets age they become more prone to leakage; based on our ED1 performance and stakeholder comments that setting a new target is complex and requires the full development of a strategy, we will replicate our ED1 target to maintain a leakage rate of 0.3%. Once the full strategy is embedded, we will review our target at the end of the second year of ED2 and also impose a target on a kilograms basis



Our RIIO-ED2 action plan for SF_6

Our long-term vision is for our network assets to be 100% free of SF_6 (or other greenhouse gases), but at present this is not technically or financially viable. We will continue to use SF_6 switchgear until such time that the SF_6-free solutions have been technically approved and are cost-effective over the whole asset life-cycle. While this market matures, our SF_6 holding may increase, with the installation of new SF_6 switchgear on the network; this switchgear will be highly unlikely to leak. There is also a risk that the process of replacing these assets earlier than end-of-life could lead to higher business carbon footprint emissions, particularly when considering embodied carbon.

During RIIO-ED2 we will keep fugitive emissions of SF_6 to below 0.3% of our total SF_6 bank – this would represent a ~10% improvement on our RIIO-ED1 performance to date and reduce carbon emissions by ~340 tCO_2e per year. As assets age, they are more prone to leaks so it is expected that this target will be a challenge. We will review this goal at the end of the first two years of RIIO-ED2 and look to impose a stretch target if we are on track to meet our initial goal.

Sulphur hexafluoride (SF_6) is a man-made and extremely potent greenhouse gas that has a global warming potential 22,800 times greater than of CO_2. It persists in the atmosphere for thousands of years.

The use of SF_6 in the electrical transmission and distribution networks is widespread due to its excellent electrical insulation properties. It also helps reduce equipment size and improves safety and reliability. SF_6 has been used in switchgear applications at all transmission and distribution network voltages as an insulating and arc-extinguishing gas which helps avoid fires and explosions.

Fugitive emissions, or leaks, are relatively rare, but due to the high greenhouse gas potency of SF_6 these have a substantial environmental impact.

RIIO-ED1 progress

Our goal for the RIIO-ED1 period was to reduce our leakage rate by over 20% from a rate of 0.38% (as a proportion of the mass in service) in 2013 to 0.30% by 2023. On average, our fugitive emissions of SF_6 have been 0.33% of our total bank during the first six years of RIIO-ED1 (an average of 48 kilograms per year, though this is increased if the first year of RIIO-ED1 is excluded).

Our RIIO-ED2 commitments

- We will develop and implement a strategy to manage SF_6 equipment and respond to fugitive emissions by the start of RIIO-ED2, to include the below measures:
  - We will collaborate with industry and manufacturers to accelerate the availability of cost effective alternative switchgear technologies that are SF_6-free
  - We will keep fugitive emissions of SF_6 from our network to below 0.3% of our total bank each year and review this target at the end of the first two years of RIIO-ED2
  - We will proactively manage our equipment to minimise leaks
  - We will replace SF_6 equipment if its condition deteriorates such that the integrity of the seals is beyond repair
  - We will install SF_6-free equipment for our grid supply points that are shared with the National Grid
  - We will use non-SF_6 primary switchboards at 11kV and 6.6kV voltage levels
  - We will report total SF_6 bank and leakage reduction rates using a common DNO methodology

Why?

- Our customers and stakeholders have told us that we should create and implement a new strategy to manage potent greenhouse gases. Reviewing our leakage rate at the midpoint of RIIO-ED2 provides an opportunity to assess technological advances and take account of current performance

Our longer-term vision

- For 100% of our network assets to be free from SF_6 or other greenhouse gases

Benefits

- A reduction in the fugitive emissions of SF_6
- Progression towards our Net Zero carbon goal

Metric

- Percentage and kilograms of SF_6 leaked

<table>
<tr><th>Maturity level</th><th>Conceptual understanding</th><th>Baseline data available</th><th>Data analysed and targets set</th><th>Action plans created</th><th>Delivery on track or complete</th></tr>
<tr><td>Current</td><td></td><td colspan="2">We have set targets for leakage rates during ED2 and are liaising with other DNOs and equipment providers to develop strategies to move to non-SF_6 equipment</td><td></td><td></td></tr>
<tr><td>By 2028</td><td></td><td></td><td></td><td colspan="2">We will have met our ED2 leakage targets and be creating action plans to replace assets with alternatives where appropriate</td></tr>
</table>

7. Becoming Net Zero

Goal 6: Baseline the embodied carbon in new projects and set targets to reduce this

Customer and stakeholder insights:

- We should address the amount of carbon embodied within our materials and equipment
- We should collaborate with other DNOs and work with the supply chain to reduce the embodied carbon on the network

Our strategy:

- We will collaborate with other DNOs through the ENA to establish common baseline data on embodied carbon within network projects. We will have established this baseline by 2024 and have developed a tool to track embodied carbon within new major network projects. By the end of RIIO-ED2, all major network projects will have a carbon reduction plan.

Embodied carbon, also commonly referred to as embedded carbon, is the emissions that result from all the activities involved in the total life cycle of a building or asset – its creation, use and demolition.

A significant reduction in embodied carbon is required to meet the UK Net Zero ambitions and the decarbonisation of the electricity network.

There are several stages within the life cycle where carbon emissions can occur. The product stage, often referred to as 'cradle to gate' captures the carbon released in extracting the materials from the 'cradle', that being raw materials from the earth, transportation to manufacturing plants and in the manufacturing process itself. This is where the majority of emissions usually occur, for which concrete commonly accounts for more than half (electrical distribution losses, which fall in the use stage, are accounted for separately in the business carbon footprint).

Our RIIO-ED2 action plan for embodied carbon

Measuring embodied carbon

Accurate and reliable measurement of embodied carbon emissions can only be assured and reasonably compared through the use of accurate and reliable tools. In order to ensure that the embodied carbon that we measure and report on in RIIO-ED2 is directly comparable, we will develop or adopt an appropriate tool.

Setting a baseline

By the end of the first year of RIIO-ED2, we will have established a true baseline for the embodied carbon within major projects.

In order to make the biggest gains in carbon reduction, we will give particular focus to the materials that result in the largest emissions, such as concrete and metal products. Within our baseline, we will measure the carbon intensity of these materials using an appropriate metric, such as kilogram of CO_2 equivalent per tonne.

Targets

Once we have established a robust baseline, we will liaise with the supply chain and other DNOs to identify potential reductions in the embodied carbon of materials provided, while also optimising the design of new infrastructure projects.

We will target a reduction in the carbon intensity of products, such as transformers and materials such as concrete. We will set these targets once we have an established baseline and work with our suppliers to reduce the carbon intensity of their offerings.

Supply chain

We recognise that as the electrical distribution network operator in the North West, we have a responsibility to lead and influence others to improve their environmental performance. We will consider introducing a mandatory requirement for the top 80% of our suppliers (by value) to report on the embodied carbon for the materials and equipment that they provide to us by the mid-point of RIIO-ED2, where they are considered material to our operations. If material embodied carbon values cannot be provided, we will apply industry-recognised emission values.

Embodied carbon at each stage and process within the building life cycle

BUILDING LIFE CYCLE INFORMATION			
Product stage	**Construction process stage**	**Use stage**	**End of life stage**
• Raw material supply • Transport • Manufacturing	• Transport • Construction installation	• Use • Maintenance • Repair • Replacement • Refurbishment • Operational energy use • Operational water use	• Deconstruction demolition • Transport • Waste processing • Disposal

Our RIIO-ED2 commitments
• We will establish an appropriate tool for measuring embodied carbon
• We will set a baseline of the embodied carbon within materials and products that are material to our operations by the end of the first year of RIIO-ED2
• We will report on activities to manage or reduce our embodied carbon within our annual environmental reporting
• We will work with the supply chain to reduce embodied carbon in the network and set appropriate reduction targets
• We will introduce carbon reduction plans for all major network projects by the end of RIIO-ED2
Why?
• This is an Ofgem baseline requirement with support from customers and stakeholders
• Understanding the embodied carbon within major projects will be required to achieve reductions and meet our SBTs
Our longer-term vision
• To complete all projects and infrastructure on our network using the least amount of embodied carbon as possible
Benefits
• A reduction in our overall business carbon footprint
Metric
• TBC – tonnes of CO_2e per tonne, £ spent or m2

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current	This is an area of relative infancy. However, we have baselined the embodied carbon within a new substation build which will help to inform the future direction of travel				
By 2028			We will have formalised targets and the requirement to plan new projects with embodied carbon a key design consideration		

7. Becoming Net Zero

Goal 7: Achieve the Carbon Literacy gold standard

Customer and stakeholder insights:

- Our stakeholders told us that we should use Carbon Literacy to educate our colleagues
- 'Green thinking' and reducing environmental impact is an important area to focus on and expect it to be appropriately represented in the business plan as part of Electricity North West being a good corporate citizen

Our strategy:

- We will increase awareness of climate change and the climate impacts of everyday actions amongst our workforce. To demonstrate and track this, we will achieve Gold Standard carbon literacy during RIIO-ED2

Our workforce is aware of our Net Zero carbon ambitions and the investments and strides we are making to see this to fruition.

In March 2019 we became the world's first 'carbon literate' power network operator after receiving a bronze accreditation from The Carbon Literacy Project.

Carbon literacy is vital climate change learning that catalyses action to reduce greenhouse gas emissions. Today more than 40 organisations in the UK are carbon literate.

Our bronze award recognises our increased commitment to act on climate change, supporting colleagues to take action and share knowledge and best practice

RIIO-ED1 progress

As part of our work to promote carbon literacy, we have developed a training programme for colleagues which is an essential part of raising awareness and helping us to achieve our plan to lead the North West to Net Zero carbon. The training helps motivate our colleagues to reduce carbon emissions on an individual, community and organisational basis.

We achieved the Carbon Literacy bronze award in 2019 and during 2021 provided carbon literacy training to our Wider Leadership Team (~300 colleagues) on our path to achieving the Carbon Literacy silver award.

Our RIIO-ED2 action plan

During RIIO-ED2, we will achieve the gold standard, with aspirations to be on the pathway to the platinum standard.

Our RIIO-ED2 commitments
• We will ensure that a minimum of 50% of our workforce is trained in carbon literacy
• We will achieve the Carbon Literacy Project gold standard during RIIO-ED2
Why?
• Having a carbon literate workforce enhances the likelihood of meeting our EAP commitments
Our longer-term vision
• To achieve Carbon Literacy Project platinum standard
Benefits
• A carbon literate workforce with the knowledge and understanding of how their actions can contribute towards climate change
Metric
• Percentage of colleagues trained in carbon literacy

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current			We are a Carbon Literate Bronze Standard organisation working towards the Silver standard		
By 2028					We will be a Carbon Literate Gold Standard organisation

In addition to becoming Net Zero, we also need to ensure that we reduce the wider environmental impact of our activities. In this section, we set out our goals, commitments and the associated benefits, to ensure we look after our natural environment in RIIO-ED2 and enhance the world around us where possible.

Goal 8: Enhance environmental management standards through our supplier code and target at least 80% of our supply chain to meet this code

Customer and stakeholder insights:

- We should require our supply chain to meet high standards of environmental management, but we should lead the way with this and motivate others
- Some of our customers thought we should consider the use of audits on our supply chain to ensure that they are meeting high standards of environmental management, although there were mixed comments on this
- Any requirements should be proportionate to what we are buying
- We should ensure that we do not rule out SMEs from tendering for work through having unrealistic expectations
- We should consider making the environment and sustainability a visible and meaningful measure in the tender evaluation process

Our strategy:

- We will enhance the environmental management standard requirements of our suppliers and ensure that 80% of our suppliers by value are meeting this code by the end of ED2. In line with our science-based targets, we will require our top 10 suppliers (by value) to set targets in line with SBTi criteria by 2026 and we will provide guidance for how we have gone through the process

The environmental impact of the supply chain can be vast. This can include resource extraction, energy consumption, greenhouse gas emissions, water consumption, the loss of biodiversity and pollution. We recognise that we must take steps to influence our supply chain to address these environmental impacts, particularly as these impacts are as a direct result of our requirements.

Our RIIO-ED2 action plan for our supply chain

We will use our procurement process to embed high standards of environmental management within the supply chain. We will continue to focus on carbon reduction and resource management.

Before RIIO-ED2, we will further develop our supply chain charter to achieve a higher standard of environmental management within our supply chain. We will liaise particularly with our main contractors to influence and drive improvements.

Our stakeholders have indicated that our supply chain requirements must be proportionate to the materials or services being procured. For instance, it may be disproportionate to ask suppliers to report on the amount of carbon embodied in basic stationery, whereas it would be apt when supplying 132kV transformers.

Our stakeholders have also indicated that our supply chain requirements must not become too much of a burden on small and medium-sized enterprises. Therefore, we will introduce requirements in a phased approach starting with the top 80% of our supplier base (by value). We are currently working with third parties with relevant experience and expertise to develop our approach.

An indication of the potential requirements of our supplier code in relation to environmental management can be seen below.

Potential supplier code requirements

Parameter	Supplier code requirements	Reporting requirement
Legislation	Comply with all legal requirements and obligations relevant to the environment	Number of environmental breaches and enforcement actions
Waste	Make reasonable efforts to reduce total waste and achieve zero waste to landfill	Total waste and percentages of waste reused, recycled and sent to landfill
Resource use	Aim to focus on eco-design and think about the life cycle of products	Percentage of recycled content in materials supplied to Electricity North West
Business carbon footprint	Use recognised methods for calculating business carbon footprint	Scope 1 and 2 business carbon footprint emissions (potentially extended to include scope 3)
Embodied carbon	Use recognised methods for calculating the embodied carbon in materials	Amount of carbon embedded in resources supplied that are material to Electricity North West inputs
Science-based targets	For our top 10 suppliers (by value), to set carbon reduction targets in line with SBTi criteria	Reduction of scope 1 and 2 BCF emissions

8. Looking after our natural environment

Tender evaluation

The standard of environmental management adopted within the supply chain will be evaluated in the tender process.

Where suitable, options available in the procurement and tender evaluation process include:

- Allocating a higher weighting for social value, including environmental management, within the procurement and tender evaluation
- Requiring suppliers to provide an environmental product declaration for products that are material to Electricity North West (an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products)
- Requiring suppliers to adopt science-based targets
- The utilisation of take-back schemes at end-of-life
- The percentage of reused or recycled content in materials and products provided.

These evaluation criteria may be phased in to provide a lead-in time for suppliers to develop their processes and systems. For instance, an individual requirement may not be scored within the first year of implementation but by the end of RIIO-ED2 assigned a 10% weighting of the overall evaluation.

Where appropriate, we will work collaboratively with our supply chain to develop their processes.

Our RIIO-ED2 commitments

- We will update and issue to suppliers, that are material to our inputs, a revised supplier code that requires high standards of environmental management by 2023
- We will adopt a target of more than 80% of suppliers (by value) meeting this code by 2025
- We will add requirements for our supply chain for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs
- We will report annually on the percentage of suppliers meeting the supplier code, and work with those not meeting these requirements
- We will incorporate, where appropriate, higher standards of environmental management within tender evaluations

Why?

- Our customers and stakeholders have also told us that we should provide leadership to our supply chain and encourage them to meet our own standards. Our stakeholders have told us that requiring higher standards of environmental management within procurement can lead to significant gains. This is also an Ofgem requirement.

Our longer-term vision

- For more than 90% of our suppliers (by value) to meet our supplier code

Benefits

- Higher standards of environmental management within the supply chain resulting in reduced wider environment impacts

Metric

- Percentage of suppliers meeting supplier code

<table>
<tr><th>Maturity level</th><th>Conceptual understanding</th><th>Baseline data available</th><th>Data analysed and targets set</th><th>Action plans created</th><th>Delivery on track or complete</th></tr>
<tr><td>Current</td><td></td><td colspan="2">Our current supply chain charter encourages suppliers to consider the environment. We also have requirements within our supply chain around resource efficiency</td><td></td><td></td></tr>
<tr><td>By 2028</td><td></td><td></td><td></td><td colspan="2">At least 80% of our supply chain will meet high standards of environmental management</td></tr>
</table>

Goal 9: To be responsible consumers of resources and reduce the amount of waste produced by the end of RIIO-ED2

Customer and stakeholder insights:

- Customers told us that we should do more to reduce the amount of waste we produce
- Our stakeholders suggested that we should consider introducing a requirement for suppliers to declare the amount of recycled material within products they supply to us

Our strategy:

- We will create a resources strategy prior to the start of RIIO-ED2 and embed the requirements of this within our organisation.

Resource consumption can have a significant impact on the environment. This can include the extraction of raw materials from the earth, greenhouse gas emissions created from processing, land degradation, loss of biodiversity, air pollution and water pollution.

Being responsible consumers means carefully balancing these environmental impacts.

Our RIIO-ED2 action plan for resource use and waste

We will create a true baseline of our waste arisings before RIIO-ED2 and reduce this throughout the period. We will also embed the requirement for suppliers of products and materials that are material to our activities to provide information on the amount of recycled content within their products.

Our RIIO-ED2 commitments

- We will update our procurement framework to increase the amount of recycled content that is material to our activities
- We will create a full baseline of our waste arisings before RIIO-ED2 and reduce this throughout the period
- We will understand the composition of our operational and office waste throughout RIIO-ED2 to identify waste reduction opportunities

Why?

- Our customers and stakeholders have told us that we should be responsible resource consumers. There is also a high likelihood that by considering resource consumption within our business and procurement processes, it will lead to cost savings and reduced business carbon footprint

Benefits

- Increased resource efficiency with a reduced environmental impact

Metric

- Total waste arisings in tonnage; total waste arisings per kilometre of network

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current	We have begun discussions with our supply chain to minimise packaging waste where not required. We also include this as a key goal within our internal responsibility framework				
By 2028				We will have further embedded circular economy principles within our business and have reduced our annual waste arisings	

8. Looking after our natural environment

Goal 10: Achieve a landfill diversion rate of 95% by the end of 2025 and reuse or recycle 70% of our waste by the end of RIIO-ED2

Customer and stakeholder insights:

- Customers and stakeholders feel we should do more to recycle as much waste as possible and reduce the amount of waste we produce

Our strategy:

- We will look for opportunities to increase the amount of our waste that gets sent for recycling and minimise the amount of waste sent to landfill. We will work with our waste contractors to identify opportunities to increase recycling, such as the segregation of individual waste streams.

Our research has shown that recycling the oil in this way can extend the life of a transformer by 10 - 15 years and reduces waste by deferring the replacement of the asset.

The consumption and disposal of products and materials has traditionally followed a linear economy, where raw materials are extracted, a product is made and used, before it is ultimately disposed. As most of these resources are finite there is an increasing move towards the circular economy model, where materials are made with reuse and recycling in mind, eliminating the need for raw materials.

We wish to further embed the circular economy principle within our resource consumption and waste management activities.

However, there are challenges to waste reduction and recycling. There are also some waste materials that cannot be recycled or recovered, such as asbestos from our substations which unfortunately is sent to landfill for disposal. In 2020 we issued over 180,000 face masks and 4,000 litres of hand sanitiser to our colleagues to keep them safe during the COVID-19 pandemic. Inevitably, this created waste materials that could not be readily recycled.

Exceptional circumstances aside, we will identify opportunities and embed circular economy requirements within our business, through thought-out specifications and discussions with suppliers for the assets we procure.

RIIO-ED1 progress

We are the only network operator with a dedicated oil reprocessing plant in the UK. Based at our Blackburn depot, the plant recycles 1.5 million litres of oil every year which is used to insulate and cool transformers.

Building on the success of our oil recycling process we pioneered a new, environmentally-friendly approach to extend the life of our 33kV and 132kV transformers through targeted oil regeneration.

Our RIIO-ED2 action plan for managing waste

We will use the waste hierarchy to manage resources in a manner that is less detrimental to the environment, i.e. disposal to landfill is a last option.

By the end of RIIO-ED2 we will look to achieve a 70% reuse or recycling rate. This is based on typical commercial waste compositions, an understanding of our operations, and the estimated recyclability and potential capture rates of our waste streams for recycling. To achieve this we will collaborate with our key supply chain and ensure that our colleagues have been given the appropriate level of knowledge and tools to follow our strategy. In meeting this target, we will have met customer expectations to recycle as much material as possible.

Excavation waste from streetworks will be excluded from these measures due to the uncertain legislative requirements surrounding this waste stream; we have focused goal 11 on this waste.

To provide full transparency in our annual environment report, we will distinguish between the percentage of waste that is reused/recycled compared to the percentage of waste that is sent for energy recovery.

Our RIIO-ED2 commitments
• We will produce a resource strategy by the start of RIIO-ED2 to reduce waste and promote the waste hierarchy
• We will send no more than 5% of our waste to landfill by the end of 2025 on the pathway to zero waste to landfill by 2035
• We will reuse or recycle at 70% of our waste by the end of RIIO-ED2
• We will report on our waste arisings and management fate within our environment reports
• We will eliminate unnecessary single-use plastic from our waste stream by the end of RIIO-ED2
Why?
• Our customers have told us that we should recycle as much material as possible. We have based our recycling rate target on national data and applied it to our waste streams
Benefits
• To be a zero waste operator and further embed the circular economy model within our business
Metric
• Percentage of waste sent to landfill; percentage of waste sent for reuse or recycling

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current		We have created targets based on an understanding of our waste streams			
By 2028				We will have met our ED2 targets and created action plans for ED3	

8. Looking after our natural environment

Goal 11: Reuse and recycle at least 85% of waste excavated for installation and repair

Customer and stakeholder insights:

- Customers and stakeholders feel we should do more to recycle as much waste as possible and reduce the amount of waste we produce
- Stakeholders told us that we should set targets on specific waste streams, not just overall

Our strategy:

- We will implement the requirements of any agreed industry protocol for the classification of streetworks and look to send as much excavation waste for recycling or reuse

Emergency repairs and planned works on our network require waste to be excavated from the ground. Traditionally, much of this waste has been classified as non-hazardous if no prior assessment has been carried out. However, we are currently working with the Environment Agency (EA) and other utility service providers to develop a protocol whereby all excavation waste will be risk-assessed for the likelihood of hazardous substances being present, such as hydrocarbons.

Under such a protocol, where indicators of potential hazardous substances are identified sampling and testing will be undertaken to determine whether the material should be classed as hazardous waste. Where hazardous substances are found, this material will need to be remediated or disposed of to a hazardous waste landfill.

Our RIIO-ED2 action plan for excavated streetworks waste

Although our vision is to reuse, recycle and divert 100% of the waste we excavate from the ground away from landfill, it is likely that 15% of the material will be hazardous and, therefore, our RIIO-ED2 goal has been adjusted to 85%.

We will look for opportunities to reuse and recycle our excavated waste and will implement any protocol that is approved by the EA for the assessment of this waste. Based on exploratory sampling, we anticipate that most of this waste will be deemed non-hazardous.

Where indicators of hazardous substances are found, the sampling and testing will present an additional cost. Where this waste is then found to be hazardous, the treatment or disposal will add significant costs.

The protocol is likely to include requirements for operating procedures and appropriate levels of training for colleagues carrying out relevant excavations. Once this is determined, we will implement the protocol requirements and work with our contractors to ensure that all excavated waste is appropriately assessed and treated accordingly.

Our RIIO-ED2 commitments

- We will implement any industry protocol that is agreed with the EA for the classification of excavated waste
- We will report annually on the amount and percentage of excavated waste sent to landfill
- We will reuse or recycle at least 85% of our excavated waste, reviewing this target once the industry classification protocol is finalised

Why?

- A regulatory position (RPS 211) on the classification of excavation waste is due to be withdrawn in 2022, with a new industry protocol to be implemented by 2023. It is vital that we begin to establish processes and targets prior to RPS 211 being withdrawn

Our longer-term vision

- To maximise the reuse and recycling of waste excavated for installation and repair and to divert 100% of this waste away from landfill

Benefits

- Identification of hazardous substances from excavated waste
- The reuse and recycling of waste not containing hazardous substances, resulting in the elimination of the need to use virgin material

Metric

- Percentage of excavated waste sent for reuse or recycling

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current	Indications from trials shows 15-20% of streetworks waste is hazardous, with little treatment capacity available currently. Further baselining is ongoing.				
By 2028				We will have met our ED2 targets and be working towards an ED3 strategy	

Goal 12: To be responsible consumers of water and reduce the water consumption per colleague during RIIO-ED2

Customer and stakeholder insights:

- Stakeholders told us that we should consider our water consumption as an additional area of focus within our Environmental Action Plan

Our strategy:

- We will re-baseline the amount of water consumed at our sites following the pandemic and new ways of working, after which we will look for opportunities to reduce the consumption and work with our Sustainability Panel to set targets

Water is a precious resource that is often taken for granted in the developed world. The impact of climate change and the resultant extreme weather is leading to water supplies being less stable.

Our use and consumption of water is largely dominated by domestic purposes in our offices and depots, as well as for cleaning vehicles at our depots. There is also a carbon impact associated with water, both for supply (0.149kg CO_2e per cubic metre) and wastewater treatment (0.272kg CO_2e per cubic metre); 6% of the UKs total greenhouse gas emissions are from household water supply and use.

During the Covid-19 pandemic, water consumption per office occupant has increased as a result of more vigorous hygiene practices. It will be necessary to re-baseline post-pandemic to take account of new agile working practices that will see a reduced office occupancy.

Our RIIO-ED2 action plan

During RIIO-ED2, we will look to reduce our water consumption in our offices and depots. We will use data to establish which sites have a higher level of water consumption per occupant and use technologies or education to make measurable reductions. We will review our data by the start of RIIO-ED2 and look to introduce SMART targets in line with identified reductions and the data on, for example, the average consumption of water within an office environment.

Our RIIO-ED2 commitments
• We will be responsible consumers of water, reducing the amount of water consumed per person, setting a target by the start of RIIO-ED2
Why?
• Our stakeholders have told us that we should consider water consumption. Our commitment to set a target prior to RIIO-ED2 allows for the impacts of the pandemic to subside and to establish new baselines in line with agile working practices to be adopted
Benefits
• A reduction in the volume of water consumed
Metric
• Water consumed at Electricity North West sites per colleague per working day in litres

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current	Water consumption has been baselined, but re-baselining is required post-pandemic to take account of agile working practices (prior to RIIO-ED2)				
By 2028				We will have met our water consumption reduction targets and create action plans for ED2	

8. Looking after our natural environment

Goal 13: Adopt an appropriate tool to assess changes in natural capital from different options for network projects, and to monitor the provision of ecosystem services

Goal 14: Enhance biodiversity and natural capital across 100 sites during RIIO-ED2 and plant 10,000 trees per year

Customer and stakeholder insights:

- We should increase our biodiversity programmes around our substations
- We should consider working with local nature partnerships to understand how to achieve a net gain on biodiversity initiatives
- Our customers thought that we should aim to enhance biodiversity by 10% when enhancing green spaces
- We should plant new trees to compensate for those cut down due to network safety

Our strategy:

- We will enhance 100 sites over the course of RIIO-ED2 in line with customer support and the maximum deliverability, whilst setting a target for the measurable net gain from 2025 once we have sufficient learnings from the schemes to date. We will adopt and use a suitable tool to measure the baseline biodiversity and natural capital, and track any gains from the enhancements. We will plant, or fund the planting of, 50,000 trees during RIIO-ED2, either on land owned by ourselves or elsewhere within our operating area.

Biodiversity is the variety of all life on earth: genes, species and ecosystems. It includes all species of animals and plants, and the natural systems that support them. Biodiversity matters because it supports the vital benefits humans get from the natural environment. It contributes to the economy, health and well-being, and it enriches our lives.

The earth's biodiversity is in decline due to activities such as deforestation, land-use change, agricultural intensification, over-consumption of natural resources, pollution and climate change. The 2019 State of Nature report showed that the abundance and distribution of the UK's wildlife species has, on average, declined since 1970 and many metrics suggest this decline has continued in the most recent decade.

As a leading company in the energy sector we recognise the importance of biodiversity and our responsibility to ensure that the biodiversity of the environment in which we operate is, as a minimum, maintained, or enhanced where possible.

RIIO-ED1 progress

The focus of RIIO-ED1 and earlier periods has broadly been on legal compliance and ensuring we minimise the impact of our operations on our environments. This may be, for example, from ensuring our tree-cutting activities are mindful of the bird nesting season or our project planning incorporating ecological assessments.

Wildflower scheme at a substation, Bolton

We are still on a journey in this area and therefore we do not yet have robust data on biodiversity and natural capital across our land holdings. However, proactive positive actions have taken place and examples of these include badger inoculations and awareness training, the use of bird diverters along migration routes near wetlands, and the creation of habitat piles or recycling of green waste at wildlife sanctuaries.

We have also created a biodiversity working group comprising of colleagues from across the company with relevant expertise and a passion for development in this area. As a result of initial discussions within this working group, in 2019 we selected nine substation sites to receive a biodiversity makeover as part of our 'Transforming our Spaces' project. Identified by our own grounds and maintenance teams, our colleagues saw an opportunity to improve the biodiversity and ecosystem of the local area as well as their appearance to local residents. All nine sites received a makeover including wildflower planting, installation of bird feeders, herbs and bug hotels. These sites are in the heart of local communities and are maintained in partnership with local groups. Community engagement has been a key feature of these schemes.

The work also supports our biodiversity priorities with plants and wildflowers to help reverse the national decline in pollinating insects, by introducing wildflower seed mixtures containing the best species for pollinators while also delivering high visual impact. We have observed an 85% success rate in transforming these sites into low-maintenance, self-pollinating, attractive spaces.

The coronavirus pandemic saw plans for wildflower planting at further sites delayed in 2020 with only a small number of sites completed, however the 2021/22 programme is now well-defined and has been built based on our learnings from the past two years. Some of the 2021/22 programme will include additional education features and a more diverse range of sites.

We will have delivered biodiversity enhancements at 30 sites by the end of RIIO-ED1.

To compliment the Transforming our Spaces programme, which is focused on urban distribution substation with relatively small areas of land and high footfall in the area, we have also looked to see what we can achieve using larger expanses of our owned land. Considerations need to be made before recommending the use of this land, such as location of existing network assets, public safety and potential future use of the land for network purposes, however taking these and other elements into account, we know that there will be some of our land which can be used to maximise biodiversity and ecosystems as well as providing a community amenity and improving the land from its current form. The first of these was identified in late 2020 and we have combined this with the launch of our partnership with City of Trees, a Manchester-based charity who have the ambition to plant a tree for every citizen in Greater Manchester within five years, and so far have planted over 300 trees on our land, enhancing our biodiversity commitment even further.

Our RIIO-ED2 action plan for biodiversity

In addition to any requirements from the Environmental Bill, we will continue to identify a number of sites each year for an enhancement in biodiversity; this will be 100 sites over RIIO-ED2. This is based upon the maximum deliverability of 20 sites per year, though as our learnings in this area increase, we will look for opportunities to increase this number without adding to the cost. We will conduct a baseline biodiversity assessment with a suitable tool and record biodiversity following the intervention.

We will build further on the work undertaken in RIIO-ED1 and pilot this approach for the first two years of RIIO-ED2 before carrying out a review of the methodology and tools used. We will then set targets for the remainder of RIIO-ED2 with a minimum aim to achieve a net biodiversity gain on new projects. The target will be set with stakeholder involvement following this review.

As part of our biosecurity code of practice we will continue to train and support operational colleagues on the identification of invasive non-native species and actions to be taken to protect native species and protect biodiversity.

To compensate for trees pruned or felled to protect our overhead lines, we will plant or fund the planting of 10,000 trees for each year of RIIO-ED2. We will investigate the strategic planting of trees and potentially partner with other organisations, volunteers and utility providers.

Our RIIO-ED2 commitments

- We will ensure that biosecurity measures are followed to stop the spread of pests and diseases, as well as limit the proliferation of invasive non-native species
- We will adopt an appropriate tool to assess changes to the natural capital from different options for new connections and network projects
- We will adopt an appropriate tool to monitor the provision of ecosystem services from network sites and report annually
- We will identify 100 sites for biodiversity enhancement and look to achieve a net gain on each of these sites from 2025, using an appropriate tool to measure the impact
- We will plant or fund the planting of 10,000 trees for each year of RIIO-ED2

Why?

- Enhancing the biodiversity across our sites and substations is an important strand of our responsibility framework and our transforming our spaces programme. Our initial view was to enhance 25 sites. Feedback from customers was that they really support the initiative and we should increase our biodiversity programmes around our substations. Therefore, our target was increased to 100 sites based on the maximum deliverability of 20 sites per year. The target of 100 sites in RIIO-ED2 is an increase on our RIIO-ED1 programme
- Our customers and stakeholders have told us that we should compensate for trees that are felled around our assets (for safety purposes); our proposal of planting or funding the planting of 10,000 trees a year is enough to replace every tree we fell and also any trees lost due to ash dieback

Benefits

- Enhancement of the biodiversity and societal benefits around our network assets
- Reduced maintenance costs (less requirement for traditional vegetation management)
- Likely reduction in vandalism around substations

Metric

- Number of sites that have undergone biodiversity enhancement
- Number of trees planted

<table>
<tr><th>Maturity level</th><th>Conceptual understanding</th><th>Baseline data available</th><th>Data analysed and targets set</th><th>Action plans created</th><th>Delivery on track or complete</th></tr>
<tr><td>Current</td><td colspan="2">We have already began the process of identifying suitable sites for biodiversity enhancements in ED2. We are currently taking steps to identify an appropriate tool to scientifically measure changes in natural capital</td><td></td><td></td><td></td></tr>
<tr><td>By 2028</td><td></td><td></td><td></td><td colspan="2">We will have completed biodiversity enhancements on 100 sites and have planted 50,000 trees. We will have created action plans for ED3</td></tr>
</table>

8. Looking after our natural environment

Goal 15: Maintain a leakage rate of no more than 25,000 litres per year

Customer and stakeholder insights:

- We should focus on a reduction in the leakage rate rather than on removal of cables
- Our customers told us that we should reduce our leakage rate target for fluid-filled cables in line with the amount of cable removed
- Our stakeholders told us that whilst reducing leakage rates is important, it was important not to replace perfectly operating cables due to the overall environmental impact of such schemes

Our strategy:

- We will continue to use sophisticated leak detection measures to identify cables that are leaking, including dosing further circuits with a trace element. Our network is susceptible to third-party damage, with fluid-filled cables particularly vulnerable to third-party construction and demolition activities. Although leaks tend to be on the smaller side, those caused by third-parties usually result in several thousand litres of oil escaping to the environment. The cables in scope of this target were laid in the 1950s/1960s and as they age become more prone to leakage. Accordingly, our leakage rate will be set at 25,000 litres per year, an improvement of 10,693 litres on our RIIO-ED1 average.

A significant part of our distribution network was constructed in the 1950s to 1970s when some of our high voltage cables were installed using fluids which act as an insulator. These fluids (mineral naphthenic oil and linear alkylbenzene) are toxic and can cause significant harm to the environment if the cables are damaged or fail.

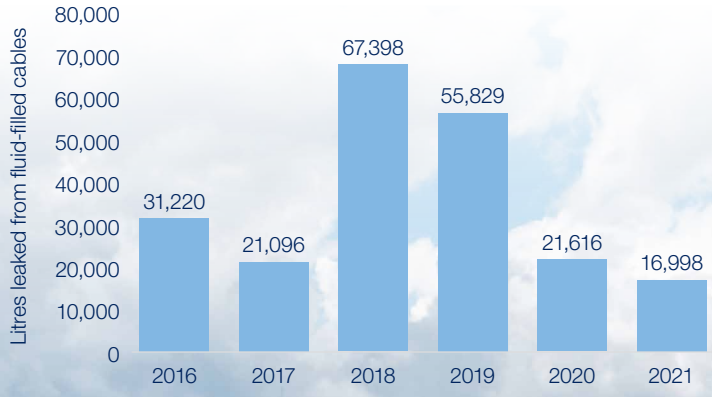
We have not installed new fluid-filled cables for several decades and the percentage of these cables on our network is now below 1%. The majority of these are found in the southern part of our network, and none are within the boundaries of the national parks.

Annual leakage rate is low at just over 3% but our long-term vision is to remove all these cables from service and replace them with alternatives that do not contain fluids or oils. Where leaks occur, the fluid used to top up cables in the last 20 years has been readily biodegradable.

RIIO-ED1 progress

Our RIIO-ED1 target was to maintain a leakage rate of less than 30,000 litres per year by 2023. By the end of 2020/21, we had reduced the leakage rate to 16,998 litres. We have removed 98.1km of fluid-filled cables in the first six years of RIIO-ED1 at an average leakage rate of 35,693 litres. The last two years have been more favourable against the average leakage rate. This is potentially an implication of the pandemic, which has slowed down construction and demolition activities and therefore third-party damage has made less of an impact on leakage rates.

Our progress during RIIO-ED1 is shown below (litres leaked from fluid-filled cables):



Our RIIO-ED2 action plan for fluid-filled cables

We will continue to use sophisticated leak detection measures to identify cables that are leaking, including dosing further circuits with a trace element.

Our network is susceptible to third-party damage, with fluid-filled cables particularly vulnerable to third-party construction and demolition activities. Although leaks tend to be on the smaller side, those caused by third-parties usually result in several thousand litres of oil escaping to the environment. The cables in scope of this target were laid in the 1950s/1960s and as they age become more prone to leakage.

As such, we will reduce our leakage rate to no more than 25,000 litres per year, a 30% reduction on our RIIO-ED1 average and less than 3% of our total oil in service as planned over the RIIO-ED2 period. We will review this target after the first two years of RIIO-ED2.

As part of our commitment to reduce our leakage rate and in line with our long-term ambition to remove all fluid-filled cables from the network by 2047, during RIIO-ED2, we will continue to remove fluid-filled cables.

We will also continue to respond quickly to leaks and, where required, initiate the remediation of the environment where contamination occurs. Where leaks do occur, we will act in accordance with the national operating code for the management of fluid-filled cable systems.

Our RIIO-ED2 commitments
• We will remove fluid-filled cables that are at the highest risk from leaking based on our asset management programme • We will maintain a leakage rate of less than 25,000 litres per year using volume topped up as a suitable proxy for leakage and review this target after the first two years of RIIO-ED2 • We will report on progress against both targets in our annual environmental reports
Why?
• A leakage rate target of 25,000 litres per year represents a reduction on our RIIO-ED1 average of 35,693 litres per year. As assets age, they are more prone to failure or developing leaks so leaks may be more likely and it will be necessary to replace some fluid-filled cables
Our longer-term vision
• To eliminate the risk of leaks from fluid-filled cables by removing all such cables from our network by 2047
Benefits
• Reduce the likelihood of environmental harm to receptors of fluid leaks
Metric
• Litres of oil leakage from fluid-filled cables

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current			We have an established action plan to deal with leakages that occur and have already removed a significant quantity of fluid-filled cables in ED1		
By 2028				We will have reduced our leakage rate to a maximum of 25,000 litres per year and have likely reduced the overall length of fluid-filled cables on the network. We will have finalised action plans to further reduce leakages in ED3	

8. Looking after our natural environment

Goal 16: Remove overhead lines from National Parks and Areas of Outstanding Natural Beauty

Customer and stakeholder insights:

- Our customers were happy for the scheme to continue but noted that it is a lower priority compared to other environmental initiatives so the scheme should not be expanded
- Our stakeholders told us that whilst it can provide visual amenity benefits, it was important to consider the impact on the whole environment, such as the total amount of carbon required to underground overhead lines

Our strategy:

- Due to undergrounding overhead lines being a lower priority for customers and stakeholders, we will not expand our scheme and only spend up to the entitlement provided by Ofgem for this activity. The length of cable to be undergrounded is based on the expected entitlement from Ofgem (which is to replicate the RIIO-ED1 calculation methods) and our experience of the cost of this activity. We will be open to applications from National Parks and AONBs, but each one will be subject to reviews based on cost, environmental benefits and viability of scheme

A significant proportion of our network (12,600 kilometres) is made up of overhead lines. These can have a direct visual impact on the surrounding environment, particularly where the surrounding environment is within a naturally appealing landscape.

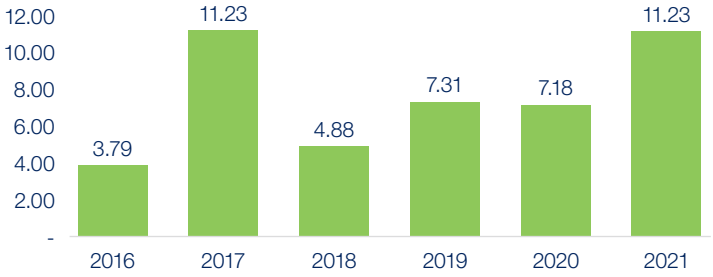
There are three national parks and four areas of outstanding natural beauty, collectively known as 'designated areas', either wholly or partially within our region. Our long-term aspiration is to remove all visually intrusive overhead lines from these areas where it is economical and backed by a full assessment incorporating the below considerations.

Any undergrounding activities will potentially require disruption to sensitive ground and will result in carbon emissions associated with the construction and demolition activities, so careful consideration needs to be given to the whole environment. Other factors to consider include network resilience, visual impact, impact on migratory birds, cost, environmental impact, age of equipment, engineering difficulties and land rights and consent issues.

RIIO-ED1 progress

We have a programme of undergrounding overhead lines for visual amenity benefits. By the end of the sixth year of RIIO-ED1, we have removed a total of 45.62km, as shown below. It is likely that the total length of cable undergrounded will be around 65km by the end of RIIO-ED1.

Undergrounding overhead lines (kilometres) for visual amenity benefits during RIIO-ED1



Our RIIO-ED2 action plan for removing overhead lines

During RIIO-ED2 we will continue our programme from RIIO-ED1 to meet annually with representatives for the designated areas to identify 7-8km of overhead lines per year to be undergrounded in their area. This activity will be at a similar level to RIIO-ED1 so as not to overburden bill payers, given the lower priority of this scheme to customers.

Our RIIO-ED2 commitments

- We will remove some of the most visually intrusive overhead lines and underground the cables in national parks and areas of outstanding natural beauty each year where it is requested and supported by stakeholder engagement and assessment

Why?

- This was one of the proposals with a lower acceptability rating during our customer and stakeholder engagement and customers are not willing to pay for the expansion of the scheme. However, the engagement did show that it was acceptable to a large percentage of customers and stakeholders. We do not highlight lines for undergrounding; instead it is representatives within National Parks and Areas of Outstanding Natural Beauty (AONB) that request undergrounding activities and then a full assessment is made
- The length of cable to be undergrounded is based on the expected entitlement from Ofgem (which is to replicate the RIIO-ED1 calculation methods) and our experience of the cost of this activity
- Undergrounding overhead lines can also have benefits on reliability by reducing exposure to overhead line faults, trees and storm events

Our longer-term vision

- To operate a network that is free from significant visual intrusion within National Parks and AONB

Benefits

- Enhancing views and protecting the natural beauty of our national parks and areas of outstanding natural beauty
- This work also makes those parts of the network more resilient

Metric

- Kilometres of overhead lines undergrounded in national parks and areas of outstanding natural beauty

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current				We have made significant progress in ED1 against requests from stakeholders for undergrounding	
By 2028				We will have undergrounded overhead lines where requested by stakeholders and supported by assessment	

8. Looking after our natural environment

Goal 17: Take action to reduce noise pollution

Customer and stakeholder insights:

- Noise is a general irritation, particularly in relation to streetworks

Our strategy:

- We will respond to noise complaints and, where substantiated, put in place actions to rectify the issue. We will report on actions taken in our RIIO-ED2 Annual Environment Report

Noise pollution is any unwanted or intrusive sound that has an effect on our health and well-being, such as noise-induced hearing loss or increased blood pressure, sleep disturbance and stress. Sound can also have an impact on wildlife as animals can use sound to help navigate, attract mates, avoid predators or find food.

Some noise is inevitable within our operations. For instance, an electric humming sound around transformers is caused by magnetic fields which cause the transformers coils to expand and contract. There is also noise created during the excavation of ground to lay new cables or to undertake repairs to existing infrastructure.

RIIO-ED1 progress

As an average across RIIO-ED1 we have received 28 noise complaints per year, predominantly from the use of temporary generators which are used to maintain electricity supplies in emergencies, e.g. fault repairs.

Our RIIO-ED2 action plan

We have already trialled the use of electric diggers which has two main benefits; firstly to reduce carbon emissions and secondly to reduce noise while operating.

We also stipulate in our generator service contracts that the service provider should use the best practicable means to minimise noise and vibrations resulting from generators such as the provision of acoustic panels.

We will investigate all noise complaints that we receive that are directly linked to our activities. Where the complaint is substantiated, we will put in place actions to bring the noise to within acceptable levels as soon as is reasonably practicable.

Our RIIO-ED2 commitments
• We will record all complaints received for noise created by our assets or operations
• We will investigate all complaints that we receive for noise created by our assets or operations
• Where a noise complaint is substantiated, we will put in place actions to bring the noise to within acceptable levels
• We will report on any actions taken in our annual environmental report
• We will continue to explore ways of reducing noise within our operations
Benefits
• A network that operates without causing a noise nuisance
Metric
• Number of noise complaints received and actions taken

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current		We record the number of noise complaints received and investigate each occurrence			
By 2028					We will have reported on all actions taken to reduce noise pollution

Goal 18: Phase out the use of diesel and petrol vehicles which produce emissions of NOx and other air pollutants

Customer and stakeholder insights:

- We should influence the behaviour of our drivers so that their NOx emissions are reduced
- We should electrify our vehicles as the principal method of reducing emissions of NOx

Our strategy:

- We will move 54% of our overall fleet to electric vehicles during RIIO-ED2

The UK government has recognised the various sources of air pollutants that impact air quality, public health and the environment. A particular area for concern is in the emissions and concentrations of nitrogen oxides, or NOx, which are released into the atmosphere when fossil fuels are burned.

In the UK, road transport is by far the biggest contributor to NOx, accounting for around a third of total emissions (34%). Energy generation (22%) and emissions from other forms of transportation (17%) are also significant contributors to NOx emissions.

As a consequence, the government has instructed many areas to develop clean air plans to bring NOx on local roads within legal limits. Following a consultation, Greater Manchester is set to introduce a clean air zone from spring 2022. We anticipate more authorities in our area will follow.

Our RIIO-ED2 action plan to reduce air pollutants

As a means of limiting direct and indirect contributions to NOx emissions, we will adopt the following strategy for RIIO-ED2.

Source of NOx	Our actions
Road transportation	Limit the choice of company cars for business travel to fully electric vehicles by the start of RIIO-ED2
	Continue to discourage journeys that are not strictly required, particularly when alternatives such as virtual meetings can be used
	Continue to encourage and incentivise colleagues to select fully electric private vehicles
	Replace fleet vehicles with cleaner technology when it is fully viable and cost neutral or cost beneficial over the full lifecycle
	Increase awareness of good driving behaviours to prevent excessive fuel use and harsh braking
	Continue to ensure our operational transport is well maintained and roadworthy at all times.
Energy generation	Continue to purchase electricity from 100% renewable sources
Other transportation	Avoid air travel where possible.

Most of the actions identified in the table above will also lead to reductions in emissions of other pollutants such as primary particulate matter ($PM_{2.5}$), volatile organic compounds (VOCs) and sulphur dioxide (SO2).

In addition, to limit the emissions of VOCs from our network, we will carry out the actions detailed below:

Source of VOCs	Our actions
Cleaning products	Ensure that only cleaning products that are free of VOCs are purchased and used on our premises
Oil storage and reprocessing	Continue to ensure that we operate within the emission limits specified in the environmental permit for our oil reprocessing facility

8. Looking after our natural environment

Our RIIO-ED2 commitments
• We will lead the transition to electric vehicles in our region by identifying opportunities to decarbonise transport in our own business • We will phase out the use of petrol and diesel cars within our company leased cars • We will encourage colleagues to choose cleaner private vehicles • We will promote efficient driving for company vehicle drivers
Why?
• The Greater Manchester region is introducing a Clean Air Zone and we anticipate further authorities within our region to introduce their own charges on the most polluting commercial vehicles. Our commitments will enable us to meet the requirements of the Clean Air Zones and reduce expenditure by avoiding charges • Part of being a good corporate citizen • Protects our staff as the highest concentration and exposure to air pollutants is inside a vehicle
Our longer-term vision
• To eliminate emissions of NOx and other air pollutants from our operations
Benefits
• Cleaner air and reduced impact on health
Metric
• Percentage of carbon and non-carbon technology vehicles

<table>
<tr><th>Maturity level</th><th>Conceptual understanding</th><th>Baseline data available</th><th>Data analysed and targets set</th><th>Action plans created</th><th>Delivery on track or complete</th></tr>
<tr><td>Current</td><td colspan="2">We are acutely aware of the potential pollution caused by our vehicles using internal combustion engines (ICE). We have increased the range of hybrid and fully electric vehicles available for those on company lease cars and began to incentivise other colleagues to take up electric vehicles by providing access to the company leasing scheme</td><td></td><td></td><td></td></tr>
<tr><td>By 2028</td><td></td><td></td><td></td><td colspan="2">We will have converted 54% of our fleet and lease cars to electric vehicles, removing more than half of the vehicles that emit NOx and other pollutants. Action plans will be introduced to further move our fleet away from ICEs</td></tr>
</table>

Goal 19: Remove equipment contaminated by polychlorinated biphenyls from our network by the end of 2025

Customer and stakeholder insights:

- We should comply with legislation relating to equipment identified as contaminated or likely to be contaminated with polychlorinated biphenyls (PCBs)

Our strategy:

- We will move all PCB-contamination from our network by 31st December 2025 and collaborate with other DNOs and TOs to identify cohorts of transformers that can be left on the network due to an Environment Agency approved statistical model

Polychlorinated biphenyls (PCBs) are a group of artificially manufactured organic chemicals that have long been recognised as posing a threat to the environment due to their toxicity, persistence and tendency to bioaccumulate.

We (and our predecessor companies) never sourced PCB-filled transformers but some contamination could and has occurred due to cross contamination in the manufacturing process. Generally, PCBs were used in electrical equipment as an alternative insulating fluid where fire resistance properties were required. Although the use of PCBs has been reduced greatly since the 1970s when legislation first sought to control their use and supply, it is recognised that PCBs in existing equipment pose an environmental threat.

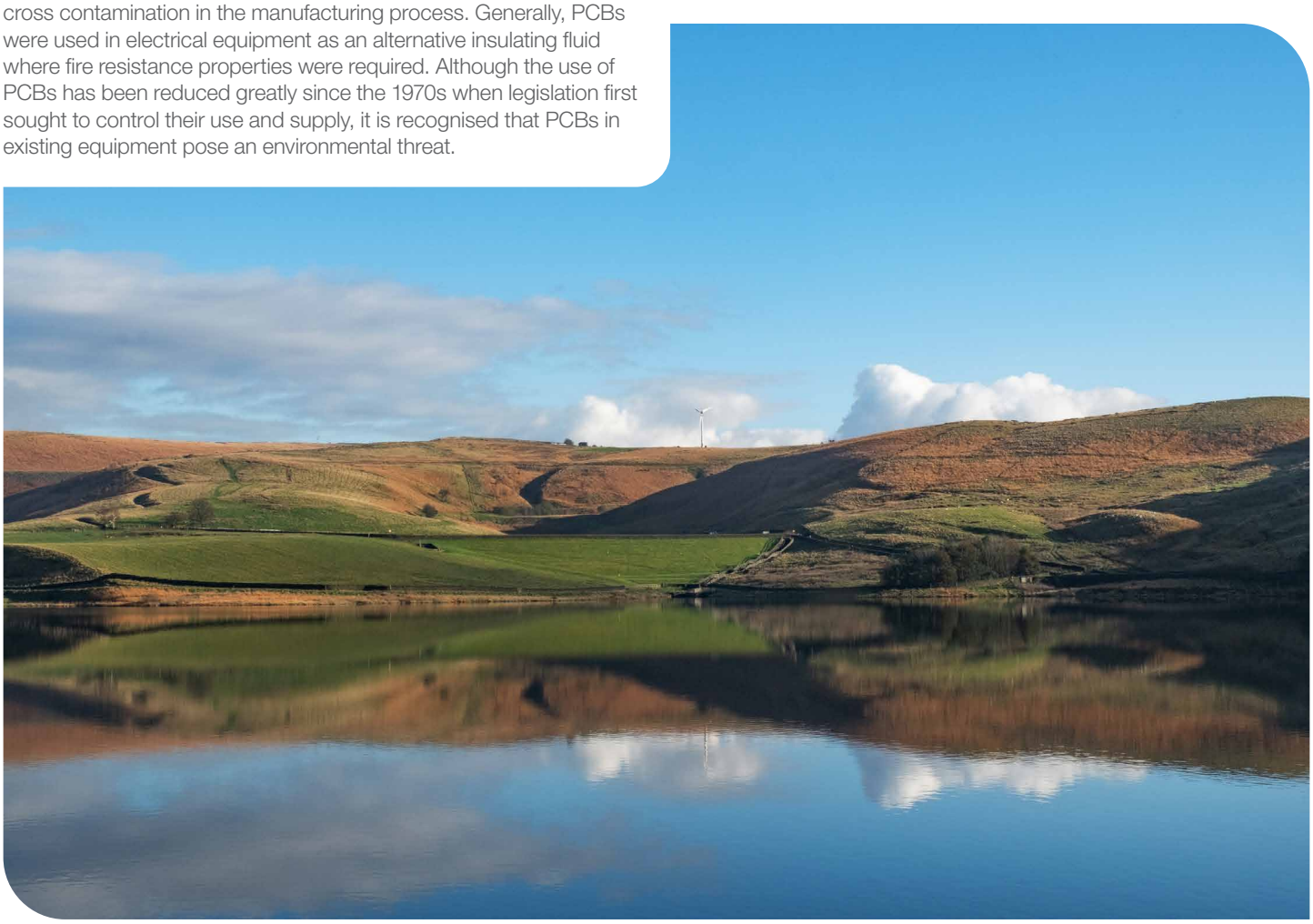
All transformers (and some other network assets) manufactured before 1987 are assumed to be potentially PCB-contaminated and are registered annually with the EA. We are working with the EA to either test or statistically determine the PCB content of all this apparatus and dispose of items that are PCB contaminated by 31 December 2025 (as legislation requires PCB-contaminated equipment to be removed by this date).

We recycle insulating oil from our network at our oil recycling facility in Blackburn. Prior to receiving oil from our network assets, the oil is tested in our own laboratory to establish its suitability for reprocessing. This looks at several parameters, including its PCB concentration. Although legislation allows for PCB concentrations of up to 50ppm, if our testing shows PCB concentration to be above 10ppm, the oil is not reprocessed to avoid the build-up of PCBs in our oil stocks.

Our RIIO-ED2 action plan for PCBs

Following testing of insulating oil from a network asset, if the PCB concentration is above 50ppm, the equipment will be replaced and the PCB-contaminated oil disposed of via high temperature incineration which destroys the chemicals.

All PCB-contaminated equipment will be sent to authorised treatment facilities where the oil will be recovered and the metal components sent for recycling.



8. Looking after our natural environment

Our RIIO-ED2 commitments
• We will remove all PCB-contaminated equipment from our network by 31 December 2025 • We will contribute to the work of the Energy Networks Association PCB working groups to establish cohorts of transformers that are PCB-contaminated or otherwise • We will submit data annually to the EA on the items of equipment on our network that are known to be, or are potentially, contaminated with PCBs • We will only reprocess insulating oils at our oil recycling facility if the PCB concentration is nil or below 10ppm to avoid a build-up of PCBs within our oil stock
Why?
• A requirement under current legislation
Benefits
• A network free of the potential for PCB-contamination and pollution
Metric
• Number of items of PCB-contaminated equipment removed from the network; number of items of PCB-contaminated equipment remaining on the network

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current			We are working with other DNOs to identify cohorts of transformers containing PCB-contamination and building in replacements into our asset programme		
By 2028					We will have removed all PCB-contaminated equipment from the network

Goal 20: Train more colleagues on the requirements of our Environmental Permits for oil storage and recycling to reduce the risk of environmental harm.

Customer and stakeholder insights:

- 'Green thinking' and reducing environmental impact is an important area to focus on and they expect it to be appropriately represented in the business plan as part of Electricity North West being a good corporate citizen

Our strategy:

- We will achieve Competence Management System (CMS) certification prior to RIIO-ED2

Electricity North West has environmental permits issued by the EA for the storage or treatment of electrical insulating oils.

The EA carries out planned and unplanned inspections of sites holding permits and uses a compliance classification scheme (CCS) to record any identified breaches. The EA uses the CCS system to assign a banding to the site based on its performance. A 'Band A' status indicates the site is performing well and has not breached its environmental permit in the last 12 months, whereas a 'Band F' status indicates that the site is a poor performer and is at risk of environmental enforcement or having its permit revoked.

Our RIIO-ED2 action plan

Our year-on-year goal for our environmental permits is to adhere to all of the requirements and maintain our current Band A status.

Currently, individually qualified persons fulfil the technical competence requirements for environmental permits. We will introduce and maintain a certified competence management system (CMS) to ensure that all colleagues who could affect our performance are trained in the associated requirements and procedures.

Our RIIO-ED2 commitments

- Before RIIO-ED2 we will introduce and continue a competence management system to ensure that all colleagues who could affect our performance are aware of the procedures that must be followed for our environmental permits
- We will receive zero breaches of our environmental permits
- We will achieve Band A status for all of our environmental permits

Why?

- Part of being a good corporate citizen and enables the continued operation of our oil storage and recycling facilities
- Reduces the risk of pollution to water sources, land and air

Benefits

- Significant reduction in the potential environmental harm from our permitted operations

Metric

- Number of EA recorded breaches of our environmental permits

Maturity level	Conceptual understanding	Baseline data available	Data analysed and targets set	Action plans created	Delivery on track or complete
Current			We have an understanding of the requirements of CMS and have created action plans for the certification process		
By 2028					We will be CMS- certified

8. Looking after our natural environment

Goal 21: Provide training to our wider leadership team to enhance environmental awareness

Customer and stakeholder insights:

- 'Green thinking' and reducing environmental impact is an important area to focus on and they expect it to be appropriately represented in the business plan as part of Electricity North West being a good corporate citizen

Our strategy:

- We will train our Wider Leadership Team (~300 colleagues) on aspects of our activities that have the potential to lead to negative environmental impacts. A strong environmental awareness enhances the likelihood of meeting our overall EAP commitments and increases our ability to deal with potential environmental pollution

We have many corporate goals relating to becoming Net Zero and looking after our environment. To fully meet these goals, it is vital that our colleagues are aware of their individual responsibilities and how they can have an adverse impact on the environment.

As part of our ISO 14001 environmental management system, we provide training on the environment and ensure that those working for us are aware of these potential impacts.

Our RIIO-ED2 action plan for colleague environmental awareness

We will enhance the training we provide around decarbonisation and the environment. This will include promoting messages as part of our corporate induction process, internal newsletters and communications, monthly 'toolbox talks' and formal training courses.

We will create a training package for our wider leadership team who will be responsible for ensuring that key messages are cascaded to their teams, supported by corporate communications, including:

- Our RIIO-ED2 commitments and progress to date
- Our environmental aspects and impacts
- Our environmental management system
- Our corporate and colleague responsibilities.

Our RIIO-ED2 commitments
• We will enhance information on the environment and decarbonisation in our corporate induction process
• We will maintain certification of our ISO 14001 environmental management system
• We will deliver environmental awareness training throughout RIIO-ED2 to our wider leadership team throughout RIIO-ED2 so that they can cascade this knowledge and influence their teams
Why?
• Having a workforce with good environmental awareness enhances the likelihood of meeting our EAP commitments and increases our ability to deal with potential environmental pollution
Benefits
• A workforce with a strong environmental awareness
Metric
• Percentage of Wider Leadership Team with environmental awareness training

9. Where we will be by the end of RIIO-ED2

Through our Environmental Action Plan commitments and our RIIO-ED2 actions, we will make significant progress against our Net Zero 2038 ambition and have made looking after our natural environment a cornerstone to all activities undertaken by the organisation.

A summary of the outcomes of our RIIO-ED2 actions are shown below:

Business carbon footprint	• We will have reduced our annual business carbon footprint to less than 8,175tCO_2e excluding losses on our pathway to Net Zero by 2038 • We will have converted at least 54% of our total vehicle fleet to electric vehicles • We will have converted nearly half of our non-operational sites to Net Zero carbon sites, including five sites during RIIO-ED2
Waste and recycling	• We will be sending no more than 5% of our waste to landfill • We will be recycling at least 70% of our waste
Biodiversity	• We will have enhanced 100 sites using biodiversity initiatives • We will have planted a total of 50,000 trees • We will be using a suitable tool to track and enhance the natural capital in network projects
Fluid-filled cables	• We will have reduced the amount of fluid-filled cables on our network • We will have reduced the leakage rate to less than 25,000 litres per year
Sulphur hexafluoride	• We will have maintained a leakage rate of no more than 0.3% of the total sulphur hexafluoride (SF_6) inventory on the network • We will be working to a strategy to reduce the number of assets containing SF_6
Polychlorinated biphenyls (PCBs)	• We will have removed all equipment containing >50ppm of PCBs from our network
Embodied carbon	• We will be creating a carbon reduction plan for all major infrastructure projects using an established reference baseline to achieve reductions in embodied carbon

10. Potential environmental impacts in RIIO-ED2 without intervention

Our progress during RIIO-ED1 has demonstrated clear improvement in our environmental performance, most notably in the reduction of our direct business carbon footprint. Through extensive engagement, our stakeholders have told us that we need to continue this progression, target additional areas and accelerate improvements.

Throughout this EAP, we have outlined the actions that we will take during RIIO-ED2 to decarbonise our network and reduce the wider environmental impacts of network activity. Without such interventions, there are a number of potential impacts on the environment, shown below, as well as potentially increasing costs and consumer bills, and failing to meet customer and stakeholder expectations.

Potential environmental impacts without RIIO-ED2 interventions

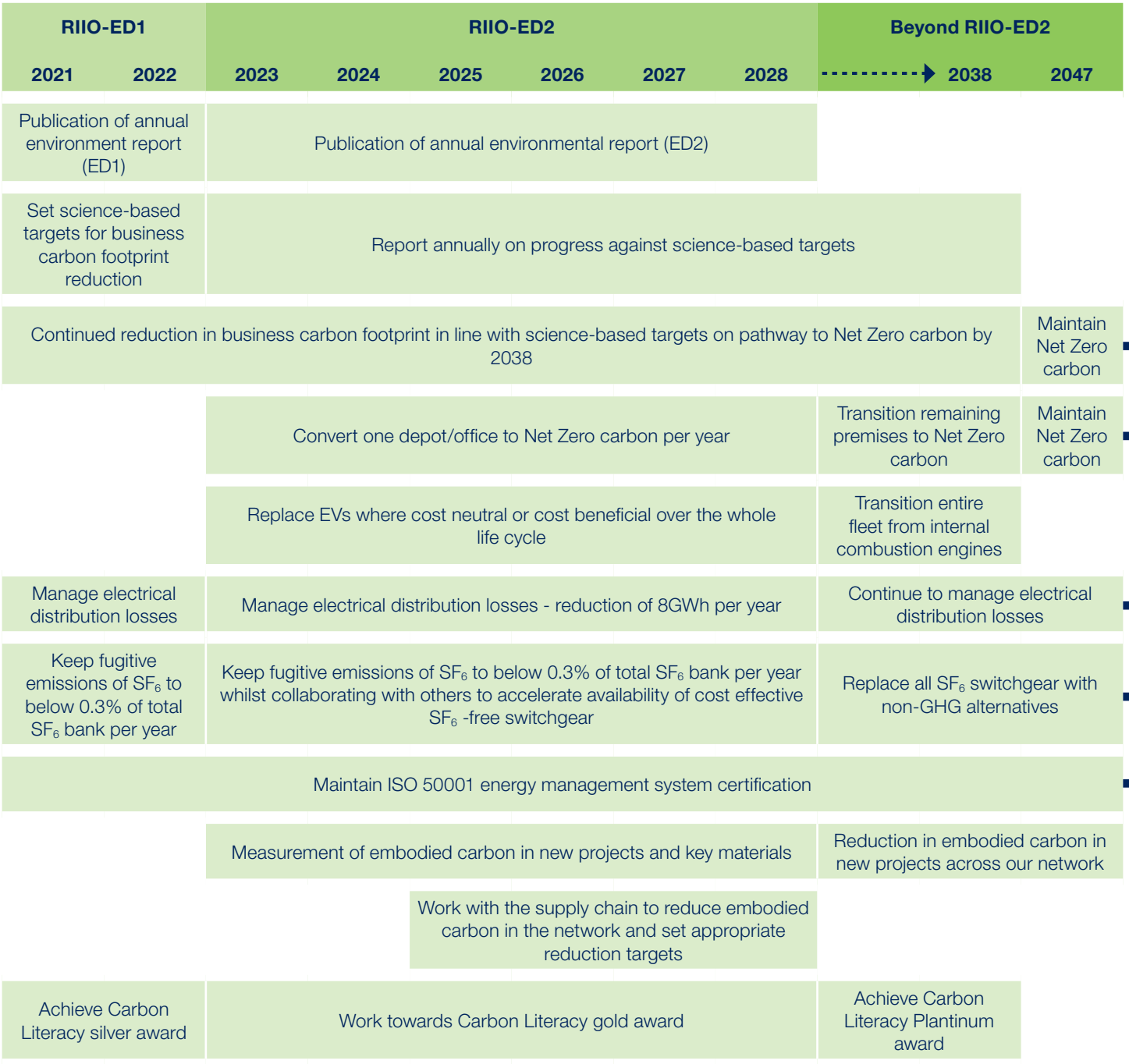
Action area and proposed target(s)	Potential impact in RIIO-ED2 without intervention
Decarbonising our network	
Business carbon footprint	
Adopt science-based targets (SBTs) to reduce our scope 1, 2 and 3 emissions	Without adopting SBTs, there is a high likelihood that carbon emissions will reduce in a reactive manner rather than proactively. This in turn will reduce the speed at which emissions are reduced, resulting in a larger contribution to climate change during RIIO-ED2. It would likely require carbon offsetting, rather than a reduction of emissions at source and lead to an inability to lead others by example
Reduce our business carbon footprint during RIIO- ED2 in line with our SBT	
Convert an additional depot/office to Net Zero carbon per year	Carbon emissions associated with our buildings' energy usage and operational transportation are the largest contributors to our business carbon footprint (over two-thirds of emissions excluding losses). Without our planned interventions, it's unlikely we would be able to meet our Net Zero carbon target and would further contribute to climate change
Replace vehicles using internal combustion engines with electric vehicles once it becomes cost neutral or cost beneficial over the whole life cost	
Sulphur hexafluoride (SF_6)	
Maintain a leakage rate of below 0.3% of our total SF_6 bank	Although only a relatively small amount of SF_6 leaks, fugitive emissions make up almost a tenth of our current business carbon footprint. Assets that develop leaks and are beyond repair would result in high carbon equivalent emissions, contributing to climate change
Replace SF_6 equipment if its condition deteriorates such that the integrity of the seals is beyond repair	
Develop and Implement a strategy to efficiently manage SF_6 assets	
Electricity distribution losses	
Manage losses, including the replacement of equipment with the highest losses, reducing a total of 8 GWh of losses per year	The loss of enough electricity to power around 2,760 homes per year, with emissions of 2,264 tCO_2e per year as well as potential network capacity constraints
Embodied carbon	
Baseline the embodied carbon within materials and products that are material to our operations by no later than 2024 and set targets for its reduction for the remainder of RIIO-ED2	Potentially failure to address total climate change impact of the business and inability to lead by example
Reducing the wider environmental impact of network activity	
Supply chain management	
80% of suppliers (by value) to adopt our enhanced supply chain code to embed higher standards of environmental management	Potential contribution to climate change, ground and water pollution, air quality and resource use could go unchecked and would be solely dependent on the supply chain to initiate
Incorporate, where appropriate, higher standards of environmental management within tender evaluations	

10. Potential environmental impacts in RIIO-ED2 without intervention

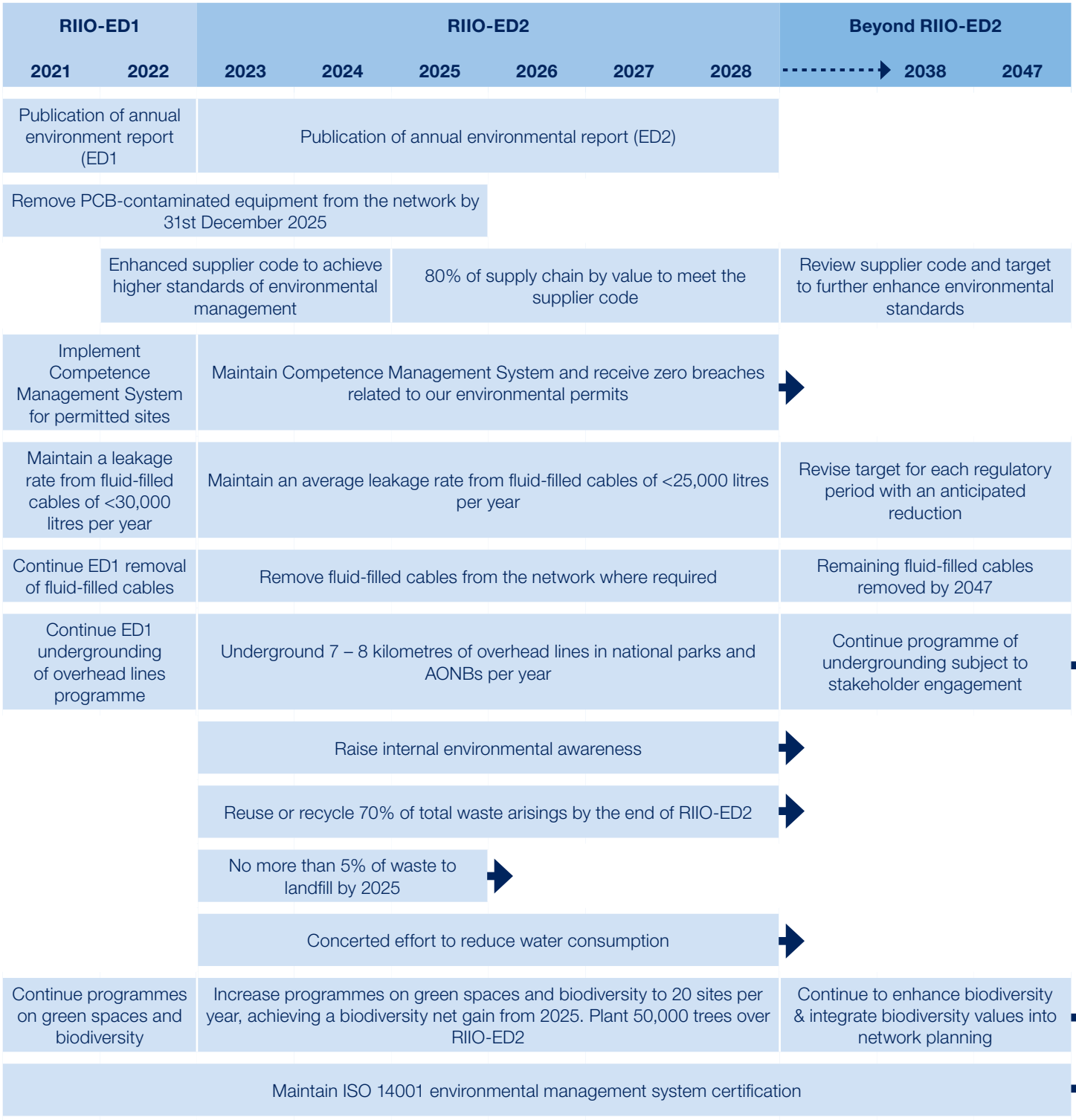
Action area and proposed target(s)	Potential impact in RIIO-ED2 without intervention
Reducing the wider environmental impact of network activity	
Resource use and waste	
Produce annual targets for reductions in waste	A permanent loss of resources, either through landfill or recovery as energy to waste, resulting in the continued extraction and use of virgin materials. Without setting reuse and recycling targets alongside landfill diversion targets, there is a risk that waste will be diverted to energy from waste facilities; although this does recover energy, it results in the need for the material to be replaced outright
Send no more than 5% of waste to landfill by 2025	
Reuse or recycle 70% of our total waste by the end of RIIO-ED2	
Reuse or recycle 85% of our excavated waste by the end of RIIO-ED2	
Eliminate unnecessary single-use plastics from our waste stream by the end of RIIO-ED2	A failure to fully embed the circular economy principles which are vital if the earth is to be sustainable
Target reductions in water use throughout RIIO-ED2	Potential water scarcity should the worst impacts of climate change be realised
Biodiversity and natural capital	
Enhance 100 sites during RIIO-ED2 through our Transforming our Spaces programme (biodiversity enhancement)	The continued loss of natural habitats and biodiversity impacting on, as an example, pollinators and all plants and species that rely on them
Plant 10,000 trees per year throughout RIIO-ED2	
Fluid-filled cables	
Maintain a leakage rate of less than 25,000 litres per year throughout RIIO-ED2	Increased risk of pollution to ground and water if these cables deteriorate or are damaged, particularly as the system works on positive pressure where lost fluid is replaced with more oil, i.e. the cable will continue to leak
Remove fluid-filled cables that are at the highest risk from leaking to the environment	
Undergrounding cables	
Remove some of the most visually intrusive overhead lines and underground the cables in national parks and areas of outstanding natural beauty where it is supported by stakeholder engagement and assessment	Visual intrusion in otherwise picturesque landscapes, impact on migratory birds and reduced network resilience where the overhead lines are damaged by storms
NOx and air quality	
Lead the transition to electric vehicles in our region by identifying opportunities to decarbonise transport in our own business	If the current proportion of vehicles that run off an internal combustion engine is maintained in RIIO-ED2, we will continue to emit existing levels of air pollutants, contributing towards poor local air quality. Our operations will also require us to travel through clean air zones, which will incur a charge for internal combustion engine vehicles entering such areas. This will also impact our business carbon footprint. The continued prevalence of internal combustion engines will result in increased maintenance cost compared with electric vehicles, whilst ICEs will also increase exposure to air pollutants to drivers.
Encourage colleagues to choose cleaner, non-carbon private vehicles	
Work with vehicle manufacturers to provide fully electric or hydrogen vehicles for our operational transport	
PCBs	
Remove PCB-contaminated equipment from the network by the end of 2025	Pollution of the environment with persistent organic pollutants should any leaks occur, increasing risk of PCB-poisoning to apex predators as the toxins bioaccumulate in the food chain. Violation of the regulations requiring their removal.

11. Our environmental timelines

11.1 Becoming Net Zero



11.2 Looking after our environment



12. Relevant Engineering Justification Papers (EJPs) and Cost Benefit Analysis (CBA) submissions

The below details EJPs and CBAs where either carbon reduction is the main driver of the proposal or carbon reduction contributes to a substantial part of the benefits claimed by the projects

EJPs

- ENV EJP 3 – Net Zero Carbon Depots – carbon reduction of 584 tCO_2e

CBAs

- Loss CBA 15 800kVa – Proactive replacement – 100 Transformers – carbon reduction of 1,316 tCO_2e
- Loss CBA 16 1000kVa – Proactive replacement – 100 Transformers – carbon reduction of 1,313 tCO_2e

Appendix A - High level mapping of EAP goals with engagement activities

Goal	Justification / Engagement Insights
Goal 1: Become a leader in the reduction of carbon emissions and achieve Net Zero carbon by 2038	Customers and stakeholders have told us to be ambitious and lead by example in reducing business carbon footprint. They expect us to accelerate actions to minimise our carbon footprint, reducing the amount of energy lost on the network through distribution losses, electrifying our vehicle fleet and reducing emissions from our buildings.
Goal 2: Adopt science-based targets to help limit global warming to 1.5 ^{O}C degrees above pre-industrial levels	Ofgem requirement, supported by stakeholder engagement through our Sustainability Advisory Panel.
Goal 3: Take responsibility for our major scope 3 emissions and include them in our science-based targets	There was clear desire among stakeholders for us to show leadership and go above and beyond the minimum requirements, taking account of not only our direct carbon emissions but those of the value chain that supports our operations.
Goal 4: Manage our electricity distribution losses and achieve reductions of 8GWh per year throughout RIIO-ED2	Customers and stakeholders have told us that this kind of 'wastage' should be reduced as far as possible and that there was a clear role for investing more to reduce losses. This was the most supported proposal tested with customers and stakeholders.
Goal 5: Maintain a leakage rate of less than 0.3% for our total bank of sulphur hexafluoride equipment	Ofgem requirement, supported by customers and stakeholders who have told us that we should implement a new management approach for dealing with sulphur hexafluoride.
Goal 6: Baseline the embodied carbon within new projects by the end of 2023/24 and set reduction targets	Ofgem requirement, supported by our Sustainability Advisory Panel who told us that we should look to establish baselines and work towards targets before the end of RIIO-ED2.
Goal 7: Achieve the Carbon Literacy gold standard	There was appetite amongst our Sustainability Advisory Panel to progress Carbon Literacy, supported by our internal ambitions as part of being a good corporate citizen.
Goal 8: Enhance environmental management standards through our supplier code and target at least 80% of our supply chain to meet this code	Ofgem requirement, supported by customer and stakeholder engagement who have told us that where appropriate, we should collaborate with other DNOs where we have mutual suppliers. They also told us that we should ensure that we don't rule out 'smaller' suppliers through our requirements.
Goal 9: To be responsible consumers of resources and reduce the amount of waste produced by the end of RIIO-ED2	Ofgem requirement, supported by our stakeholders and customers who told us that we ought to reduce the amount of waste we produce.
Goal 10: Divert 95% of our waste away from landfill by the end of 2025 and reuse or recycle 70% of our waste by the end of RIIO-ED2	Ofgem requirement, supported by our stakeholders and customers who told us that we ought to recycle as much waste as possible.
Goal 11: Reuse and recycle at least 85% of waste excavated for installation and repair	Our Sustainability Advisory Panel told us that, where appropriate, we should introduce targets on individual waste streams.

Appendix A - High level mapping of EAP goals with engagement activities

Goal	Justification / Engagement Insights
 **Goal 12:** To be responsible consumers of water and reduce the water consumption per colleague during RIIO-ED2	Our Sustainability Advisory Panel told us that we should consider including water consumption within our EAP. We have also engaged with other DNOs and looked to other sectors. This is also supported by our internal ambitions as part of being a good corporate citizen.
 **Goal 13:** Adopt an appropriate tool to assess changes in natural capital from different options for network projects	Ofgem requirement and an appropriate way of measuring the impact of enhancements made under goal 14
 **Goal 14:** Enhance biodiversity and natural capital across 100 sites during RIIO-ED2 and plant 10,000 trees per year	Our customers and stakeholders told us that creating wildlife havens and expanding our 'Transforming our Spaces' programme would have a particularly positive impact on the environment. This was one of the most highly supported proposals tested with customers and stakeholders.
 **Goal 15:** Maintain a leakage rate of less than 25,000 litres per year	Ofgem requirement, supported by our customers and stakeholders who have told us that it is important to prevent the pollution of environments through leakage from fluid-filled cables.
 **Goal 16:** Remove overhead lines from national parks and areas of outstanding natural beauty	This proposal received a mix of responses but overall our customers and stakeholders told us that overhead lines cause a visual impact on the natural beauty of designated areas. Our Sustainability Advisory Panel advised that the whole environmental impact should be considered when a request to underground cables is received.
 **Goal 17:** Take action to reduce noise pollution	Ofgem requirement, supported by our customers who told us that street works noise can lead to noise irritation.
 **Goal 18:** Phase out the use of diesel and petrol vehicles which produce emissions of NOx and other air pollutants	Our stakeholders told us that we should look to reduce emissions of air pollutants. This is a natural by-product of electrifying our vehicle fleet. Greater Manchester is introducing a Clean Air Zone with expectation that other authorities within our operating area will introduce similar plans.
 **Goal 19:** Remove equipment contaminated by polychlorinated biphenyls from our network by the end of 2025	Legislative requirement which is supported by customers and stakeholders.
 **Goal 20:** Train more colleagues on the requirements of our Environmental Permits for oil recycling through a CMS to reduce risks of environmental harm	Part of being a good corporate citizen and enables the continued operation of our oil storage and recycling facilities.
 **Goal 21:** Provide training to our wider leadership team to enhance environmental awareness	Our internal drive as part of being a good corporate citizen and increasing the likelihood of meeting the goals set out in our EAP.

Appendix B - Mapping of EAP goals with Ofgem baseline expectations

Ofgem baseline requirements		EAP Goal
1	**Business carbon footprint**	
1.1	Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20xx, without relying on international GHG offsetting, that is in line with Net Zero	**Goal 2:** Adopt science-based targets to help limit global warming to 1.5 ^{O}C degrees above pre-industrial levels
1.2	Efficient and economic actions to address controllable BCF in RIIO-ED2	**Goal 1:** Become a leader in the reduction of carbon emissions and achieve Net Zero carbon by 2038
1.3	Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero	**Goal 2:** Adopt science-based targets to help limit global warming to 1.5 ^{O}C degrees above pre-industrial levels
1.4	Report on BCF reduction and progress towards science-based target and Net Zero using a common BCF methodology. Reporting should include progress in reducing scope 3 emissions	**Goal 3:** Take responsibility for our major scope 3 emissions and include them in our science-based targets
2	**Losses**	
2.1	Develop and commit to implementing a strategy to efficiently manage both technical and non-technical losses on the DNO's network over the long term. This should include specific actions and performance measures to track the impact of actions in RIIO-ED2	**Goal 4:** Manage our electricity distribution losses and achieve reductions of 8GWh per year throughout RIIO-ED2
2.2	Commit to reporting on the progress of implementing the losses strategy and associated performance measures	
2.3	Contribute to the evidence base on the proportion of losses that network companies can influence/control	
3	**Embodied carbon**	
3.1	Commit to monitoring and reporting on embodied carbon in new projects	**Goal 6:** Baseline the embodied carbon within new projects by the end of 2023/24 and set reduction targets
3.2	Commit to collaborating with DNO's supply chain on addressing challenges to reduce embodied carbon in the network	
3.3	Commit to establishing baseline and a target to reduce embodied carbon on new projects during RIIO-ED2	
4	**Sulphur Hexafluoride (SF_6)**	
4.1	Commit to implementing a strategy in RIIO-ED2 to manage SF_6 on their network. This should include economic and efficient actions to reduce leakage rates and where appropriate, economic and efficient SF_6 asset replacement	**Goal 5:** Maintain a leakage rate of less than 0.3% for our total bank of sulphur hexafluoride equipment
4.2	Adopt a target for SF_6 leakage reduction	
4.3	Commit to reporting on total SF_6 bank and leakage reduction rates using a common DNO methodology	

Appendix B - Mapping of EAP goals with Ofgem baseline expectations

Ofgem baseline requirements		EAP Goal
5	**Supply chain management**	
5.1	Adopt high standards of environmental management in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs	**Goal 8:** Enhance environmental management standards through our supplier code and target at least 80% of our supply chain to meet this code
5.2	Adopt target of more than 80% of suppliers (by value) meeting code in RIIO-ED2	
5.3	Commit to reporting on actual percentage of suppliers (by value) meeting code	
6	**Resource use and waste**	
6.1	Update procurement processes to embed Circular Economy principles	**Goal 9:** To be responsible consumers of resources and reduce the amount of waste produced by the end of RIIO-ED2
6.2	Adopt a target for zero waste to landfill by 20xx	**Goal 10:** Divert 95% of our waste away from landfill by the end of 2025 and reuse or recycle 70% of our waste by the end of RIIO-ED2
6.3	Adopt a target for recycled and reused materials as a percentage of total materials by 20xx	
6.4	Commit to reporting on actual waste to landfill, recycling and reuse as a percentage of total	**Goal 11:** Reuse and recycle at least 85% of waste excavated for installation and repair
7	**Biodiversity/natural capital**	
7.1	Adopt appropriate tool to assess net changes in natural capital from different options for new connections and network projects.	**Goal 13:** Adopt an appropriate tool to assess changes in natural capital from different options for network projects
7.2	Adopt appropriate tool to monitor the provision of ecosystem services from network sites and report annually	
8	**Fluid-filled cables**	
8.1	Adopt a target for reductions in the volume of fluid (oil) used to top up cables	**Goal 15:** Maintain a leakage rate of less than 25,000 litres per year
9	**Noise pollution**	
9.1	Commit to reporting on actions taken to reduce noise pollution	**Goal 17:** Take action to reduce noise pollution
10	**PCBs**	
10.1	Commit to reporting on the volume of PCB-contaminated equipment on the network	**Goal 19:** Remove equipment contaminated by polychlorinated biphenyls from our network by the end of 2025

Additional areas outside the scope of / or exceeding the Ofgem baseline requirements:

Action area	EAP Goal
Planting 10,000 trees per year and identifying 100 sites for biodiversity enhancements in RIIO-ED2 through our Transforming our Spaces programme	**Goal 14:** Enhance biodiversity and natural capital across 100 sites during RIIO-ED2 and plant 10,000 trees per year
Carbon literacy	**Goal 7:** Achieve the Carbon Literacy gold standard
Undergrounding of overhead lines	**Goal 16:** Remove overhead lines from national parks and areas of outstanding natural beauty
Emissions of air pollutants	**Goal 18:** Phase out the use of diesel and petrol vehicles which produce emissions of NOx and other air pollutants
Water consumption	**Goal 12:** To be responsible consumers of water and reduce the water consumption per colleague during RIIO-ED2
Train more colleagues on the requirements of our Environmental Permits for oil recycling through a Competence Management System	**Goal 20:** Train more colleagues on the requirements of our Environmental Permits for oil recycling through a CMS to reduce risks of environmental harm
Enhanced environmental awareness of colleagues	**Goal 21:** Provide training to our wider leadership team to enhance environmental awareness

Appendix C – High level value for money analysis

Goal	How it delivers value for money
Goal 1: Become a leader in the reduction of carbon emissions and achieve Net Zero carbon by 2038	Our customers and stakeholders have told us that we should make concerted efforts to reduce our business carbon footprint and to achieve Net Zero carbon by 2038. We will convert our vehicle fleet to electric at the point in which it becomes cost neutral or cost beneficial. Our RIIO-ED2 proposal to convert one depot to zero carbon per year offers value for money by spreading the cost over multiple years and price control periods.
Goal 2: Adopt science-based targets to help limit global warming to 1.5 ^{O}C degrees above pre-industrial levels	Adopting SBT is a minimum requirement under the Ofgem baseline expectations. However, by having validated SBTs will lead to formalised actions plans to reduce our BCF in a structured way, thereby representing increased value for money.
Goal 3: Take responsibility for our major scope 3 emissions and include them in our science-based targets	Reductions in overall BCF can be met in a more structured and formalised way through the validation of SBTs. It is likely that this will lead to efficient reductions through the supply chain.
Goal 4: Manage our electricity distribution losses and achieve reductions of 8GWh per year throughout RIIO-ED2	Our losses reduction activities will be based on a CBA, offering value for money. We will also contribute to the knowledge base for best practice on managing losses and deliver into a business as usual solution where it is cost efficient.
Goal 5: Maintain a leakage rate of less than 0.3% for our total bank of sulphur hexafluoride equipment	We will collaborate with industry and manufacturers to accelerate the availability of cost effective alternative solutions. Until such point, we will only replace equipment holding sulphur hexafluoride (SF_6) if its condition deteriorates such that the integrity of the seals is beyond repair and leads to excessive leakages, i.e. we will replace equipment based on actual environmental harm rather than equipment that is causing no harm.
Goal 6: Baseline the embodied carbon within new projects by the end of 2023/24 and set reduction targets	This goal is predominantly focused on establishing baselines. We will work with both the supply chain and with other DNOs to work towards cost effective reductions in embodied carbon.
Goal 7: Achieve the Carbon Literacy gold standard	By having a carbon literate workforce, the likelihood of meeting our actions to decarbonise the network is significantly enhanced.
Goal 8: Enhance environmental management standards through our supplier code and target at least 80% of our supply chain to meet this code	Enhancing environmental management standards in the supply chain is a minimum requirement under the Ofgem baseline expectations. We will work with other DNOs to investigate a common supplier code framework; many suppliers are common to multiple DNOs so it is likely to lead to some cost efficiencies.
Goal 9: To be responsible consumers of resources and reduce the amount of waste produced by the end of RIIO-ED2	The production of a resources strategy will help to identify waste reduction techniques including reducing the amount of materials procured. This will lead to reduced disposal requirements, which in turn will reduce relative disposal costs.
Goal 10: Divert 95% of our waste away from landfill by the end of 2025 and reuse or recycle 70% of our waste by the end of RIIO-ED2 **Goal 11:** Reuse and recycle at least 85% of waste excavated for installation and repair	Generally, the reuse or recycling of waste materials is more cost effective than disposal to landfill. By ensuring we maximise the amount of waste materials being sent to landfill, our costs will reduce relative to the total amount of waste produced.

Appendix C - High level value for money analysis

Goal	How it delivers value for money
 **Goal 12:** To be responsible consumers of water and reduce the water consumption per colleague during RIIO-ED2	Identifying initiatives to reduce water consumption will lead to a reduction in water consumption, thereby reducing bills and offering value for money.
 **Goal 13:** Adopt an appropriate tool to assess changes in natural capital from different options for network projects	This is a minimum requirement under the Ofgem baseline expectations.
 **Goal 14:** Enhance biodiversity and natural capital across 100 sites during RIIO-ED2 and plant 10,000 trees per year	We will work with partners to plant trees ensuring that schemes are chosen appropriately and deliver the greatest benefits. Enhancements around substations (100 sites over RIIO-ED2) will reduce the vegetation management resources required.
 **Goal 15:** Maintain a leakage rate of less than 25,000 litres per year	We have altered our approach to fluid-filled cables to concentrating on leakage reduction rather than removing cables that are fit for purpose. Therefore, although our strategy will result in the leakiest fluid-filled cables being replaced, this will only be done so when necessary to stop large-scale leaks
 **Goal 16:** Remove overhead lines from national parks and areas of outstanding natural beauty	Undergrounding activities will only occur after requests have been made by our partners in national parks and AONBs, and after a full assessment has been made taking into account various factors, including the cost of the scheme.
 **Goal 17:** Take action to reduce noise pollution	Rather than adopting a blanket approach for noise reduction, we will assess each occurrence. This will result in the most suitable noise reduction technique being used, rather than an approach which may not have the required impact (which could result in further expenditure / techniques being employed).
 **Goal 18:** Phase out the use of diesel and petrol vehicles which produce emissions of NOx and other air pollutants	Our principal method of reducing NOx emissions is through the replacement of cars using internal combustion engines with electric vehicles. This will be done when it is a cost neutral or cost beneficial activity.
 **Goal 19:** Remove equipment contaminated by polychlorinated biphenyls from our network by the end of 2025	This is a legal requirement. However, we are working with other DNOs to establish transformers that are or are not PCB-contaminated based on an Environment Agency approved statistical analysis. This will likely mean that a significant number of transformers can be left on the network instead of replacing them, thereby avoiding costs.
 **Goal 20:** Train more colleagues on the requirements of our Environmental Permits for oil recycling through a CMS to reduce risks of environmental harm	Relatively low cost to implement and will result in reduced need for travel for staff not located close to the permitted sites. Staff who currently have to attend site weekly will no longer be required to attend site on a fixed frequency, reducing travel costs and associated carbon emissions.
 **Goal 21:** Provide training to our wider leadership team to enhance environmental awareness	By having an environmentally aware workforce, the likelihood of meeting our actions to reduce the wider environmental impact of network activity is significantly enhanced.

Appendix D – Assessing our environmental impacts

The ISO 14001 Environmental Management System standard requires certified organisations, such as Electricity North West, to determine the environmental aspects (interactions with the environment) of its activities and the associated environmental impacts (changes to the environment). It also requires that abnormal conditions are taken into account.

We operate to our own internal environmental management procedure, Code of Practice 904 (Health, Safety and Environment Management System). Section 5.2 refers to the environmental aspects and impacts, as below:

5.2 Environmental aspects and impacts

The Head of Safety and Policy shall ensure generic environmental aspects and impacts are identified in regard to the following activities:

a) Routine activities including those associated with the operation and maintenance of the electricity distribution system;

b) The design of apparatus for installation on the electricity distribution system;

c) The use of equipment and materials;

d) The use of plant and equipment including workplace transport;

e) The occupation of premises;

f) Emergency situations.

In identifying the generic environmental aspects and impacts, the following factors shall be taken into account wherever applicable:

a) The identification of legal or other requirements;

b) The outputs from the evaluation of compliance with legal and other requirements;

c) The outputs from performance measurement and monitoring activities;

d) The outputs from incident investigation and non-conformity processes;

e) The findings of internal audits;

f) Ad-hoc identification of environmental aspects and impacts by employees or others;

g) Changes or proposed changes in the organisation, its activities or the health and safety management system.

Whenever a generic environmental risk assessment is carried out (or updated), the Head of Safety and Policy shall where necessary ensure the assessment is undertaken by suitably competent people, including when appropriate external consultants.

All significant findings of a generic risk assessment shall be recorded in at least one of the following locations/formats:

a) Corporate Risk Register;

b) Generic Risk Assessments;

c) Distribution Safety Rules (DSR), Electricity Policy Decisions (EPD), Codes of Practice (CP) and Electricity Specifications (ES).

Once the aspects and associated impacts are identified, they are then scored according to:

- Likelihood of impact
- Severity of impact

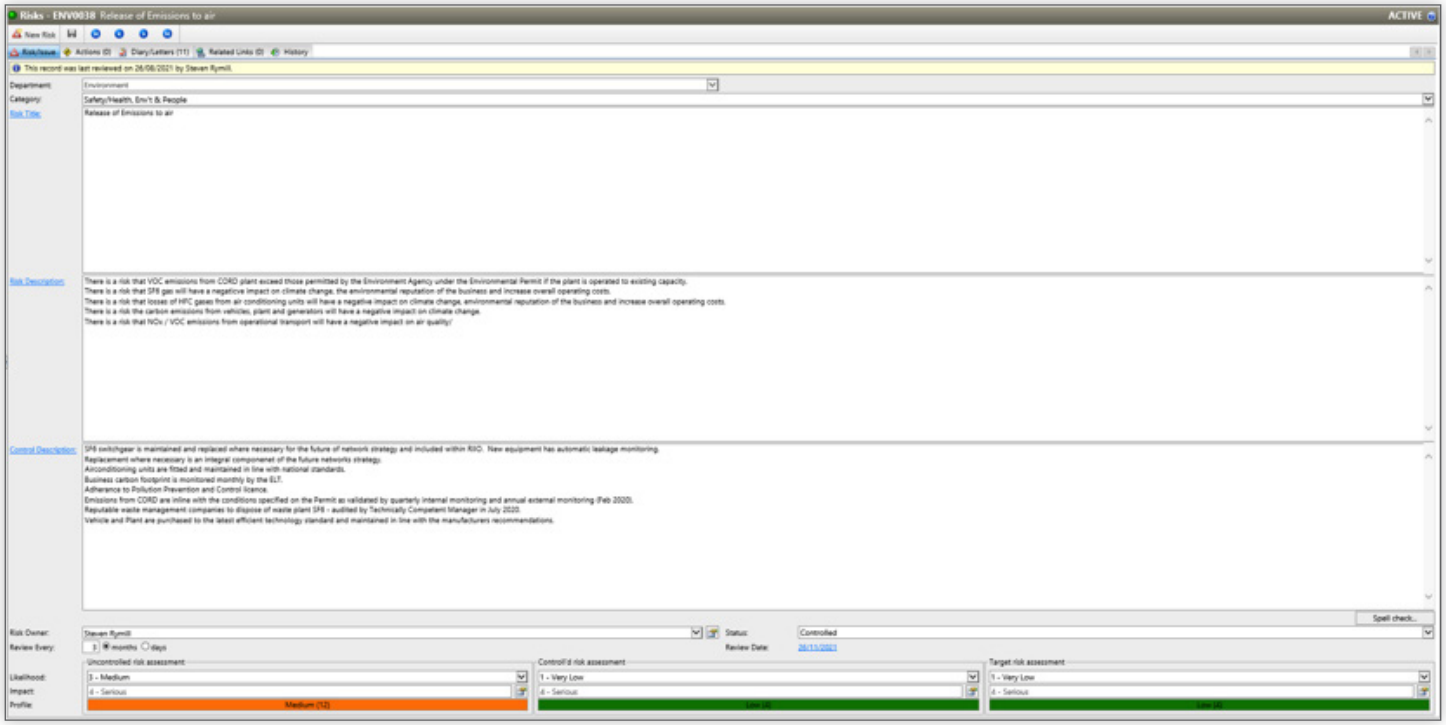
These are scored as below, with likelihood judged over a 12 month period:

#	Likelihood	Severity
1	Little to no chance of occurrence	Insignificant or no negative impact on the environment
2	Unlikely but possible to occur	Minor, localised negative impact on the environment
3	Occasional occurrence	Moderate negative impact on the environment
4	Will likely occur several times	Critical negative impact on the environment
5	Likely to occur often or with certainty	Catastrophic or major long-term negative impact on the environment

As a worked example, the likelihood of overhead lines occurring on the landscape is a certainty, whereas the impact is principally visually, is minor in nature and is very localised. In this case, the likelihood has been scored as a '5' whereas the severity is scored as a '2'.

A description of the risk and control descriptions are then assigned in the corporate risk register, which is then reviewed at defined intervals. The environmental entries within the corporate risk register and audited annually by our external auditors to check that the relevant aspects have been identified and control measures and action plans are in place where applicable.

An excerpt from our corporate risk register is shown below for the release of emission to air.



Appendix E – Environment Incentive (ODI-F): The Environment Scorecard; ENWL proposals

This appendix to our EAP sets out the details behind our proposal for common environment scorecard incentive (ODI-F) for the RIIO-ED2.

1. Executive Summary

This appendix sets out our proposal for an environmental scorecard to form the basis of a financial incentive (ODI-F) in RIIO-ED2. Ofgem as part of the Sector Specific Methodology Decision (SSMD) and set out to all DNOs in the decarbonisation and environment working group (DEWG) session 12 set out that an ODI-F would be included for RIIO-ED2 and that this would be worked up in the DEWG up to final determination.

To support this development, we are setting out our proposal that the environmental scorecard uses the following measures and metrics covering the areas in table 1.1. below. For the avoidance of doubt, we are proposing that this could apply commonly to all DNOs in its entirety or with some degree of variation for individual circumstances.

Table 1.1: Summary of metrics and areas to be included in ENWL environmental scorecard

Area	Metric
Operational transport emissions	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Business transport emissions	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Depot and office energy emissions	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Waste Diverted from Landfill	Percentage (%) landfill avoidance of total[2] waste arisings
Total waste recycled	Percentage (%) of total[3] tonnage
Land enhancement projects delivered	Number of sites per year

We acknowledge the Ofgem position is to "***develop the scope, weightings of the areas in scope, financial exposure and provisional targets of the ODI-F over the next year and consult on these at Draft Determinations.***"[4]. To support in this endeavour, we have also considered and set out our views on the wider incentive mechanism design and how this is best applied to an environmental scorecard ODI-F for RIIO-ED2. The table 1.2 below summarises this.

[2] Excludes streetworks waste due to the likely impact on volumes of environmental legislation removal (RPS211) in the RIIO-ED2 period

[3] Excludes forms of incineration or heat recovery with/without energy recovery to align with Defra / European legislation and excludes streetworks waste as per reference 1 above.

[4] RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers, para.9.47 Ofgem

Table 1.2: Summary of incentive mechanism design components for environmental scorecard

Design parameter	Proposal
Frequency of assessment	Annual, with reward/penalty assessed and an incentive payment on the same basis.
Target setting	Fixed for the RIIO-ED2 period against a defined baseline, annual profile on a pro-rata basis as applicable (metric dependent).
Reward and/or Penalty	Symmetrical upside and downside as the default proposal but needs to be considered on a metric by metric basis.
Dead bands	Use of limited dead band for metrics that are impacted by factors outside of management control such as seasonal volatility or uncertain impacts.
Value of incentive	To align with SSMD for bespoke ODI-F proposals, we propose that cumulatively the value for the environment scorecard should be 0.25% base revenue per annum. It is likely that the reward towards the lower end of the scale is justified and as such we would support incentive calibration at or close to the 0.25% of base revenues per annum.

We remain supportive of the inclusion of an environmental scorecard as part of the RIIO-ED2 framework. We also remain committed to working with Ofgem, DNOs and other stakeholders to develop the proposals further post our business plan submission, but we would expect that this includes a meaningful consultation phase as well as consideration of company specific circumstances such as the ability to measure and accurately baseline and record/report annual volumes. Therefore, whilst the core of any mechanism would be common, it will in our view be applied differently to each company where this is merited.

2. Introduction and Background

As part of its RIIO-ED2 working groups, Ofgem has been engaging with DNOs and other stakeholders with the aim of developing a common environmental scorecard for the 2023-28 period. The basis of this scorecard would be to set annual targets for a subset of key and common areas of the EAP. Ultimately the scorecard will be used to penalise or reward DNOs financially based on their delivery against the Ofgem agreed targets with individual incentive rates, summing up to a single payment determined across the performance on the scorecard as a whole. The proposal from Ofgem is that this is a financial output delivery incentive (ODI-F) and would apply to all DNOs. We agree with this approach.

Based on the work undertaken by the Ofgem Decarbonisation and Environment Working Group (DEWG), the engagement we have undertaken with our customers and stakeholders, as well as our CEG, and the direction given by Ofgem on the measures it expects to be included (and not included) on the scorecard, this section sets out our proposals as part of our final business plan submission to Ofgem.

Our proposal includes; the measures to be included in the scorecard for ENWL; our proposed baseline performance based on RIIO-ED1 to date (2015-2021); our targeted performance for the period of RIIO-ED2 (2023-2028); and how that translates into annualised targets for the RIIO-ED2 period. It also includes consideration for the impact of Covid-19 on baseline as well as other impacting factors

We are clear in this document that whilst these areas have been included in our scorecard which is common to the sector and all DNOs, the other areas of the EAP are equally as important. The financial incentive status of the certain areas of the scorecard will not see us act differently or see more focus placed on these when compared to the other outcomes/outputs which have a strong reputational focus (i.e. no financial incentive applied to them).

[5] RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers, Ofgem

As an example of this, our proposed environmental scorecard has been developed based on Ofgem's sector specific methodology decision (SSMD)[6], which explicitly states to exclude SF_6 from environmental scorecards as a financial incentive targeting an absolute reduction in SF_6 assets could risk incentivising investments which would not otherwise be justified by the environmental benefit. Rather Ofgem want DNOs to take efficient and economic actions to reduce leakage and overall SF_6 asset base in line with Net Zero. As demonstrated we have plans to tackle SF_6 losses in RIIO-ED2 as we understand the importance of addressing this area in the context of Net Zero delivery/transition.

The SSMD also sought to avoid financially incentivising areas that are heavily investment driven, such as fluid filled cables. We have therefore focused on areas that have been discussed as part of the DEWG and where commonality between DNOs is apparent, as well as to areas where improvements deliver value for money for customers and consumers through initiatives in areas that have not traditionally been incentivised in RIIO-ED1 or through the proposals set out in RIIO-ED2 SSMD.

For completeness we have excluded measures that through assessment, engagement with Ofgem, DNOs and other stakeholders are deemed to be:

- Difficult to accurately quantify or measure comparably;
- Wholly or materially outside of company or management control;
- Have significant interactions with other parts of the regulatory framework which could create perverse incentives (such as IIS);
- Covered by an existing legislative driver within the period; and/or
- Where the materiality of the impact being low or of deemed low priority/importance.

Therefore, the areas included in our proposals are areas where measurement will benefit stakeholders and incentivise outperformance to support, and potentially go further, in delivery of environmental benefits in our plan.

The DEWG and Ofgem have also considered the ODI-F environment scorecard for National Grid which was supported and accepted by Ofgem as part of its Final Determination for the RIIO-2 controls for Gas Distribution and Transmission[7] sectors. Ofgem and the DEWG agreed that this forms a useful blueprint for application in RIIO-ED2 for DNOs, but the measures and the mechanics need to be considered in the context of Electricity Distribution specifically which we have considered in developing this sections proposal(s).

3. Stakeholder engagement

3.1. Ofgem and the Decarbonisation and Environment working group

Ofgem in its SSMD[8] signalled the aim to include in its regulatory framework an environment incentive that was common to all DNOs. This incentive would be financial, with a single monetary value (that could be zero, a reward, or a penalty) for companies as determined by performance across a scorecard of assessment areas. This is set out in SSMD by Ofgem where it states:

"For specified areas, the scorecard will compare the outturn annual performance metric in an area to the baseline annual target and performance thresholds. Performance would be scored depending on the level of under or out-performance in each area."[9]

As part of its RIIO-ED2 working groups, Ofgem has been engaging with DNOs and other stakeholders since December 2019, with the group meeting regularly to work through the challenges and framework requirements for RIIO-ED2 business planning and regulatory assessment.

One of the aims, amongst other things, has been developing the scope of this common environmental scorecard for the 2023-28 period. The basis of this scorecard would be to set annual targets in a subset of key and common areas of the EAP.

Our proposals contained in this document has been guided by the work undertaken by the DEWG and through our engagement as a member of this working group. By way of example, Ofgem has been clear in the DEWG and in the SSMD that the following areas are out of scope for the environmental scorecard, which are:

- Fluid filled cables;
- Noise pollution;
- PCB-contaminated equipment;
- SF_6;
- Losses.

As you will see from the main body of our EAP, these areas are included in our plans with ambitions set out for RIIO-ED2. It is clear that not including these within the environment scorecard still means we are focused on these environmental actions as part of our EAP activities in the period.

[6] Ibid.

[7] Both electricity transmission and gas transmission.

[8] RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers, Ofgem

[9] RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers, para.9.36 Ofgem

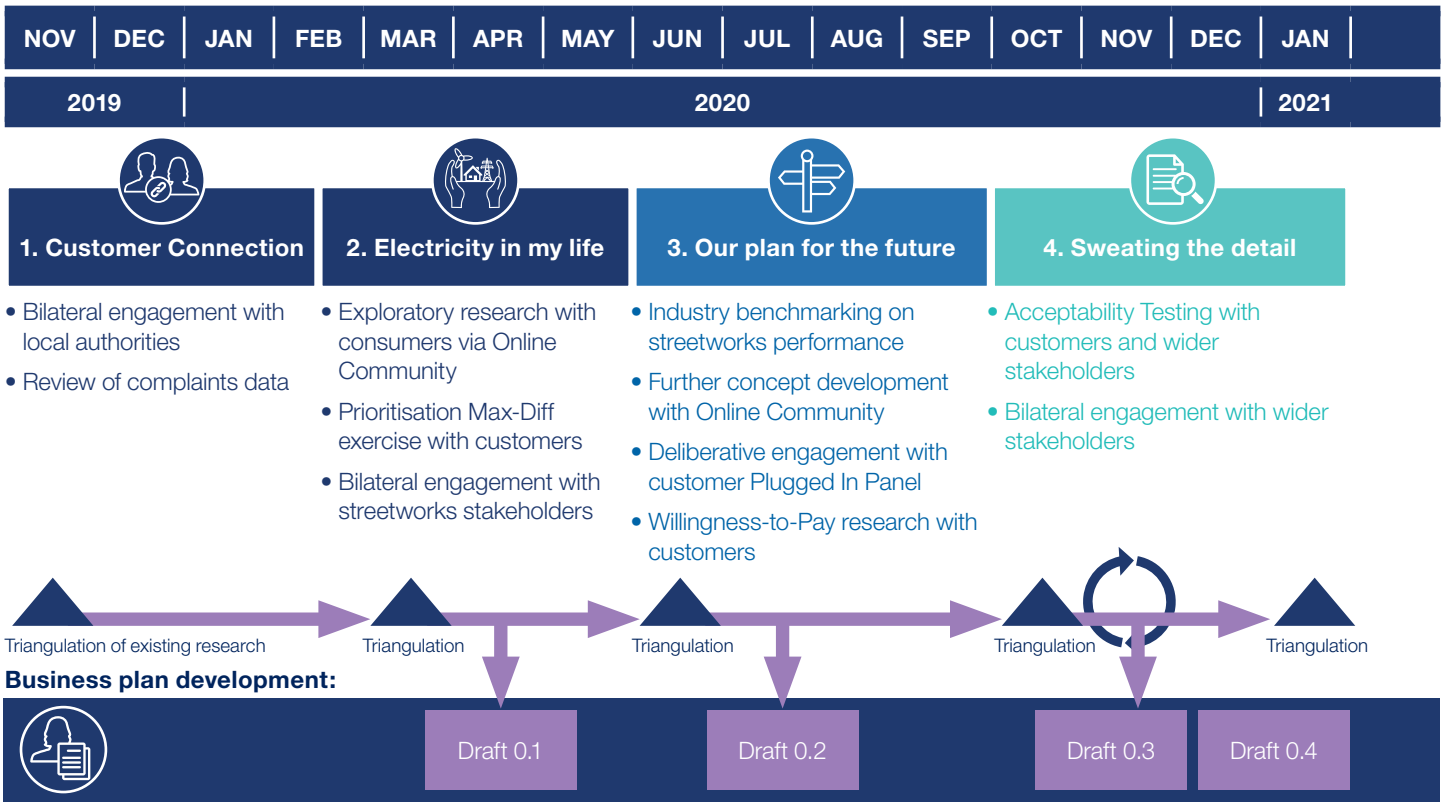
3.2. Our enhanced stakeholder engagement

We have also undertaken and considered our stakeholder engagement using this to help shape our proposals for this common ODI-F environmental scorecard. We have tested environmental incentives with our consumers empirically through our qualitative and quantitative research in response to, and constantly considering, the customer and wider stakeholder engagement we have undertaken as part our business plan development. This is reflected in the proposals set out in this document.

Our overall consultation for all areas was delivered in six phases. We began by canvassing broad opinions on a range of issues related to our customers and stakeholders in phase one, before narrowing the focus and increasing the level of detail with each successive phase. The final two phases were designed to enable final refinement and assurance of our plans before final submission of the business plan.

The development of all of our stakeholder-led proposals have been aided by a range of inclusive and accessible engagement mechanisms (illustrated in Figure 3.21 below).

Figure 3.21: Iterative development of stakeholder led proposals for RIIO-ED2 business plan.



As part of this approach we used a process called triangulation to inform our engagement approach and iterate our proposals. Triangulation is not about validating current or emerging thinking but deepening and widening understanding by capturing different dimensions of the same phenomenon so that new insights can be found to improve the overall quality of organisational decision making. It is a process which interprets a range of different inputs, reflects on how information has been processed and informs further steps required.

One of the insights we gained from our enhanced and extensive stakeholder engagement programme was that "***Customers and stakeholders support Ofgem continuing the use of incentives in ED2 to increase company performance***" (Insight 3).

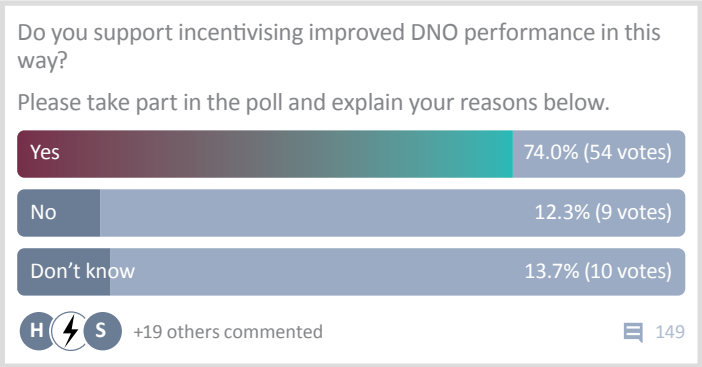
In engaging with customers about incentivisation in RIIO-ED2, we hoped to gain understanding which activities, if any, the company should legitimately be incentivised to undertake in the future. In doing so it was important that customers were provided with sufficient information to understand the purpose of incentives and current examples.

The information presented to the Online Community in a video format set out that:

- Incentives are intended to mimic the pressures and responses typically experienced by consumer-facing businesses in a competitive environment;
- Additional activities and achieving higher performance levels can drive up costs;
- Financial incentives ensure that companies face the risks that these costs are worthwhile so that customers only pay for the reward after the company has achieved success in improving performance and consumers can see lower bills if the company fails to improve (via a company penalty being levied); and
- In 2019/20 4% of Electricity North West's income was obtained through Ofgem incentives.

In total 149 community members engaged on the topic and 74% agreed that they supported incentivising improved performance in this way, as evidenced in figure 3.22.

Figure 3.22: Results of community member engagement



The 149 online community members engaged in the topic were later asked whether there were any activities (other than RIIO-ED1 business as usual) that they felt we should be incentivised to focus on improvements in the future. Participants felt that we should be incentivised for making environmentally conscious decisions and to also 'go the extra mile'.

Members engaged in the discussion were then prompted to think about whether activities that contribute to reducing the company's environmental impact could and should be incentivised. Participants largely agreed that some form of incentivisation should be used.

In a series of regional workshops stakeholders were informed that Ofgem is proposing an incentive structure to reward network companies for going above baseline standards including:

1. Approaches to DSO
2. Providing services to vulnerable customers
3. Providing services to large connection customers
4. Exceeding Environmental Action Plans (EAP)
5. Whole system approaches
6. Those with below average reliability

Workshop participants included, but were not limited to, housing and building developers; local authorities, government departments, local enterprise partnerships, universities, emergency service providers, transport providers, consumer protection representative bodies, environmental groups and charities. On review, 92% of stakeholders across the three regions agreed that these are the rights areas of focus as shown in table 3.23.

Table 3.23: Results of our regional workshops stakeholder engagement on incentive structure

Poll	Manchester (n=21)	Lancashire (n=17)	Cumbria (n=20)	Total (n=58)
Yes	100%	90%	85%	92%
No	0%	10%	15%	8%

3.3. Customer Engagement Group (CEG) discussions

We have also set out our views on the common environment scorecard with our customer engagement group (CEG). We have discussed frequently and in detail our EAP, and specifically with them on two occasions regarding the development of a common environmental scorecard for RIIO-ED2.

While engagement set out that final proposals as part of business plan determination will be shaped by the Ofgem conclusions on the common areas it wants for all DNOs, we have sought to reflect on the views of our CEG through working groups and our proposals contained within this document which are ultimately grounded in our EAP which has had extensive and direct input into shaping as part of our CEG engagement.

4. Scorecard proposal

Table 4.1. below shows a summary of the areas we are proposing are contained within a common environmental scorecard to form the assessment for an ODI-F for RIIO-ED2.

We set out further detail for each of the metrics in turn in specific sections below and set out our proposed targets in section 5 of this document.

It is clear that Ofgem and stakeholders have a desire for a scorecard, as we currently understand it, and for where this to be common and/or comparable where possible. Therefore, we expect further interaction with Ofgem and the DEWG on the mechanism as well as our proposal. This will need to occur between final submission and final determination including the draft determination stage of the RIIO-ED2 determination process.

In developing and submitting our business plan we sought clear information and certainty on key targets and outcomes or outputs that Ofgem required. However, this has not been possible in time for our final business plan submission. Should the development of the incentive approach by Ofgem require us to make changes to our business plan to reflect how Ofgem decides this incentive should work then we will look to put these changes to Ofgem for consideration. Ofgem has stated to ENWL that an update to our submission if we need to can occur once we know how Ofgem proposes the regulatory framework to operate.

Table 4.1: Summary of metrics and areas to be included in ENWL environmental scorecard

Area	Metric
Operational transport emissions	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Business transport emissions	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Depot and office energy emissions and usage	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Waste Diverted from Landfill	Percentage (%) landfill avoidance of total waste arisings
Total waste recycled	Percentage (%) of total tonnage
Land enhancement projects delivered at ENWL sites	Number of sites delivered per year

4.1. Operational transport emissions and fuel consumption

Definition: To account for variations in contracting models, a defined list of direct services should be included for each DNO. The proposed definition is that all direct operational transport (scope 1) within the defined services list should be reported on and included for in the assessment. Contracted services (scope 3) are to be excluded because of the challenges and issues with measurement as well as being partially outside of management control. Should changes in operating model, i.e. movement from direct as defined by the direct services list to contracted in the period of RIIO-ED2 adjustment to targets should be undertaken and recalibrated. Equally if contracted services are brought into direct delivery in period these would be excluded from assessment.

Metrics: It is proposed that this is a measure of tonnes CO_2 equivalent (tCO_2e) to encourage and reflect changes and decarbonisation of operational fleet.

4.2. Business transport emissions and distance travelled

Definition: Emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains (including light rail systems), buses, and passenger cars (including emissions from leased company vehicles). It is proposed that this excludes standard commuting mileage.

Metrics: It is proposed that this is a measure of tonnes CO_2 equivalent (tCO_2e) to encourage and reflect changes and decarbonisation of business transport through use of EVs or alternatives forms of transport. For clarity we are proposing that the measure is done at a transport type level and then aggregated up for the purposes of the scorecard metric.

[10] excludes streetworks waste due to the likely impact on volumes of environmental legislation removal (RPS211) in the RIIO-ED2 period

[11] excludes forms of incineration or heat recovery with/without energy recovery to align with Defra / European legislation and excludes streetworks waste as per reference 9 above.

Appendix E – Environment Incentive (ODI-F): The Environment Scorecard; ENWL proposals

4.3. Depot and office energy emissions and usage

Definition: All forms of energy consumed to provide heating, cooling and ventilation within DNO owned or operated premises (excluding substation usage where currently the majority of this is not metered and therefore only assumed/estimated). Consideration to be given to EV charging at office/depots and this should be excluded where possible. Green energy tariff offsets should not be relied on as:

a) they do not encourage reductions in energy use

b) only purchasing the equivalent of green energy, i.e. the actual electricity supplied may be derived from other sources; and

c) the holistic, nationwide energy consumption needs to be considered

Metrics: It is proposed that this is a measure of tonnes CO_2 equivalent (tCO_2e) to encourage and reflect changes and decarbonisation of energy usage at depots and offices. This allows tracking against BCF / SBTs and ensures that the sole use of green tariffs do not remove the incentive to reduce overall energy use.

4.4. Waste Diverted from Landfill

Definition: Reduction in total waste arisings, regardless of whether operational or office, including waste sent for incineration with energy recovery but excludes waste from streetworks.

Metrics: Percentage (%) landfill avoidance of total waste arisings (as defined)

4.5. Total waste recycled

Definition: Recycling as a proportion of total waste arisings, with recycling including any material that is sent for either reuse or recycling. Recycling should only qualify where waste is turned into a new substance or product (including material sent for composting) and should exclude forms of incineration or heat recovery with/ without energy recovery to remain consistent with the waste hierarchy.

It is proposed that there should be no distinction between office and operational waste, reported as a total, with streetworks 'spoil' excluded. Streetworks is excluded due to the impact of potential environmental legislation changes due to RPS211 removal in ED2.

Although streetworks spoil is excluded from ODI-F environmental scorecard assessment it is proposed to be included in the AER to show the recycling rate of streetworks making the impact of new legislative requirements (likely to come into force in 2023) transparent.

Metrics: Percentage of total waste (in scope), given it is the more comparable and traditional metric.

4.6. Land enhancement projects delivered at ENWL sites

Definition: Land enhancement project delivered on ground in or adjacent to a substation. This could include measures to enhance the biodiversity of a site as well as project to enhance the visual amenity of the sites improved.

Metric(s): Count of qualifying sites as defined per year.

4.7. Other considered

Some of these considered but non-included metrics if Ofgem wish to take them forward may require development work during ED2, especially if sought to be common across DNOs in time for developing ED3 business plans. Clear signalling from Ofgem of which these metrics might be is desirable as part of developing the ED2 approach but should not delay reaching the clarity needed for ED2 to be put in place with the appropriate regulatory steps taken (e.g. policy development, then licence drafting).

Table 4.71: Other metrics considered for inclusion in environmental scorecard

Area	Conclusions
Reduction in water use from all sites	We do not support this as a metric to be included in the environmental scorecard as the area is of low materiality.
Temporary generation	We do not support this as a metric to be included in the environmental scorecard as we have concerns with interaction with IIS & CSAT. Additionally, this is outside of company control on both; the level required each year, the maturity and scalability of alternative solutions to diesel generators in ED2 Further the volumes could be volatile making baselining challenging.
Grouped Scope 1	We are proposing that these are covered by individual metrics such as operational and business transport as set out above. We consider that aggregation of scope 1 emissions removes transparency and risks failure in one area being offset by performance in another. Grouped scope emissions will be reported as part of the BCF / SBT process.
Reduction in waste created at offices only	We do not support this in its current form as a metric to be included in the environmental scorecard; we instead propose the measure shown in section 4.4.
Increase in environmental value of non-operational land	We do not support this as a metric to be included in its current form for the environmental scorecard as we have lower land reserves than transmission companies as DNOs. We would support a measure of enhancement projects as proposed in section 2.6.
Environmental net gain on all construction projects	We do not support this as a metric to be included in the environmental scorecard. We assess there is insufficient time available for a method of accurate and consistent measurement to be agreed as well as challenges baselining. Net gain measurement is still evolving, and DNOs will not have an accurate and consistent baseline, particularly as establishing these in the ED2 rather than ED1 period is an Ofgem requirement
Adopt a target for reductions in the volume of fluid (oil) used to top up cables	Discounted for inclusion in the SSMD and DEWG working groups. However, a target is set within our EAP.
Commit to reporting on actions taken to reduce noise pollution	Discounted for inclusion in the SSMD and DEWG working groups. This will be reported on as part of our AER.
Commit to reporting on the volume of PCB-contaminated equipment on the network	Discounted for inclusion in the SSMD and DEWG working groups. This is a legislative requirement that all DNOs must comply with and will be reported upon accordingly.
SF_6	Discounted for inclusion in the SSMD and DEWG working groups. Our SF_6 strategy will share our actions and plans to manage this key area of potential environmental impact. A leak reduction target is included within our EAP.
Losses	Discounted for inclusion in the SSMD and DEWG working groups. Our losses strategy shares our actions and plans to manage this key area.

Appendix E – Environment Incentive (ODI-F): The Environment Scorecard; ENWL proposals

5. Wider Mechanism design

We note that as we draft proposals the wider incentive mechanism design has not been discussed in detail at the DEWG to date. Ofgem has been clear in its forward timeline that it expects to develop positions on financial exposure and provisional targets of the ODI-F, as well as consulting on these at the Draft Determination stage of the RIIO-ED2 business plan process. Therefore, we are committed to continuing our engagement with Ofgem through the DEWG between our final plan submission and Draft/Final Determination.

To help with this engagement we have considered as part of our proposal the targets and the measures for the metrics which are set out in section 4 above as well as in section 5.1 below. But this is only part of the potential incentive design which can ensure fairness and the appropriate balance for consumers and stakeholders. Therefore, in this section we set out our thoughts on the other key parameters needed to complete the design of the overall environmental ODI-F for RIIO-ED2.

For clarity we support a mechanistic combination of a range of performance metrics as per the scorecard for RIIO-T2. We see a metricised and mechanised combination of the range of scores across a number of areas included in the scorecard which results in a single penalty or reward payment on an annual basis. We would not support a proposal where subjectivity or qualitative assessment is included in the scorecard proposal.

5.1. Frequency of assessment

Design parameter	Proposal
Frequency of assessment	Annual, with reward/penalty assessed and an incentive payment on the same basis.

We propose and support that this ODI-F is reported on and assessed on an annual basis. It is our view that this annual assessment should result in a decision and annualised incentive reward/penalty being incurred.

Annual assessment will tie into the annual environment report and ensure that all areas of the EAP are focussed on the same frequency and reporting basis. It also allows consumers and stakeholders to transparently review our performance across the whole of the EAP on the same frequency.

Further assessing and rewarding or penalising on an annual basis allows targets to be calibrated in a way where gradual, incremental improvements can be incentivised ensuring that companies are set realistic targets and that consumers and stakeholders are able to benefit from realised annual improvements in for all the regulatory period.

Whilst not the primary consideration, the use of the annualised assessment would align with the mechanics of the environment scorecard and ODI-F as deployed in the Transmission sector for RIIO-T2.

5.2. Target setting

Design parameter	Proposal
Target setting	Fixed for the RIIO-ED2 period, annual profile on a pro-rata basis as applicable (metric dependent).

Appendix E – Environment Incentive (ODI-F): The Environment Scorecard; ENWL proposals

Target setting is crucial to ensure a fair balance between consumers, stakeholders and the companies' ability to achieve targeted improvements in the RIIO-ED2 period.

We would advocate that in each of the metrics contained in the scorecard, consideration is given to the following areas to ensure target calibration is fair and achievable. These are:

- Is baseline performance in ED1 representative of historic underlying performance or is it impacted by exogenous factors such as COVID-19? Our starting assumption is that targets should be set based on Pre-Covid historic data as our operations move back to normal.
- Are there factors known in the ED2 period which will affect the performance or trend in the assessment period (I.e. installation of EV chargers and energy use at offices and depots)?
- Are there factors that are outside of management control which will affect the performance (i.e. weather)?

All of the above are important to consider in the context of each of the measures included in the scorecard on an individual basis. Depending on the answer to each question in turn, adjustments to, or calibration of the targets, or even exclusions from the measurement may need to be made.

Additionally, for target setting it is important to consider how any improvements are annualised. We would propose that where RIIO-ED1 and RIIO-ED2 are on a like for like basis the difference between the RIIO-ED1 baseline and the RIIO-ED2 target is pro-rata across the whole period (I.e. the improvement year-on-year is the same). We would not advocate or support any proposals which reset the baseline annually as this would not allow companies to plan against fixed and certain targets for improvement and may create perverse incentives.

It is possible that, not all measures or metrics in the environment scorecard will have an annualised improvement, or an improvement over the period as targeted. This will depend on the measure and how this is assessed.

We have considered all of the above in the context of our proposed measures and in the table below we set out our proposed targets for each metric in turn.

Area	Unit	ED1 Baseline	ED1 Baseline	ED2 targets					ED2 Outcome
				2023/24	2024/25	2025/26	2026/27	2027/28	
Operational transport emissions	Tonnes CO_2 equivalent (tCO_2e)	20/21	4,119	3,921	3,724	3,526	3,328	3,131	988 reduction
Business transport emissions	Tonnes CO_2 equivalent (tCO_2e)	Average of 15/16 to 20/21	1,310	1,151	993	834	675	517	793 reduction
Depot and office energy emissions	Tonnes CO_2 equivalent (tCO_2e)	20/21	989	854	720	585	451	316	672 reduction
Waste Diverted from Landfill	Percentage (%) landfill avoidance of total waste arisings	20/21	93.4%	93.7%	94.0%	94.4%	94.7%	95.0%	1.6% increase
Total waste recycled	Percentage (%) of total tonnage (in scope)	20/21	60.6%	62.5%	64.3%	66.2%	68.1%	70.0%	9.4% increase
Land enhancement projects delivered	Count of projects delivered per year	Average across ED1 (including forecast)	30	20	20	20	20	20	100 Sites delivered

Appendix E - Environment Incentive (ODI-F): The Environment Scorecard; ENWL proposals

5.3. Reward and/or Penalty incentive

Design parameter	Proposal
Reward and/or Penalty	Symmetrical upside and downside as the default proposal.

Ultimately incentives can be designed to be upside only (reward), downside only (penalty) or a mixture of both. We have considered all of these as part of the potential application to an environment scorecard and our proposal is that as a default symmetrical upside and downside approach should be applied.

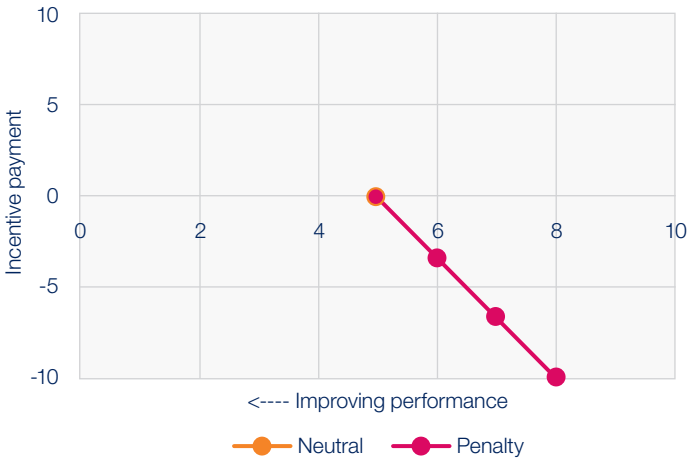
Below we set out our considerations under each option available;

- Upside (Reward) only; An upside only incentive provides an incentive for the company to target enhanced service improvements but does not incentivise the company to ensure that there is no service deterioration in a situation where the service becomes a lower priority in delivery period. These are usually best deployed where there is a regulatory backstop mechanism that protects from performance deterioration such as a licence obligation setting a minimum guaranteed standard. This is shown in figure 5.31 below.

Figure 5.31: Stylised representation of simple incentive mechanism – Upside (reward) only

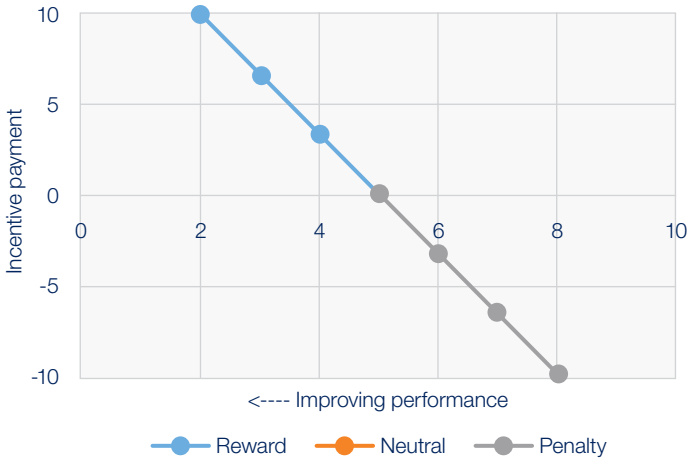
- Downside (penalty) only; A downside only incentive would only incentivise a company to avoid service deterioration. In a scenario where an enhanced service from that currently provided was valued by consumers and stakeholders, additional baseline funding would be required to reach these levels and penalties levied against failure to deliver that level with the additional baseline funding. If no additional baseline funding is provided for then the penalty would need to apply from current performance and would not incentivise companies to deliver improved service. These are best deployed where improvements in service are unlikely or where customers say they are already satisfied with performance and don't want improvements, possibly because companies are at the frontier of what is achievable, but where a mechanism is required to ensure no deterioration in service occurs. This is shown in figure 5.32 below.

Figure 5.32: Stylised representation of simple incentive mechanism – Downside (penalty) only



- Upside (reward) and downside (penalty); An upside and downside incentive, if equally calibrated, ensures that companies have an equal incentive to improve service as to ensure that no service deterioration occurs. This is shown in figure 5.33 below.

Figure 5.33: Stylised representation of simple incentive mechanism – Upside (reward) and downside (penalty)



Our view is that upside and downside (or penalty and reward) should apply as the default consideration to each of the metrics included in the environmental scorecard. This reflects the importance of improvements in these areas included and their interaction with Net Zero transition, as well as the fact it ensures that improvements and/or deterioration in performance is incentivised in the period and on an annual basis.

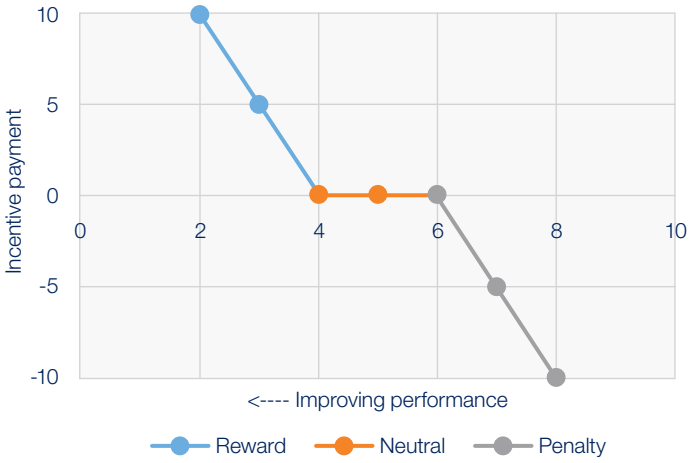
5.4. Use of dead bands

Design parameter	Proposal
Dead bands	Limited dead band use to metrics that are impacted by factors outside of management control such as seasonal volatility or uncertain impacts.

In assessing the best way to design the mechanism and ensure fairness to all parties we have considered the use of dead bands in the setting of environmental scorecard metrics.

Dead bands are levels of performance improvement around the baseline/annual performance target where upside or downside (penalty or reward) is not incurred. I.e. the company would have to achieve better than these levels before the incentive mechanism payment would start. A diagram showing a representation of how dead bands work is set out in figure 5.41.

Figure 5.41: Representation of incentive mechanism with dead bands



It is these characteristics that mean dead bands can be used to protect companies from natural variations in service, and/or those driven by legislative changes that are outside of management control. Additionally, they can afford protection to consumers from the same natural year-on-year variations in performance.

However, the inclusion of dead bands weakens the incentive properties, where the company must make improvements at zero reward when moving through the dead band. Equally it weakens the incentive of companies to actively manage the impact of activities outside of its control where a penalty won't be incurred if service lands within the downside dead band.

Considering this and the requirement on the incentive to both protect customers and deliver service improvements valued by our consumers and stakeholders, the proposal is therefore to only apply dead bands to metrics where there are exogenous factors in play influencing the annual level of performance achieved. More broadly speaking our preference is (and has been used to guide our scorecard proposal contain herein) that measures which are influenced by factors outside of management control are not utilised in the environmental scorecard but this may not be possible and dead bands help to account for this.

5.5. Value of incentive

To align with SSMD for bespoke ODI-F proposals, we propose that the per annum cumulative incentive value for the environment scorecard should be 0.25% of annual base revenue.

We will continue to work with Ofgem, DNO and other stakeholders through the DEWG to ensure that the incentive value and the incentive rates per metric are representative and calibrated in such a way that they incentivise the output they are aiming to achieve.

5.6. Proposal summary

Having considered the key incentive mechanics and how these are best applied in the case of a common environment incentive based on a scorecard model our proposal is:

Design parameter	Proposal
Frequency of assessment	Annual, with reward/penalty assessed and an incentive payment on the same basis.
Target setting	Fixed for the RIIO-ED2 period against a defined baseline, annual profile on a pro-rata basis as applicable (metric dependent).
Reward and/or Penalty	Symmetrical upside and downside as the default proposal but needs to be considered on a metric by metric basis.
Dead bands	Use of limited dead band for metrics that are impacted by factors outside of management control such as seasonal volatility or uncertain impacts.
Value of incentive	To align with SSMD for bespoke ODI-F proposals, we propose that cumulatively the value for the environment scorecard should be 0.25% of base revenue per annum.

6. Conclusion

We remain supportive of the inclusion of an environmental scorecard to form the basis of a financial incentive (ODI-F) in RIIO-ED2. We also remain committed to working with Ofgem, DNOs and other stakeholders to develop the proposals further post our business plan submission, but we would expect that this includes a meaningful consultation phase as well as consideration of company specific circumstances such as the ability to measure and accurately baseline and record/ report annual volumes.

We acknowledge the Ofgem position is to "***develop the scope, weightings of the areas in scope, financial exposure and provisional targets of the ODI-F over the next year and consult on these at Draft Determinations.***"[12], and this document is designed to support this endeavour.

Having considered the discussions at the DEWG, as well as our own stakeholder engagement and through discussions with our CEG, we are proposing that the environmental scorecard uses the following measures and metrics covering the areas in table 6.1. For the avoidance of doubt, we are proposing that this could apply commonly to all DNOs in its entirety or with some degree of variation for individual circumstances.

We have also considered and set out our views wider incentive mechanism design and how this best is applied to an environmental scorecard ODI-F for RIIO-ED2. Table 6.2 summarises this.

[12] RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers, para.9.47 Ofgem

Table 6.1: Summary of metrics and areas to be included in ENWL environmental scorecard

Area	Metric
Operational transport emissions and fuel consumption	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Business transport emissions and distance travelled	Tonnes CO_2 equivalent
Depot and office energy emissions and usage	Tonnes CO_2 equivalent (tCO_2e) using the relevant UK government GHG emission factors
Waste Diverted from Landfill	Percentage (%) landfill avoidance of total[13] waste arisings
Total waste recycled	Percentage (%) of total[14] tonnage
Land enhancement projects delivered at ENWL sites	Number of projects per year

Table 6.2: Summary of incentive mechanism design components for environmental scorecard

Design parameter	Proposal
Frequency of assessment	Annual, with reward/penalty assessed and an incentive payment on the same basis.
Target setting	Fixed for the RIIO-ED2 period against a defined baseline, annual profile on a pro-rata basis as applicable (metric dependent).
Reward and/or Penalty	Symmetrical upside and downside as the default proposal but needs to be considered on a metric by metric basis.
Dead bands	Use of limited dead band for metrics that are impacted by factors outside of management control such as seasonal volatility or uncertain impacts.
Value of incentive	To align with SSMD for bespoke ODI-F proposals, we propose that cumulatively the value for the environment scorecard should be 0.25% of base revenue per annum.

[13] Excludes streetworks waste due to the likely impact on volumes of environmental legislation removal (RPS211) in the RIIO-ED2 period

[14] excludes forms of incineration or heat recovery with/without energy recovery to align with Defra / European legislation and excludes streetworks waste as per reference 1 above.

Appendix F - Overview of EAP deliverables/initiatives for RIIO-ED2

Deliverables									
Impact Area	DNO Deliverables/ Initiatives	ED1		ED2					*EAP*
		ED1 to date	ED1 forecast	ED2 Target	ED2 Delivery Date	Relevant performance measure (units)	Costs (£)	Consumer and environmental benefits	*Goal reference*
BCF	Convert one site to Net Zero Carbon for each year of RIIO-ED2	0	2	5	31/08/28	Number of sites	£5M	Reduction in BCF / carbon emissions	Goal 1
	Convert 36% of commercial fleet to electric vehicles	N/A	N/A	36%	31/08/28	Percent of vehicles	Cost neutral	Reduction in BCF / carbon emissions	Goal 1
	Convert all company lease cars to electric vehicles	N/A	100%	100%	31/08/28	Percent of vehicles	Cost neutral	Reduction in BCF / carbon emissions	Goal 1
	Achieve Net Zero within our internal BCF by 2038	14,090	12,000	8,175	31/08/28	tCO_2e per year	-	Reduction in BCF / carbon emissions	Goal 1
	Adopt science-based targets for all emission scopes	N/A		N/A	31/03/28	tCO_2e	-	Reduction in BCF / carbon emissions	Goal 2 and 3
Losses	Manage our electricity distribution losses and achieve savings of 8GWh per year	122.96	122.96	40	31/03/28	GWh	£10M	Reduction in BCF / carbon emissions	Goal 4
	Use cost-efficient network interventions to manage losses	N/A		N/A	31/03/28	N/A	-	Reduction in BCF / carbon emissions	Goal 4
	Track the impact of actions of our losses strategy during RIIO-ED2 in our AER	N/A		N/A	Annually	N/A	-	Transparency of plans against outcomes	Goal 4
Embodied Carbon	Baseline the embodied carbon in new projects by 2024	N/A		N/A	31/03/24	tCO_2e per activity	-	Establishment of scope 3 BCF	Goal 6
	Report on activities to manage or reduce our embodied carbon within our annual environmental reporting	N/A		N/A	31/03/28	N/A	-	Reduction in BCF / carbon emissions	Goal 6
	Introduce carbon reduction plans for all major network projects by the end of RIIO-ED2	N/A		N/A	31/03/28	N/A	-	Reduction in BCF / carbon emissions	Goal 6
Supply Chain	Enhance the environmental management standard requirements of our suppliers through our supplier code	N/A		80%	31/03/28	Percent of suppliers meeting code	-	Higher standards of environmental management within our supply chain	Goal 8
	Require our top 10 suppliers (by value) to set targets in line with SBTi criteria by 2026	N/A		10	31/03/26	Number of suppliers setting SBT-aligned targets	-	Reduction in scope 3 BCF / carbon emissions	Goal 3 and 8

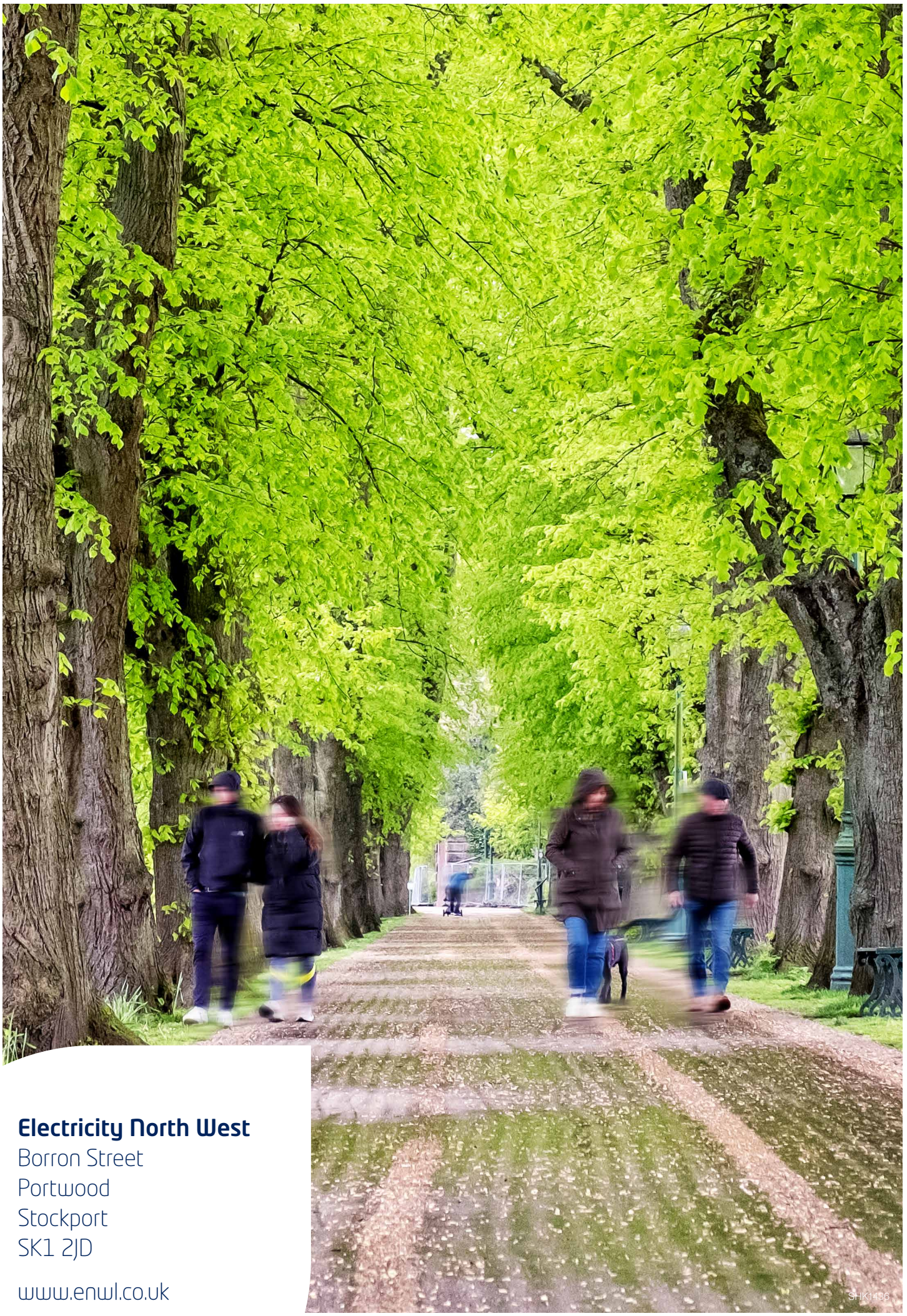
Notes
Costs are rounded to nearest £100,000
Where a cost is not provided it indicates business as usual (BAU) or negligible against BAU
Costs for fluid-filled cables target includes replacement costs
Costs for losses reductions are supported by relevant CBAs
Costs for sulphur hexafluoride initiatives include premium for replacements

Appendix F – Overview of EAP deliverables/initiatives for RIIO-ED2

Deliverables									
Impact Area	DNO Deliverables/ Initiatives	ED1		ED2					*EAP*
		ED1 to date	ED1 forecast	ED2 Target	ED2 Delivery Date	Relevant performance measure (units)	Costs (£)	Consumer and environmental benefits	*Goal reference*
Resource use/waste	Create a resources strategy to embed the circular economy within our activities	N/A		N/A	31/03/23	N/A	-	Increased resource efficiency	Goal 9
	Achieve a landfill diversion rate of 95% of our waste	93.40%	93.40%	95%	31/12/25	Percent of waste diverted from landfill	-	Reduction in scope 3 BCF / carbon emissions	Goal 10
	Reuse or recycle 70% of our waste	60.60%	60.60%	70%	31/03/28	Percent of waste recycled / reused	-	Avoidance of raw material extraction	Goal 10
	Reuse and recycle at least 85% of waste excavated for installation and repair	-	-	85%	31/03/28	Percent of streetworks waste recycled / reused	-	Avoidance of raw material extraction	Goal 11
Biodiversity and Natural Capital	Enhance 100 sites through biodiversity initiatives	9	30	100	31/03/28	Sites	£1.9M	Enhancement of the biodiversity and societal benefits around our network assets	Goal 14
	Plant 50,000 trees	-	TBC	50,000	31/03/28	Trees		Compensation for trees felled for network safety and maintenance	Goal 14
Fluid-filled cables	Maintain a leakage rate of no more than 25,000 litres per year	35,693	30,000	25,000	31/03/28	Litres	£27.9M	Reduction in land and water contamination	Goal 15
Sulphur Hexafluoride (SF_6)	Maintain a leakage rate of no more than 0.3% of our total SF_6 bank	0.33%	0.35%	0.30%	31/03/28	Kilograms / Percent	£9.6M	Reduction in fugitive emissions of SF_6	Goal 5
	Implement a new management approach / strategy for sulphur hexafluoride (SF_6) on our network	-	-	-	31/03/23	N/A	-	Reduction in fugitive emissions of SF_6; reduction in holdings of SF_6 on our network	Goal 5
Noise pollution	Report on actions taken to reduce noise pollution	144	192	100%	31/03/28		-	Reduction in noise pollution	Goal 17
PCBs	Remove PCB-contamination from the network	13,796	TBC	0	31/12/25	Number of PCB-contaminated items on the network	£21M	Removal of potential PCB-contamination	Goal 19

Notes

Costs are rounded to nearest £100,000
Where a cost is not provided it indicates business as usual (BAU) or negligible against BAU
Costs for fluid-filled cables target includes replacement costs
Costs for losses reductions are supported by relevant CBAs
Costs for sulphur hexafluoride initiatives include premium for replacements



Electricity North West
Borron Street
Portwood
Stockport
SK1 2JD

www.enwl.co.uk