



NETWORKS

# ENVIRONMENTAL PERFORMANCE REPORT 2023

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# 1

## Executive Summary





## Executive Summary

Welcome to ESB Networks' Annual Environmental Performance Report, 2023. In this report you will find information on the environmental and sustainability aspects of our business.

Our [Networks for Net Zero Strategy](#), launched in January 2023, sets out ESB Networks' role in enabling the delivery of the Government's Climate Action Plan and supports the decarbonisation of the electricity system by 2040. It is based on our role in transforming the electricity distribution network that will empower customers to decarbonise their energy consumption; and in our role as Transmission Asset Owner, Distribution Asset Owner and Distribution System Operator in delivering the ambitious electricity transmission programme.

2023 was a strong year for the Renewables Team of ESB Networks, having connected 414 MW of grid scale renewables to the Network. At year end, ESB Networks had enabled the connection of 6,193 MW of renewable energy; 4,814 MW of wind energy generation and 582 MW of grid scale solar, approximately 400 MW of roof top, mini, micro and small-scale solar, with the remaining capacity coming from other renewable sources. 2,975 MW are connected at Distribution (DSO) level and 3,218 MW connected at Transmission (TSO) level. ESB Networks has now connected approximately 1 GW of solar generation to the grid.

In 2023, the National Networks, Local Connections Programme continued to deliver new products and services by working together with industry. This programme was delivered in partnership with stakeholders and organisations, with extensive customer research, education, and recruitment initiatives to build customer participation and awareness.



## Executive Summary continued

The 2023 “Beat The Peak - Domestic” campaign pilot ran until March 2023 with 18,500 participating customers. 24,000 behavioural changes were self-reported by customers. ESB Networks built on the lessons learned in the pilot and launched a revised product in August 2023. ESB Networks currently have 15,000 customers signed up to the product at the time of this report. The Beat the Peak Team supported 16 energy events in 2023, issuing notifications to customers to reduce consumption at times when there was constraint on the electrical system. The campaign has educated people on how and when they use their energy throughout the day and empowers customers to take control of their usage.

ESB Networks continued the replacement of over 2.4 million electricity meters in homes, farms and businesses with next generation smart meters to support the transition to a low carbon electricity network. Over 450,000 smart meters were installed in 2023 by almost 400 installers across the country. The programme reached a significant milestone of 1.5 million smart meter installations in November 2023.

In 2023, ESB Networks' electricity usage in buildings and carbon emissions associated with SF6 gas decreased in comparison to 2022.

During 2023, ESB Networks continued to manage a number of environmental compliance issues as detailed later in this report.

ESB Networks' Environmental Management System (EMS) retained its external certification to the ISO: 14001 Standard, following two surveillance audits by external auditors in 2023.

During 2023, ESB Networks committed sponsorship funding to the EurElectric Power Plant - Phase II research project. The project aims to deliver a charter of guiding principles for a legislative and regulatory framework supporting biodiversity protection and power sector investment for electricity utilities across the EU. This sponsorship will demonstrably facilitate ESB Networks' drive for sustainability and support the transition to a low carbon future as it aligns and supports the commitments in the Networks for Net Zero Strategy, most specifically those regarding biodiversity gain. ESB Networks also made progress on the initial drafting of its Biodiversity strategy.

During 2023, ESB Networks continued to effectively manage the environmental and sustainability aspects of our business.

### John Tuohy

Environmental Manager, ESB Networks



# 2

## Introduction



## Introduction

ESB Networks DAC is the distribution operator and has a number of licence obligations relating to the environment contained in the Distribution System Operator (DSO) licence issued by the Commission for Regulation of Utilities (CRU). ESB is the licenced Transmission Asset Owner (TAO). Condition 30 of the DSO licence and condition 22 of the TAO licence require the respective licence holders to:

- Comply with all current and future European Union and Irish Environmental Laws, as well as directions by the CRU in respect of its duties relating to the Environment.
- Maintain an Environmental Policy setting out how it will comply with its duties and obligations under these laws and directions.
- Report annually to the CRU on its environmental performance.

ESB Networks, a business unit of ESB, manages environmental issues for the DSO and the TAO. This report has been prepared by ESB Networks on behalf of the DSO and TAO for the year ending December 2023.





# 3

## ESB Networks - Who we are





## ESB Networks - Who we are

ESB Networks provides the electricity infrastructure that transports electricity to all customers in Ireland through both the distribution and the transmission systems. We have served Irish customers for over 90 years and have provided the electrical infrastructure on which our society has developed.

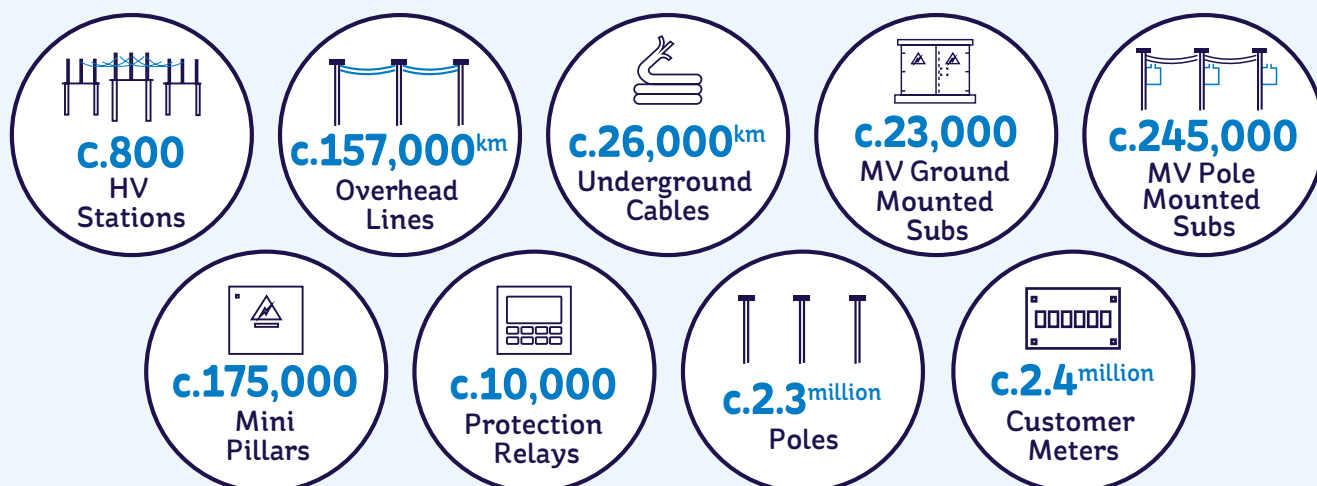
ESB Networks works to meet the needs of all Irish electricity customers, providing universal affordable access to the electricity system and delivering and managing the performance of a system of almost 157,000 km of overhead networks, 26,000 km of underground cables, over 800 high voltage substations, significant amounts of connected generation (including renewable generation connected to the distribution and transmission systems) and almost 2.5 million demand customers.

We carry out all the functions relating to the electricity distribution system. This includes asset management, planning, construction, maintenance, and operation of the high, medium, and low voltage distribution networks. We also deliver a range of services to the Republic of Ireland (RoI) Retail Electricity Market servicing almost 2.5 million customers. We manage relationships with market participants and provide data in a timely and accurate fashion on a daily basis.

ESB Networks supports the wider Irish market through the ring-fenced Meter Registration System Operator (MRSO) and Retail Market Design Service (RMDS) and supports the wholesale Single Electricity Market through the provision of aggregated meter data.

ESB Networks builds and maintains the high voltage transmission system. By the end of 2023, ESB Networks had facilitated the connection of over 6.179 GW of renewable energy generation to the distribution and transmission systems.

### Our Network

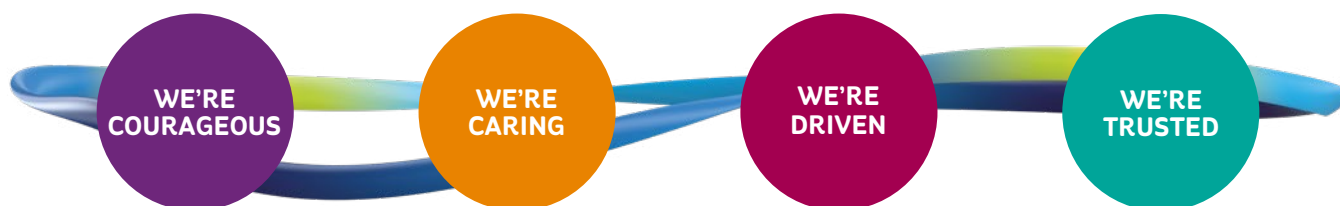


ESB Networks places customer service at the centre of our operations, providing services to all electricity customers regardless of their supplier. Our staff throughout the country strive for excellence in all interactions with customers, while also supporting them in participating in the energy market and transitioning towards low carbon technologies.

As part of our commitment to a low carbon future, ESB Networks will lead the way in electrifying heat and transportation. We will work to develop and innovate our networks to support this goal, which is crucial to our future success in the changing and uncertain environment of the energy sector. By identifying innovative opportunities, we aim to support significant changes in electricity generation and consumption by 2030.

To ensure that our day-to-day activities are managed sustainably, the ESB Networks' Environmental Team and senior leadership provide support to various groups and teams across the business with environmental responsibilities. We draw on specialist knowledge from key areas such as electricity, procurement, environment and construction to achieve this enduring role.

## Our Values



Each of us is prepared to challenge the way we've always done things, stand up for what we feel is right and try better ways of working.

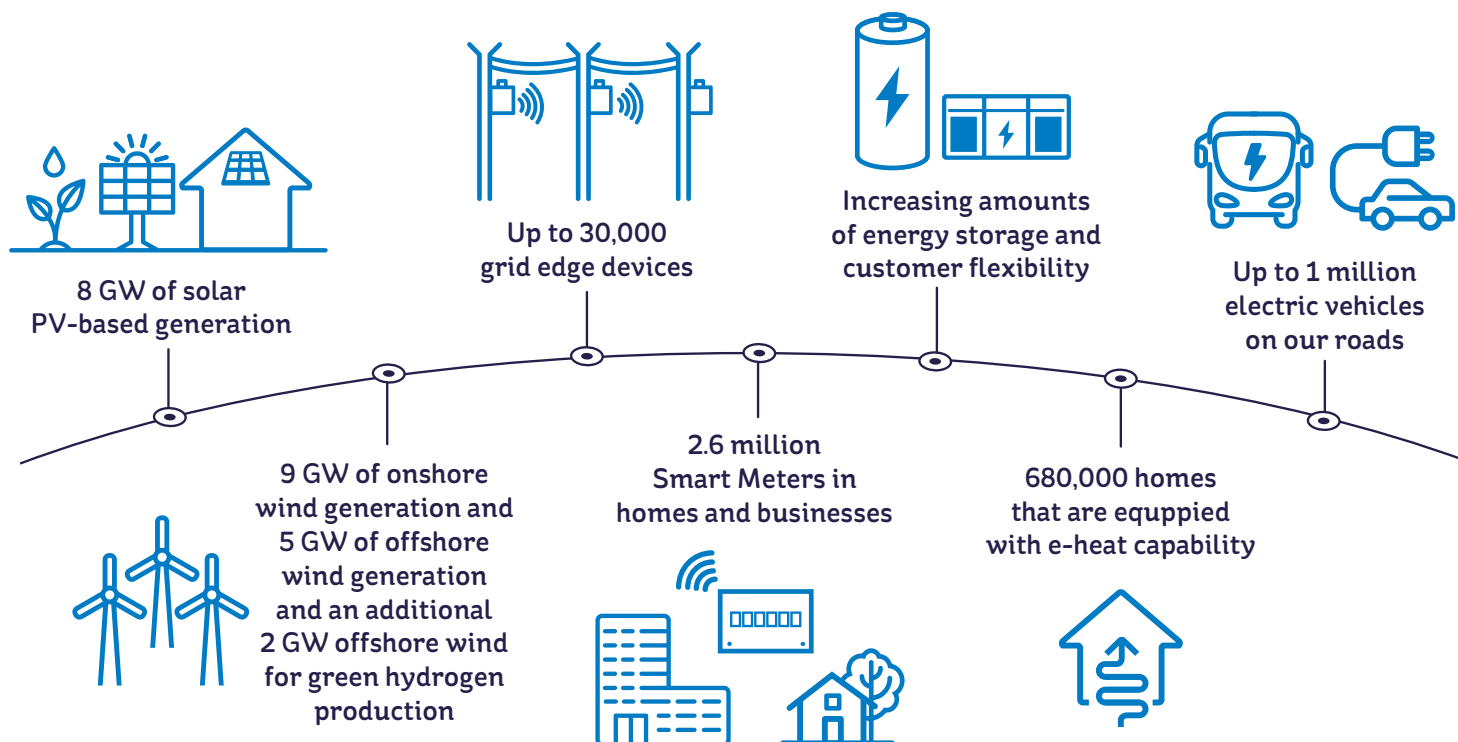
We're putting customers' current and future needs at the heart of what we do and we keep ourselves and others safe and healthy.

We bring passion and persistence to what we do every day, innovating and collaborating to meet the challenges and opportunities ahead.

We each play our part, taking ownership of our responsibilities, seeing the job through and protecting our own health and safety, as well as others'.



ESB Networks' vision for our network by 2030 is seen below:



## Networks for Net Zero Strategy

Our Networks for Net Zero Strategy sets out ESB Networks' role in enabling the delivery of the Government's Climate Action Plan 2023 and supports the decarbonisation of electricity by 2040, which will enable the achievement of Ireland's net zero ambition no later than 2050. It is based on our role in transforming the electricity distribution network to empower customers to decarbonise their energy consumption; and in our role as onshore Transmission Asset Owner in delivering the electricity transmission programme. As we implement this strategy, we will ensure that we have a safe, reliable and efficient network with the required capacity, flexibility and resilience for the electricity system for 2040.



We have identified three strategic objectives, which are core to delivery of our strategy:

### DECARBONISED ELECTRICITY

This objective reflects our commitment to support Ireland in achieving net zero through enabling the connection of renewable generation to decarbonise electricity. At ESB Networks, distribution system operation at all voltage levels, is core to what we do today. The energy transition and the roll out of new technologies means that the way we manage the network will change materially in the future. Thus, as the electricity system transitions towards a smarter, sustainable model, the operation and management of these new resources will require a digital network that is flexible and smart.

We have introduced a 'Build Once for 2040' concept that will ensure that the distribution network, and supporting services such as demand management, are designed and developed to meet the anticipated needs of customers in 2040 and to deliver a clean electric future. This will eliminate the need for repeated, costly and resource intensive interventions on the network. Essentially, where possible, we will deploy solutions today which are scalable to meet the needs of customers and stakeholders in 2040.

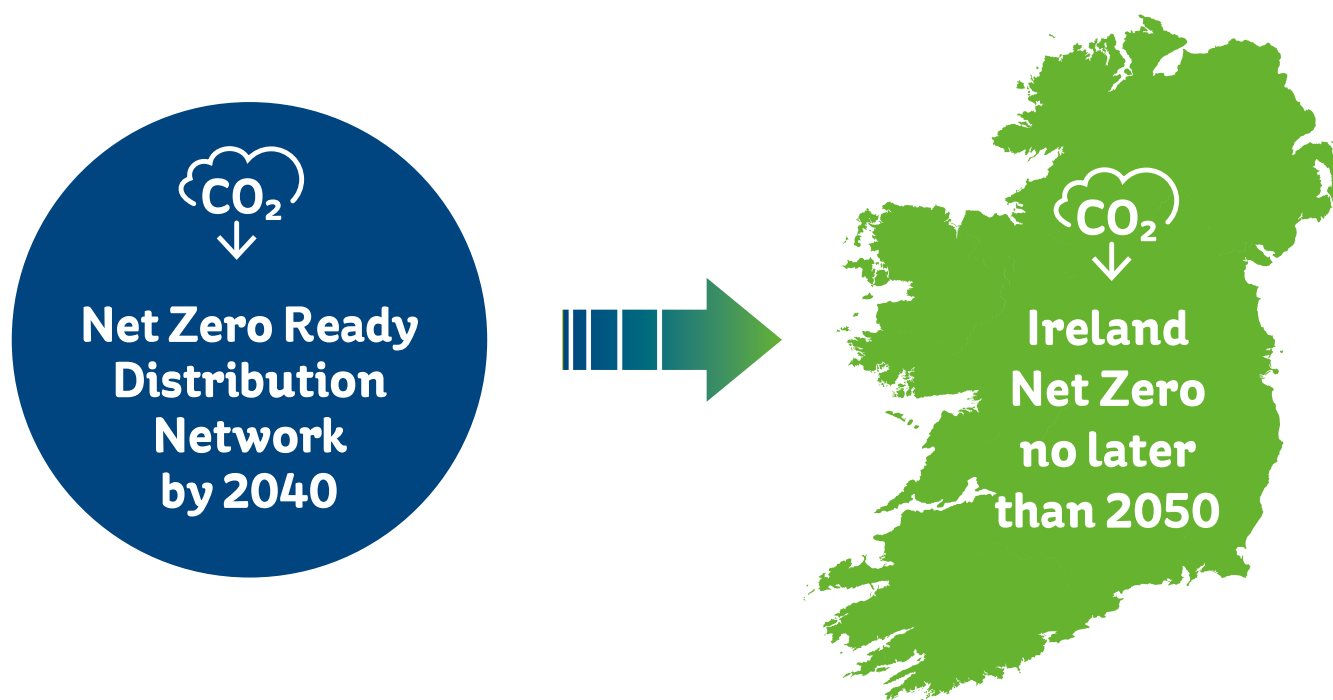
### RESILIENT INFRASTRUCTURE

This objective recognises that the transition to a low-carbon future powered by clean electricity requires a network that is resilient to the impacts of climate change and disruptive events such as storms and cyber threats. It also recognises we need to build capacity to connect the renewable generation that will generate the clean electricity to our network. In addition, we need to provide network capacity for the demand associated with significant population growth, new housing developments, economic growth, as well as a significant increase in demand due to electrification of heat, transport and industry.

### EMPOWERED CUSTOMERS

This objective reflects our commitment to working alongside customers and communities, supporting them to achieve net zero. We will use data and digital technologies to deliver convenient and personalised customer experiences. We will also develop insight-driven services to meet diverse and evolving customer needs. ESB Networks will put in place solutions for our networks customers to enable the electrification of heat and transport. We will make it easy for customers and communities to participate in markets for flexibility and make active choices in their use of energy.





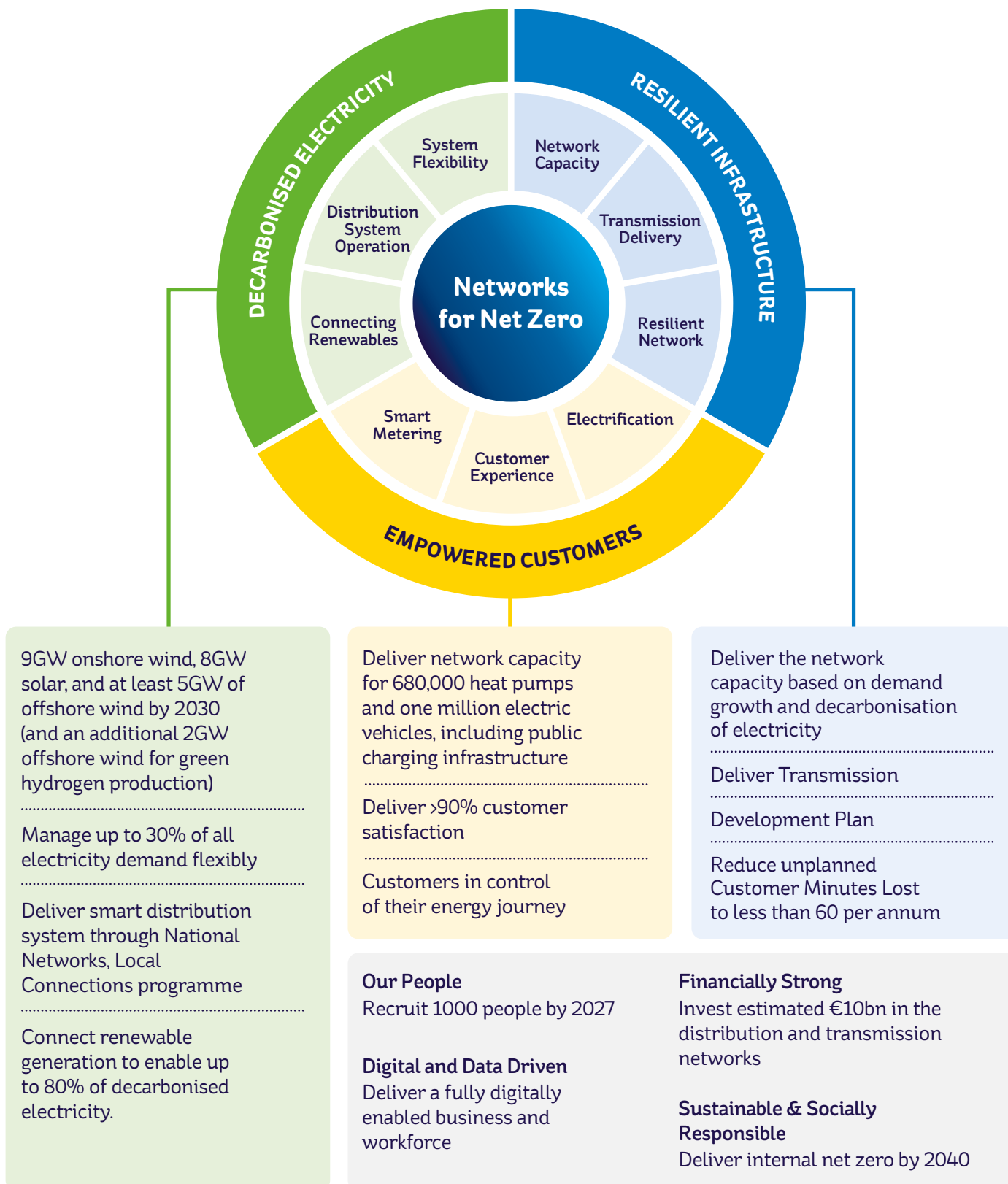
We know that change is happening at pace, and we are evolving our business processes, systems, and ways of working in anticipation of future network requirements. In anticipation of the changes ahead, and informed by the inputs above, we have structured our strategy around three key strategic objectives on which we will focus our efforts.

Our strategy is further underpinned by a suite of four foundational capabilities which will be critical to ensuring we are positioned to execute and deliver on our ambition. These foundational capabilities are:

- **Our People**
- **Digital and Data Driven**
- **Financially Strong**
- **Sustainable and Socially Responsible.**

These objectives and capabilities are illustrated in the following graphic:

## ESB Networks' targets for 2030 are:





## ESB Networks' Internal Environmental Strategy - 2021 to 2025

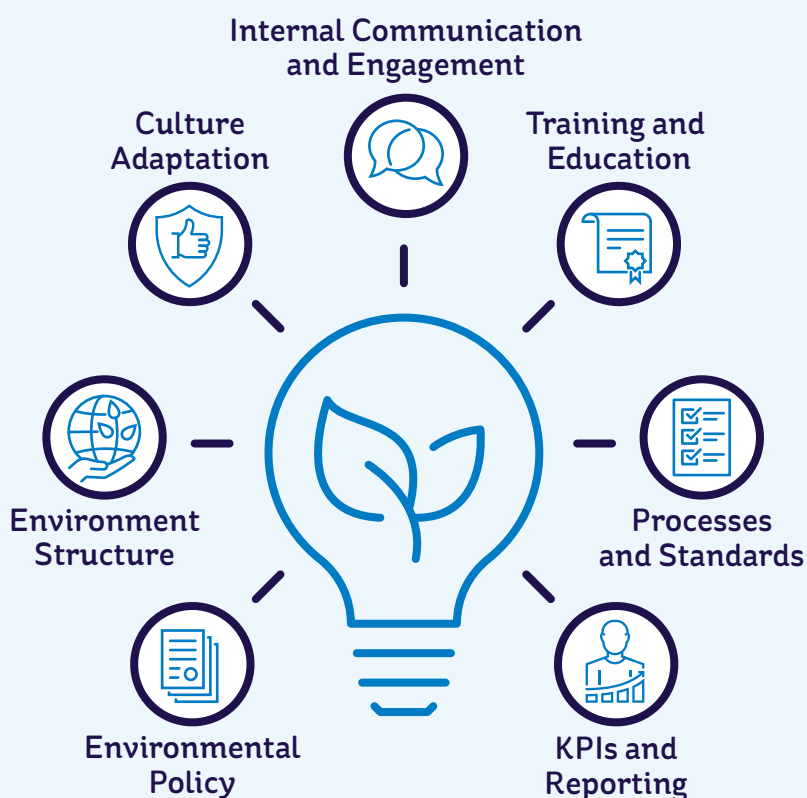
We continued to roll out ESB Networks' internal Environmental Strategy – 2021 to 2025 across Networks during 2023. This strategy is based on five commitments as they relate to the environment.

It ensures that individuals who are environmentally accountable are employed in an environmentally sound workplace (which includes asset integrity). Employees operate tools, equipment, vehicles, and machinery that are compliant with environmental standards, follow documented systems of work that prioritise the environment, and exhibit environmentally responsible conduct as the standard.

In 2023, ESB Networks continued to focus on achieving the objectives of this strategy, which were developed by a cross section of ESB Networks' staff. Some key achievements include environmental awareness training and monthly core briefs that have been rolled out to all staff in ESB Networks. Targeted internal systems of work and documentation were updated to ensure environmental consideration is included at key stages of work by our staff and our contractors. These achievements have raised awareness of environmental aspects of ESB Networks roles.



### Environmental Strategy Seven Strategic Enabling Priorities



The strategy is based on the following 5 commitments as these relate to Environment

People

Workplace

Tools, Equipment,  
Vehicles & Machinery

Systems  
of Work

Behaviours

## Stakeholder Engagement

Engagement with our external stakeholders is integral to our day-to-day operations and is at the heart of everything we do at ESB Networks.

Our Stakeholders are defined as the individuals, groups of individuals, communities or organisations that affect (or could be affected by) our activities, products or services, and associated performance. Given our central role in the electricity industry in connecting over 2.4 million homes, farms, communities, and businesses around the country, we have a very broad range of stakeholders. Since considerable changes are taking place within the energy sector at an unprecedented scale, who we engage with and how is constantly changing.

We have developed this stakeholder wheel to help us better define and categorise our vast stakeholder base.





## Why we engage

Engaging with our customers and stakeholders is crucial to how we shape the future of our business and the electricity network. It helps us develop new initiatives which benefit the communities and industries we serve, as well as improving and enhancing existing ones. It shapes our business planning and strategic priorities and informs the decision-making process. Engagement with wider industry accelerates innovation within the business and the energy sector through shared learnings and ideas.

Good engagement benefits our customers, stakeholders, the wider community, and our business. When we engage with each other in a genuine two-way conversation, we can learn from each other, enabling us to make better decisions and work towards mutually beneficial outcomes. Ultimately, better engagement builds stronger relationships and gives us greater opportunities to achieve our business objectives. The earlier we engage with each other, the more likely these benefits will be realised. For our customers and stakeholders, engagement provides opportunities to contribute to projects and programmes, have their issues heard and inform the decision-making process. It gives these groups better understanding of our priorities, increased ownership of outcomes and greater capacity to engage in how energy will be used in the future. For ESB Networks, engagement provides insights by understanding changing priorities, tapping into specialist or local knowledge and gives us the opportunity to 'road-test' proposals or initiatives with stakeholders. It helps us identify emerging issues and risks and is central to us meeting our statutory obligations and better meeting customer needs.



## Our Engagement Performance in 2023

In January 2023, we launched, in collaboration with our stakeholders, our [Networks for Net-Zero](#) strategy, which outlines our commitment to futureproofing Ireland's electricity network and making the country's goal of net zero by 2050 a reality. This will require deploying innovative solutions today which are scalable to meet the electricity needs of the nation by 2040. The Networks for Net Zero Strategy will underpin an energy transition that will enable electricity customers to adopt new technologies, products, and services in the decades ahead, changing how they generate, store, and consume electricity.

We recognise that the transition to a net zero future will have a significant impact on our customers' day-to-day lives and success will not be achieved without ongoing active customer and stakeholder participation, engagement, and support.

Our annual stakeholder publications, such as [ESB Networks' Stakeholder Engagement Strategy & Plan for 2023](#) set out our approach to stakeholder engagement, our engagement priorities and activities and provides stakeholders with pathways to engage with us. We greatly encourage all our stakeholders to continue to engage with us through these pathways. Our most recent publication [ESB Networks' Stakeholder Engagement Report 2023](#) describes our stakeholder engagement in 2023 and shows how it has helped inform our plans and delivered activities aimed at ensuring that the network is prepared to meet the changing needs of our customers and to achieving our vision for a clean electric future. We demonstrate how we are committed to continually improving our engagement performance, how engagement is integral to our day-to-day operations and is at the heart of everything we do at ESB Networks.



## Our Engagement Performance in 2023 continued

For instance, in relation to our environmental priorities for 2023, we recognise that our activities have environmental impacts and that we have a responsibility to manage these impacts in a manner that provides a high level of protection for the natural environment, while also contributing to the sustainable development of our economy.

In 2023 we engaged with relevant stakeholder groups including the Local Authorities, EPA, Waterways Ireland, Inland Fisheries, National Parks & Wildlife Services, Irish Water, Transport Infrastructure Ireland and EirGrid. We continued to enhance the 'Climate Action, Sustainability and the Environment' section of our website to ensure that ESB Networks is open and transparent in communicating its environmental performance. The environmental webpages received approximately 2,453 views in 2023.

We reported to CRU on our Environmental Performance and published our 2022 Annual Environmental Performance report on our website, demonstrating our commitment to transparency.

In 2023 we maintained certification of our ISO 14001 Environmental Management System following a series of surveillance audits by independent external specialist auditors. We also continue to attend and support working groups with external stakeholders in relation to environmental topics, such as biodiversity.

ESB Networks chaired the Environmental section of 2023's Energy Networks Association (ENA) Safety, Health and Environment (SHE) Management Conference in partnership with the ENA and wider utility industry, in Croke Park.





# 4

## Delivering a Low Carbon Future



## ESB Networks and the Climate Action Plan

Climate Action continues to be central to Government policy and this is reflected each year through an updated Climate Action Plan (CAP), which sets out the key actions to be delivered to achieve Ireland's carbon reduction ambitions by 2030 and to reach net zero emissions no later than 2050. It must also deliver the legally binding economy-wide Carbon Budgets and Sectoral Emissions Ceilings which were approved by Government in 2022. The ceiling for the electricity sector is one of the most stretching with a 75% reduction required by 2030.

This national ambition is further enhanced and complemented by a broad range of legislation at European level to tackle emissions in transport and heat, ensure sufficient EV charging infrastructure, while accelerating timely renewables delivery and empowering customer participation in the energy system. This is mainly through the requirements set out in the Clean Energy and Fit for 55 legislative packages.

A critical mechanism to achieve these targets is the electrification of heating and transport while significantly ramping up the amount of renewables on the electricity system to 80% by 2030 and ensuring that the system is both flexible and resilient. The electrification of heat, transport and our economy will see our customers adopting low carbon technologies such as heat pumps, electric vehicles, and microgeneration such as solar PV. To enable this, the role of the DSO is changing and ESB Networks is designing the products and systems to allow citizen and community participation in the future energy system.

Delivering this is going to require a challenging transformation of our network, our systems, and our approach. The sustainable social and economic development of communities, businesses, Ireland's climate action response and transition to net zero are all dependent on ESB Networks delivering our purpose through to 2030 and beyond. ESB Networks is investing in smart meters and extensive digitisation, adding additional capacity through network reinforcement, connecting increasing quantities of microgeneration, mini-generation and small-scale generation, and establishing the systems to enable active participation by customers who choose to take a full and active role.

Since the first CAP in 2019, and through further iterations in 2021 and 2023, ESB Networks has delivered all our lead actions on target. In addition, we have actively and positively supported the progress and delivery of many other actions through significant engagement with a range of stakeholders including DECC, CRU and EirGrid. In the 2023 plan, ESB Networks was assigned as the lead for three actions and a key stakeholder in a further 17 actions. All our lead actions due in 2023 were delivered on time.

The Irish Government published CAP 2024 in December 2023. ESB Networks again is key to the delivery of many elements of the plan including the delivery of actions across the Electricity, Transport and Climate Adaptation sectors. We will continue to collaborate with relevant stakeholders throughout 2024 to deliver these actions.



## Connecting Renewable Energy

ESB Networks' mission is to play a leading role in Ireland's transition to a low carbon economy and to provide secure, sustainable, reliable electricity in an affordable manner for all customers. With the Government's Climate Action Plan having ambitious targets for increased penetration of renewable energy by 2030, ESB Networks has continued its key role of connecting renewable generation to our Network to help decarbonise electricity.

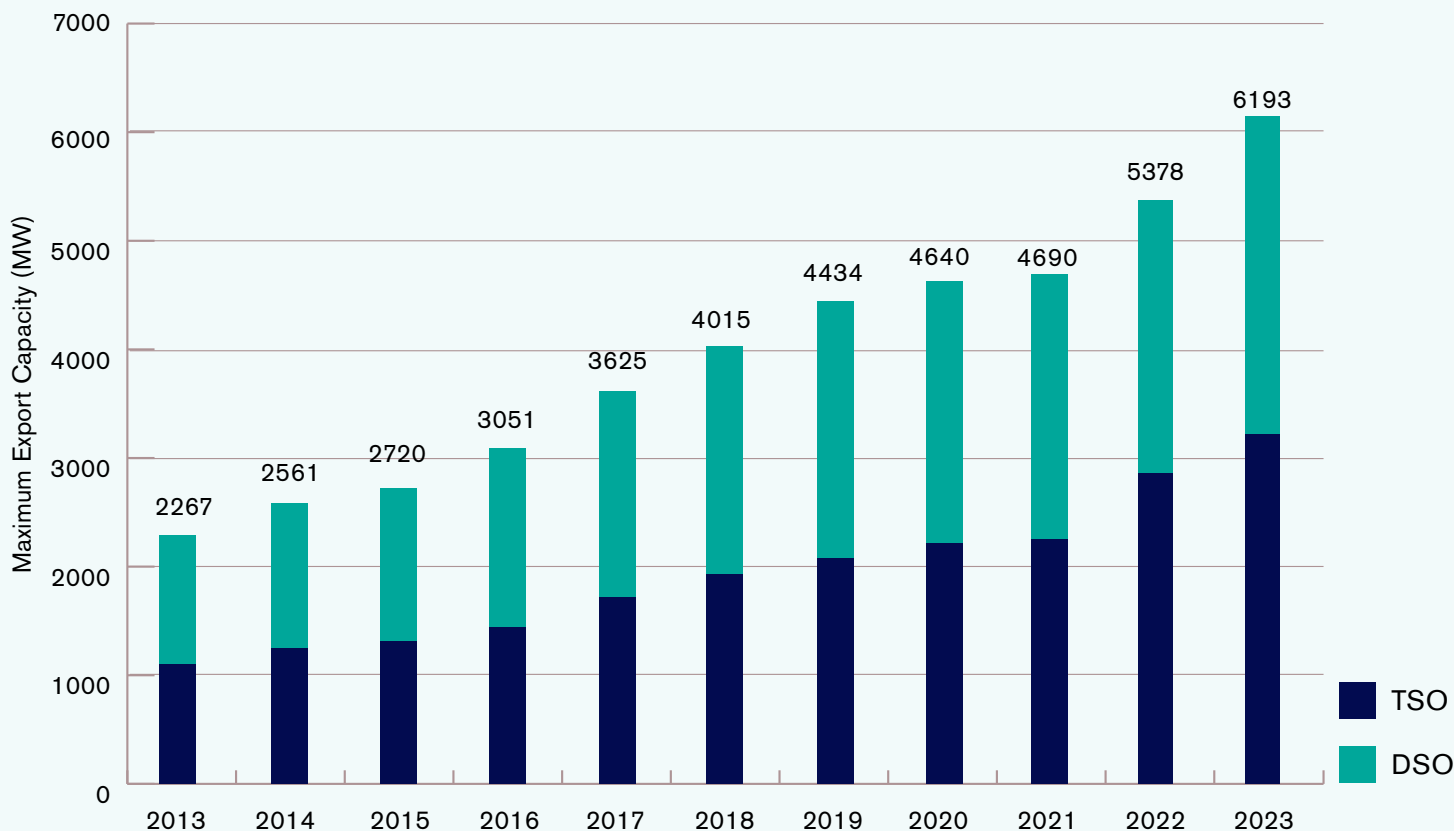
ESB Networks' Renewables Team performed strongly in 2023, having connected 414 MW of grid scale wind and solar.

At the end of 2023, ESB Networks had enabled 6,193 MW of Renewable Energy; 4,814 MW of wind energy generation, 582 MW of grid scale solar, approximately 400 MW of roof top, mini, micro and small-scale solar, with the remaining capacity coming from other renewable sources. 2,975 MW are connected at Distribution (DSO) level and 3,218 MW connected at Transmission (TSO) level (see Figure 1). ESB Networks has now connected approximately 1 GW of solar to the grid.

ESB Networks conducted scoping, design and construction works associated with the pipeline of customer projects for connections throughout 2023. Many of these customer projects are participants in RESS-1, RESS-2 & RESS-3, the Government Renewable Energy Support Scheme.

### Connected Renewables

Figure 1 - Renewable energy connected to the electricity system (2013- 2023)



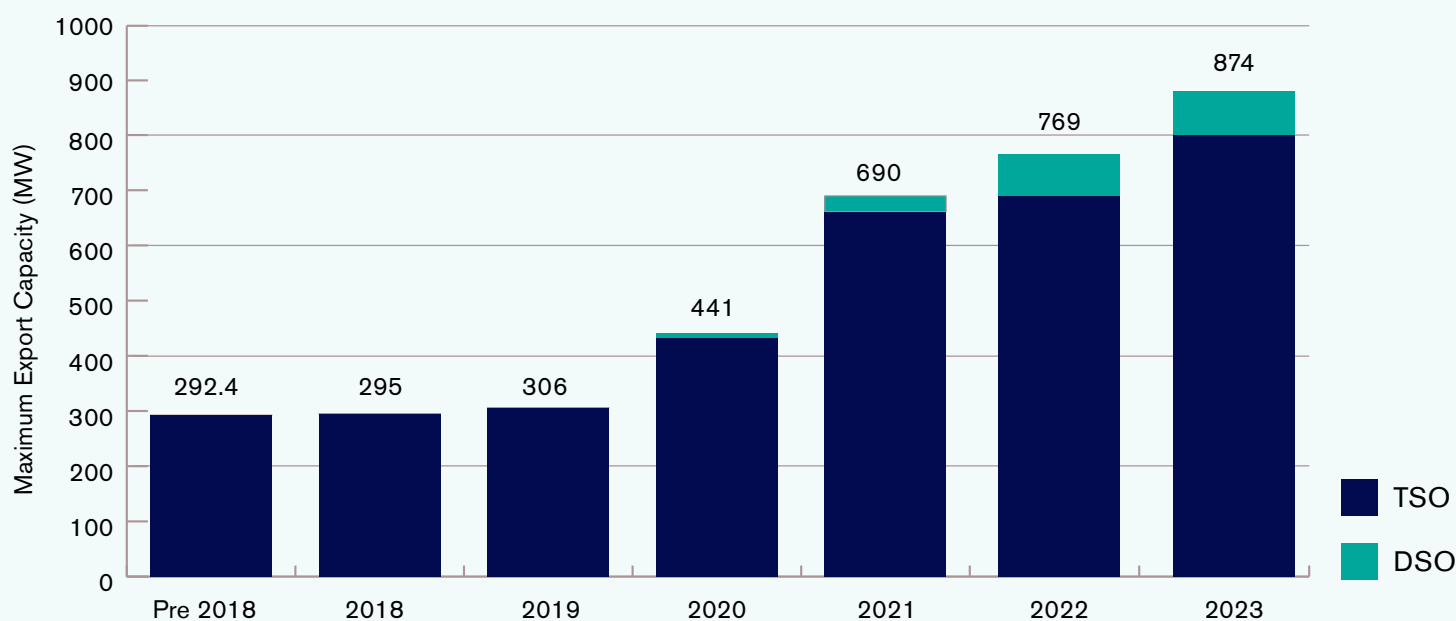


## Connecting Renewable Energy

ESB Networks connected two large transmission system energy storage projects for 2023 totaling 105 MW, resulting in a total energy (battery and pumped hydro) storage capacity of 874 MW on the network by the end of 2023 (see Figure 2). Energy storage provides system support services to the electricity system operators to enable increased penetration of renewable energy on the grid and to store renewable energy when the supply of energy exceeds demand.

### Connected Energy Storage

Figure 2 - Energy Storage (MEC) connected to the electricity system



\* Energy Storage includes Pumped Storage, Flywheel and Battery Energy Storage Connections

## Connecting Renewable Energy continued

### Microgeneration

ESB Networks is committed to facilitating the rapidly increasing level of microgeneration connections to the distribution network. Customers who wish to install microgeneration and export excess electricity onto the electricity network are referred to as prosumers. As Distribution System Operator, ESB Networks has an important role to play in facilitating this transformation. We aim to support our customers along each stage of the process as they adopt small-scale low carbon technologies and make the transition towards being active participants in the energy system. To date, ESB Networks has facilitated 79,000 microgeneration connection applications to the electricity network providing approximately 300 MW of green energy. With 33,000 of these connections registering in 2023 alone ESB Networks has been successfully processing and registering an average of 700 applications per week.

(See: [Micro-generation on esbnetworks.ie](https://www.esbnetworks.ie/micro-generation) for more details)

### Mini-Generation

In December 2021, ESB Networks announced the launch of its new simplified mini-generation application process for larger customers generating up to 50 kW (e.g. farms; business properties; community buildings; etc). This equates to, for example, between 18 and 150 typical solar panels. (See: [Mini-Generation on esbnetworks.ie](https://www.esbnetworks.ie/mini-generation) for more details). The new mini-generation process was initially launched on a pilot basis in line with Ireland's 2030 Climate Action Plan. Feedback and learnings from the pilot are now being used to enable the transition to the enduring process. The new streamlined process ensures that it is even simpler for our customers who generate their own renewable electricity to export their excess electricity to the local network and therefore play a more active part in connecting Ireland to a clean electric future. Shortly after the launch by ESB Networks of the mini-generation pilot, the Irish Government also introduced the Microgeneration Support Scheme (MSS) and Clean Export Guarantee (CEG) which enables these customers to be remunerated for exporting their excess electricity.

### Mini-Generation Connections Pilot

- Streamlined process for customers exporting up to 50 kW
- By the end of 2023 a total of 1,763 applications have been received which will enable over 49 MW of renewable generation
- So far 501 mini-generation customers have fully completed their installations connecting over 16 MW of generation to the system
- The pilot process is currently transitioning to an enduring solution

## Connecting Renewable Energy continued

### Small Scale Generation

On 30th September 2022 ESB Networks launched its new simplified Small Scale Generation (SSG) application process for larger sites generating up to 200 kW ([See Small Scale Generation on esbnetworks.ie](#) for more details). The new process was initially launched on a pilot basis in line with Ireland's 2030 Climate Action Plan. Feedback and learnings from the pilot will be used to inform the enduring process. The new streamlined process will ensure that it is even simpler for our customers who generate their own renewable electricity to export their excess electricity to the local network and therefore play a more active part in connecting Ireland to a clean electric future. The Irish Government introduced a SRESS Support Scheme in 2023 enabling these customers to be remunerated for exporting their excess electricity.

### Small Scale Generation Connections Pilot

- Streamlined process for customers exporting up to 200 kW
- By the end of 2023 a total of 240 applications have been received which will enable over 27 MW of renewable generation
- So far 64 small scale generation customers have fully completed their installations connecting over 7.5 MW of generation to the system
- The pilot process is currently transitioning to an enduring solution

### Enduring Connection Policy (ECP)

ESB Networks successfully completed the processing of over 50% of the Enduring Connection Policy 2.3 (ECP-2.3) generator applications in 2023, with the remaining applications scheduled to be completed by April 2024. The ECP-2.3 batch included 71 projects across each of the categories including a mix of wind, solar, battery and auto-producer customers.

The ECP-2.4 application window opened in October 2023, and the applicants are currently being finalised for processing in 2024.



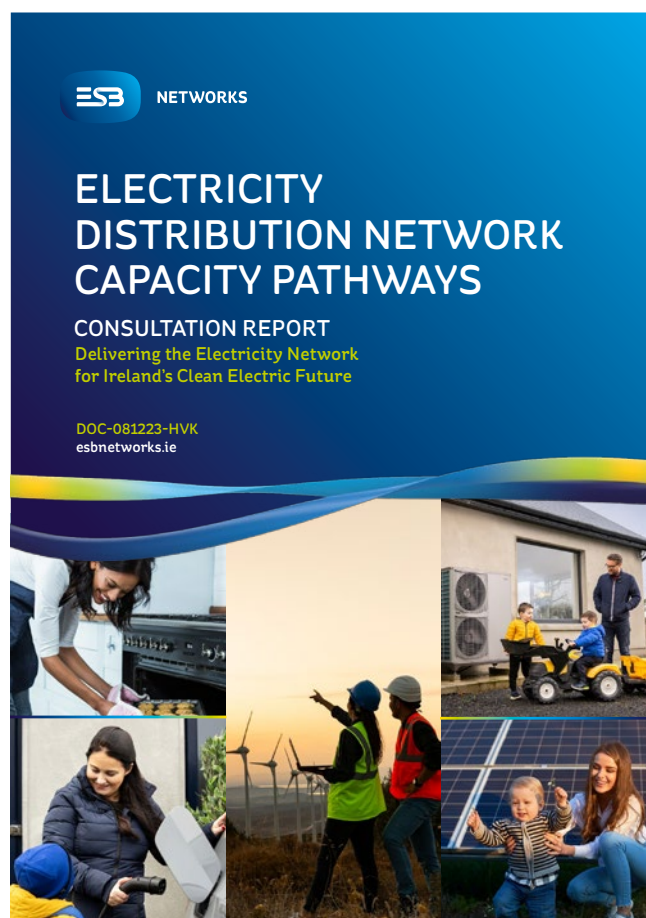
## Connecting Renewable Energy continued

### Future Grid Connections for Small Scale Renewables

Generation capacity and network reinforcement costs remains a major challenge for community and small-scale renewable projects, which do not have the economy of scale advantages of larger renewable projects. CRU is in the process of drafting a new electricity generation and system services connection policy which will include policy on connection of small-scale generation and community energy projects with a decision expected in June 2024.

ESB Networks is developing renewable hubs which have the potential to create additional network capacity for small scale renewable projects. The Renewable Hubs pilot aims to build network capacity in areas where there is a pipeline of renewable energy projects and where customers are charged on a per kVA basis for capacity utilised. Further information is available in the [Renewable Hubs Pilot](#).

In addition to traditional network development, ESB Networks is progressing several technical solutions to address significant network generation capacity needs across the country. ESB Networks is in the final stages of developing proposals to amend the existing planning standards to increase the firm capacity in two transformer stations where both demand and generation are connected and the introduction of a Solar Diversity Factor. Subject to approval, these initiatives have the potential to release up to 1.7 GW of generation capacity on the existing network assets. ESB Networks is also piloting the extension of the existing non-firm/flexible access offering which could potentially release up to a further 1.4 GW of capacity. Further information on these proposals is available in the [Electricity Distribution Network Capacity Pathways Report](#).



## Innovation

ESB Networks has a strong history of innovation, and as a result we continue to develop one of the most progressive electricity networks in the world. We will continue to play a leading role in delivering the Government's Climate Action Plan.

Our Networks for Net Zero Strategy commits us to deliver on our part to achieve the targets set out for 2025 and 2030. Innovation is a key enabler of our strategy to continuously strive towards a sustainable low-carbon energy future and delivering a net zero ready distribution network by 2040.

We will continue to innovate to develop the distribution network and supporting systems to meet the changing needs of our customers as we enable decarbonisation of the Irish economy and society. In addition, we continue to collaborate on innovation with the TSO to enable the development of the transmission network and through the delivery in line with our strategic objectives.

Over the past decade, ESB Networks has invested over €7bn to make the electricity network smarter and more resilient, and to facilitate distributed energy assets like battery storage, wind farms and EVs. This has enabled intermittent renewable assets, like wind farms and solar plants, come on stream without undermining the quality of electricity supply. We will invest approximately €10bn in the distribution and transmission networks to deliver on our 2030 targets.

In ESB Networks, we are very clear that the challenge of enabling a low carbon Ireland powered by clean electricity cannot be delivered without extensive and collaborative innovation. To that end our Innovation Strategy sees us delivering in line with our strategic objectives:

- **Decarbonised Electricity**
- **Resilient Infrastructure**
- **Empowering Customers**

There is a significant wave of innovation downstream where customers interact with the electricity system throughout our industry. Microgeneration technologies like solar PV are available making it possible for future customers to potentially sell power back to the grid; the Internet of Things is connecting everything from energy assets to sensors in the home and digitally connected customers are able to manage their energy use remotely through smart controls. Battery storage and electric vehicles are opening up the potential of large-scale storage for electricity that could support increased penetration of renewable energy on the grid. The possibilities are interlinked and extensive.

We continue to deliver on innovation to support and enable communities to adopt low carbon technologies and enable the electrification of heat and transport.

In 2023, over 95 innovation ideas were examined in ESB Networks; we initiated seven new projects and have 28 projects which are in active delivery. We also transitioned a number of innovation projects and learnings into business as usual, such as the On-Street Charging Customer Interface and the Positive City Exchange both of which are part of the plan working towards net zero. We collaborated with over 90 external organisation partners on innovation concepts with an estimated potential benefit of €35m. It is through continued collaborative innovation and partnerships that we will develop a future electricity network which empowers our customers, delivers value for money and provides a sustainable energy system for all customers.

## Innovation continued

Below are some of the ongoing projects which we believe will have a positive impact on the environment.

### Sustainable Backup Power Solutions Project

#### Scope:

ESB Networks deploy diesel generation for temporary and emergency backup scenarios. Diesel generation has been used over the last 50 years to provide temporary generation during substation maintenance, upgrade works, and for continuity purposes during network outages. In addition, emergency diesel generation is installed at over 50 ESB Networks' depots to provide backup power in the event of grid blackouts.

#### Environmental Impacts:

Moving away from diesel generators towards Sustainable Backup Power Solutions such as Battery Energy Storage Systems (BESS), hydrogen (H<sub>2</sub>) fuel cells, and Hydrotreated Vegetable Oil (HVO) marks a significant leap towards environmental sustainability. This transition not only promises a substantial reduction in carbon dioxide and other greenhouse gas emissions but also addresses potential environmental concerns. Diesel generators, traditionally used for backup power, contribute to air pollution, emitting harmful pollutants including nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), and volatile organic compounds (VOCs), which are detrimental to both human health and the environment. By adopting cleaner energy sources, we can significantly mitigate these effects.

The shift towards BESS and hydrogen fuel cells exemplifies a move towards zero-emission backup power solutions. BESS systems store electricity generated from renewable sources, offering a clean, reliable power supply during outages or peak demand periods without any direct emissions. Hydrogen fuel cells, on the other hand, produce electricity through a chemical reaction between hydrogen and oxygen, with water vapor as the only by-product, presenting a clean alternative to fossil fuel-based power generation.

Beyond reducing emissions, transitioning to sustainable backup power solutions minimises the risk of soil and water contamination from diesel spills, which can have negative impacts on local ecosystems. It also lowers noise pollution, a common issue with diesel generators, thereby reducing the impact on wildlife and improving the quality of life for nearby communities.

The move towards sustainable backup power supports the growth of green technology industries, driving innovation in clean energy solutions and creating jobs in the renewable energy sector. This transition not only aligns with global efforts to combat climate change but also supports economic development through the promotion of sustainable industries.

The adoption of Sustainable Backup Power Solutions offers a multifaceted approach to environmental protection, addressing climate change, air quality, noise pollution, and ecological integrity, thereby playing a crucial role in the energy sector's journey towards net zero 2040.



## Innovation continued

### Industrial Heat Pumps Project

#### Scope:

The NEXSYS heat pump project aims to comprehensively analyse the implications of incorporating an industrial heat pump into the electricity network. The scope includes a detailed assessment of the impact on the electricity network, considering factors such as load curves, peak demand, power losses, voltage drop, power quality, and reactive power requirements. The broader analysis encompasses the examination of the industrial heat pump, its size, industry applicability, and interactions with other systems like storage, supplementary heating, and waste-heat systems. Additionally, the project involves a review of relevant industry standards and an in-depth analysis of heat pump performance and load capacity scheduling.

#### Environmental Impacts:

Industrial heat pumps represent a pivotal technology in the shift towards sustainable industrial processes. By harnessing ambient heat from the air, water, or ground, these systems provide an energy-efficient method for heating and cooling, significantly reducing the industrial sector's reliance on fossil fuels. This transition away from carbon-intensive energy sources is crucial for reducing industrial carbon emissions, a major contributor to global greenhouse gas emissions.

The efficiency of industrial heat pumps is measured by their coefficient of performance, which often exceeds that of traditional heating methods, meaning they can produce more heat energy than the electrical energy they consume. This high efficiency leads to a substantial decrease in energy demand for industrial processes, contributing directly to the reduction of overall energy consumption and the environmental footprint of industrial operations.

The integration of industrial heat pumps into existing systems also encourages the utilisation of waste heat, further enhancing energy efficiency. By recycling heat that would otherwise be lost to the environment, these systems minimise waste and maximise resource use, aligning with principles of circular economy and sustainable development.

The adoption of heat pump technology can stimulate innovation and growth within the renewable energy sector, driving down costs through economies of scale and making sustainable heating solutions more accessible to a wider range of industries. This can produce a broader shift towards renewable energy sources, contributing to the decarbonisation of the energy grid and supporting global efforts to combat climate change.

In addition to their direct environmental benefits, industrial heat pumps also contribute to energy security and independence by reducing dependency on imported fuels. This enhances national and regional resilience to energy supply disruptions and fluctuations in fuel prices.

The environmental impact of integrating industrial heat pumps extends beyond immediate reductions in emissions and energy consumption. This project represents a comprehensive approach to sustainable industrial practice, fostering innovation, improving public health, and contributing to the resilience and sustainability of the global energy system.

## Innovation continued

### Investigate Statistical Contributions from Distribution Generation: F-Factors Project

#### Scope:

F-factors are a statistical means to account for the contribution of embedded generation to system security and have been utilised in the UK by some DNOs. F-factors are used in planning studies to propose a basis for setting assumed generation output in order to show a reduced requirement for network assets to meet demand but are applied differently depending on whether a generator is not in control of its fuel source (intermittent generation) or whether a generator can control its fuel source (non-intermittent). This project adopts a 'Fast Follower' approach to consider methodologies in other jurisdictions and how ESB Networks' security of supply standard might be enhanced to include the contribution from embedded generation connected to the network.

#### Environmental Impacts:

Recognising the contribution of embedded generation like solar PV and wind can lead to a more efficient and renewable-focused grid. By statistically accounting for the input of these embedded generation sources, energy providers can optimise grid operations to minimise the necessity for constructing new, often carbon-intensive, network assets. This optimisation reduces the environmental footprint associated with the extraction and processing of raw materials, as well as the land use changes and habitat disruption that come with building new infrastructure. Furthermore, the project encourages a shift towards a higher penetration of renewable energy in the energy mix. This shift is instrumental in lowering the dependency on fossil fuels, significantly cutting down on greenhouse gas emissions, and reducing the occurrence of pollution-related health issues. It also has a ripple effect on the market, potentially boosting the development and adoption of renewable technologies and supporting a broader transition to a low-carbon economy.

The incorporation of F-factors into planning studies enhances the precision of load forecasting and asset requirement projections. With a more accurate assessment of how much energy embedded generators contribute to the grid, planners can better gauge the actual demand on central power plants, leading to a more balanced and environmentally friendly energy production. This harmonisation of supply and demand is a crucial step towards achieving net-zero emissions, as it ensures that energy is generated more sustainably and consumed more efficiently.

Further details are available on our website: [Innovation in ESB Networks](#).



## Electrification

At the end of 2020, ESB Networks published our Electrification of Heat & Transport Strategy.

We recognised then the pivotal role that the electrification of heat and transport can make to lowering Ireland's greenhouse gas emissions and achieving our targets for decarbonisation of the Irish economy for 2030 and beyond towards net zero. The distribution system will be the critical link between customers electric vehicles and heat pumps and the zero carbon, renewables-based generation that will power them into the future. Therefore, it is our core belief that it is essential that the distribution system will not be, in any way, an impediment and should instead be a key enabler of customer adoption of electric vehicles and heat pumps.

Our Electrification Strategy outlined our level of ambition in facilitating the electrification of heat and transport and clarifies what our position and objectives are across a range of customer, technical, commercial and educational areas. This document set the direction for the objectives we have undertaken to deliver for our customers in order to enable, empower and ensure our networks can cater for the whole range of expanded needs and demands relating to Low Carbon technologies (LCT) uptake in Ireland, in particular additional power through-put that such electrification infers.

Our strategic commitments in this space relate to:

- **Ensuring ESB Networks' policies and standards support electrification**
- **Engaging, enabling and empowering our customers to electrify**
- **Ensuring LV network readiness**

### Deliverables

As the delivery of our Electrification of Heat & Transport Strategy is inherently linked to ESB Networks' Net Zero Strategy, the direction and delivery to 2030 (and achieving net zero) of priority actions is shaped and influenced by the whole business.

Some noteworthy objectives that have been achieved are included here, in particular leading the interpretation of the defined ESB Networks' Net Zero Strategy actions to business for delivery and driving of same:

- Connection Screening – we have launched a new customer service which is connection screening for EV charging infrastructure developers. The value of this service is early-stage information on the likely availability of capacity in locations along with indicative costs. This allows these developers to make more informed decisions about which site to progress for development.
- Driving the key business insights and analysis of this connection screening function with respect to customer needs and network development strategy.
- We are designing an LCT Register.
- We have supported in the development of the recently published ESB Networks' Distribution Network Investments Capacity Pathways report.

## Electrification continued

### LV System – moving the dial on LV investment

Since ESB Networks' current PR5 commenced, there is a focus on the likely impact of electrified transport and heat, on the LV network. In this timeframe we have commenced the proactive and planned LV system improvement work to accommodate this on our network.

As we are anticipating that in the next number of years, LCT adoption will substantially increase, we are now also making provisions for microgeneration impacts on our LV network. ESB Networks is working as part of various government steering groups to support the acceleration of electrification of heat and transport, and we are evolving our forecasting tools to include all new data sets as they emerge and accelerated scenario assumptions.

We are basing our approach to network readiness and the development of the distribution network on what we refer to as the FIMSS methodology: Forecast, Identify, Monitor, Smart toolkit and Strengthening of the network.

Using our FIMSS methodology we are using novel forecasting techniques based on innovative data analytics to help reduce the uncertainty about the locations and uptake rates for the electrification of heat and transport. We use these forecasts to help us identify appropriate locations for enhanced network monitoring, so as to support the need and allow us to plan a programme of activity to address the network challenges. We then seek to use our smart solutions toolkit where possible to provide the additional capability within the distribution system. We have developed and will continue to develop new tools and procedures to enable the use of new innovative technologies and concepts to solve constraints on the network using the existing asset base.

We then move to strengthen the network by conventional reinforcement when smart options have been exhausted. As our innovation project portfolio and learnings develop, we will continue to explore relevant non-wires alternatives to conventional reinforcement, that will see new solutions added to our smart toolkit.

Despite the uncertainty factor that remains regarding the potential uptake rates and crucially the timing of electrification across the national electricity distribution system, the FIMSS methodology allows us to adopt a clear and consistent approach to ensuring network readiness in a timely and cost-effective manner. Should electrification uptake levels grow at a higher rate than our current assumptions, we are confident that this methodology will also be able to provide advance warning of same, again supporting efficient investment on the distribution network as a principle of ESB Networks enabling mass electrification.





## Smart Metering Project

The National Smart Metering Programme was established by CRU and is the delivery plan for the roll out of smart meters across Ireland. ESB Networks has been tasked with the delivery of the roll out programme, which involves upgrading all of Ireland's electricity meters to smart meters. Ireland's smart meter upgrade programme is part of the national Climate Action Plan. Smart meters will support Ireland's transition to a low carbon future by enabling the development of smart grids, and supporting the electrification of heat and transport, local renewable generation, and microgeneration.

Since 2021, electricity supply companies have been offering new smart products and services, which enables the customer to shift some of their consumption to times of the day when electricity is cheaper.

During 2023, ESB Networks continued the replacement of over 2.4 million electricity meters in homes, farms, and businesses with next generation smart meters to support the transition to a low carbon electricity network. In 2023, over 450,000 smart meters were installed by almost 400 installers across the country. The programme also reached a significant milestone of 1.5 million smart meter installs in November 2023.

The upgrade to smart meters will bring many benefits to customers, the environment, and the economy and is a key enabler of the Government's Climate Action Plan, specifically regarding microgeneration and the electrification of heat and transport.



## Smart Metering Project continued

The following has been delivered in support of these objectives:

- The programme continued to safely install smart meters, across every county in Ireland during 2023. 1.557 million smart meters were successfully installed by the end of December 2023. This means that over 1.5 million customers now have access to smart tariffs and services.
- ESB Networks delivered the IT upgrades required to support the delivery of smart services and tariffs by electricity supply companies in February 2021. These products provide customers with more information on their energy usage and allow them to move some of their consumption to times of the day when electricity is cheaper. At the end of 2023 almost 300,000 customers were availing of smart services and/or tariffs.
- Smart meters are being remotely read and as of the end of 2023, our Smart Metering Operations Centre had issued more than 5 million billing reads to suppliers. This has resulted in a significant reduction in estimated bills and improved billing information for customers with smart meters.
- From September 2023, ESB Networks began installing smart Day/Night meters. By the end of the year, over 30,000 existing Day/Night meters were replaced with a Smart Day/Night meter. This means that customers on an existing Day/Night tariff with their supplier, were able to remain on their existing tariff but benefit from other smart services, such as accurate billing.
- Throughout 2023, the Smart Metering Programme continued to make improvements to the 'My Energy Consumption' application which enables customers to access their smart meter data via ESB Networks' new Customer Portal. This portal is a new customer channel offering self-serve digital services for our customers. The Customer Portal, including 'My Energy Consumption' is a key delivery in the strategy of empowering customers and providing consumption insights toward the goal of net zero.
- Throughout 2023, ESB Networks' Smart Metering Programme ran a range of localised and national media awareness campaigns across radio, print and social media. The Programme has also led industry forums and working groups ensuring alignment with supplier systems and process development and provided on-going support for supplier queries during 2023.



## National Networks, Local Connection Programme

The decarbonisation of Irish society relies on fundamental changes to how energy is generated and consumed. To enable these changes at the right pace and the right price, we need to make the connection between how renewable energy is generated, and how we use or store it. Every Irish home, farm, community, and business is being called on to play a part. The National Network, Local Connections Programme (NN,LC) was established within ESB Networks to work with, and for, customers to make this possible.

In the three years since the programme has been established, the urgent need to introduce and scale flexible demand in Ireland has accelerated. The original national targets for flexible demand (20- 30% by 2030) set out in Climate Action Plan (CAP) 2021 focussed on flexible demand as a means of ensuring electricity infrastructure had the capacity to support the connection of low carbon technologies like electric transport, heating and distributed generation. However, the accelerated Climate Action Plan 2023 target for 15-20% flexible demand by mid-decade acknowledged and sought to leverage the reality that the greatest impact that flexible demand can have is to accelerate carbon abatement and the percentage of renewable energy consumed. This means that our focus is increasingly on how flexible demand can begin to reshape the demand curve, beginning to follow our indigenous supply of renewable generation, rather than a narrower focus on providing short term responses to security issues.

As mandated in the Climate Action Plan, the CRU is developing an overarching Energy Demand Strategy (EDS) to provide a coherent approach to addressing emissions associated with electricity and gas demand. As the CRU develops Ireland's national EDS, it has identified ESB Networks' central role to enable and incentivise much of the demand flexibility and response required to meet our national targets.





## National Networks, Local Connection Programme continued

Following publication of CAP23 in December 2022, ESB Networks published its Networks for Net Zero Strategy in January 2023, with a clear commitment to Ireland's climate action policies and ambitions. Significant investment in flexibility will be key to delivering on this commitment. Flexible demand will be central to our ability to support the rapid increases in demand and distributed renewable generation across the Irish electricity system quickly, efficiently and securely. In line with the shift in emphasis in CAP23, we believe that flexible demand will be central to Ireland's ability to reduce carbon emissions, by enabling low carbon demand growth by matching new or changing energy demand with renewable energy generation. Finally, flexible demand, including, as facilitated, by storage, provides new opportunities for all customers and businesses to benefit from taking an active role in climate action.

### The NN, LCP in 2023

Some of the flexible demand initiatives delivered in 2023 by the NN,LC Programme are as follows:

- Beat the Peak initiatives, which aims to empower customers to take control of their energy usage made great progress this year with both Domestic & Business campaigns.
- The 2023 Beat The Peak Domestic campaign pilot ran until March last year with 18.5K participating customers. 24k behavioural changes were self-reported. We then built on the lessons learned in the pilot and launched a revised product in August 2023. We currently have 15k customers signed up to the product (correct as of February 2024). The Beat the Peak Team supported 16 energy events in 2023, issuing notifications to customers to reduce consumption at times when there was constraint on the electrical system. The campaign has educated people on how and when they use their energy throughout the day and empowers customers to take control of their usage.
- The Beat the Peak Business initiative went live on e-tenders and there has been significant expressions of interest to date. The scheme is open for applications until December 2024.
- The Distribution Markets and System Operation (DMSO) Community Toolkit, (which is a climate action target), was published in December 2023. The overall purpose of the DMSO function is to drive the transition to a high-renewable, low-carbon energy system with customers at the centre, while delivering operational excellence and ensuring security of supply. It will play a key role in helping to deliver targets set out in the Networks for Net Zero Strategy. A big part of this is adapting ESB Networks to deliver the 2023 Climate Action Plan target of 15 – 20% demand flexibility by 2025. The DMSO community toolkit contains resources created to support customers and communities in engaging with Flexible Demand. It provides 26 counties with tools to compare and contrast their renewable energy journey with other communities. There is more to come in this space over the coming year.



Is your business ready to **Beat the Peak**?

By signing up to ESB Networks' Beat the Peak Business programme, eligible commercial electricity users can now receive payment to reduce their electricity demand during the 4.30pm – 7pm commercial peak hours, when the margin between the electricity supply and generation is low.

To learn more about Beat the Peak Business, scan this QR code or visit [esbnetworks.ie/business](https://esbnetworks.ie/business)

**ESB NETWORKS**  
Energising your everything



## National Networks, Local Connection Programme continued

### The NN, LCP in 2023 continued

- Procurement is ongoing with flexibility service providers operating on congested MV feeders and associated 38 kV stations fed from the Mullingar 110 kV station. Mullingar is the first location in a national rollout of flexibility services.
- The Flexible Connections pilot is exploring the use of flexible connections to connect renewable generators involved in the government's Renewable Energy Support Scheme (RESS-1) at a quicker rate. To date, new business processes and controls have been introduced and there have been four connection offers made under ECP 2.1.
- CRU published a consultation document from ESB Networks titled "Demand Flexibility Product Proposal". This consultation seeks views from industry on ESB Networks' proposed plan to procure up to 500MW of medium-term flexibility products. This procurement is intended to form a component of the overarching National Energy Demand Strategy (NEDS) and will play an important in achieving Ireland's CAP targets.
- An initiative to display an accurate picture of the electricity network (LV Network Schematic), at any given point in time, successfully mapped 25% of the LV Network. This marked a major milestone for the Programme and helped us to meet CRU requirements.
- An initiative called "The Role of Early Adopters in Other Markets", which issues dynamic instruction sets to Demand Side Units to enable participation in TSO markets, went live, with an estimated unlocking of 679 MWh of additional capacity. As a result of this initiative, participants will be updated daily by ESB Networks and will only be prevented from participating on a given day if network conditions require it, rather than for the entirety of the summer as done previously.
- An initiative called Conservation Voltage Reduction (CVR) which aims to reduce peak electricity demand by supplying the same amount of energy to customers in a longer timeframe, went live last year. There was an initial roll-out to 43 transformers in 11 regional areas, achieving an estimated 8073 MWh energy savings. Further updates are planned this year.

## National Networks, Local Connection Programme continued

### Flexibility

In response to the commitment made in the Networks for Net Zero Strategy, ESB Networks has developed a set of evidence-based scenarios (central, no-storage, industry-led and consumer-led), each one a possible pathway to achieving 15%-20% demand side flexibility by 2025. The purpose of the scenarios was to allow us to build a baseline plan for enabling and incentivising high potential sources of flexibility to come to market. Based on the best available evidence at the time, the central scenario described the most likely pathway to achieving this target. However, each of the scenarios reflect a different way in which the step change needed to deliver on 2025 demand side flexibility and carbon abatement targets could be achieved.

We need customers and market participants to choose to participate in flexibility services, and thus moving from scenario analysis to action plan has depended on intensive co-creation and engagement with stakeholders and customer representatives. The CRU published the scenarios for 15-20% flexible system demand for public consultation as part of its Energy Demand Strategy call for evidence and elicited diverse and independent perspectives on the assumptions made, the key initiatives proposed and most importantly, the gaps in the scenarios which should be addressed.

Looking towards the future, the NN, LCP will continue to deliver new products and services by working together with industry, while taking onboard lessons learned as we move forward. This will continue to be delivered in partnership with stakeholders and organisations, with extensive customer research, education, and recruitment initiatives to build customer participation and awareness.

### Engagement

The NN, LC Programme's engagement with our stakeholders evolved and expanded in 2023. The NN, LCP Advisory Council meets three times a year and gives our stakeholders an early and ongoing opportunity to shape the direction of the programme. Our published call for input consultation, outlines the roadmap for delivering flexibility services and features the following strategic proposals:

- [Market Design](#)
- [Power Systems Requirements](#)
- [Commercial and Domestic Customer](#)
- [Behind the Meter Infrastructure](#)
- [15-20% Flexible System Demand](#)

We participated in many industry conferences and events and provided representation at the Eirgrid Citizens Energy Forum which are ongoing roadshows throughout the year at community townhalls across Ireland.

# 5

## Climate Action and Sustainability



## Overall Carbon Emissions

ESB Networks' carbon emissions can be categorised into three different scopes:

**Scope 1** – These are direct emissions from ESB Networks' owned or controlled sources. This includes our vehicle fleet, SF6 emissions from switchgear, diesel generators, and from buildings heated by gas.

**Scope 2** – These are typically indirect emissions from the generation of purchased energy, such as electricity used in ESB Networks' buildings. However, as ESB Networks is an electrical utility, this also includes Transmission and Distribution losses from the network.

**Scope 3** – These emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. This includes waste, capital goods, business travel, employee commuting, working from home and the upstream emissions of purchased fuels.

ESB Networks' annual carbon footprint for 2023 is detailed in the table below:

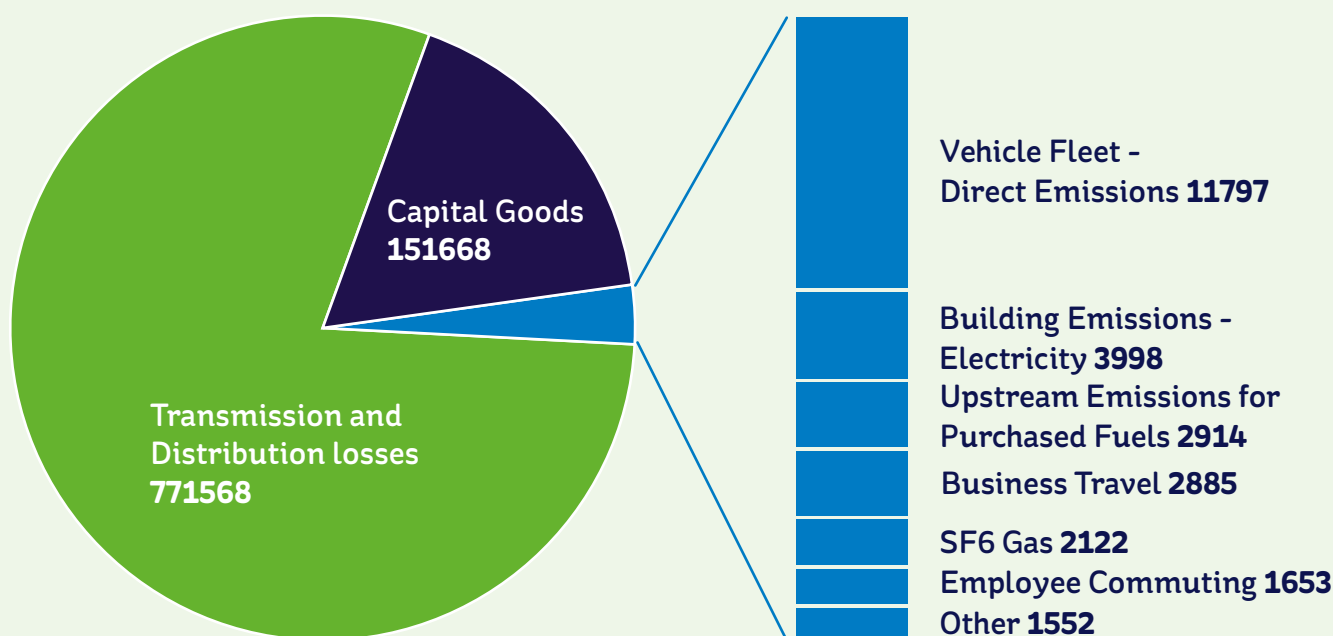
SCOPE	CATEGORY	TONNES OF CO <sub>2</sub> EQUIVALENT (2023)
<b>Scope 1</b>	Vehicle Fleet - Direct Emissions	11797
	SF6 Gas	2122
	Perfluorocarbon Tracer*	2.6
	Generator Emissions*	568
	Building Emissions - Heating Gas*	160
<b>Scope 2</b>	Building Emissions - Electricity	3998
	Transmission and Distribution Losses	771568
<b>Scope 3</b>	Waste*	207
	Capital Goods	151668
	Business Travel	2885
	Upstream Emissions for Purchased Fuels	2914
	Upstream Emissions of Gas Consumption in Buildings *	26
	Employee Commuting	1653
	Working From Home *	588

\*All of these categories will be represented by the 'Other' Category in Figure 3.



## Breakdown of ESB Networks' 2023 Carbon Footprint

Figure 3 – ESB Networks' CO<sub>2</sub> Emissions 2023 (Tonnes of CO<sub>2</sub> Equivalent (2023))



## Energy Usage – Buildings and Fleet

Compared to 2022, electricity usage in our buildings was down by 5.9% in 2023. Aided by a decrease in the carbon emission factor of electricity, this resulted in a 10.2% reduction in carbon footprint associated with our buildings. In ESB Networks, sustainable carbon-reducing measures are a feature of all current and future building upgrade works and include lighting, insulation, energy efficient heating systems, windows, and other works.

Vehicle fleet fuel consumption was lower by 0.4% in 2023 than 2022. However, due to a change in the manufacture of the biofuel used, associated carbon emissions of that fuel rose by 6.3%.

This fuel consumption reduction is attributable to newer and more efficient vehicles being brought onto the fleet, and an expansion of our electric vehicle fleet. Ongoing engagement with the vehicle industry continues to search for and identify viable low carbon vehicle solutions for the fleet, with most viable options addressing the area of smaller fleet vehicle replacement.

## Expansion of Energy Management System

In 2023, the external scope extension audit added five more ESB Networks buildings to the scope of the ISO 50001 certified Energy Management system (Ballina, Inchicore, Nowlan Park, Castlebar and Enniscorthy). This will see increased improvements in energy efficiency in buildings across ESB Networks' portfolio.

The ESB Networks' buildings refurbishment program commenced on five depot sites during 2023, pursuing a cost optimal approach to maximising efficiency and carbon emissions gains. Two depot deep-retrofit projects were completed over the course of 2023, delivering retrofit measures including heat pumps, mechanical ventilation and heat recovery, LED lighting, insulation and solar panels. The BER ratings for the completed projects are awaited. ESB Networks continues to progress the planning of the next phase of building energy improvements.



## Distribution Losses/20 kV Conversion Project

In the 1990s, ESB Networks began a program to convert its 10 kV network to 20 kV based on studies at the time which indicated that this was the most cost-effective and efficient way to address voltage and capacity issues on the rural MV network.

One of the primary benefits of converting the electricity network to 20 kV is that the thermal capacity is increased by a factor of two and voltage drop performance is increased by a factor of four. Voltage drop is the limiting criteria that determines circuit capacity of ESB Networks' typical rural networks. Consequently, circuit capacity is effectively increased by a factor of four. In effect, 20 kV is a vital enabler of demand growth that is anticipated as a result of low carbon government initiatives in relation to e-Heat and e-Transport. In addition, as conversion to 20 kV reduces losses by a factor of 4, the reduction in carbon footprint that can be achieved by extending this programme is significant. The conversion programme continued in 2023, with 618 kilometres of the network converted to 20 kV. To date, ESB Networks has converted 45.2% of the 10 kV Network to 20 kV.



6

# Minimising Our Impact on the Environment



ESB Networks is dedicated to conducting its operations in a way that enables us to take pride in our environmental performance. We acknowledge that our activities can have an impact on the environment and understand our duty to manage these impacts in a manner that prevents pollution and ensures a high level of protection for the natural environment.

## ESB Networks' Policy Statement on the Environment

[ESB Networks' Policy Statement on the Environment](#) approved by the Managing Director, ESB Networks, commits us to:

- Conduct our activities and those undertaken on our behalf in an environmentally responsible manner and in compliance with all legal and other requirements and company policies and standards related to our environmental aspects.
- Develop and maintain an effective environmental management system.
- Implement the environmental aspects of the Networks for Net Zero Strategy.
- Protect the environment and prevent pollution by identifying, managing and regularly reviewing the environmental aspects and impacts associated with our business activities, services and processes.
- Review our environmental programme regularly to ensure continual improvement in environmental performance and to provide a framework for setting and reviewing environmental objectives and targets.
- Act responsibly in our use of natural resources.
- Consider environmental matters in all planning and decision making.
- Make continuous efforts to maximise the energy efficiency of our networks, buildings and fleet.
- Minimise the production of all wastes as far as practicable, promptly recover all litter found at Networks locations and dispose of all residual wastes in a safe and responsible manner.
- Record and respond swiftly to all environmental incidents and complaints.
- Promote environmental and sustainability awareness among our staff, contractors and suppliers and embed these values in our investment and expenditure decisions.
- Provide the necessary training and support to staff on environmental matters relating to our business activities.
- Make this Policy Statement available to all our staff, contractors and interested stakeholders.



## Environmental Management System

Since 2010, ESB Networks has been using an Environmental Management System (EMS), which has received external certification for compliance with the ISO 14001 Standard. The EMS presents a structure that enables ESB Networks to methodically recognise, evaluate, prioritise, and handle environmental hazards connected with its business activities. The EMS encompasses all of ESB Networks' operations, services, and processes linked with managing the electricity network.

During 2023, ESB Networks' EMS underwent surveillance audits by an external Certification Body, against the requirements of the ISO 14001:2015 standard. This Recertification Audit sampled a large range of activities within the scope of ESB Networks' certification, including:

- Environmental Management Systems
- Underground Fluid-Filled Cables
- SF6 Gas Management
- Smart Metering
- Depots
- Garages
- Construction Crews
- Management of Woodpoles
- HV Stations
- Working in Environmentally Sensitive Areas
- Managing Environmental Incidents
- Waste Management
- Managing Contractors

No major non-conformances were identified by the External Auditors during any EMS Audits in 2023. ESB Networks continue to be certified to the ISO 14001 standard.



## Environmental Monitoring and Associated Improvement Works

In line with our EMS, ESB Networks continues to identify and respond to environmental matters across the business, undertaking environmental monitoring and associated improvement works where appropriate.

During 2023 regular ground water and surface water monitoring continued at ESB Networks' national wood pole storage facility in Killeel, Co Kildare. Following completion of a site specific General Quantitative Risk Assessment in 2022, a Detailed Quantitative Risk Assessment was undertaken in 2023 and the findings from same are now being progressed to the next stage of site improvement.

During 2023, there was engagement with the Environment Protection Agency (EPA) in relation to ESB Networks' Polychlorinated Biphenyls Management Plan requirements and associated updates on EDEN, the Agency's online reporting system.

In addition to bunding all new transformer installations in HV substations, during 2023, ESB Networks retrofitted bunding to nine existing legacy transformers and installed 16 legacy separators to European Norm 858 and Class 1 performance.

ESB Networks' Oil Storage and Transportation Improvement Project continued in 2023. Oil and diesel storage infrastructure upgrades were completed for HV Stations in Dublin and at Depots in Naas and Ballycoolin.

Bunded pallets and transformer oil containment bags were procured for storage of damaged oil-filled plant and equipment, chemicals and other identified hazardous materials. Mobile oil spill containment kits and consumables were provided at depots, HV stations, fleet and equipment garages and in relevant ESB Networks' fleet.

ESB Networks was the subject of a complaint under Section 108 of the Environmental Protection Agency Act 1992 relating to noise from transformers at Knockraha. The complaint was issued in the District Court in Cork in July 2021. Following a number of hearings, this complaint was struck out by the District Court on 27 October 2023. The complainants made an application to appeal this strike out in January 2024, but the application was refused by the District Court. ESB Networks and EirGrid intend to replace the existing transformers at Knockraha. The complainants have been allowed the right to re-enter their complaint if they believe noise is still an issue after the installation of these new transformers.

In 2023, sixteen requests for information under the European Communities (Access to Information on the Environment) Regulations 2007 – 2018 were received and decisions issued by ESB Networks. Of these sixteen decisions, four were appealed to the Commissioner for Environmental Information. ESB Networks has dedicated staff involved in the management of these requests to ensure all requests are responded to within the statutory timelines.

ESB Networks communicates with internal and external stakeholders on an ongoing basis.

## Managing the Environment During Construction

In line with our commitments to deliver PR5 by 2025 and in keeping with our ESB Networks' Networks for Net Zero Strategy, a sustainability approach is a key consideration in the design and construction stage of all our projects.

ESB Networks has remained committed to achieving timely and cost-effective project delivery, despite the demanding landscape of project planning and consenting. To this end, ESB Networks has made continuous improvements and adapted to the challenges of the environment to ensure successful project implementation.

At the planning and design stage for each project, multi-disciplinary technical teams work to develop projects and site-appropriate construction methodologies in order to deliver connections to customers, while protecting sensitive receiving environments. Detailed construction packs, capturing all of the requirements (e.g; planning consents) are provided to our external contractors who are increasingly important to project delivery. Project support through document review processes (e.g., inputs to Construction Environment Management Plans, Traffic Management Plans, Resource Waste Management Plans, etc.) is key to ensuring delivery on planning permission condition requirements. Oversight of construction projects is achieved through the appointment of specialists such as Environmental Coordinators, Project Ecologists, Ecological Clerks of Works, Project Archaeologists, etc.

The Waste Enforcement Regional Lead Authorities (WERLA) oversees enforcing waste regulations and ensuring the appropriate handling of construction and demolition waste at a national level. When requested, ESB Networks provides WERLA with data on their construction undertakings that could produce construction and demolition waste. This information is then passed on by WERLA to waste enforcement officers from local authorities throughout the country, who conduct inspections to verify that waste and materials are being properly managed at construction sites. This effort is part of a strategic approach to managing construction and demolition waste in the state.





## Biodiversity

ESB Networks continues to be highly cognisant of the importance of biodiversity in the Irish landscape, and to ensure its activities are managed in a sustainable manner in relation to wildlife and habitat protection. It is also aware of the requirements to identify potential impacts on biodiversity with the aim of avoiding or mitigating these impacts, and where feasible, works to enhance biodiversity. The Networks for Net Zero Strategy notes that ESB Networks will aim for net biodiversity gain from our operations by 2025.

A number of ESB Networks' documents are in place to advise staff on biodiversity matters and communicate their requirements for legislative compliance. A significantly updated procedure with regard to designing and undertaking work in proximity to sites designated for nature conservation was finalised and approved during 2023. Work has continued with regard to developing guidance for managing biodiversity-related risks to our assets, particularly in relation to invasive species and wildlife damage.

Through the course of 2023, ESB Networks has progressed initial drafting of its Biodiversity Strategy, comprising both strategic and practical actions which are readily implementable and scalable. Measures will relate to both operational infrastructure and future projects and will include consideration of tools and metrics by which biodiversity net gain can be monitored.





## Biodiversity continued

During 2023, ESB Networks committed sponsorship funding to the EurElectric Power Plant - Phase II research project. The project aims to deliver a charter of guiding principles for a legislative and regulatory framework supporting biodiversity protection and power sector investment for electricity utilities across the EU. This sponsorship will demonstrably facilitate ESB Networks' drive for sustainability and support the transition to a low carbon future as it aligns and supports the commitments in the Networks for Net Zero Strategy, most specifically those regarding biodiversity gain.

In addition, staff from the ESB Networks' Environment Team have been directly contributing to the Business for Biodiversity Platform and the development of its Community of Practice through 2023. This is a Government-backed national platform helping Irish businesses transition towards a 'nature positive' way of working, where they can actively seek to support nature restoration. The initiative is a key objective delivery vector in the 4th National Biodiversity Action Plan (NBAP), with an aim to scale up to 900 businesses over the duration of the plan.

ESB Networks has progressed preparations for reporting requirements relating to Biodiversity and Ecosystems under the Corporate Sustainability Reporting Directive (CSRD) requirements. An initial assessment has been carried out with regard to available baseline data and existing tools and methods for assessing our risks, impacts, dependencies and opportunities with regard to biodiversity. This has been carried out utilising the 'LEAP' approach (Locate, Evaluate, Assess and Prepare), as advocated by the Taskforce for Nature-Related Financial Disclosures (TNFD).

ESB Networks continues to support ESB's contribution to the All-Ireland Pollinator Plan (AIPP), pursuing opportunities for more pollinator-friendly management of properties, where this fits with the needs of safety, business operations and property management. In addition to the continuation of a pollinator-friendly management regime at the National Training Centre in Portlaoise, ESB Networks has expanded its trialling of practical biodiversity actions to a number of asset locations around the country. For example, a suite of actions have been undertaken at the retired Stradbally Road 38 kV substation property in Athy to enhance the biodiversity value of the site. The site originally comprised extensive stoned and concrete surfaces as well as several towers and a control room building. Working closely with our civil contractors, ESB Networks has undertaken native seeding and planting on site, repurposed remaining buildings and structures for nesting birds and roosting bats, while non-native species have been removed and deadwood used to create habitat for insects and small mammals. Results from this trial will be used to inform and design biodiversity action at other ESB Networks' substations, depots and offices located around the country.

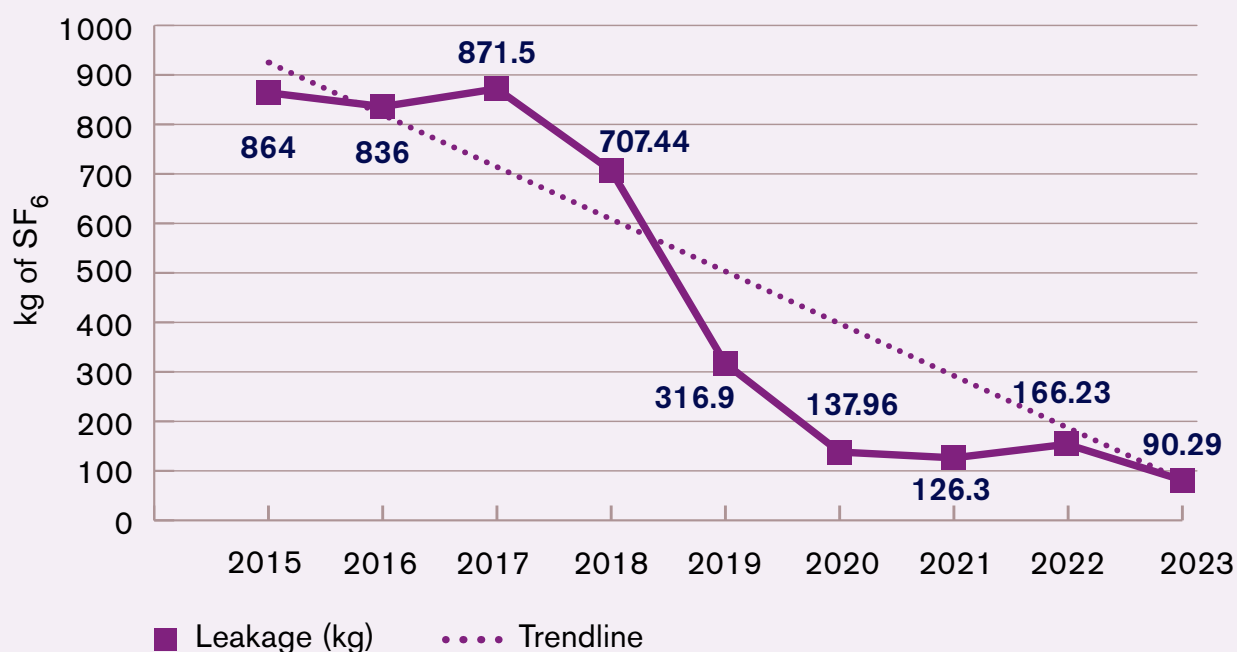
Staff continue to regularly engage with the ESB Networks' Environment Team and ecology staff (based in Engineering and Major Projects) on various biodiversity-related issues, including screening for appropriate assessment, invasive species response and management, and the implementation of appropriate mitigation measures.

## SF6 Gas Management

Sulphur hexafluoride (SF6) is used in a significant portion of ESB Networks' high-voltage switchgear assets on the transmission and distribution networks. It is used because of its very high electrical insulating properties which facilitate efficient and safe operation of the switchgear. Emissions rates for SF6 gas are reported to the Environmental Protection Agency (EPA) on an annual basis.

In 2023, 90.29 kg of SF6 was emitted due to equipment faults, representing 0.04% of the total installed inventory of SF6. The comparable 2022 leak quantity was 166.23 kg, representing 0.08% of inventory. This overall leakage rate compares favourably to other European utilities. This overall downward trajectory of SF6 emissions over the last seven years can be seen in Figure 4.

Figure 4 – SF6 gas leakage trends



## SF6 Gas Management continued

ESB Networks complies with EU Regulation 517/2014 in relation to SF6. This compliance is enabled by:

- Implementation of revised SF6 policy and procedures across the ESB Networks business, addressing:
  - Labelling
  - Transport
  - Gas Handling
  - Recording & Reporting
  - Leak Response
- Continued training and certification for those involved in handling SF6.
- Technology Improvements related to mobile app-based recording of SF6 gas usage.
- Further work to improve accuracy of SF6 gas inventory across all assets.
- Enhanced monitoring/closeout of SF6 leaks on a systematic basis.
- Renewed nationwide communication of key requirements of EU Reg 517/2014 as part of rollout of revised procedures.
- Maintaining a critical understanding of market development, regulatory environment and available SF6-free technology.

### Engagement with statutory authorities & associated reporting protocols

ESB Networks engages with a number of key stakeholders, in relation to SF6 emissions reporting, namely Local Authorities and the Environmental Protection Agency (EPA).

#### Local Authorities

Where a leak has been identified on a piece of equipment, ESB Networks reports this leak to the relevant local authority. This reporting requirement is implemented in accordance with the Air Pollution Act (1987).

The reporting structure adopts the following approach:

- A Stage 1 notification is issued when a SF6 leak has been identified.
- A Stage 2 notification is issued when the SF6 leak has been stopped.

## SF6 Gas Management *continued*

### Environmental Protection Agency

ESB Networks reports on an annual basis to EPA on its cumulative SF6 emissions for the previous year on/before 31st of March each year. This reporting is undertaken as part of ESB Networks' responsibilities in relation to the Pollutant Release and Transfer Register Regulations (2011).

ESB Networks reports all SF6 emissions to the associated license holder where there are emissions from ESB Networks equipment on EPA licensed sites.

### Processes

Technology Utilisation – where SF6 is moved to and from assets, these transactions are recorded via a mobile device based SF6 app. This simplifies site recording and enables prompt and accurate reporting of gas utilisation.

Policy & Procedures Enhancement – Regular reviews and updates of existing SF6 procedures are carried out to ensure consistent and up to date information and guidance is available for all staff, thus embedding the processes to drive ongoing awareness and compliance in the business with regard to SF6 regulations.

Rationalisation of existing SF6 gas quantities – Where SF6 was recovered from assets, it has been assigned for use in new projects, negating the need to buy additional SF6 for these projects.

SF6 Leak Monitoring & Repair Programme Review – enhanced procedures and IT tools are in place to ensure prompt reporting, capture and closeout of SF6 leaks through a robust process involving Network Assets, Environmental and frontline high voltage station staff.



## Fluid-Filled Cables

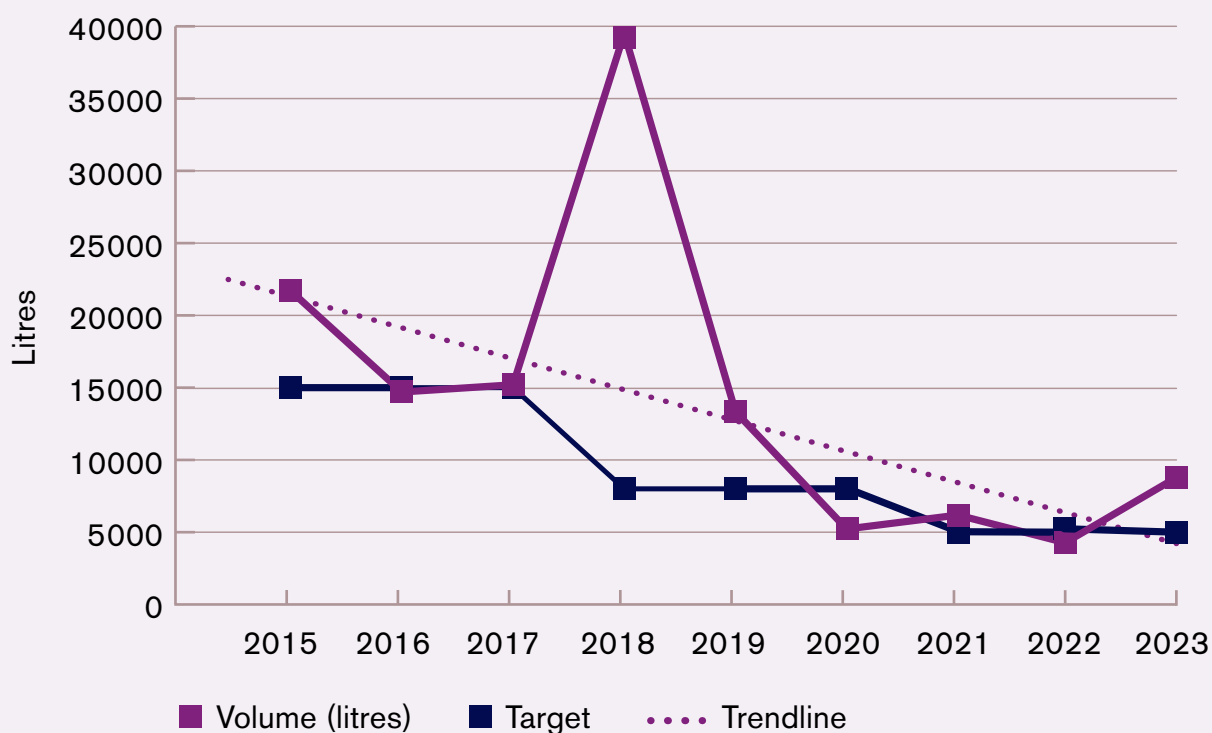
During 2023, 9,016 litres of cable insulating fluid leaked from the High Voltage Cable network (51 litres per km). This is an increase of 4,101 litres on the 2022 fluid leakage figure of 4,917 litres. The breakdown of the fluid leaks was as follows:

- **220 kV Cable Network = 557 litres**
- **110 kV Cable Network = 4221 litres**
- **38 kV Cable Network = 4238 litres**

ESB Networks' Company Standard, "Management of Fluid Filled Cables" set a target maximum cable leakage volume of 5,000 litres for 2023. The aim of this value is to encourage efficient leak incident identification and repair. Due to a combination of factors, our leakage total in 2023 surpassed targets. These factors include, the increasing age of the assets, 3rd party damage and the requirement to maintain a constrained critical network. Many of our main arteries in Cork and Dublin employ fluid filled cables as the backbone of our network, which imposes challenges in managing these assets.

The overall trend for the past eight years continues to show an overall downward trend in leakage. (see Figure 5).

Figure 5 – Fluid-filled cables leakage trends 2015 to 2023



## Fluid-Filled Cables continued

Leaks that were notified to the relevant Local Authority on the 38 kV Cable Network in 2023:

- [Pembroke – Ringsend](#)
- [Camden Row – Francis St](#)
- [Inchicore – Marrowbone lane](#)

Leaks that were notified to the relevant Local Authority on the 110 kV Cable Network in 2023:

- [Francis St – Harolds Cross](#)

Leaks that were notified to the relevant Local Authority on the 220 kV Cable Network in 2023.

- [Inchicore – Poolbeg 2](#)

Circuits with repaired leaks in 2023 were:

- [Francis St – Harolds Cross](#)
- [Harolds Cross – Ringsend](#)
- [Coolock – Raheny](#)
- [Carrickmines – Poolbeg](#)
- [Pembroke – Ringsend](#)

## Fluid Filled Cables - Environmental Assessments

In 2023, further works were progressed on a number of sites as we continue to progress all to a conclusion with the relevant authorities. ESB Networks issued Generic Quantitative Risk Assessments (GQRAs), that had detailed site assessments completed, to the relevant Local Authority. All reports recommended no further site assessments or remediation. As further detailed site assessments are completed and further GQRAs developed, ESB Networks will continue to update Local Authorities on our progress in these assessments and will publish the reports on our public website.

## Fluid Filled Cables - Incident Management

Since 2019, ESB Networks has Fluid Filled Cables (FFC) incident protocols in place dealing with both historic and current FFC leaks with relevant Local Authorities. The protocols ensure all relevant authorities are notified of incidents as they arise and are kept up to date with incident response. Regular communication is maintained with relevant Local Authorities to ensure close collaboration regarding road opening licenses, drainage maps and other aspects relevant to our work in cable leak location, environmental assessment, and repair.



*Damage to fluid-filled cable caused by house building contractor*

## Fluid-Filled Cables continued

### Fluid Filled Cables - Incident Management continued

We continue to have experienced Network Technicians specially trained in FFC maintenance, leak identification and repair techniques to ensure that we manage these incidents promptly when they occur. ESB Networks' tracer detection equipment has significantly improved our ability to identify leak sites and implement repairs. We continue to implement this state-of-the-art leak detection methodology along with other leak detection methods being trialled such as canine detection services.

ESB Networks' leakage rate in 2023 was approximately 51 litres per kilometre. The current leakage rate equates to 1.1% of the total installed cable fluid volume per annum. This is equivalent to or lower than the leakage rates reported by a number of peer network companies in other countries. While we have surpassed our target leakage figure in 2023, the total fluid leakage in any year depends upon several factors associated with the cables' condition, route and location. Two of the oldest fluid filled cable circuits caused 44% of the total volume leaked. During 2023, major advanced works to repair the leaks on these two cables took place. These works included, weekend and off peak outages, consultant lead leak identification efforts as well as network reinforcement to allow the repair of both poorly performing assets while maintaining supply to customers. This should pay dividends into the future years to allow us to reach our targets until we can retire and replace these cables.

### Fluid Filled Cables - Replacement Programme

Recognising the environmental challenges in operating and maintaining FFCs, ESB Networks started a fluid-filled cable replacement programme in 2005. So far, 20% of FFCs have been replaced, removing the source of 40% of the previous cable fluid leaks from the system. At present, there is approximately 176km of FFCs on the transmission and distribution electricity networks. We have a number of active FFC replacement projects at construction stage and additional projects at route selection stage.

Such major infrastructural projects involve:

Scheduled outages, for which businesses and families adjacent to these works must be informed and given adequate notice.

- **Securing temporary road opening licences.**
- **Traversing third party infrastructure, services and major road, rail, waterway crossings.**
- **Temporary extended road closures.**
- **Significant trench excavations for new plastic insulated cable and cable replacement.**
- **Jointing works.**

## Fluid-Filled Cables continued

### Fluid Filled Cables - Replacement Programme continued

The projects will be undertaken on a phased basis in populated urban areas with significant traffic volumes. Ongoing engagement with relevant stakeholders is vital to ensure efficient and successful delivery of these cable replacement projects.

ESB Networks has now committed to an accelerated investment programme with the Commission for Regulation of Utilities (CRU). An environmental assessment informs both the schedule and the timing of individual cable replacements.

As part of the Price Review Five (PR5) determination, CRU approved distribution and transmission FFC Replacement projects. While there are a number of factors that determine how long it takes to replace a full FFC route, our current expectations are to replace approximately 39km of DSO FFC routes in PR5.

A significant number of TSO FFC route replacements will have achieved capital approval in late PR5 also. Due to the significant circuit lengths on most of the TSO FFC routes involved, full replacement is not expected to be completed until PR6 (2026-2030) with ESB Networks' TSO project work commencing from 2025. However, we are engaging with the TSO to take advantage of advanced ducting opportunities as they arise. For example, we are liaising with Dublin City Council's (DCC's) Royal Canal Greenway project team to install 220 kV ducting which may become part of a future 220 kV FFC replacement project in PR6. The TSO is proactively engaging with multiple stakeholders in their Powering up Dublin strategy. The replacement of five of the existing TSO FFC circuits in Dublin City will result in a significant uprate of the circuits involved. As such, there is both a system uprate and environmental benefit to these circuits being replaced.

The remaining FFCs are planned to be replaced over subsequent Price Reviews subject to CRU approval.

ESB Networks has installed 4.6km of advanced ducting, in 2023, in ongoing DSO FFC replacement projects.





## Waste Management

Throughout 2023, ESB Networks maintained and improved its arrangements for effectively managing waste in compliance with waste regulations. ESB Networks continued to segregate waste, pending its appropriate disposal, treatment or recycling. The company continued collaboration with all waste management contractors to ensure compliance with all permits and licenses required.

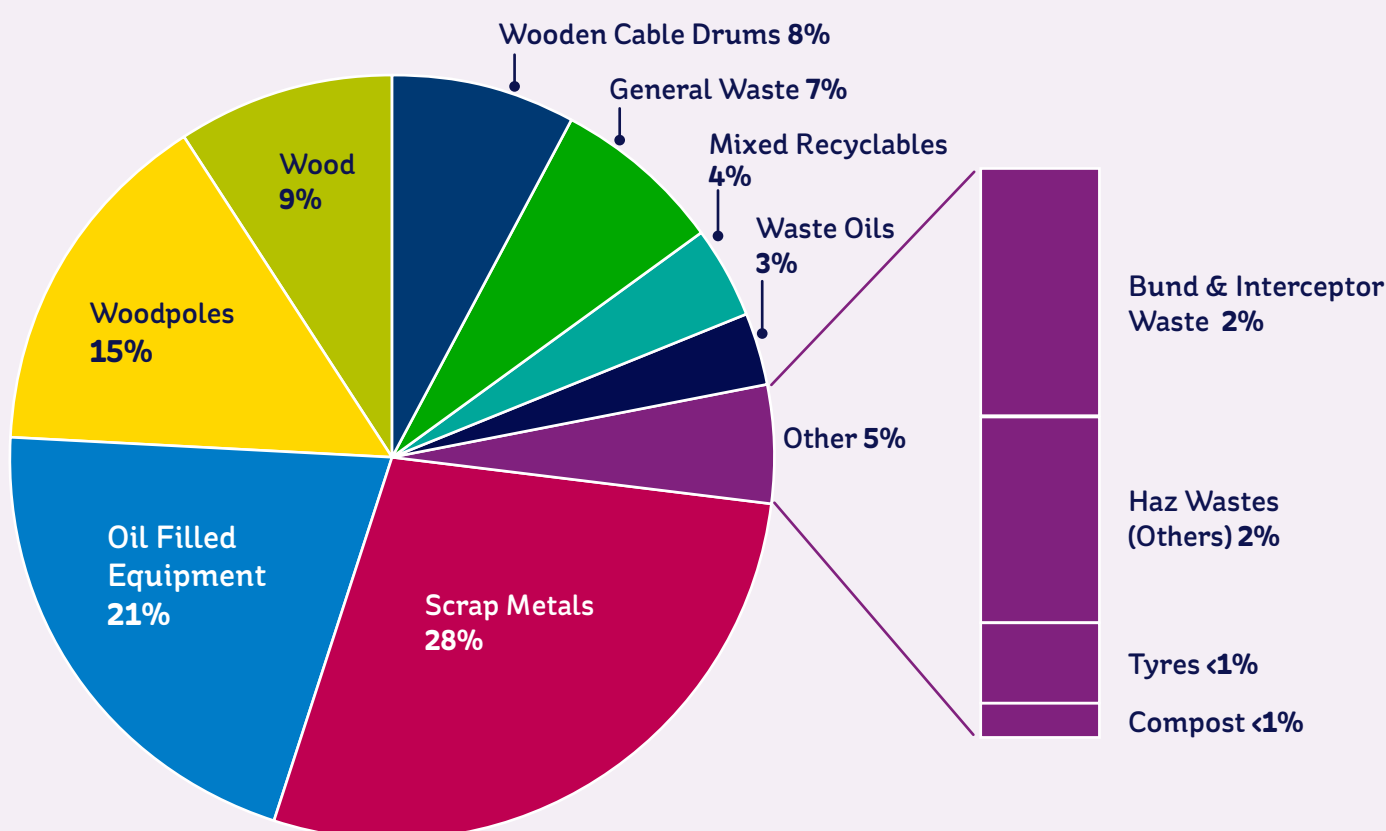
ESB Networks is committed to being at the forefront of sustainability and the circular economy, and the effective management of waste is a fundamental part of this environmental management goal. Notably, in 2023, significant advancements were made towards this objective, with some key achievements and initiatives:

- Contracts for the management of non-hazardous and hazardous waste, scrap metal, oil-filled equipment, and the disposal of empty cable drums and Creosote poles were effectively managed nationwide.
- ESB Network's contracted service providers were facilitated to collect waste, and records of waste disposal were maintained.
- Data management was continued to track tonnages and waste streams.
- Depot recycling rate of 80% achieved for municipal solid waste and scrap metal recycling and 81% for all non hazardous and scrap metal recycling combined in 2023.
- 100% of networks assets including oil filled equipment, scrap metal, transformer oil and network poles are recycled.
- Waste including soil, stone / concrete and asphalt (soil and rubble) are disposed of at suitably licenced waste receiving facilities nationwide.
- Standardised office waste management systems maintained at all our facilities to ensure the proper segregation of associated wastes.
- Training continued to be rolled out addressing waste management, recycling targets, waste hierarchy, and proper waste segregation and disposal requirements.
- Memorandums of Understanding are in place and maintained with Dublin City Council, South Dublin City Council and Dun Laoghaire-Rathdown County Council on the management of illegal dumping of waste, litter, and graffiti at unoccupied ESB Networks' facilities.
- Throughout 2023, ESB Network's appointed waste management contractors were engaged to clean up and dispose of waste illegally dumped at ESB Networks' facilities in a prompt and timely manner to minimise the risk to the environment.
- A consultant had been employed to prepare applications for appropriate waste authorisations for designated ESB Networks' sites. The consultant is currently preparing appropriate documentation prior to submitting applications.

## Waste Statistics (Classification and Quantities)

In 2023, ESB Networks generated 9,752 tonnes of waste, a 14% increase when compared to 2022, due to a significant increase in work programmes. Figure 6 presents a breakdown of the various waste streams. Statistics are compiled based on management data provided by our service waste contractors.

Figure 6 - Breakdown of Waste Streams



### Notes:

- Statistics don't include soil and rubble waste generated from internal construction projects.
- Scrap metals, wood poles, oil filled equipment, and wooden cable drums, accounted for 72% of all waste collected during 2023.
- General waste accounted for a total of 7% of all waste generated. However, due to the additional processing, recovery and recycling of waste materials undertaken by ESB Networks' waste service contractors, the percentage of overall waste sent to landfill is less than 1%.

Table 2 compares tonnage quantities for the principal waste categories for 2021, 2022 and 2023.

Table 2 - Waste Tonnage Quantities from 2021 to 2023

WASTE STREAM / RETIRED MATERIAL	TONNES PER YEAR		
	2021	2022	2023
Scrap Metals	3087	2957	2732
Oil Filled Equip	1460	1967	2067
Wooden Cable Drums	505	915	760
Wood	711	648	834
General Waste	535	534	654
Mixed Recyclables	338	376	397
Bund & Interceptor Waste	218	359	229
Waste Oils	169	307	343
Woodpoles	193	303	1438
Haz Wastes (Others)	274	99	192
Tyres	53	65	73
Compost	20	31	33
Spoil & Rubble	253	18	0
<b>Totals</b>	<b>7816</b>	<b>8579</b>	<b>9752</b>

**Note:**

**Hazardous Waste Others** includes Creosote Contaminated Consumables, Contaminated Soil, Oil Filters, Solid Oily Waste, Batteries, WEEE, Chemicals, Paints, Empty Paint Containers, Mixed Fuels, Resins, Silica Gel

## Environmental Incidents

ESB Networks' environmental management systems are designed to minimise, prevent, and mitigate the occurrence of environmental incidents. However, some environmental incidents occur in the course of ESB Networks' business operations, and these are appropriately managed and dealt with. During 2023 there were 202 environmental incidents (as seen in Table 3).

Table 3 - Environmental Incidents

REPORTED ENVIRONMENTAL INCIDENTS	INCIDENTS PER YEAR		
	2021	2022	2023
Air Emissions/breaches (excluding F - gases)	-	-	1
Dust nuisance	-	1	-
Ecology, Flora and Fauna (Including invasive species)	15	6	9
Environmental Complaint (External)	2	1	-
Environmental monitoring/abatement equipment malfunction or breakdown	-	-	4
Explosion	-	-	-
F - Gas leak/storage/handling (excluding SF6)	1	-	1
Fire	1	-	-
Flooding (Environmental impact)	-	-	1
Fluid filled cable leaks	7	3	4
Impact on Conservation area (SACs/SPAs/NHAs) and national monument/heritage sites.	3	-	-
Land - Contaminated land or soil	-	5	-
Land - General land damage	-	-	-
Leaks/uncontrolled discharges/spillages of chemicals, oils or fuels	39	37	60
Noise nuisance/emissions	2	2	1
Odour	-	-	-
SF6 gas leak/ handling/storage	81	116	108
Timber Cutting	-	-	-
Visual (Litter/Graffiti) (3rd party)	1	2	-
Waste - Unauthorised disposal (3rd party)	5	6	6
Waste management (Internal)	4	6	8
Water & Discharges - Emissions/breaches/leaks to water bodies	4	-	-
<b>Totals</b>	<b>165</b>	<b>185</b>	<b>202</b>



## Environmental Incidents continued

ESB Networks uses appropriately licenced and permitted environmental incident response contractors, and environmental consultant services, and liaises with relevant regulatory authorities in connection with environmental incident management as necessary. Spill response training is delivered to staff engaged in oil and oil-filled equipment handling and a range of related ESB Networks' Guidelines have been developed and are available. Spill kits and associated consumables are also available in depots, stores, HV stations and in fleet and equipment vehicles as required.





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