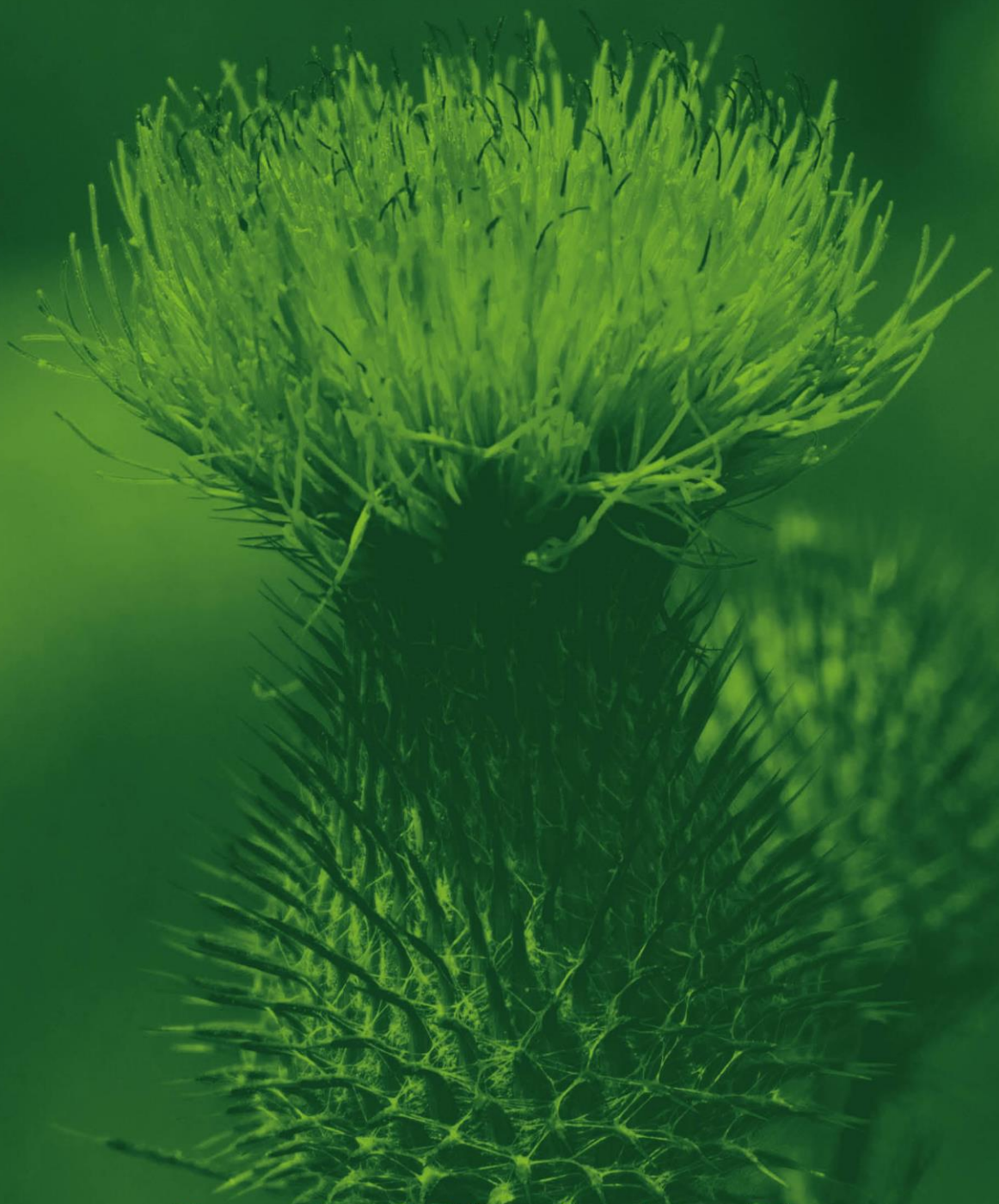
Scottish & Southern Electricity Networks

TRANSMISSION

www.ssen-transmission.co.uk



Sustainability Action Plan

December 2019

Scottish Hydro Electric Transmission plc

About us

We are Scottish Hydro Electric Transmission (SHE Transmission), part of the SSE Group, responsible for the electricity transmission network in the north of Scotland.

We operate under the name of Scottish and Southern Electricity Networks, together with our sister companies, Scottish Hydro Electric Power Distribution (SHEPD) and Southern Electric Power Distribution (SEPD), who operate the lower voltage distribution networks in the north of Scotland and central southern England.

As the Transmission Owner (TO) we maintain and invest in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network in the north of Scotland. Our network consists of underground and subsea cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass crossing some of its most challenging terrain.

We power our communities by providing a safe and reliable supply of electricity. We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for onwards distribution to homes and businesses in villages, towns and cities.

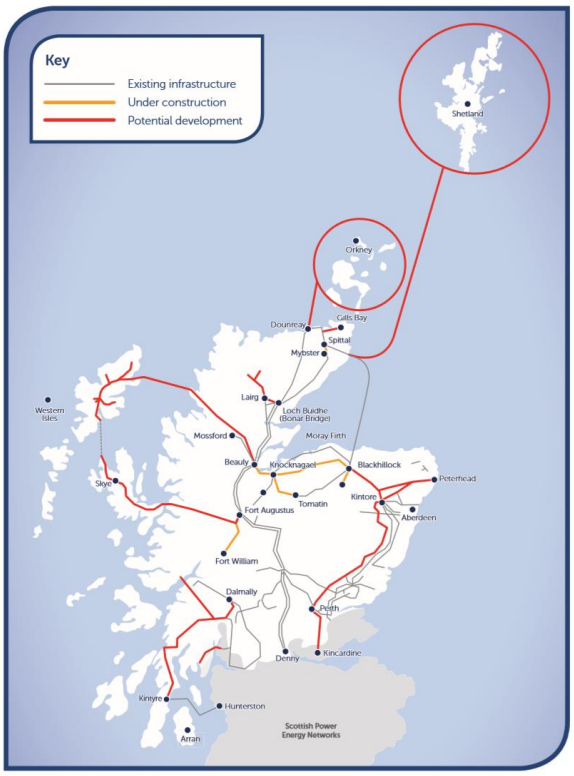


Figure 1: The SHE Transmission network and operating area

RIIO-T2 Sustainability Action Plan

Since the publication of our stakeholder-led Sustainability Strategy in May 2018, we have been developing our delivery plans to implement our six sustainability ambitions in collaboration with our stakeholders and business teams. This Sustainability Action Plan sets out our detailed forward plan to implement our sustainability outcomes presented in our Network for Net Zero Business Plan.

Supported by our stakeholders, this action plan meets the Ofgem requirements for the Environmental Action Plan (EAP) and includes our broader action on socio-economic sustainability requested by our stakeholders. The plan includes timebound actions and outputs against which our performance will be measured, enabling our stakeholders to hold us to account during the next price control period, RIIO-T2 (2021-2026).

Contents

Our Journey to Leadership in Sustainability

Societal expectations on Climate Change and Sustainability are rising and stakeholders want businesses to take broader accountability of their environmental and social performance. Stakeholders have strongly and consistently emphasised their desire for us to show ambition and leadership in sustainability. We agree. We are determined to play a leading role in the years ahead; meeting our stakeholders' expectations and helping to build a sustainable energy system.

There are major challenges to overcome around the world. The world is warming faster than we thought, the Paris Climate Agreement and UN's Sustainable Development Goals are challenging government and businesses to act on these issues. The climate emergency is undoubtedly the greatest challenge of our generation. Since the Intergovernmental Panel on Climate Change (IPCC) recommendation to limit global warming to 1.5 degrees, the UK and Scottish Governments have committed to Net Zero targets for 2050 and 2045 respectively[1].

As a business at the forefront of the transition to a low carbon economy, operating in some of Scotland's most precious landscapes, we have a critical role to play in helping the UK and Scottish Government's meet their commitments to achieve Net Zero emissions. Our network now supports over 6 GW of clean, renewable electricity; more than double the capacity of a decade ago and generating enough energy to power 5 million homes and businesses across GB.

We are extremely proud of our contribution and commitment to helping tackle climate change. We have an equally strong commitment to positively manage the impact of our activities on the local environment and communities in which we live and work.

Our holistic stakeholder-led Sustainability Strategy provides our clear vision of a sustainable business, encompassing the full range of social, environmental and economic considerations. The vision has received strong support from our stakeholders.

This RIIO-T2 Sustainability Action Plan sets out our detailed forward plan to implement our sustainability outcomes presented in our Network for Net Zero Business Plan. We have set stretching actions for each Sustainability Ambition to place ourselves at the forefront of best practice. Key outcomes for each Sustainability ambition are presented as follows:

Connecting for Society	Transport the renewable electricity that powers 10 million homes
Tackling Climate Change	One third reduction in our greenhouse gas emissions, consistent with the Net Zero pathway
Promoting Natural Environment	Deliver Biodiversity No Net Loss outcomes leading to Net Gain in 2025
Optimising Resources	Achieving Zero Waste to Landfill across our waste streams
Supporting Communities	Using local supply chains and meeting the needs of vulnerable consumers
Growing Careers	Expanding our inclusion and diversity programme

Our strategic objective is to enable the transition to a low carbon economy, and we have set achieving Leadership in Sustainability as a critical element of this objective. This means being a trusted partner of customers and communities, realising long term benefit for society, economy and the environment.

By implementing and continuing to build on this plan, we will deliver a truly sustainable transmission network in RIIO-T2 and beyond.

[1] UK CCC (2019) Net Zero: The UK's contribution to stopping global warming. Available at: www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

Strategic Objective

Leadership in Sustainability

Trusted partners of customers and communities, realising long term benefit for society, economy and environment.

Our holistic stakeholder-led Sustainability Strategy provides a clear vision of a sustainable business. We have set six stretching ambitions to achieve this and place ourselves at the forefront of best practice. In this Plan we set out our proposed actions to deliver a truly sustainable transmission network into the next price control and beyond.

Clear Goal

One third reduction in our greenhouse gas emissions

Reduce the controllable greenhouse gas (GHG) emissions from our operations by 33% by 2026, compared to 2018/19 levels, consistent with the Net Zero emissions pathway.

Targets for RIIO-T2

Target	RIIO-T2 type†	Metric	RIIO-T1	RIIO-T2 Target
Connecting for Society				
GB homes powered by renewable energy transported through our network	PCD / UM	Number (m)	5.3	10.0
Application of new CBA framework	PCD	% of applicable investments	0%	100%
Tackling Climate Change				
Reduction in scope 1 and 2 GHG emissions	CVP (Rp)	% GHG volume	n/a (Baseline)	-33%
Insulation and Interruption Gases (IIG) leakage	ODI (P/R)	Percentage of installed IIG	0.39%	0.39% Baseline
Promoting the Natural Environment				
Projects gaining consent after 1 April 2020 with biodiversity 'No Net Loss' outcomes	CVP (R)	Percentage of investments	n/a	100%
Investments proposals to improve visual amenity	CVP (R)	Number of proposals	3	5
Optimising Resources*				
Waste sent to landfill across all waste streams	PCD	Percentage	~23%	0%
Recycling, recovery and re-use of waste	PCD	Percentage	~76%	>70%
Supporting Communities				
Employees trained in community vulnerability	CVP (Rp)	Percentage	0%	>95%
Approved supplier located in the north of Scotland	CVP (R)	Percentage	27%	>25%
Growing Careers				
Employees trained in inclusion and diversity	PCD	Percentage	0%	>95%
Pipeline intake is local diversity representative	PCD	tbc	tbc	Tbc

† Type is a regulatory categorisation: LO = Licence Obligation; PCD = Price Control Deliverable; ODI (P/R) = Output Delivery Incentive with financial Penalty and/or Reward; Rp = Reputational; CVP = Consumer Value Proposition; UM = Uncertainty Mechanism

‡ We will establish the methodology and measurement of our diversity profile during 2020, and expect to set a target in early 2021

* Baseline values have been estimated from supplier feedback and industry construction, resource use and waste data. We will refine these baselines ahead of RIIO-T2 from further supply chain reporting.

1 Introduction

1.1 Our Sustainability Ambitions

Stakeholders have strongly and consistently emphasised their desire for us to show ambition and leadership in sustainability. Our holistic stakeholder-led Sustainability Strategy provides a clear vision of a sustainable business. This encompasses the full range of social, environmental and economic considerations.

This Sustainability Action Plan sets out our actions to deliver a truly sustainable transmission network into the next price control, RIIO-T2 (2021-2026). We have set six stretching ambitions to achieve this and be at the forefront of best practice. This plan presents a roadmap for each sustainability ambition with defined sustainability outcomes by 2026.

Connecting for Society	Working collaboratively to deliver a whole system solution that promotes affordability, considers societal benefits and supports community renewable connections.
Tackling Climate Change	Managing resources over the whole asset lifecycle to reduce greenhouse gas emissions in line with climate science and become a climate resilient business.
Promoting Natural Environment	Delivering biodiversity net-gain and driving environmental stewardship best practice.
Optimising Resources	Managing resources for a circular economy; achieving zero waste to landfill, increasing resource efficiency and using sustainable materials.
Supporting Communities	Meeting the needs of vulnerable consumers and maximising the local benefit of our investments.
Growing Careers	Ensuring a safe, inclusive culture for our employees; adding value through good jobs, training and development.

Our Commitment to Sustainability

SHE Transmission is owned by the UK-listed SSE plc Group. SSE's vision is to be a leading energy provider in a low carbon world. As a responsible energy company, the SSE Board and senior management are passionate advocates of sustainability. This is captured in SSE's long-standing sustainability value:

"We do things responsibly to add long term value."

The SSE Chief Sustainability Officer is a Director of SHE Transmission and a member of our Board Sub-Committee on sustainability. Earlier this year, SSE set stretching new targets for 2030 in a bid to tackle climate change and support the UN's Global Goals for Sustainable Development (the SDGs)[2].

How do we define Sustainability?

Sustainability, or sustainable development, seeks to balance environment, social and economic objectives to deliver long term equitable growth. We follow the widely applied Brundtland definition of sustainable development[3]:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

[2] www.un.org/sustainabledevelopment/

[3] From Our Common Future report (World Commission on Environment and Development, 1987) available at: https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

1.1.1 Our Sustainability Strategy

In late 2017 we started a conversation with our stakeholders about what a sustainable business would look like for us.

The insight provided by our stakeholders, along with our own experience and research, highlighted that we should:

- Expand our ambitions beyond standalone decarbonisation aims; and
- Ensure that our activities are mindful of other social, economic and environmental issues.

Based on that consultation, we published our stakeholder-led Sustainability Strategy in May 2018. This sets out six ambitions to deliver an overarching sustainability ambition to enable a smart, sustainable energy future (Figure 2). These ambitions are broad and bold.

Figure 2: Our Sustainability Ambitions

Contributing to the UN Sustainable Development Goals

The UN Sustainable Development Goals (SDGs) provide a common framework for targeting improvements in wider sustainability. As a responsible business that is part of the SSE Group, we are determined to play our part, alongside governments, civil society and individuals, to ensure that these goals are reached.

As part of the development of our Sustainability Strategy, we undertook a materiality assessment of how we contribute to the SDGs to identify those that we should incorporate into our sustainability ambitions.

In order of materiality, the SDGs we actively support are:

You can read our Sustainability Strategy:
www.ssen-transmission.co.uk/sustainability-and-environment/sustainability-strategy/

1.1.2 Defining Leadership in Sustainability

Stakeholders have strongly and consistently emphasised their desire for us to show ambition and leadership in sustainability. Societal expectations on sustainability are rising and stakeholders want companies to take broader accountability outside of their own operations. We agree. We are determined to play a leading role in the years ahead:

- Meeting our stakeholders' expectations;
- Being at the forefront of best practice; and
- Helping to build a sustainable energy network.

Our approach to leadership in sustainability is based on three underlying principles:

1. Adopting a holistic approach for true sustainability. Moving away from a narrow vision of environmental sustainability to include full socio-economic sustainability.
2. Taking stretching and ambitious action. Committing to step change actions for continuous improvement and, ultimately, moving the frontier.
3. Supporting and influencing positive change. Collaborating and engaging internally and externally to promote new thinking and the application of best practice.

1.1.3 Meeting Ofgem requirements for delivering an environmentally sustainable network

Sustainability now goes far beyond environmental issues, as society expects businesses to act responsibly, transparently and accountably in all of its current and future operations and impacts. This action plan, supported by our stakeholders, meets the Ofgem requirements for delivering an environmentally sustainable network[4] and includes our broader action on socio-economic sustainability requested by our stakeholders (Table 1).

In the past, the energy networks industry has focused on decarbonisation and environmental sustainability. This is reflected in the RIIO-T2 price control high level objective for network owners "to mitigate the impact of their networks and business activities on the environment and to support the transition to a low carbon energy future" [5].

While enabling decarbonisation in pursuit of climate change goals is the most material contribution that we can make to sustainability, our economic, social and environmental impacts are also significant. Our stakeholders believe broader sustainability is equally important and expect our approach to consider socio-economic and resource sustainability. Leadership in sustainability is implicitly about creating change in the social contract we have with stakeholders and society. Moving away from a narrow vision of environmental sustainability will help support a truly sustainable low carbon energy transition.

[4] Ofgem (2019) RIIO-2 Business Plan Guidance. Available at: www.ofgem.gov.uk/system/files/docs/2019/09/riio-2_business_plans_guidance_september_2019_-_published_0.pdf
[5] Ofgem (2018) RIIO-2 Framework decision. Available at: www.ofgem.gov.uk/system/files/docs/2018/07/riio-2_july_decision_document_final_300718.pdf

Table 1 Going above and beyond Ofgem's Environmental Framework Requirements

Ofgem Environmental Framework	Our Sustainability Ambitions	Action Plan Section
Decarbonising the Energy Network – with a focus on business carbon footprint and embedded carbon in networks.	Tackling Climate Change Optimising Resources	Section 3 Section 5
Reducing network's other environmental impacts i.e. pollution to the local environment; resource waste; biodiversity loss; and other adverse local.	Promoting the Natural Environment Optimising Resources	Section 4 Section 5
Supporting the transition to an environmentally sustainable low carbon energy system.	Connecting for Society Sustainable Procurement	Section 2 Section 8
Our stakeholders believe broader sustainability is equally important and expect our approach to also consider socio-economic sustainability.	Supporting Communities Growing Careers	Section 6 Section 7

1.2 Meeting Stakeholder Expectations

Stakeholder-led outcomes

As the transmission network owner in the north of Scotland, we seek stakeholder input on all aspects of our activities. To understand the expectation of our customers and stakeholders for sustainability in our business, we have undertaken a targeted programme of engagement and consultation since late 2017. We have consulted specifically on the development of our Sustainability Strategy and Plan. These consultations have informed this Sustainability Action Plan alongside our targeted RIIO-T2 engagement programme. Our stakeholder engagement has included six round table events, written consultations and a range of bilateral meetings as follows:

150+ People received our Sustainability Strategy, Sustainability Plan, Approach to Biodiversity Net Gain and RIIO-T2 Emerging Thinking consultations.

83 People attended our large RIIO-T2 Stakeholder events which included topics on sustainability

53 Written responses received relevant to our Sustainability ambitions

6 Roundtable workshops held on Environment, Biodiversity Net Gain, Losses and Vulnerable Consumers; with 44 attendees joining these sessions

Sustainability Strategy consultation

In developing our Sustainability Strategy, we have sought to understand the views and needs of our stakeholders. We developed our sustainability ambitions based on our internal analysis and the views of our stakeholders informed our decisions, goals and materiality of different issues. In February 2018, we published our draft Sustainability Strategy for consultation. The responses to the consultation were used to refine our Sustainability Strategy and to help us with setting specific targets. For example, feedback indicated that there was a need for increased focus and targets on resource use which led to the development of an additional ambition on Optimising Resources and the material inclusion of SDG 12 - Responsible Consumption and Production. Overall, the tone of responses was positive with stakeholders, including

government, welcoming our approach and acknowledging the alignment of our sustainability ambitions with current climate change and energy policy ambitions. There was also a strong and widely-held view that our targets should be short, measurable and ambitious.

Sustainability Plan (2019-2021) consultation

In February 2019, we consulted on our draft Sustainability Plan (2019-21) that included proposed activities to implement our Sustainability Strategy up until the end of the current price control period. The consultation provided stakeholders with the opportunity to ensure our action on sustainability was fit for purpose and met their reasonable needs and expectations. Feedback from the Sustainability Plan consultation indicated that our proposed activities are material, likely to be impactful and timescales are suitably ambitious. Further suggestions were also made that the following areas should receive greater focus and action: climate change adaptation; visual amenity; focus of the community fund; and sustainable procurement. This feedback has been incorporated into our Sustainability Strategy update and our RIIO-T2 Business Plan.

RIIO-T2 stakeholder engagement

As part of our RIIO-T2 engagement programme, we consulted a wide stakeholder group at a RIIO-T2 stakeholder workshop in November 2018. We also held an environmental roundtable event with experts to consult on our environment plans in March 2019.

We consulted stakeholders at the RIIO-T2 workshop on our approach to carbon reductions, sustainable resource use and our community support. Specific feedback indicated that focus should also be placed on reducing scope 3 (supply chain) carbon emissions as contractors and suppliers expressed interest and support for carbon reduction initiatives. Stakeholders also highlighted that there is a significant opportunity for us to support the circular economy. Relating to our Optimising Resources activities, stakeholders felt that commitments relating to minimising waste, resource efficiency and sustainable materials were equally important.

Our targeted environmental roundtable event held in March 2019 provided experts the opportunity to comment and provide feedback on our environment policies for biodiversity, landscape and visual amenity, forestry and woodland, noise and oil management. Feedback strongly reinforced our decision to include biodiversity as a core ambition of our plan and that visual amenity considerations is a key topic of interest during project consultations. Stakeholders were supportive of plans to improve communications on visual amenity and agreed our approach to oil and noise management should be risk based. This feedback and input refined this draft Business Plan and Sustainability Strategy update.

Since our draft Business Plan consultation feedback, we have strengthened our proposal for SF_6 emissions, visual amenity, Losses and supporting vulnerable consumers. We have also further consulted our supply chain to inform the sustainability requirements and commitments to be included within our RIIO-T2 procurement framework agreements.

1.3 How we developed our plan

1.3.1 Methodology for Assessing and Prioritising Sustainability Impacts

During the development of our stakeholder-led Sustainability Strategy, we defined our material issues in-line with the United Nations Sustainable Development Goals. This involved a review of the issues and impacts arising from our network from considering our ISO14001 Aspects and impacts register, current performance, emerging trends and stakeholder feedback. This was further strengthened by undertaking an external benchmarking assessment of key issues important to our stakeholders.

Our sustainability planning has been an iterative and adaptive process and we have continued to consult our stakeholders during the development of this action plan to ensure that our sustainability plans are fit for purpose and the most material – and impactful – issues are prioritised.

In summary, the process for assessing and prioritising key sustainability issues and impact areas has involved both qualitative and quantitative inputs; as detailed in the 7-step process presented in Figure 3.

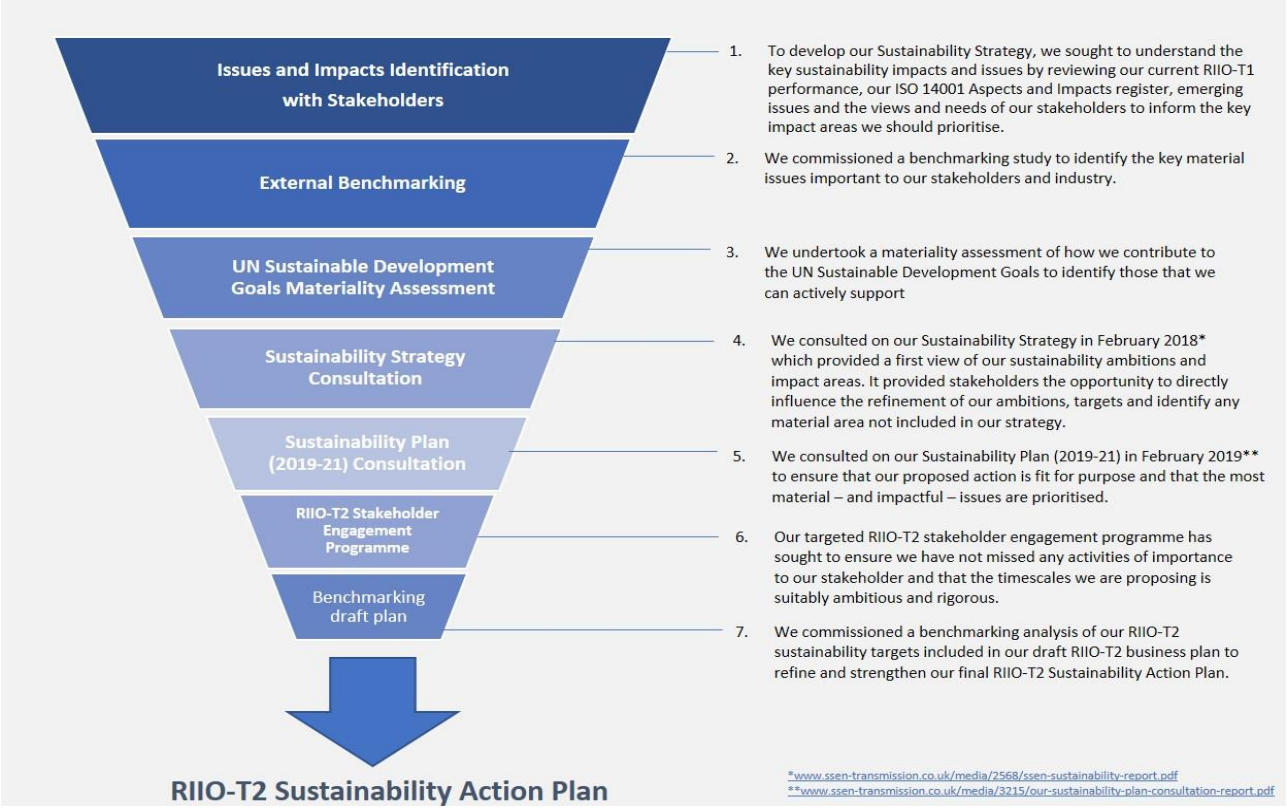


Figure 3: Methodology for Assessing and Prioritising our Sustainability Impacts

Our continued review of our Sustainability Strategy and plans with our stakeholders let to the publication of our RIIO-T2 Sustainability Strategy Update in June 2019[6]. This update identified several areas in our strategy that we have broadened, expanded and strengthened to meet expectations and realise long term benefit for society, economy and the environment. For example, we strengthened our focus on Climate Resilience, Vulnerable Consumers, scope 3 emissions and included our wider environmental planning on forestry, oil and noise management.

To support the finalisation of our Sustainability Action Plan, we have also undertaken further benchmarking of our RIIO-T2 plans in our draft Business Plan against government policy and industry best practice. We have presented the outcome of this benchmarking in each section of the plan to determine how our plans compare in level of ambition to our peers.

1.3.2 Assessment of Sustainability Impacts – Comparison between RIIO-T1 and RIIO-T2

As noted in our methodology for assessing sustainability impacts arising for our network, we have undertaken a comprehensive review of the significant impacts arising from our network and assessed the possible impacts in RIIO-T2 in comparison to our current impacts. Table 2 provides a summary comparison of the sustainability impacts arising from our network between the latest year of RIIO-T1 (2018/19) and the last year of RIIO-T2 (2025/26). Values for RIIO-T2 are estimates and represent the impacts from business as usual (BAU) activity.

[6] www.ssen-transmission.co.uk/media/3498/ssen-riio-t2-sustainability-strategy-update.pdf

Table 2 Comparison of Sustainability Impacts between RIIO-T1 and RIIO-T2

Ambition	Impact	Measure	Ofgem Reporting Requirement	RIIO-T1 Impact (2018/19)	Est. RIIO-T2 Impact (2025/26 - BAU)[7]
Connecting for Society	Low Carbon Transition	Connected renewable capacity (GW)	RIIO-T1 & T2	6.4 GW	10 GW
		Carbon emissions displaced by renewable generation (tCO_2e)	No	4.6 million	4.4 million†
		GB homes powered by renewable energy transported through our network	No	5.3 million homes	10 million homes
		Number of EVs supported in our network area	No	2,729	80,733
Tackling Climate Change	Carbon Footprint	Total BCF (tCO_2e)	RIIO-T1 & T2	118,962	164,750
		Scope 1 & 2 Emissions (tCO_2e)	RIIO-T1 & T2	8,448.16	14,515.48
		Scope 3 Emissions (Excluding Losses)	RIIO-T1 & T2	10,307.64	5,187.9*
		Losses (tCO_2e)	RIIO-T1 & T2	100,207	149,059
		SF_6 leakage Rate (%)	RIIO-T1 & T2	0.39%	0.39%
Promoting the Natural Environment	Impacts on Local Environment	No. of Environmental Incidents (Int Reporting)	RIIO-T1 & T2	43	Similar
		Biodiversity Sites	No	2	Similar
		Km of overhead line removed	RIIO-T1 & T2	12.3 km	Similar
Optimising Resources	Waste and Resource Use	Total Waste Weight (kg)	RIIO-T2 only	N/A	38m kg ‡
		Total Waste Volume (m^3)	RIIO-T2 only	N/A	168,000 m^3 ‡
		% Waste Recycling	RIIO-T2 only	~76%	~78% ‡
		% Waste Landfill	RIIO-T2 only	~23%	~20% ‡
		% Waste Heat to Energy	RIIO-T2 only	~1%	~2% ‡
		Embodied Carbon (tCO_2e/£m)	RIIO-T2 only	N/A	130 tCO_2e/£m ‡
Supporting Communities & Growing Careers	Social Impact	Approved supplier located in the north of Scotland (%)	No	27%	>25%
		Investment in Communities (hours)	No	1,185	Similar
		Investment in Training and Development (£)	No	£1m	Similar
		Gender Pay Gap (%)	No	32.4%	Similar

† Displaced carbon emissions are projected to be lower in 2025/26, despite growth in renewables, due to projected decarbonisation of the UK electricity grid mix carbon factor.
* Actual contractor scope 3 emissions will vary from year-to-year based on project activity therefore this value is not reflective of an absolute reduction. We will aim to refine our estimates through improved contractor emission reporting measures.
‡ All waste and embedded carbon values are estimated from supplier feedback and industry construction, resource use and waste data.

[7] These are estimate of sustainability impacts from Business as Usual activity (BAU), Please also refer to the Business Carbon Footprint (BCF) and Environmental Action Plan (EAP) RIIO-T2 data tables for impact estimate for BAU and with environmental initiatives, available at: www.ssen-transmission.co.uk/riio-t2-plan/business-plan-data-tables/. For each environmental impact area in the plan, there is also a comprehensive review of our current performance, opportunities and challenges for addressing each impact and estimated benefits for the sustainability initiatives.

Whilst our key impact areas remain similar across both RIIO-T1 and RIIO-T2, our focus for the next price control is to build on our performance for continuous improvement; our Sustainability Strategy and plan seeks to move beyond compliance to Leadership in Sustainability (Figure 4).

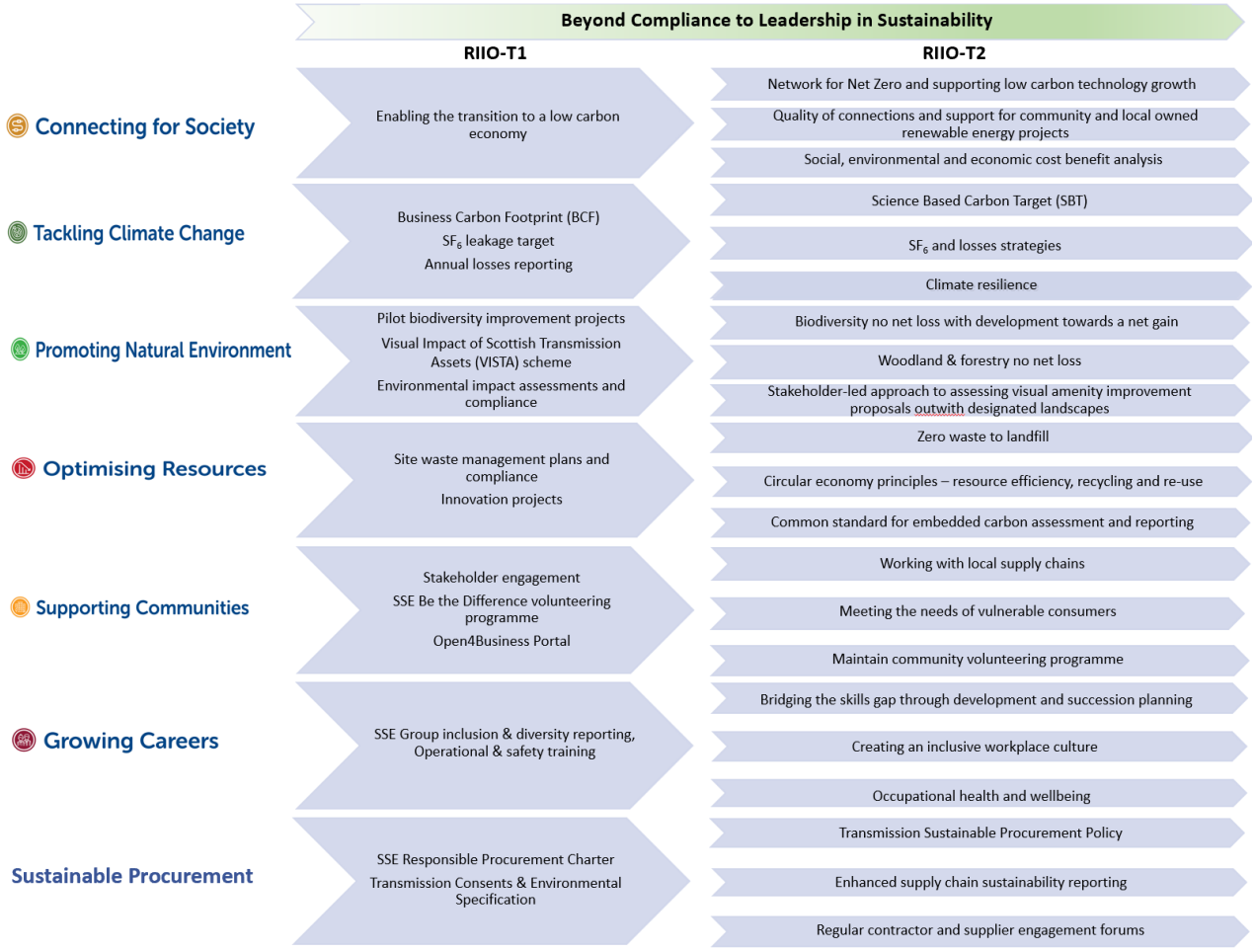


Figure 4: Action to address our Sustainability Impacts during RIIO-T1 and RIIO-T2

1.3.3 RIIO-T2 Sustainability Action Plan - Looking ahead to 2026

This RIIO-T2 Sustainability Action Plan sets out the next stage of our sustainability journey which seeks to fully deliver our Sustainability Strategy during the RIIO-T2 price control. This plan presents an action plan for each sustainability ambition with defined sustainability outcomes to 2026.

Each section of the plan relates to a corresponding outcome presented in our RIIO-T2 Business Plan, A Network for Net Zero, and has an accompanying detailed action plan showing the steps we will take to deliver each outcome. This action plan does not attempt to cover everything that might be possible to fully embed and implement our Sustainability Strategy. As we understand more from implementing these activities, we will revise and update our approach through our biennial Sustainability Plans and annual strategy reviews.

This plan therefore sets out our proposals for the next stage of our sustainability journey to deliver our Sustainability Strategy during RIIO-T2 with business as usual and leading actions for 2026.

Developing a time frame

Our plan has been designed in line with the price control periods set by Ofgem. The completion for each action has been categorised as:

- Short Term (by March 2022, the end of first year of RIIO-T2);

- Medium Term (by March 2024, end of the middle year of RIIO-T2); and
- Long Term (by March 2026, the end of RIIO-T2).

Benchmarking

Based on user group feedback and to finalise our RIIO-T2 Sustainability Action Plan, we have commissioned a benchmarking analysis of our RIIO-T2 sustainability targets and ambitions. With the support of consultants, we have undertaken a comparative analysis of 11 peer organisations' sustainability plans (including other TOs, Network Companies, other UK regulated business and peer organisations) with the aim of defining what represents the norm and what represents ambitious and leading action. Each section of our action plan includes a summary of the benchmarking findings and how our proposed action compares against our leading peers and how the findings have strengthened our final action plans.

This benchmarking assessment is based on publicly available information, such as RIIO-T2 business plans, Sustainability Strategies and Annual Sustainability Reports, as of 10th September 2019. It is important to note that this benchmarking assessment seeks to provide an indication of what sustainability best practice looks like for our company, demonstrate how we are going beyond minimum expectations and inform future action. However, we appreciate the sustainability field is rapidly evolving and we will continue to review and benchmark our sustainability strategy and plans on an annual basis to apply best practice and promote Leadership in Sustainability.

An overview of the benchmarking methodology and assessment criteria is presented in Annex 3.

Estimated Benefits to Consumers

Stakeholders strongly and consistently emphasised their desire for us to show ambition and leadership in sustainability. It is important that we demonstrate that our ambitious plans will lead to measurable outcomes that are valued by current and future consumers.

For each of our outcomes, we have included a section on the estimated benefits of our actions across RIIO-T2 and, where possible, we have monetised the benefits to consumers for our consumer value proposition. We have provided an overview of the methodologies used to estimate the benefits. These estimates are not intended to provide the basis for price control deliverables, but rather to provide an indication of the benefits that will result from the proposed action. We are committed to transparent reporting on our progress implementing this plan and the realised benefits throughout the price control. Please refer to Section 1.4.3.

1.3.4 Embedding our sustainability strategy into our wider business planning

The actions of shareholders and businesses are demonstrating that sustainability is moving from the business side-lines into core mainstream activities and becoming integral to business strategy. Embedding our Sustainability Strategy within our business processes and operations will ensure we deliver our commitments, create innovative solutions and drive sustainable decisions as business as usual.

Following the publication of our Sustainability Strategy, we have undertaken an internal review of our existing business practices to define the actions required to meet our ambitions. This review showed that adopting our Sustainability Strategy will involve new approaches and ways of working, requiring a process of change management. Central to the change will be cross-functional team engagement to develop new working practices.

Our cross functional business teams have assessed our sustainability impacts and future commitments across each of our sustainability ambition areas to develop this sustainability plan and shape the delivery of our operations. For example:

- Our Connecting for Society plans has been developed by our System planning and wider Commercial and Connections teams;

- Our carbon reduction plans (including SF_6) has been developed by our Engineering, Asset Management, Project Development, Operations and Procurement teams; our Losses Strategy and plan has been development by our System Planning, Operations and Procurement team;
- Our plans for Optimising Resources have been developed with Asset Management, Engineering, Operations and Project Development;
- Our plans for Supporting Communities has been developed by our Stakeholder Engagement and Procurement teams;
- Our plans for Promoting the Natural Environment have been developed with our Environment, Project Development and Operations teams;
- Our plans for Growing Careers have been developed by our HR and business planning teams; and,
- Our Procurement team has developed our Sustainable Procurement action plan.

Each team has been involved in the peer review of this Sustainability Action Plan. Implementation responsibilities will sit within the appropriate business teams once the sustainability processes are firmly established in business operations.

Going forward, the adoption of Leadership in Sustainability as a key business strategic theme, integrating sustainability requirements into our cost benefit analysis framework and including sustainability criteria in our procurement and design processes will ensure our sustainability impacts are considered and assessed in our wider business planning processes.

1.4 Delivering Our Sustainability Action Plan

1.4.1 An Adaptable Planning framework

We appreciate that solutions to some of today's challenges may not have been developed yet and planning our sustainability work will be an iterative and adaptive process. We have established a Sustainability Planning framework to continually assess progress and ensure we continue to apply best practice, pilot new approaches and innovate to drive sustainability leadership (Figure 5).

Following this framework, every two years we will prepare a Sustainability Plan setting out our proposed actions to implement our six sustainability ambitions, and report on progress to date.

Figure 5: Our Sustainability Planning Framework

To complement the SSE Group ISO 14001 management system, SHE Transmission is also becoming certified under the ISO 14001 standard for Environmental Management System (EMS) for continuous environmental improvement.

1.4.2 Governance

Appropriate and effective governance is essential to giving stakeholders confidence in our plans, activities and outcomes. Increasingly there is a demand, particularly from shareholders, for specific governance in relation to sustainability. SSE's Chief Executive has overall lead responsibility for sustainability across the SSE Group, including at Board level. The three electricity networks owned by SSE plc are managed separately from other SSE plc businesses under the ownership of Scottish and Southern Energy Power Distribution (SSEPD) which trades under the name Scottish and Southern Electricity Networks (SSEN)

SSEPD has a separate Board with independent non-executive members. Under this structure, the Managing Director of Transmission has responsibility for implementing the Sustainability Strategy within our business. The Sustainability Sub-Committee of the SSEPD Board was established in 2017 to oversee the development and delivery of the Sustainability Strategy, the transition to low carbon energy systems and high standards of environmental management. The remit of the Sub-Committee also includes ensuring consideration of sustainability in other business activities, including: strategy, network planning, connections, networks development, and innovation. It is chaired by the Managing Director of Transmission and includes non-executive representation from other SSEPD Board members. We intend to continue with this strong governance structure during RIIO-T2, adapting as required and in line with best practice.

1.4.3 Our Commitment to Transparent Reporting

As part of our sustainability governance, we are committed to setting measurable targets and activities, and reporting on these so our stakeholders can monitor our performance. Internally, our Sustainability Sub-Committee tracks progress on a quarterly basis and oversees the delivery of the Sustainability Plan.

We are committed to:

- An annual review of our Sustainability Strategy, with a public report on the outcome of that review;

- Developing any changes to our Sustainability Strategy through open and transparent consultation, with changes (and the reasons for them) clearly presented;
- Publishing every two years a Sustainability Plan that sets out measurable, time-bound milestones for delivery against our sustainability ambitions, with open and transparent reporting of progress against those milestones;
- Developing any changes to our Sustainability Plan through open and transparent consultation, with changes (and the reasons for them) clearly presented;
- Establish and implement best practice greenhouse gas emission reporting;
- Continue to work collaboratively with other Transmission Owners (TOs) and our stakeholders to agree common reporting methodologies and metrics[8]; and
- An annual Sustainability Statement incorporated into our Performing for Society report, that describes the progress that has been achieved in the past year.

Table 3 Meeting Ofgem Requirements for Environmental Reporting

SHE Transmission Sustainability Reporting	Meeting Regulatory and wider Reporting Requirements
Annual Performance for Society Report	This report will include the requirement for the Ofgem annual report on their transmission network's impact on the environment and will include the annual losses reporting requirements.
Service Performance Report	This will include the annual Regulatory Reporting KPIs for environment and sustainability and associated data tables required by Ofgem.
Wider Reporting	Reporting as required by the Scottish Environment Protection Agency (SEPA), the Science Based Target Initiative and the Carbon Disclosure Project (CDP).

You can read our sustainability reporting:
www.ssen-transmission.co.uk/sustainability-and-environment/sustainability-strategy/

1.4.4 Creating Partnerships for Sustainability

Partnerships are a valuable tool to drive change towards more responsible, inclusive and sustainable growth. It is essential to actively engage with industry, government and leading organisations to define and promote sustainability best practice.

During the RIIO-T1 price control we have engaged in several partnerships to support our environmental programmes. For example, we have participated in the Scottish Infrastructure Circular Economy Forum (SICEF) and partnered with the Scottish Environment Protection Agency (SEPA) on the Technology Steering Board VALUES (Valuing Land Use change and Ecosystem Services) Project. This project delivered a tool that can be used to value potentially affected ecosystem services (such as erosion and landslide control, flood risk, drinking water, pollination and seed dispersal, preservation of archaeology, hydroelectricity and peat extraction) because of development planning. During RIIO-T2 we will continue to collaborate and establish partnerships with other transmission owners, our supply chain, the wider network industry and cross-sector peer organisations to support our sustainability ambitions. This will allow us to share learnings, promote new thinking and the application of best practice.

[8] Meeting Ofgem Sector Specific Methodology Guidance, "*3.76. We agree that preparatory work is needed to agree common reporting methodologies and to identify metrics that will take account of the different circumstances across the networks in order to compare performance, eg through some normalisation of data. We encourage the TOs to work collaboratively with each other and with interested stakeholders to develop appropriate reporting metrics and a report format in the lead up to RIIO-ET2".*

2 Connecting for Society

Working collaboratively to deliver a whole system solution that promotes affordability, considers societal benefits and supports community renewable connections.

2.1 Introduction

Our main strategic driver over the past decade has been the timely delivery of large-scale capital investment in new infrastructure to accommodate increasing levels of renewable electricity generation across the north of Scotland. Connecting customers remains our primary business driver for the RIIO-T2 period and it is this activity which underpins our Connecting for Society sustainability ambition.

Our strategic purpose, to enable the transition to a low carbon economy, is predicated on our ability to connect additional renewable generation capacity in the north of Scotland, assess the full impacts of our investment decisions and deliver a quality connection service to our customers. Delivery of these activities will be achieved through our Whole System Planning Approach and our Connections and Commercial Policy[9]. Our Connecting for Society ambition influences and aligns these core business deliverables with business and national targets for a Net Zero future – i.e. a future where society achieves an overall balance between greenhouse gas emissions produced and emissions taken out of the atmosphere.

The scale of decarbonisation required to achieve the UK and Scottish Government Net Zero targets, for 2050 and 2045 respectively, is ambitious. The north of Scotland, with its vast reserves of renewable energy, has a critical role to play in meeting these targets. Our Network for Net Zero paper outlines how our Certain View capital delivery programme for RIIO-T2 will prepare our network for a Net Zero future and help to unlock the renewable potential in the north of Scotland. Given the strategic importance of our investment decisions in meeting Net Zero targets we must also ensure that we are accounting for the full lifecycle impacts of our projects. Through our Cost Benefit Analysis (CBA) Methodology[10] we will assess the wider social, environmental and economic impacts of projects to inform and influence decision-making.

In delivering these projects we will place customer and stakeholder needs at the heart of our approach. Providing a quality connections service isn't just the right thing to do for our customers but also for wider society as it enables renewable generators to connect to the network faster or benefit from condensed outages. Likewise, our engagement with Local Area Energy Planning (LAEP) and Local Heat and Energy Efficiency Strategies (LHEES) can help remove barriers for community and locally owned renewable energy schemes which have a significant role to play in the decarbonisation and decentralisation of the energy system.

Read our Planning for Net Zero – Scenarios, Certain View and Likely Outturn report:
www.ssen-transmission.co.uk/riio-t2-plan/planning-for-net-zero-scenarios-certain-view-and-likely-outturn/

2.1.1 Stakeholder Expectations

Our stakeholders have shown consistent and strong support for our strategic purpose of enabling the transition to a low carbon economy. Through consultations on our Sustainability Strategy, Sustainability Plan and Executive Level Annual Statements, we have received continued affirmation that connecting renewable generation is the most important contribution we can make towards this transition. Stakeholders have also consistently shown support for sustainability to be a core part of our business strategy and RIIO-T2 business plan.

[9] www.ssen-transmission.co.uk/media/3405/ssen-riio-t2-commercial-connections-policy-paper-28pp-22782-artwork.pdf
[10] www.ssen-transmission.co.uk/riio-t2-plan/cost-benefit-analysis-methodology/

Our RIIO-T2: Engaging on Our Strategic Objective[11] paper, published in February 2019, outlines the extensive engagement process followed for the development of our core strategic themes in RIIO-T2. Through a series of interviews, consultations and workshops we arrived at and adopted our four strategic themes:

- Safe & Secure Network Operation
- Sector-Leading Efficiency
- Stakeholder-Led Strategy
- Leadership in Sustainability

These themes were deemed to represent a good 'fit' with the new SSE Group strategic themes, reflecting the enduring importance of being a responsible company and recognising that the low carbon world is widening beyond renewable energy connections to encompass the smart, flexible transition. The Leadership in Sustainability theme in particular represents our view that the transition to a low carbon economy should receive equal footing in our business strategy, reflecting the views of our stakeholders and the increasing importance of this issue in society at large. We have shaped our Connecting for Society sustainability ambition around this clear message that our core business activity – enabling generation capacity to connect – should be in the interests of society.

In delivering the connections that enable the low carbon transition we have also incorporated stakeholder views on how we approach network investments. Through our sustainability consultations, in February 2018 and February 2019, we received feedback that we need to consider the whole-life costs of projects and incorporate a broader range of social, environmental and economic impacts in our investment decisions. This feedback has directly influenced our sustainability strategy and our decision to adopt a CBA methodology which includes these wider considerations.

The development of our Connections & Commercial Policy involved multiple avenues of stakeholder engagement including: Online consultation on our Transmission Connection Process paper in November 2018; Bi-lateral discussions with connections customers and National Grid ESO; Online communication including a consultation on our website and via email; Targeted face to face events in February and May 2019; Targeted online webinars in April and May 2019; and, attendance at industry events: National Grid Customer seminars, National Grid RIIO-T2 events, Scotland OC2 forum and All Energy.

Through this process, we identified our stakeholder needs for an optimal connections solution, tailored connection services and an accessible connections process. These needs defined our three connections policy ambitions and reinforced our focus on ensuring customers have access to the right information at the right time to make informed decisions about their projects.

2.2 Supporting the Low Carbon Energy Transition

Outcome

Transport the renewable electricity that powers 10 million homes.

2.2.1 Introduction

In June 2019, the UK Government accepted the Committee on Climate Change (CCC) recommendation to cut greenhouse gases to 'Net Zero' emissions by 2050[12]. The Scottish Government has passed legislation to implement the CCC's recommendation that Scotland adopts the target five years earlier, in 2045. In the general election campaign currently underway as this Plan is being written, all major political parties have re-stated their commitment to the Net Zero targets, with a number of parties proposing to accelerate the target dates.

[11] www.ssen-transmission.co.uk/media/3222/engaging-on-our-strategic-objective.pdf
[12] UK CCC (2019) Net Zero: The UK's contribution to stopping global warming. Available at: www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

Achieving Net Zero emissions will require large scale decarbonisation across all economic sectors and anticipated electrification of heat and transport will necessitate increased growth in renewable electricity generation. Given this, the CCC argue that "A relatively large expansion in [grid] capacity is likely to have low regrets".

The north of Scotland network will have a crucial part to play in realising a Net Zero future by unlocking the renewable energy potential in the north of Scotland. Our network currently supports 6.4 GW of renewable energy, 14% of the UK's total renewable capacity. By the end of RIIO-T1 this is expected to be around 7 GW.

Under Net Zero future energy scenarios for the RIIO-T2 price control period and beyond, modelling indicates that the connected generation will increase to between 13.6 GW and 15.7 GW, i.e. potentially double. The Certain View, on which this RIIO-T2 Business Plan is based, will provide the network infrastructure to accommodate at least a further 3 GW of renewable generation[13]. This would allow our network to provide enough renewable energy to power 10 million GB homes. The flexible uncertainty mechanisms that we propose[14] will be deployed to accommodate generation connections beyond this, as required for Net Zero.

In addition to decarbonising the UK electricity network we have a role to play in facilitating the decarbonisation of other sectors, particularly transport. Through our whole system planning approach and support for the DSO transition, our network will need to support a growing number of low carbon technologies such as electric vehicles. This is reflected in SSE's sustainability goal to support 10 million electric vehicles across the UK by 2030[15].

2.2.2 Current Performance

Since 2013/14 we have invested £2.6 billion in our network with a further £1.3 billion of investments in the pipeline for the remaining two years of the current price control period[16]. This investment has enabled the growth of renewable generation capacity on our network from 3.7 GW in 2013/14 to 6.4 GW. This is expected to grow to 7 GW by the end of RIIO-T1 meaning our network will supply low carbon electricity for the equivalent of over 6 million GB homes. By enabling this generation to connect and export renewable electricity across our network we have contributed towards the decarbonisation of the UK electricity grid. The renewable capacity connected to our network has enabled the displacement of an estimated 38 million tCO_2e over the course of RIIO-T1.

We also understand that our network has a role to play in the uptake of low carbon technologies that will allow other sectors, like transportation and heating, to decarbonise. Through our Whole System Planning approach, we are engaging with stakeholders to understand the impacts on the transmission network from an increasing number of new low carbon technologies. This includes electric vehicles, which are showing signs of increased uptake. Currently our network area in the north of Scotland supports an estimated 2,729 electric vehicles, up from 1,926 in the previous year. This represents around 25% of the total electric vehicles in Scotland and 1.5% of the total electric vehicles in the UK. We will continue to work with our stakeholders to ensure that our investments take account of growing demand for electric vehicles and other low carbon technologies.

2.2.3 Opportunities and Challenges

The UK Climate Change Committee Net Zero report[17] outlines some of the challenges involved in achieving a Net Zero future. The decarbonisation of transport, heating sectors and some industrial processes will potentially double demand

[13] SHE Transmission Net Zero Network: Scenarios (2019). Available at: www.ssen-transmission.co.uk/riio-t2-plan/planning-for-net-zero-scenarios-certain-view-and-likely-outturn/
[14] www.ssen-transmission.co.uk/riio-t2-plan/regulatory-framework-uncertainty-mechanisms/
[15] www.sse.com/sustainability/our-2030-goals/
[16] www.ssen-transmission.co.uk/media/3520/ssen-sustainability-annual-statement-2018-19.pdf
[17] UK CCC (2019) Net Zero: The UK's contribution to stopping global warming. Available at: www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

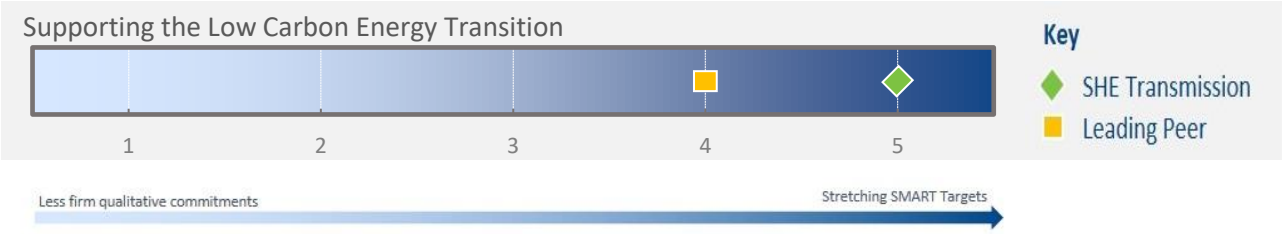
for electricity to 600 TWh across the UK by 2050. This will require stretching and ambitious action across all sectors supported by equally ambitious political commitments.

Clearly this presents an enormous challenge, however our track record of timely delivery of capital infrastructure in RIIO-T1 provides us with a solid foundation on which to deliver our capital investment programme in RIIO-T2. Our Network for Net Zero paper shows how, through having the capacity to 'flex-up' our Certain View, we will align our network and our business with a Net Zero future. This flexibility allows us flexibility against any uncertainty in the Net Zero pathway (e.g. political commitments, uptake of new technologies such as energy storage or carbon capture and sequestration) and give assurance on costs to the consumer.

With transport now the UK's largest emitting sector, increased efforts to switch to low carbon vehicles are being brought to the fore[18]. The UK Government has announced a ban on sales of new petrol and diesel cars and vans by 2040, with the Scottish Government committing to an earlier date of 2032. In addition, Low Emission Zones in Scotland's largest cities (including Aberdeen and Dundee in our network area) will further fuel the uptake of alternatives[19]. The switch to electric vehicles will result in increasing demands on the electricity system. Managing this demand and fully realising the benefits of electric vehicles will require a smart, flexible network with increased decarbonisation, decentralisation and digitalisation. Our 2018 North of Scotland Future Energy Scenarios[20] paper provides further detail on how these trends are expected to impact the regions in our network area.

2.2.4 Benchmarking

Our benchmarking exercise indicated that we are currently leading in delivering a network for Net Zero by having SMART targets relating to connected renewable generation capacity, facilitating the uptake of electric vehicles and transporting renewable energy to homes in GB. While peer organisations have made similar commitments in these areas the review concluded that they were not as ambitious and stretching as the specific targets made by SHE Transmission. This level of leadership has been achieved by aligning our strategic purpose with the low carbon transition and making the connection of renewable generation and low carbon technologies the core of our business. This has provided renewed strategic focus which has in turn driven our RIIO-T2 goal on connecting enough renewable energy to power 10 million GB homes.



[18] www.theccc.org.uk/wp-content/uploads/2019/07/CCC-2019-Progress-in-reducing-UK-emissions.pdf p24
[19] www.lowemissionzones.scot/local-zones
[20] www.ssen-transmission.co.uk/information-centre/industry-and-regulation/future-energy-scenarios/

2.2.5 Action Plan

Actions		Outputs	When
Supporting the Low Carbon Energy Transition	Develop Net Zero scenarios for our network area.	Publish an updated North of Scotland Future Energy Scenarios report.	Short Term 2021/22
	Support flexible network solutions to enable the growth of low carbon technologies (e.g. electric vehicles).	Engagement on low carbon technologies through whole system forums and inclusion of demand profiles in system planning considerations.	Continuous
	Transport enough renewable energy through our network to power 10 million homes.	Delivery of our Certain View investment programme.	Long Term 2025/26
	Contribute towards a GB network capable of supporting the accommodation of 10 million electric vehicles across by 2030.	Delivery of our Certain View investment programme.	

Measuring Performance

Performance in supporting the low carbon transition will be measured based on delivery of the above action plan and the following KPIs:

- Connected renewable capacity (MW)
- Carbon emissions displaced by renewable generation and low carbon technologies facilitated by our network (tCO_2e)
- Number of electric vehicles supported in our network area
- Number of engagements on whole system planning and network flexibility

2.2.6 Estimated Benefit to Consumers

Enabling the connection of renewable generation to our network provides a wider benefit to society through the value of displaced carbon emissions. Each tonne of carbon displaced has an avoided impact and an associated avoided cost which society doesn't have to pay. At the end of RIIO-T1 we will have an estimated 7 GW of renewable generation capacity connected to our network. If there was no further network growth during RIIO-T2 this would displace approximately 18 million tonnes of CO_2 equivalent by the end of the price control period. However, with the delivery of the projects in our Certain View, adding an extra 3 GW, the estimated carbon displacement would be 24 million tonnes of CO_2 equivalent by the end of RIIO-T2. This annual carbon displacement profile across RIIO-T1 and RIIO-T2 for renewables connected to our network is shown in Figure 6.

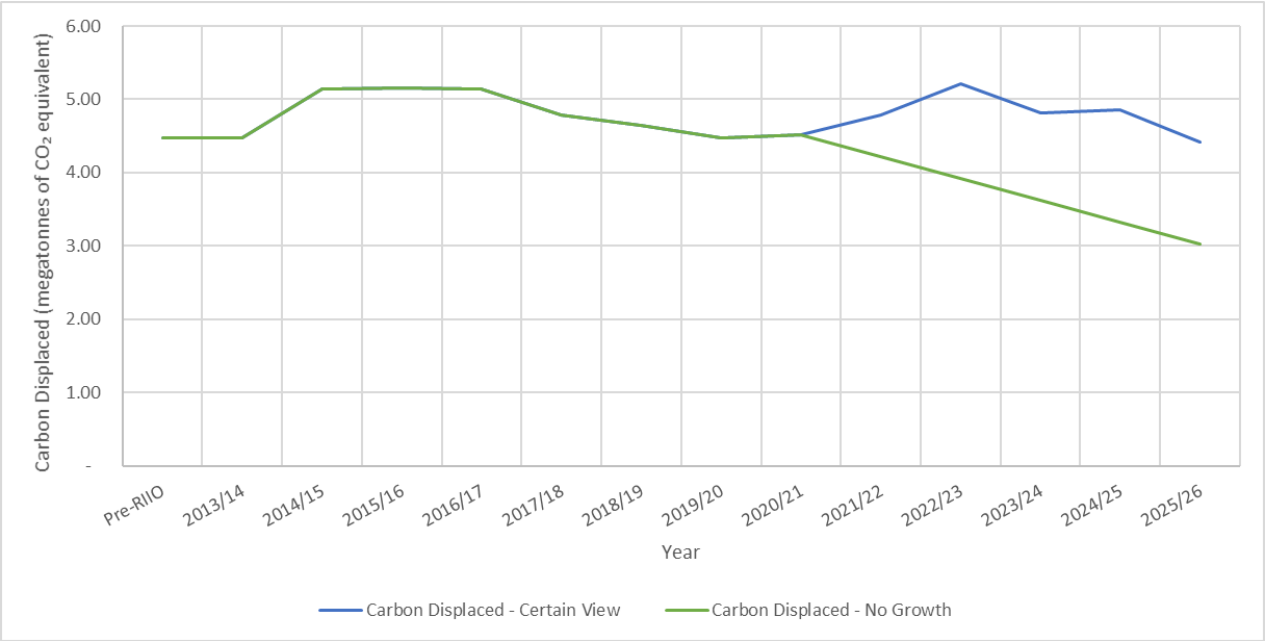


Figure 6: Carbon Displacement from Renewable Generation Connected to Our Network

These carbon displacement values have been estimated using a methodology similar to the Scottish Government Renewable Electricity Output Calculator[21]. As per this methodology, each megawatt hour of renewable electricity generated is assumed to displace the carbon emitted by one megawatt hour of UK grid mix. A forecast of UK electricity carbon intensity (tCO_2e per kWh) aligned with a Net Zero scenario has been used, showing a declining grid carbon factor. Estimates of the renewable megawatt hours each scheme would generate on an annual basis have been calculated using a combination of system planning and Scottish average load factor values.

In addition to the carbon displaced by enabling decarbonisation of the UK electricity network, supporting the uptake of electric vehicles provides a further benefit through the displacement of carbon emissions that would have arisen from their conventional counterparts. While, the growth of electric vehicles will involve multiple stakeholders, our network investments and approach to network flexibility will have a significant role to play. As per the SSE Group goals, SHE Transmission, in coordination with other TOs and DNOs, aims to contribute towards a GB electricity network capable of supporting 10 million electric vehicles by 2030. Within our network area this would equate to an estimated 80,733 electric vehicles by the end of the RIIO-T2 price control period and an estimated 136,450 by 2030, assuming that the number of vehicles in the north of Scotland remains proportional to the GB total.

Assuming that each new electric vehicle displaces one conventional petrol or diesel vehicle, the emissions associated with this displacement in terms of carbon emissions avoided can be calculated using estimates of the average annual distance travelled per vehicle and the BEIS carbon emissions factors for each vehicle type. The displacement of 80,733 petrol and diesel vehicles in our network area would result in an indicative carbon saving of 661,347 tonnes of CO_2 equivalent by the end of RIIO-T2.

2.3 Making Sustainable Investment Decisions

Outcome

Apply our new social, environmental and economic CBA framework to all capital investment decisions made during the RIIO-T2 period and report on the outcomes.

[21] www.gov.scot/Topics/Statistics/Browse/Business/Energy/onlinetools/ElecCalc

2.3.1 Introduction

In delivering a Network for Net Zero we need to make sure that our investment decisions are justified and that impacts are fully understood. It is widely recognised that conventional accounting practices and economic analysis are failing to fully quantify impacts and risks, particularly those associated with environmental and social aspects (often referred to as natural and social capital). We aim to expand the scope of our planning by analysing and quantifying the wider social, environmental and economic impacts of projects to inform decision-making through a Cost Benefit Analysis (CBA) framework.

The purpose of our CBA methodology is to help decision makers within SHE Transmission make informed choices on investment decisions. It provides a framework for assessing the comparative societal, environmental and economic trade-offs associated with proposed investment options to enable the selection of the best value option for the end consumer. The load and non-load network investments in our Certain View capital delivery programme for RIIO-T2 have been assessed through the CBA framework and we will use the outputs to drive strategic optioneering and decision-making across the project lifecycle. Further information on the CBA framework can be found in our Cost Benefit Analysis Methodology[22] paper.

2.3.2 Current Performance

During 2019 we have been developing our CBA framework with input from across the business. This has helped us to refine the supporting data models and better understand how the CBA can be used to influence decision-making and the early optioneering and route/site selection stage of the project lifecycle. The current focus of the CBA framework has been on producing high-level estimates of the project carbon footprint across its lifecycle, with associated carbon pricing, and the gross value added (GVA) to the UK and Scottish economies from project spend. The sections below are focused on the carbon pricing element of the CBA framework. Further information on the GVA element of the CBA framework can be found in the Supporting Communities ambition.

As the CBA framework is a recent development there are no baselines for RIIO-T1 projects. However, we have completed an external peer review of the carbon pricing model in the CBA to ensure that it is fit for purpose and to provide feedback on how we develop the model in future. This peer review took a two-stage process, with an initial review highlighting priority improvement areas to make the model suitable for use and a subsequent review concluding that these issues has been closed out. In applying the CBA framework to all of our load and non-load related projects in our Certain View capital delivery programme for RIIO-T2, we have been able to better understand how it will drive investment decisions for future projects[23].

2.3.3 Opportunities and Challenges

The primary challenge in adopting the CBA framework involves changing the behaviours that underpin decision-making. Adopting a new set of considerations and ensuring these are accounted for alongside traditional cost assessments takes time and training to embed. Here, our RIIO Planning & Performance and Sustainability teams are working with decision-makers to build their understanding of how the models work and help them to interpret what the results tell them.

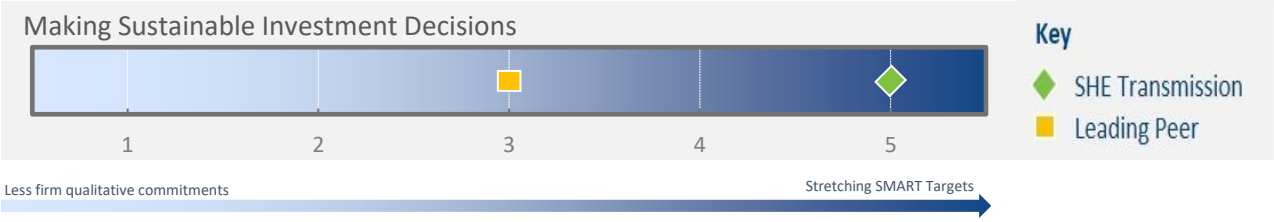
In addition, the datasets which the models are built on will mature over time as we get more refined data through the new supply chain reporting processes we are implementing. This will improve the accuracy of the model and expand its scope to include other impact areas over time. For example, the new waste and resource data reporting requirement in contracts will help refine our resource estimates used in embedded carbon calculations. This will help us to improve our estimates of the full lifecycle carbon impacts of an investment decision.

[22] www.ssen-transmission.co.uk/riio-t2-plan/cost-benefit-analysis-methodology/
[23] Refer to Section 10 for the list of RIIO-T2 engineering justification papers that have an associated Cost Benefit Analysis.

We recognise that this will be a journey and a process of iterative improvement. We will be developing the CBA methodology and how it is applied through an annual review process. As we use the CBA methodology, our understanding of how it can influence decisions will also mature and enable us to make more targeted interventions on impact areas. We will further develop our approach through collaboration with TOs, other infrastructure providers and our supply chain.

2.3.4 Benchmarking

Our benchmarking exercise indicated that we are currently leading in applying sustainable decision-making to our investments through our commitment to apply our CBA framework to all new appropriate investments from the start of the price control. While the peer organisations reviewed make reference to using CBA tools which consider wider social, economic and environmental impacts, they do not state the same level of commitment as SHE Transmission in their application of these tools.



2.3.5 Action Plan

Actions		Outputs	When
Making Sustainable Investment Decisions	Assurance review of CBA framework	External assurance report with recommendations for future development.	Short Term 2021/22
	Annual review of CBA framework.	Annual review reports, updating our approach based upon: A review of the costs and benefits quantified in our modelling New/updated industry standard approaches Updated internal modelling approaches.	Continuous
	Consultation on CBA framework.	Consultation report with review of how feedback has been incorporated into our CBA approach.	Medium Term 2023/24

Measuring Performance

The outputs of the CBA will be presented as part of business justification papers for each applicable project. These will show the project carbon footprint and associated cost for each option. In some instances, only one option is feasible for economic or technical reasons.

For each CBA output we will report on:

- Carbon avoided as a result of strategic optioneering (tCO_2e)
- Carbon displaced by connected renewable generation - for load related projects only (tCO_2e)

We will also report on the development of the CBA framework and its underpinning models through the annual review process.

2.3.6 Estimated Benefit to Consumers

By applying the CBA carbon pricing model to our Certain View projects we can estimate how each considered option differs from the baseline option in terms of their carbon impact. For each option, the carbon impact is estimated and valued using a forecast of the BEIS non-traded carbon price. This can be used to influence our strategic optioneering and show how our recommended option reflects the most balanced decision when all factors are taken into consideration. It is important to note that these other factors, such as cost to consumers and local environmental impacts, also influence the strategic optioneering process therefore the lowest carbon option may not always the one pursued.

Through application of the CBA carbon pricing model to the load and non-load related projects in our Certain View, we have produced an estimate of the total carbon saving enabled by our strategic optioneering process. This saving has been valued using the BEIS non-traded carbon price to show an overall avoided cost to society of £3.2 million resulting from the application of our CBA framework.

2.4 Providing a Quality Connection Service

Outcome

Implement our Local Area Energy Planning Framework.

2.4.1 Introduction

To cater to our customers' individual project economics and timescales we must focus on the quality of the connection service during each stage of the customer experience. Affordability is crucial to the success of low carbon energy development, particularly for local and community owned projects. To arrive at the most optimal connection solution for the customer, the connection service, solution and products must be accessible and tailored to suit each individual customers' need. Where possible, we will seek ways to help customers connect earlier and keep planned outages to a minimum through application of our Commercial & Connections Policy[24] and Network Access Policy[25]. Meeting connection offers ahead of schedule and minimising outages not only benefits our customers directly but also wider society through reduced carbon emissions resulting from more renewable generation capacity on the network.

Through our connection service we also have a role to play in the increasing decentralisation of the UK power system. This is a critical part of moving towards what the Scottish Government's Energy Strategy[26] describes as "a smarter local energy model", underpinned by the Scottish Government's ambitious plans to support 1 GW of local and community energy by 2020 and 2 GW by 2030. We will engage with stakeholders, Local Area Energy Planning (LAEP)[27] and Local Heat and Energy Efficiency Strategies (LHEES)[28] to facilitate the growth of local and community owned renewable energy schemes in our network area as part of the wider low carbon transition. However, the benefits of supporting these developments go much further than contributing to national targets and also include:

- reducing reliance on more expensive and polluting forms of generation in remote areas of our network;
- reducing the impact of fuel poverty; and
- providing local economic benefit in addition to greater social and health benefits such as building social capital and community cohesion around the project.

Local and community energy customers will typically connect to the distribution network. However, with the distribution network in the north of Scotland largely constrained, most connections will require some interaction with transmission.

[24] www.ssen-transmission.co.uk/media/3405/ssen-riio-t2-commercial-connections-policy-paper-28pp-22782-artwork.pdf
[25] www.ssen-transmission.co.uk/riio-t2-plan/network-access-policy/
[26] www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/
[27] www.es.catapult.org.uk/news/ssh1-local-area-energy-planning/
[28] www.gov.scot/policies/energy-efficiency/energy-efficient-scotland/

The policies proposed in our Commercial & Connections Policy, Local Area Energy Planning paper and Stakeholder Engagement Strategy[29] will address barriers that local communities can face when taking a project from concept to reality by providing them with improved clarity around the connection process and access to more information on which to make informed decisions about their projects.

Read our Local Energy Area Plans & Community Energy Plan:
www.ssen-transmission.co.uk/riio-t2-plan/local-energy-area-plans-community-energy/

2.4.2 Current Performance

During RIIO-T1 our customers' expectations were largely centred around securing quicker connections, of which the timely receipt of connection offers was key. Delivering quicker connections supported customer ambitions around subsidy dates and requirements. We recognised that this was a key objective and we have delivered it by changing our ways of working including delivery of flexible connections to speed up connection timescales. Our strong track record for providing a quality connection service to our customers in RIIO-T1 is evidenced by our 100% on-time connections rate and our 96% average reported customer satisfaction rate.

Based on our RIIO-T1 performance and stakeholder feedback, we have developed our Commercial & Connections Policy. This outlines our three policy ambitions to achieve our overall aim and provide customers with:

- Optimal connection solutions;
- Tailored customer services and products for our existing and future customers and;
- An accessible connection process

Each of these policy ambitions details a range of products and services that we will make available to new and existing customers during RIIO-T2.

In addition, we continue to develop our Network Access Policy (NAP) to ensure outage planning is efficiently coordinated to benefit consumers and network users by minimising whole system costs. Through the NAP, working with network users and industry stakeholders has helped produce efficient and economic outage solutions to benefit both consumers and society. The practices we have implemented during RIIO-T1, such as advising network users of high impact outages and utilising alternative outage strategies to achieve the best whole system outcome, will become business as usual, during RIIO-T2.

Using RIIO-T1 data we have developed estimates of the additional renewable generation from accelerated connections and condensed outages enabled by our Commercial & Connections Policy and Network Access Policy. These examples provide an indication of the potential scale of consumer benefits that can be achieved in RIIO-T2 if we continue to deliver and improve upon a quality connection service. Table 4 below shows the additional renewable generation enabled for the example accelerated connections or condensed outages, the associated carbon emissions displaced and the value of these displaced emissions using the BEIS non-traded carbon price.

Table 4: Indicative Carbon and Cost Savings from Accelerated Connections & Condensed Outages in RIIO-T1

Connection Activity	Additional Renewable Generation in RIIO-T1 (MWh)	Carbon Emissions Displaced (tCO_2e)	Cost Impact - from BEIS non-traded carbon prices (£)
Accelerated Connections	4,057,336	1,355,940	88,535,478
Condensed Outages	150,754	64,378	4,017,532

In supporting local and community energy schemes we will build on our existing relationships and strong connection to the places that we operate. As part of our new Transmission Operating Model we have established a new Directorate of

[29] www.ssen-transmission.co.uk/media/3560/shet-stakeholder-engagement-strategy-final-document.pdf

Customers and Stakeholders to give our relationships a strategic focus and ensure that our connection customers are at the heart of our business. We have also undertaken work to identify the actions we can take to address barriers that local communities can face when taking a project from concept to delivery. This includes:

- Enabling our stakeholders to more easily identify opportunities across our network;
- Providing access to expertise; and
- Ensuring that our communications are accessible and inclusive

Through our Local & Community Energy policies, we will take this approach forward into RIIO-T2 and help contribute toward the Scottish Government's Energy Strategy targets. Currently, the capacity of local and community owned renewable energy schemes within our network area (operational and under construction) is 489 MW. This represents 65% of the capacity from such schemes in Scotland. Through our engagement approach outlined above, our focus to date has been on understanding the potential barriers that such schemes face in relation to our connections process.

2.4.3 Opportunities and Challenges

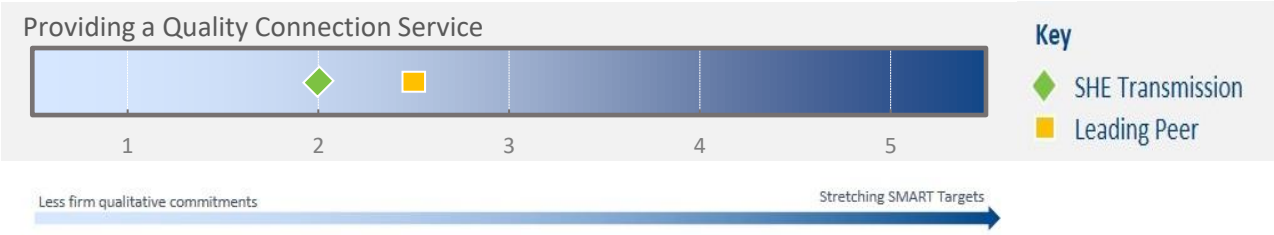
In seeking to get our customers connected earlier we need to make sure they have the right information at the right time. Feedback from our stakeholders indicates that policy changes in support of renewables has changed the business model for local energy. Faced with increased budgetary challenges, an accessible and easy-to-understand connections process, with options that suit each project's economics, can make all the difference to smaller schemes. This is especially true for local and community energy schemes which typically have smaller budgets. Digital technologies provide an opportunity to provide our customers and stakeholders with this information in novel ways. For example, greater visibility of network constraints and outages will allow them to make more informed decisions on where to site their projects and a catalogue of tailored access options will allow them to make decisions around the optimal way and time to connect.

The increasing variety of scheme types and different access options will create a challenge for our network through increased complexity. Through our Whole System Planning approach and our investments, we will continue to emphasise the importance of having a flexible network able to adapt to these challenges. Through collaboration with our customers, DNOs and the ESO we will explore innovative ways to enable connections whilst maintaining the safety and reliability of network.

2.4.4 Benchmarking

Our benchmarking exercise identified that we are currently in the pack in our commitments to providing a quality service but lagging compared to another TO which has established a quantitative target to provide faster connections offers. Our stakeholders have advised us however that they would prioritise greater quality and validity of offers over a faster connection offer. We have adopted this position in our Connections and Commercial Policy and focused on providing a quality service which provides more information to customers earlier in the process, allowing them to make more informed decisions and leading to a more refined connection offer and cost profile.

The benchmarking exercise also identified that we are currently in the pack compared to other TOs and DNOs in terms of our commitments to support community energy. Establishing leadership in this area will therefore require us to improve our offering in RIIO-T2 and establish new KPIs which will enable us to track manage our performance. The actions we will take to deliver this our detailed in the Action Plan below.



2.4.5 Action Plan

Actions		Outputs	When
Providing a Quality Connection Service	Collaborate with TOs and ESO to develop a common NAP approach.	Collaborate with ESO and TOs to deliver single GB Transmission NAP.	Short Term 2021/22
	Develop a quality of connections service target.	A target against which to measure our performance on the quality of connections service we provide to customers.	Short Term 2021/22
	Deliver optimal connection solutions.	Provide customers with digitised information and tools to enable them to scope optimal solutions.	Medium Term 2023/24
	Provide a tailored customer service.	Provide a range of products and services which allow customers to connect faster and optimise their connections.	Long Term 2025/26
	Deliver an accessible connections process.	Provide a service which keeps customers up-to-date on policy changes and market opportunities and which facilities cooperation between customers where there are opportunities for optimal connections solutions.	Long Term 2025/26
	Formulate and implement a process for network users to self-fund outage changes.	Develop process in collaboration with ESO.	Medium Term 2023/24
	Act as a trusted partner and realise the benefits of collaboration through the development of LAEP and LHEES.	LAEP toolkit for engaging with local authorities applied across SHE Transmission license area and LAEP data embedded within network planning activities.	Long Term 2025/26

Measuring Performance

Performance in providing a quality connection service will be measured based on delivery of the above action plan and the following KPIs:

- Performance against a quality of connections service (to be developed at the start of RIIO-T2)
- Number of connections and outages on time
- Number of accelerated connections
- Customer satisfaction ratings throughout connection process
- Community energy supported in our network area (MW)

In coordination with TOs and the ESO we will also develop KPIs to measure performance in the implantation of our Network Access Policy.

2.4.6 Estimated Benefit to Consumers

For accelerated connections and condensed outages, a wider benefit to consumers can be estimated based on the additional renewable electricity generated and the carbon emissions displaced as a result. For example, a renewable generator which is able to connect to the network and export electricity earlier will generate more renewable electricity than if it was connected on its original date. This additional renewable generation can be quantified in terms of the amount of carbon emissions it would displace and valued using the BEIS non-traded carbon price. Likewise, for condensed outages, the additional renewable generation enabled by reducing the duration of a planned outage can also be quantified and valued in the same manner.

While it is not possible to predict which schemes at present will benefit from accelerated connections, as this will be customer-initiated in most cases, we can use examples from RIIO-T1 to provide an indicative value. If the average duration from accelerated connections in RIIO-T1 is applied across the load related projects in the Certain View it would enable an indicative 4.4m tonnes of CO_2 equivalent to be displaced. This would have a benefit of £313 million.

Likewise, for planned outages in RIIO-T2, the duration of condensed outages cannot currently be predicted. However, with the same methodology above, we can apply average durations from RIIO-T1 to provide an estimate of what may be achievable in RIIO-T2 if a similar level of performance is delivered. This would displace an indicative 52,435 tonnes of CO_2 equivalent, providing a benefit of £3.6 million. While these values are not definitive, they do offer a perspective on the potential scale of the value that can be unlocked through our Network Access Policy.

For local and community owned energy schemes, the policies outlined in our Connections & Commercial Policy, Stakeholder Engagement Strategy and our LAEP paper will play a role in reducing the barriers to connection for such schemes. This will help facilitate achievement of the Scottish Government's 2030 target of 2 GW of local and community owned renewable generation capacity. While this will be attributable to multiple stakeholders, it can be valued based on the carbon emissions displaced by the additional renewable generation in our network area. Assuming that the current percentage of local and community owned energy in the north of Scotland stays consistent relative to Scotland as a whole, our network area would need to support approximately 950 MW by the end of RIIO-T2 and 1304 MW by 2030 to meet the Scottish Government target. Over the RIIO-T2 period, this equates to the displacement of approximately 3.4m tonnes of CO_2 equivalent, providing a benefit of £249 million.

3. Tackling Climate Change

Managing resources over the whole asset lifecycle to reduce our greenhouse gas emissions in line with climate science and become a climate resilient business.

3. 1 Introduction

It has been a remarkable 12 months and the need for action to tackle climate change has never been clearer.

Globally, the impacts of the changing climate have become increasingly visible and the latest science shows that the average global temperature for 2015-2019 is on track to be the warmest of any equivalent period on record[30]. It is currently estimated to be 1.1°C above pre-industrial (1850-1900) times and 0.2°C warmer than 2011-2015. It is time to act and plan for this new reality.

Greta Thunberg, Extinction Rebellion and Sir David Attenborough have engaged the public in the UK's transition to a low carbon economy and have raised awareness of the fact that we are facing a climate emergency[31]. In May 2019, the Committee's Net Zero report offered compelling evidence of the need to reduce greenhouse gas emissions in the UK effectively to zero by 2050.

The combination of strengthened public sentiment and increased scientific evidence provides a powerful impetus for accelerated policy action through the early 2020s. The UK leads international action to tackle climate change and has become the first major economy to pass a Net Zero emissions legislation[32]. The UK Government has adopted the Committee on Climate Change recommendation to cut greenhouse gases to Net Zero by 2050 and the Scottish Government has also accepted the Committee's recommendation that Scotland adopts the target five years earlier, in 2045. The Net Zero target meets the UK's obligations under the Paris Agreement and responds to the urgent need for action highlighted by the IPCC in last year's landmark Special Report on 1.5°C of global warming.

As the owner of the transmission network in a region rich in renewable energy, our most material contribution to action against climate change is in enabling the transition to a low carbon electricity system. While acting on this, we are also determined to:

1. Reduce our Business Carbon footprint (BCF)
2. Contribute to fewer transmission losses on the network
3. Make our business resilient to the future risk of climate change

3.1.1 Stakeholder Expectations

Our stakeholders, including our shareholders, want us to take ambitious action on climate change and reduce our emissions following best practice in climate science through the Science Based Target (SBT) initiative. At the outset of developing our Sustainability Strategy, stakeholders highlighted the importance of reducing our own carbon emissions in-line with climate science and adopting an absolute reduction approach to setting our target[33].

During our RIIO-T2 stakeholder engagement events, stakeholders have continued to encourage us to reduce our carbon emissions. During our November 2018 stakeholder workshop, it was recommended that we should also place emphasis

[30] United in Science (2019) High-level synthesis report of latest climate science information convened by the Science Advisory Group of the UN Climate Action Summit 2019. Available at: www.public.wmo.int/en/resources/united_in_science
[31] UK CCC (2019) Reducing UK Emissions 2019 Progress Report to Parliament. Available at: www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/
[32] www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law
[33] SHE Transmission (2018) Sustainability Strategy Consultation Summary

on reducing our scope 3 (supply chain) greenhouse gas emissions alongside our scope 1 and 2 emissions. In addition, we have received feedback that we should consider the use of electric vehicles in our fleet to reduce emissions[34].

During the consultation on our Sustainability Plan (2019-2021) and RIIO-T2 Emerging Thinking Paper, stakeholders also told us that we need to adapt to the consequences of climate change as the Met Office[35] recently published detailed analysis that indicates there will be further and significant climatic changes this century. We have since included climate resilience planning within our RIIO-T2 plans.

Most recently our supply chain responded positively to our sustainability questionnaire in support of reducing our scope 3 emissions and the majority were supportive of setting their own science-based target to complement our goal[36]. We have been commended by our stakeholders on our draft business plan and for the inclusion of our ambitious carbon target that is in line with an independent science-based target. Our ambition is therefore to reduce our greenhouse gas emissions to facilitate the necessary level of decarbonisation critical to limit rising global temperatures by 1.5°C and become a climate resilient business.

In September 2019, we also consulted on our Losses Strategy at a roundtable workshop whereby 75% of stakeholders strongly agreed or agreed that the proposed strategy and action for transmission losses was appropriate. Stakeholders encouraged us to further engage with the supply chain through procurement to monitor and minimise the level of power losses.

3.2 Business Carbon Footprint (BCF)

Outcomes

- Scope 1 and 2: One third reduction on our scope 1 and 2 greenhouse gas emissions from 2018/19 baseline.
- Scope 3: Two thirds of our suppliers by spend set a science-based target by 2025.
- Target an Insulation and Interruption Gases (IIG) leakage rate of 0.15% of installed volumes by the end of RIIO-T2.
- Establish and implement best practice GHG emissions reporting (including for scope 3).

Long Term Targets

- SBT: 45% absolute reduction in scope 1 and 2 carbon emissions by 2030 to meet the 1.5-degree climate science pathway from a 2018/19 baseline[37].
- EV 100: 100% of vehicles up to 3.5t and 50% of vehicles up to 7.5t to be electric by 2030.
- Our longer-term goal is to remove all SF_6 from our Network by 2050 subject to cost benefit analysis for consumers.

3.2.1 Introduction

Stakeholders have told us to be ambitious and drive business activities that reduce our carbon footprint throughout RIIO-T2. Our goal is to reduce our scope 1 and 2 greenhouse gas emissions from our operations by 33% by 2026, compared to 2018/19 levels, consistent with the net zero emission pathway

This goal aligns with the trajectory required to meet our 1.5-degree science-based carbon target that we are in the process of setting with the Science-Based Target Initiative (SBTi). We are applying this goal on our certain view projects and we will review the impact of future outturn projects on this target on a project-by-project basis.

[34] SHE Transmission (2018) Stakeholder Workshop Recommendations
[35] Met Office (2018) UK Climate Projections – UKCP18. Available at: www.metoffice.gov.uk/research/collaboration/ukcp
[36] Our suppliers demonstrated a commitment to carbon reduction and the majority are wanting to set a SBT in the future.
[37] Subject to verification by the Science Based Target initiative

At the time of writing we have proposed our science-based target as:

- A 45% absolute reduction in scope 1 and 2 carbon emissions by 2030 to meet the 1.5-degree climate science pathway from a 2018/19 baseline.

SHE Transmission Carbon Emission Areas

To set a Science Based Target we carried out detailed analysis of our business carbon emissions that has helped us to identify our key emission areas and action required during RIIO-T2 to meet a Science Based Target. Our carbon emission areas are summarised by scope in Figure 7.

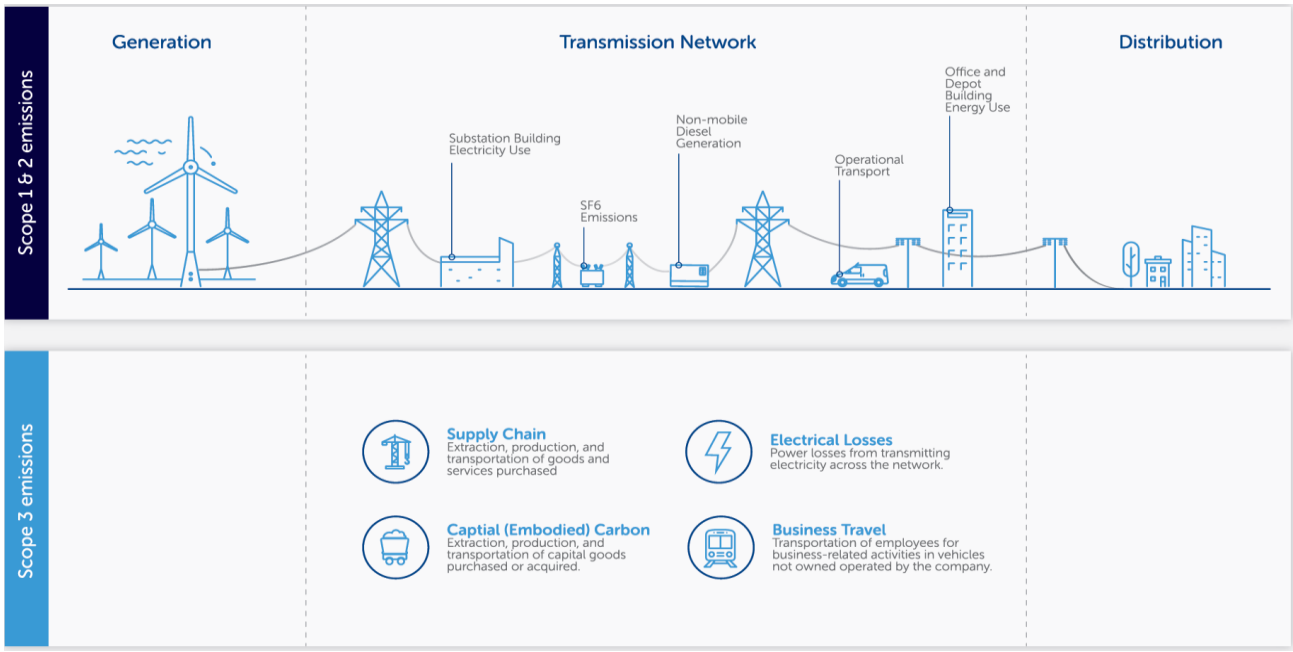


Figure 7: SHE Transmission Carbon Emission Areas

Our main material emission areas for scope 1 and 2 emissions are:

1. Substation building electricity use emissions;
2. Sulphur hexafluoride (SF_6) emissions; and
3. Operational transport emissions.

These emission areas will be prioritised for reduction. Other less material scope 1 and 2 emissions include office energy use and non-mobile diesel fuel use.

Our scope 3 emissions include contractors supply chain emissions, business travel, embedded carbon and transmission losses. It is important to note that we have allocated our substation auxiliary electricity use (sometime referred to as losses) as our scope 2 greenhouse gas emission under our direct control. However, we have defined wider network losses as a scope 3 greenhouse gas emission as per the Greenhouse Gas Protocol definition of scope 3 emissions, "Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company"[38]. Please refer to Section 3.3 for our approach to minimise Transmission Losses.

[38] www.ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

3.2.2 Current Performance

During RIIO-T1 we have reported annually on the main components of our greenhouse gas emissions: business carbon footprint (BCF), SF_6 leakage and the electrical losses on our network (see section 3.3 for Transmission Losses). During this period, we have targeted SF_6 leakage improvements and had targets to reduce building and transport emissions.

Table 5 RIIO-T1 Business Carbon Footprint (tCO_2e)

Data Gathered[39]	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Scope 1 Emissions	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)
Buildings Energy Usage (Gas Fuel)	-	12.92	8.18	13.24	15.36	15.36
Operational Transport	4,499.31	379.71	469.77	560.07	580.85	568.37
Fugitive Emissions (SF_6) [40]	4,204.15	2,237.20	2,037.45	1,245.50	1,259.37	1,924.65
Fuel Combustion	-	-	-	-	-	99.87
Total	**8703.46**	**2629.83**	**2515.4**	**1818.81**	**1855.58**	**2608.25**
Scope 2 Emissions						
Office Buildings Electricity Use	752.37	629.99	294.24	267.22	238.14	189.83
Substations Electricity Use[41]	6,183.26	6,840.56	7,034.53	6,502.15	5,990.58	5,650.08
Total	**6935.63**	**7470.55**	**7328.77**	**6769.37**	**6228.72**	**5839.91**
Scope 3 Emissions						
SHE Transmission's Business Transport	670.76	999.69	860.29	601.89	705.26	670.53
Electrical Losses	169,282.40	328,831.80	286,440.15	110,004.30	87,000.92	100,206.78
Total Contractors' Emissions	-	4,891.73	8,848.00	4,778.98	14,636.18	9,637.11
Total	**169953.16**	**334723.22**	**296148.44**	**115385.17**	**102342.36**	**110514.42**
Total BCF	**185592.3**	**344823.6**	**305992.6**	**123973.4**	**110426.7**	**118962.6**
Total Scope 1 and 2 emissions	**15639.09**	**10100.38**	**9844.17**	**8588.18**	**8084.3**	**8448.16**

Our overall BCF performance trend over the period of RIIO-T1 Price Control, shows a reduction in our business carbon footprint by 35.9% from 185,592.3tCO_2e reported in 2013/14 to 118,962tCO_2e reported in 2018/19.

Despite increasing operations, there has been an overall decrease in our scope 1 and 2 emissions predominantly due to the decarbonisation of electricity use and energy efficiency measures undertaken on our office buildings. Our operational transport emissions have been fairly constant and our SF_6 emissions have reduced significantly since the start of the RIIO-T2 price control, however increased over the past few years due to an increasing asset base.

SHE Transmission has been reporting scope 3 greenhouse gas emissions since the start of the price control. Losses are a significant component of our scope 3 emissions (please refer to Section 3.3). While our business travel emissions have

[39] The reporting methodology is compliant with the principles of the Greenhouse Gas Protocol ("GHG Protocol") and in line with Defra's Environmental reporting guidelines: including Streamlined Energy and Carbon Reporting requirements, 2019

[40] To improve our focus on whole-life asset management of SF_6, we have amended our methodology to report actual leakage only rather than also including manufactured calculated leakage. Please refer to our IIG strategy for further information.

[41] We have undertaken a review of our substation emission calculation methodology and have amended our methodology for RIIO-T2 accordingly. Please see action plan for substation electricity use.

decreased slightly, our contractor emissions show a general increase due to improved reporting. The stated contractor emissions directly relate to our construction activities.

SF_6 emissions

For decades, SF_6 gas has been used extensively across the electrical industry as an insulating gas for switchgear in substations, with the electricity transmission industry responsible for 80% of the world's usage. SF_6 gas was chosen for its excellent insulating properties making it possible to reduce equipment size and improve reliability and safety. However, SF_6 is a greenhouse gas that is 23,500 times more harmful to the earth's atmosphere than CO_2 which if released, stays in the atmosphere for over 3,200 years. Its lifecycle management requires careful handling, particularly when decommissioning aging substations. Whilst leaks are relatively rare, when they do occur the environmental impact is substantial.

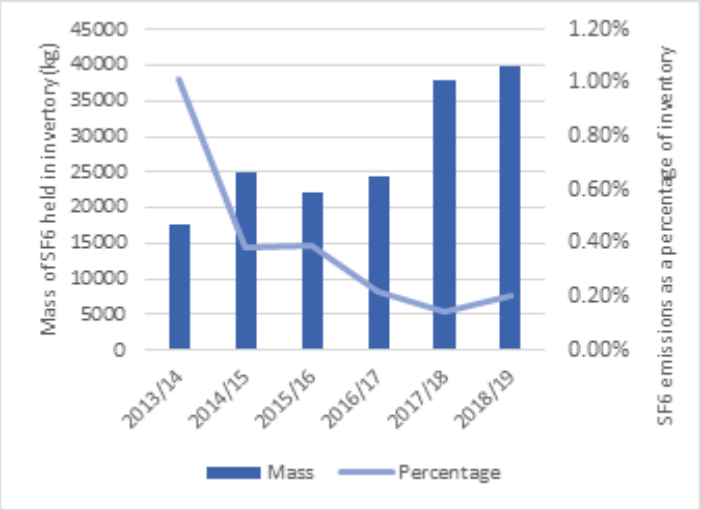


Figure 8: Leakage against total mass (%)

Our SF_6 Leakage at the start of RIIO-T1 was 1% of our asset base in 2013/14 and has significantly reduced through improved and innovative operational practices with an average leakage rate of 0.39% across the price control (Figure 8).

During RIIO-T1, we have led the way in Great Britain in trialling SF_6 alternatives, collaborating with several manufacturers and are currently in the trial stages for two new alternative Insulation and Interruption Gases (IIGs). For example, we were the first UK Transmission Owner to energise SF_6 gas free circuit breakers at our substation in Dunbeath[42]. This SF_6 free circuit breaker technology has been developed by Siemens, using a combination of vacuum and clean air technology to provide the same level of performance and reliability, without the need for SF_6 gas and with no Global Warming Potential (GWP). Furthermore, we have committed to using SF_6 alternatives at our New Deer and Fort Augustus substations. New Deer will see the world's largest volume of GE's alternative gas g^3 used in one location[43].

Baseline

Refer to Table 6 for our scope 1 and 2 emissions baseline for our RIIO-T2 carbon target.

[42] www.ssen-transmission.co.uk/news-views/articles/2019/10/ssen-transmission-first-uk-transmission-owner-to-energise-sf-gas-free-technology/
[43] www.ssen-transmission.co.uk/news-views/articles/2019/3/ssen-transmission-s-sites-lead-the-way-with-use-of-new-environmentally-friendly-gas-insulated-switchgear/

Table 6 SHE Transmission Scope 1 and 2 Emissions (2018/19)

	Emission Area	tCO_2e	Percentage of Scope 1 & 2 Emissions (%)
1	Substation Building Electricity Use	5650	66.9%
2	SF_6 Emissions	1924.65	22.8%
3	SHE Transmission Operational Transport	568.37	6.7%
4	Buildings electricity Use	189.83	2.2%
5	Diesel Fuel Combustion	99.87	0.12%
6	Buildings energy use – other fuels	15.3	0.02%
	Total	8448.02	100%

Refer to Table 7 for our scope 3 emissions baseline. Our scope 3 baseline has been developed based on the science-based target initiative guidance[44]. The baseline includes our scope 3 reporting during RIIO-T1 (losses, contractor emissions and business travel) and includes projections of capital goods and waste emissions from the GHG protocol Scope 3 Evaluator tool[45]. This seeks to ensure all appropriate scope 3 emissions required for setting a science-based target are included within our scope 3 target boundary.

Table 7 SHE Transmission Scope 3 emissions (2018/19)

	Emissions Area	GHG Protocol Classification	Emissions (tCO_2e)	Percentage
1	Capital goods (estimated)	Embedded Carbon	10,042.00	47.86%
2	Road (Contractors)	Upstream transport (Contractors)	7,400.10	35.27%
3	SF_6 (Contractors)	SF_6 leakage (Contractors)	1964.86	9.36%
4	Waste generated in operations (estimated)	Waste generated in operations	631.32	3.01%
5	Road (SHE Transmission)	Business travel	503.16	2.40%
6	Buildings - Electricity (Contractors)	Fuel and energy-related activities	264.30	1.26%
7	Air	Business travel	148.78	0.71%
8	Rail	Business travel	16.54	0.08%
9	Buildings - Other fuels (Contractors)	Fuel and energy-related activities (Contractors)	5.13	0.02%
10	Gas Natural (Contractors)	Fuel and energy-related activities (Contractors)	2.72	0.01%
11	Sea	Business travel	2.05	0.01%
	Total Emissions		20,980.96	100%
11	Losses	Transmission Losses	100,206.78	
	Total Scope 3 Emissions (including Losses)		121,187.73	-

[44] SBTi (2019) Science Based Target Setting Manual. Available at: https://sciencebasedtargets.org/wp-content/uploads/2017/04/SBTi-manual.pdf
[45] www.ghgprotocol.org/scope-3-evaluator

3.2.3 Opportunities and Challenges

In May 2018 we marked a significant milestone in our low carbon strategy by committing to set a science-based target for reducing our greenhouse gas emissions. We have since aligned our business carbon reduction strategy with the need to achieve the level of decarbonisation consistent with the 1.5-degree pathway recommended by the latest IPCC report.

Setting a Science Based Target provides a clearly defined and transparent pathway to reduce our emissions. Over the past year we have been reviewing the different approaches to setting a science-based target and have undertaken scenario analysis and technical feasibility to inform the development of our carbon reduction plans. There are several opportunities to reduce our emissions that will provide both environmental and wider benefits to our stakeholders:

- Applying energy efficiency measures at substations and non-operational buildings will result in carbon and energy savings for consumers.
- Electric Vehicles (EVs) are on track to be cheaper to buy as well as to run than conventional vehicles during the 2020s[46]. However suitable EVs for our terrain are still in development.
- There is an opportunity to collaborate with our supply chain improve scope 3 data reporting and to target reductions of our scope 3 emissions that will also support innovation across the industry.
- The SSE group has targets to reduce non-operational buildings emission by 5% every three years up to 2030 and is looking to use certified renewable energy for our building electricity use.

Achieving the carbon reductions required for a science-based target is challenging, has not previously been achieved, and there is uncertainty of all actions required so a range of solutions may be developed over the price control period. Several challenges to be addressed include:

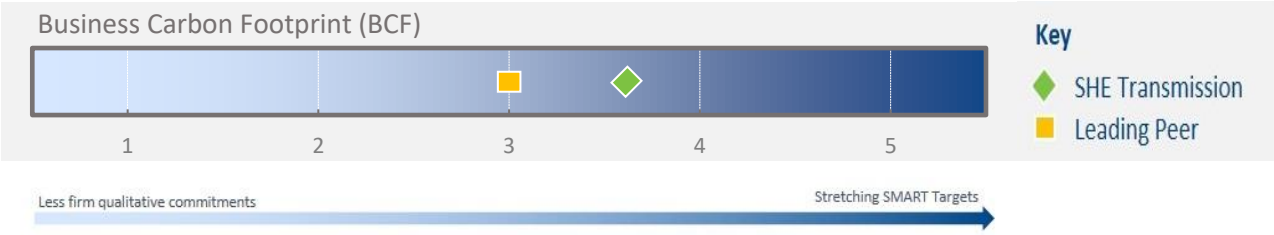
- Our network will experience significant growth over the price control period to accommodate at least a further 3 GW of renewable energy, making an absolute reduction in greenhouse based on our most recent financial year as a baseline very ambitious.
- Our SF_6 fugitive emissions are a key material emission however in some situations there are currently no technical alternatives, particularly at 275kV and 400kV. We are working with suppliers to install SF_6 alternatives across our network, as well as working with the Energy Networks Association to support industry wide adoption of these technologies.
- The mechanisms for Greenhouse Gas Removal (GGR) to meet the UK Net Zero target are still in development[47] and a range of options are being considered such as Reforestation/Afforestation; Soil Carbon Sequestration; and, Carbon Capture and Storage (CCS). We will review these options as they become available to ensure efficient and economic actions are taken to address our controllable carbon emissions.

3.2.4 Benchmarking

SHE Transmission was the first Transmission Owner (TO) in the UK to commit to setting a science-based target in May 2018 which has led to the development of this carbon reduction plan. Ofgem has now included setting a science-based target as a minimum requirement within the RIIO-T2 business plan guidance and the wider industry is now beginning to commit to science-based carbon reduction targets. It is important to note that SHE Transmission's science-based target will be set directly with the Science Based Target initiative and will not be a sub-target of the wider business Group target. Our SBT will therefore be subject to the meeting the full criteria for a setting a 1.5-degree science-based target.

[46] UKCCC (2019) Net Zero: the UK's contribution to stopping global warming. Available at: www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

[47] BEIS (2019) Greenhouse Gas Removal (GGR) Policy Options. Available at: www.gov.uk/government/publications/greenhouse-gas-removal-policy-options



3.2.5 Action Plan

Substation Electricity Use

Based on the Edinburgh Napier University Research Study (2018) on 'Reducing energy losses & greenhouse gas emissions from substations' at our Tealing Substation, we propose to introduce energy efficiency measures and microgeneration to reduce electricity consumption, cost and carbon emissions from our substations. To achieve this, we will:

- Install electricity monitoring on a representative sample of existing substations and install electricity usage measurement on all new substations;
- Install Photovoltaics (PV) or other suitable micro-generation on our existing and future sites to reduce their direct electrical consumption where viable; and
- Implement an energy efficiency programme for existing substations built prior to RIIO-T1 and design new efficient substations.

Actions		Outputs	When
Substation Electricity Use	Technical review of the suitability of existing substations for energy efficiency measures and the adoption of PV microgeneration.	Technical feasibility study for PV and energy efficiency measures on existing sites.	Short Term 2021/22
	Technical specifications developed for energy efficiency measures, micro generation and energy monitoring for substations.	Technical specifications for: energy efficiency measures, micro generation and energy monitoring at substations.	
	Install data loggers on a representative sample of existing substations.	Data loggers installed on existing substation.	
	Pilot the installation of PV microgeneration on substation sites.	Analysis of the effectiveness of pilot measures.	Medium Term 2023/24
	Pilot energy efficiency measures on existing sites (e.g. heating control, LED lighting, insulation etc).	Updated methodology for determining substation electricity use and reduction measures benefits.	
	Update methodology for calculating substation emissions based on metering and determine need to re-baseline emission projections.		
	Roll out energy efficiency and PV programme on existing and new substation sites.	Energy efficiency and PV on up to 83 existing sites subject to technical and CBA assessment. Install metering and PV on ~10 new sites substation sites.	Long Term 2025/26

SF_6 emissions

Read Our Strategy for the Management of Insulation and Interruption Gases (IIG) here[48]:
www.ssen-transmission.co.uk/riio-t2-plan/our-strategy-for-the-management-of-insulation-interruption-gases/

We propose to reduce our leakage rate and minimise the increase in our SF_6 mass holdings due to network growth. To achieve this, we will:

- Target an Insulation and Interruption Gases (IIG) leakage rate of 0.15% of installed volumes by the end of RIIO-T2;
- Monitor all IIG-containing plan and introduce real time monitoring on all new GIS SF_6 installations;
- No longer install SF_6, where there is a technically and commercially viable alternative; and
- Collaborate with our suppliers and other network operators to improve the viability of the SF_6 alternatives supply chain

Actions		Outputs	When
SF_6 emissions	Insulation and Interruption Gases (IIG) Strategy published and plan to implement strategy in place.	Invest in new technologies to remove the need to install around 19.9t of SF_6 during RIIO-T2.	Short Term 2021/22
	Update our SF_6 specification to include installation of real time monitoring on new GIS SF_6 installations and the use of SF_6 alternatives.	Updated Specification	
	Monitor and report against our baseline IIG leakage rate of 0.39% and our target of 0.15% by the end of RIIO-T2.	Targeting a leakage rate of 0.15% of our asset base by the end of RIIO-T2.	Continuous
	Continue to collaborate with our suppliers and other network operators to improve the alternative supply chain and minimum leakage requirements.	Trial SF_6 alternative at 275/400kV subject to technology readiness.	Continuous

Operational transport emissions

We propose to introduce alternative fuel use vehicles where suitable vehicles are available for our operations. To achieve this, we will:

- Introduce fuel efficient and alternative fuel vehicles (hybrid, electric) in our operational fleet when viable, targeting 50% of our fleet to be EVs by the end of RIIO-T2; and
- Develop and implement a plan to reduce our operation vehicle mileage where possible without compromising quality of service to our customers and stakeholders.

[48] Also refer to the A6.5 IIG SF_6 data table for further information

Actions		Outputs	When
Operational transport emissions	Complete technical scoping for the installation of EVs charging infrastructure across our network area.	Technical and feasibility assessment, Programme plan.	Short Term 2021/22
	Pilot the introduction of EVs and/or alternative fuel use vehicles in our operational fleet.	Pilot Assessment	Medium Term 2023/23
	Develop and implement a plan to minimise our operational vehicle mileage where possible without compromising the quality of service to our customers.	Operational plan	
	Roll out programme to install EV charging infrastructure and the use of Electric Vehicles and/or alternative fuel use vehicles in our fleet by the end of the price control.	Target 50% of fleet to be electric subject to technology readiness. ~32 charging points installed on our substations and a further 98 across our network.	Long Term 2025/26

Scope 3 emissions

We will collaborate with our supply chain to target reductions in our scope 3 emissions from our contractor emissions and asset embedded carbon. Based on the science-based target initiative guidance we aim to set our scope 3 carbon target as two thirds of our suppliers by spend setting a Science Based Target by 2025.

Actions		Outputs	When
Scope 3 Carbon Emissions	Include our Sustainable Procurement Policy in key framework contracts for the start of the price control that will include a requirement for our key framework contractors to set a Science Based Target within the next 5 years.	Sustainable procurement policy in framework contracts.	Short Term 2021/22
	Adopt the SBT best practice guidance[49] and define our supplier engagement plan for supporting our key framework contractors to set a Science Based Target.	Plan for showing progress against target.	
	Include carbon projections in contract tenders for key framework contracts.	Methodology for projecting carbon emissions in contract tenders.	
	Strengthen our supply chain carbon reporting by introducing a sustainable procurement reporting database for our suppliers.	Refer to Section 8.	
	Based on the Science Based Target guidance, report on progress of achieving our scope 3 supplier engagement target.	Two thirds of our suppliers by spend set a science-based target by 2025.	Long Term 2025/26

[49] SBTi (2019) Value Change in the Value Chain: Best Practice in Scope 3 greenhouse gas management. Available at: www.sciencebasedtargets.org/wp-content/uploads/2018/12/SBT_Value_Chain_Report-1.pdf

	Strengthen scope 3 data quality and undertake review to determine future scope 3 targets.	Scope 3 carbon review report.	
	Hold regular contractor and supplier engagement forums to collaborate, share knowledge and support our supplier to set science-based carbon targets.	Supplier engagement forums.	Continuous

Measuring Performance

We are committed to reporting annually on our carbon emissions and progress against our business carbon footprint targets to our stakeholders.

Throughout RIIO-T1, we have had an internal procedure[50] for calculating our business carbon footprint for our Regulatory Reporting Pack (RRP) and Environmental Discretionary Reward (EDR) Executive Level Annual Statement.

SHE Transmission's Business Carbon footprint is calculated to meet Ofgem's reporting requirements outlined in the Regulatory Instruction and Guidance Document. GHG data is provided by various data providers from across the businesses, the carbon footprint activity data as source data - e.g. kWh, litres, etc. - rather than CO_2 equivalent, so that the most up-to-date GHG conversion factors can then be applied.

To calculate total carbon emission value, the latest carbon conversion factors provided by Department for Business, Energy and Industrial Strategy (BEIS) are used. The data is gathered centrally by Transmission Sustainability team who compiles it and prepares a report for our Group external verification audit.

We will continue this BCF reporting (Scope 1, 2 and 3) during RIIO-T2 and establish and implement best practice GHG emissions reporting (including for scope 3) and strengthen our annual data assurance and reporting throughout the price control.

To demonstrate progress against our carbon target, will measure progress of meeting our third reduction target (using both percentage reduction and reduced tonnes of carbon dioxide equivalent (tCO_2e) KPIs) and report on this in our Annual Performance for Society Report. In addition, to track progress on meeting our science-based target and to demonstrate benefits from our carbon reduction initiatives we have also identified further metrics below[51].

Substation Electricity Use	SF_6 Emissions	Operational Transport emissions
PV Installed (kW).	IIG SF_6 Leakage rate	No of EV charging point installed on our network
Estimated Carbon saving from PV installed (tCO_2e).	Tonnes of SF_6 avoided	Carbon saving from EV Operational Transport Use (tCO_2e).
Number of sites where energy efficiency measures have been introduced.	Number of SF_6 free CBs installed.	
Estimated Energy savings from efficiency measures (kWh).		
Carbon saving from efficiency measures (tCO_2e).		
Number of substations with electricity monitoring.		

[50] RIIO-T1 SHE Transmission Regulatory Reporting RRP Table 6.2

[51] It is important to note due to the likely phasing of the carbon reduction measures and project activities, the carbon reduction to meet our carbon targets is unlikely to be a linear reduction.

3.2.6 Estimated Benefit to Consumers

Achieving a third reductions in our carbon emission from a 2018/19 will require a reduction of >2,816tCO_2e in our scope 1 and 2 emissions by the end of RIIO-T2. To meet this target, we plan to invest in new technologies to remove the need to install 19.9t of SF_6 during RIIO-T2.

Achieving this carbon reductions required for a science-based target is challenging, has not previously been achieved, and there is uncertainty of all actions required due to our network growth. We have included detailed plans to achieve this target, however, a range of further solutions may be developed over the price control period to ensure we meet this target.

Based on our proposed plans, reducing our own business carbon footprint has a wider benefit to society through the value of avoided carbon emissions. For each tonne of carbon we reduce, there is an avoided impact and an associated avoided cost which society doesn't have to pay (both carbon and energy efficiency savings). For each of the carbon reduction initiatives contributing towards our SBT, we have quantified the value of the avoided carbon emissions across appropriate time periods using the BEIS non-traded carbon price. This shows a total benefit to society of approximately £33 million. Table 8 summarises the benefits for each carbon reduction initiative as follows:

Table 8 RIIO-T2 Carbon Reduction Initiative Benefits

Reduction Activity	Benefits	Timeframe
Energy Efficiency Measures on Existing Substations ‡	£13,100,476.10	Includes cost savings from the RIIO-T2 period plus 20 years from the end of RIIO-T2 as an estimate of remaining asset life for existing substations.
Energy Efficiency Measures on New Substations ‡	£3,399,983.21	Includes cost savings from the RIIO-T2 period plus 40 years from the end of RIIO-T2 as an estimate of design life for new substations.
Solar PV Installations on Existing Substations ‡	£6,320,732.90	Includes cost savings from the RIIO-T2 period plus 25 years from the end of RIIO-T2 as an estimate of remaining asset life for existing substations and design life of PV installations.
Solar PV Installations on New Substations ‡	£1,307,656.43	Includes cost savings from the RIIO-T2 period plus 25 years from the end of RIIO-T2 as an estimate of design life of PV installations.
Charging Infrastructure for Operational Fleet Electrification	£1,656,100.28	Includes cost savings from the RIIO-T2 period plus 20 years from the end of RIIO-T2 as an estimate of design life of electric charging infrastructure.
IIG Leakage Reduction	£1,591,556.70	Includes cost savings from the RIIO-T2 period
SF_6 Avoidance through Alternative IIGs	£5,534,897.32	Includes cost savings from the RIIO-T2 period plus 40 years from the end of RIIO-T2 as an estimate of design life of IIG-containing equipment. Assumes a 0.15% rate for avoided leakage across the 40-year design life.

‡ Energy efficiency and solar PV measures also include the benefit to the consumer from avoided wholesale energy costs as a result of reducing substation electricity consumption

We are also setting a scope 3 target requiring that two-thirds of our suppliers by spend set a science-based target by 2025. This is a bold and industry leading target and again, an area which we anticipate others may follow, leading to wider benefits across our value chain and industry. There will be additional future value of us taking this action now rather than delaying our actions and having to do more in 5, 10, 15 years' time but it is difficult to quantify that value.

3.3 Transmission Losses

Outcome

Implement our Losses strategy to monitor and minimise the level of power losses on the network including, over the long term, to try and contribute fewer losses on the network than would otherwise be the case, and where this is economic and provides benefits to consumers.

3.3.1 Introduction

The power losses on GB transmission network is typically 2% of electricity generated. Power losses are an inevitable consequence of generating, transmitting and distributing. In general, there are two main components of losses in a transmission system: technical losses and non-technical losses. Technical losses are energy lost as heat from power flows though electrical equipment such as cables, overhead lines, and transformers, while non-technical losses are caused by inaccurate metering, billing and energy theft. Our Losses Strategy and action is focused on technical losses.

Read our Losses Strategy:
www.ssen-transmission.co.uk/riio-t2-plan/losses-strategy/

3.3.2 Current Performance

Figure 9 shows the average annual losses in the last 10 years for our network is 0.31TWh, peaking at 0.38TWh in 2014/15 and with a minimum of 0.24TWh in 2010/11. Losses vary from year to year, there was a steady decline in transmission losses between 2013/14 and 2017/18. This period is when a number of major projects, such as the Beauly-Denny 400kV overhead line and Crossaig-Hunterston 220kV subsea cables, were completed. However, as more generators connect to the distribution network, generation may exceed local demand, and the excess power is exported from the Grid Supply Point (GSP) onto the transmission network which could increase transmission loading and losses.

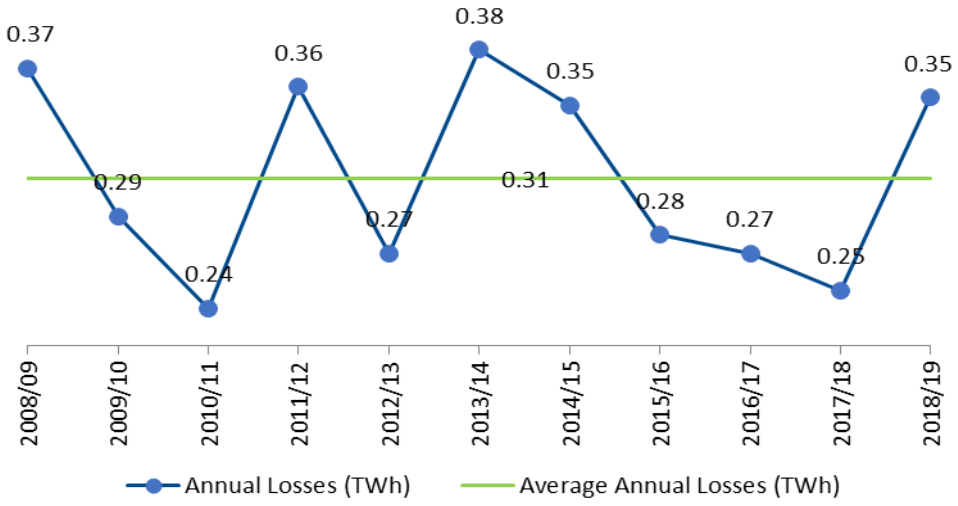


Figure 9: Annual losses on the SHE Transmission system 2009-2019

3.3.3 Opportunities and Challenges

Losses can be reduced through existing overhead line reconductoring, voltage upgrade, e.g. uprating from 132kV to 275kV operation, use of Flexible AC Transmission systems, HVDC technology and use of low-loss transformers. While

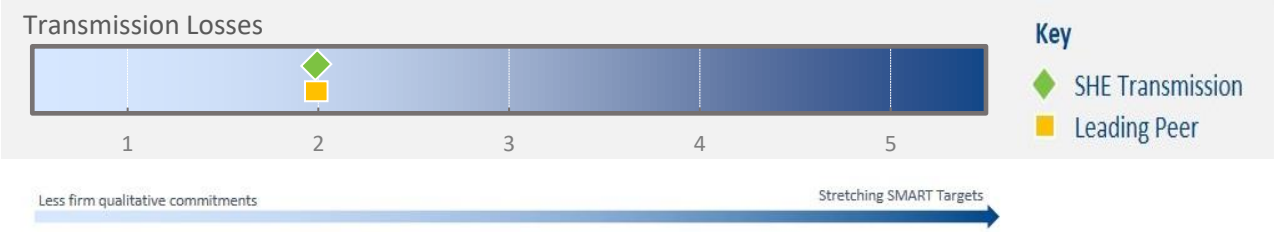
every measure is taken to minimise transmission losses, there are still a number of factors which must be considered when making investment decisions, and not all of these result in a reduction of transmission losses.

These factors include capacity requirements to accommodate higher load requirements and the need to increase efficiency through maximising asset utilisation. Power losses on our network are mainly determined by the overall power dispatch. However, as a Transmission Owner (TO), we do not dispatch generation and demand on the transmission system – this is mainly driven by electricity market activity, with system balancing being a responsibility of the ESO under its licence. We have very little opportunity in system operation to reduce losses.

Approximately 98% of energy is traded on the electricity market and the ESO intervenes in the dispatch of remaining 2% of energy via their System Operator's role. It is also the ESO's role to calculate annual losses for each TO area and we review the calculations to understand the loss performance of our network and evaluate the impact of our network development activities on the losses

3.3.4 Benchmarking

Ofgem has set guidance for TOs to develop and adopt a strategy to contribute efficiently to fewer losses on network, including over the long term, than would otherwise be the case in the absence of strategy. The industry has adopted similar plans based on this Ofgem guidance.



3.3.5 Action Plan

Due to the above challenges, it is critical that we focus on our role in the specification of assets we install on our network to ensure that we take into account their lifetime losses impact and cost. We also consider the losses impact of the design options we develop in reinforcing the system.

Due to the high capital cost of transmission assets, the losses reduction on its own generally does not yield an economic case for capital projects, but we recognise that it is important to include losses in our cost benefit analysis (CBA) when comparing alternative solutions for network reinforcement. We therefore consider the impact of losses when undertaking cost benefit analysis on procurement and reinforcement options to incorporate societal, economic and environmental factors. Our key actions are as follows:

- Introduce a clear transparent methodology for calculating lifetime losses of new assets in our procurement process
- Explore enhancements in the annual losses reporting
- Include losses accounting within our new whole system cost benefit analysis frameworks

Actions		Milestones	When
Losses	Grid/Super Grid Transformer procurement with whole lifetime costs consideration - Embed the Grid/Super Grid transformers' representative loading profile into the whole life losses and associated carbon emission cost estimation to the procurement tendering system.	Issue the whole life cycle losses and associated carbon emission costs projection methodology document.	Short Term 2021/22
	Losses Monitoring and Annual Reporting Review - explore a better way to enhance the losses data collection on our network.	Issue the losses monitoring improvement option assessment report.	
	Pilot Losses Assessment in the Reinforcement Projects - develop a reinforcement option losses assessment methodology.	Issue the draft reinforcement option losses assessment methodology together with the whole system CBA.	
	Grid/Super Grid Transformer procurement with whole lifetime costs consideration - Develop the whole life cycle losses estimation methodology for other key components such as conductors and embed it into the procurement tendering system.	Integrate the methodology into the Procurement System and improve the system.	Medium Term 2023/24
	Losses Monitoring and Annual Reporting Review - Establish a platform to automatically collect and calculate the detailed losses data on the key assets across our network.	Establish a better losses data collection and monitoring system.	
	Pilot Losses Assessment in the Reinforcement Projects - Validate the effectiveness of the methodology through the learning by trying and explore embedding the methodology into the whole system CBA framework.	Finalise the internal reinforcement option losses assessment methodology together with the whole system CBA.	
	Grid/Super Grid Transformer procurement with whole lifetime costs consideration - review the losses and carbon costs projection methodology; continue to collaborate with our suppliers to design lower power losses products.	Grid/Super Grid Transformer procurement requirements established as Business as Usual	Long Term 2025/26
	Losses Monitoring and Annual Reporting Review - review the losses data collection effectiveness and work more closely with ESO and other two TOs on the losses data sharing and cooperation.	Improved Annual losses report and strategy regularly published as required.	
	Pilot Losses Assessment in the Reinforcement Projects - Review the methodology and achieve an industry agreement on the methodology between 3 TOs and ESO.	Achieve the agreement with ESO and 3 TOs on the option assessment methodology.	

Measuring Performance

Performance reporting for this outcome will be measured based on the delivery of the above action plan milestones and the following KPIs

- Annual Network Losses (TWh)
- Annual Network Losses greenhouse gas emissions (tCO_2e)

3.3.6 Estimated Benefit to Consumers

During the RIIO-T2 price control period, we are developing a number of key transmission reinforcements to accommodate the rapid growth in renewable generation in the north of Scotland. These developments include various conventional asset replacement and reinforcement works such as transformer replacements, new overhead lines and substations, re-insulation and re-profiling of existing overhead lines as well as High Voltage Direct Current (HVDC) technology, phase shifting transformers, power flow controllers and dynamic reactive compensation.

Figure 10 illustrates a forecast of the demand (in blue), power exports from north to south (in orange) and transmission losses (in grey) on our network at the time of GB winter peak demand time between 2017 and 2027 based on the ETYS 2018 model under the '2 Degrees' future energy scenario. The total of demand, exports and losses represents the generation output at the time of winter peak.

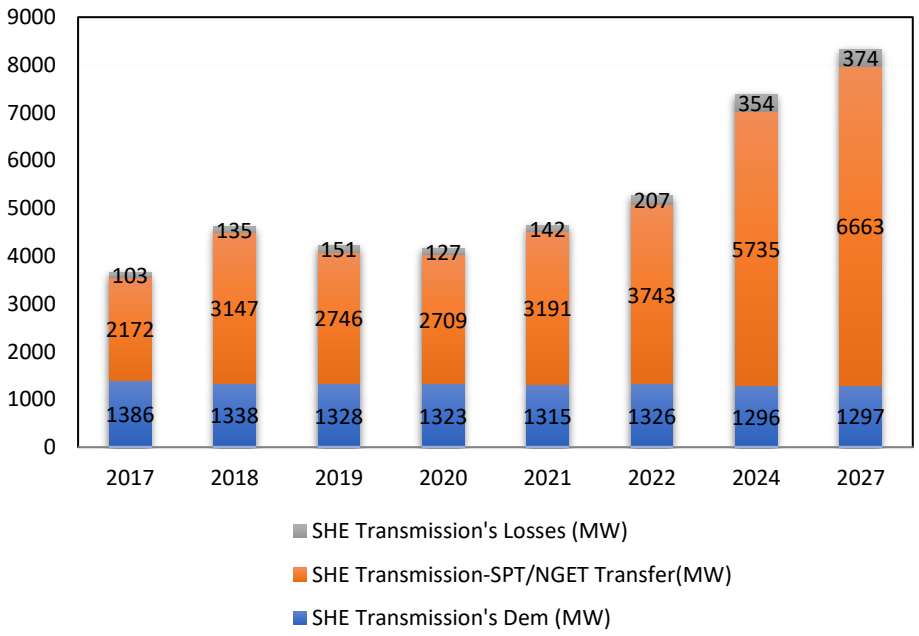


Figure 10: SHE Transmission's Network Losses Estimation Using ETYS Model for GB Winter Peak Time (2 Degree)

While all of the above developments have a beneficial impact on minimising transmission losses, the rapidly increasing expansion of renewable generation in our area at both Transmission and Distribution levels (3661 MW in 2017 vs an anticipated 8314 MW in 2027) and resulting power exports through the network, means that overall losses will inevitably increase over time (103 MW in 2017 vs an anticipated 374 MW in 2027). This will likely also lead to an increase in carbon emissions from transmission loses over RIIO-T2 as the projected increase in losses will exceed the rate at which the UK grid carbon emission factor is declining due to the low carbon transition. Over the longer term our Transmission Losses would decarbonise with the wider electricity network Net Zero pathway.

We remain committed to transparently reporting on losses on our network, progress on implementing our Losses Strategy and plan, and contributing to the evidence base on proportion of losses that network companies can influence/control.

3.4 Climate Resilience

Outcome

Update our flood risk assessments in line with best practice, using the latest Met Office forecasts and climate change projections.

3.4.1 Introduction

Climate change is no longer a distant threat, but a visible reality. Our operations in the north of Scotland are exposed to the impacts of extreme weather events and other landscape changes that have been attributed by many commentators to climate change.

Recent climate change projections indicate we will experience increasing severity of extreme weather events, such as storms, floods and heat waves which bring prolonged extreme temperatures, wind or rainfall (Figure 11). Over the longer term, changes in climate patterns will cause sustained higher temperatures that may result in lower rainfall and reduced wind levels[52].

Environmental, Climatic and landscape hazards pose a natural threat to the safe and secure operation of the transmission network. This includes extreme weather, landslides, wild fires and flooding.

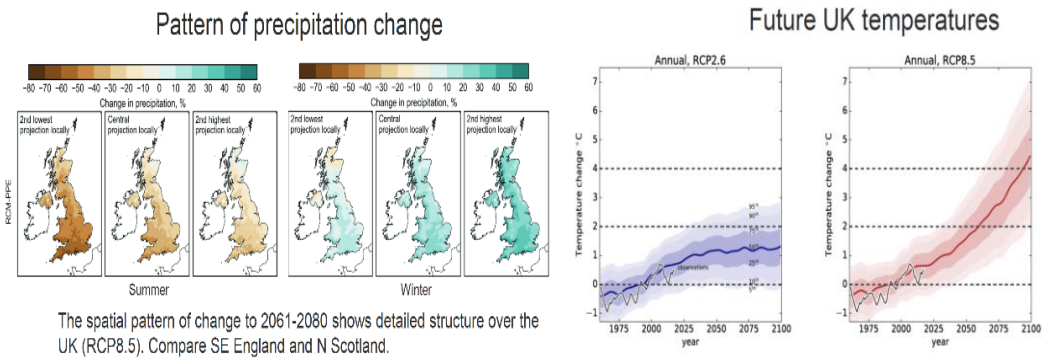


Figure 11: UK CP18 National Climate Change Projections

3.4.2 Current Performance

During RIIO-T1, security of supply has been affected by both winter storms and Landslides. Over the current price control, we have focused on the risk of flooding to our assets, risk assessed and undertook remediation works at several sites such as our Tealing Substation near Dundee. During 2019, we have experienced additional risks from extremes of weather with an increase in the number of wildfires and a landslide near Loch Quich Dam, which resulted in the Transmission line impacting the power supplies to Skye and the Western Isles, closed the road and deposited a considerable amount of material into the Dam spillway, forcing power station operations to be stopped.

Through our parent company, SSE Plc, we have contributed towards the implementation of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). This has involved disclosure of how a company manages climate-related risks and opportunities. SSE has committed to fulfil each of the recommendations before the end of financial year 2020/21.

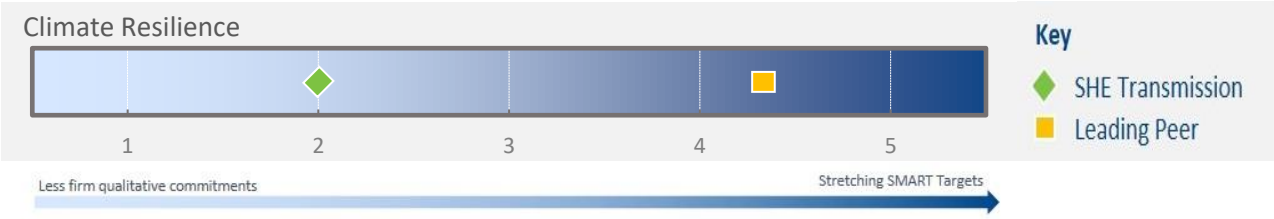
[52] UK Climate Projections – UKCP18 (Met, Office, 2018). Available at: www.metoffice.gov.uk/research/approach/collaboration/ukcp

3.4.3 Opportunities and Challenges

To ensure business resilience to climate change, we will proactively assess the material risks that extreme weather events poses to the resilience of the transmission network. We will continue to invest in maintenance and emergency response solutions identified for climate change adaptation.

3.4.4 Benchmarking

Our peer organisations, particularly the Distribution businesses and water companies have detailed plans for climate resilience, our outcome to update all our flood risk assessments and the delivery plan below seeks to strengthen our plans for climate resilience.



3.4.5 Action Plan

Actions		Outputs	When
Climate Resilience	Update our flood risk assessments in-line with best practice, using the latest Met Office forecasts and climate change projections.	Updated flood risk assessments for 127 sites.	Medium Term 2023/24
	Update wider climate risk assessments (such as wildfire risk) and integrate into business planning by the end of the price control.	Assessment and quantification of risk.	
	Facilitate our Wildfires Subgroup (Transmission & Distribution) and participate in international collaborations on Wildfire Risk Management.	Wildfires subgroup and landowner engagement & communication strategy.	
	Undertake flood mitigation works at identified sites following risk assessment.	Flood risk remediate works undertaken on identified sites.	Long Term 2025/26
	Actively undertake asset condition monitoring such as a monitoring and sampling programme of the concrete foundations on sites near floodplains and exploring the use lidar assessments to asses condition risk where appropriate.	Condition monitoring programme	Continuous

Measuring Performance

Performance reporting for this outcome will be measured based on the delivery of the above action plan milestones and the following KPIs:

- Number of updated flood risk assessments completed
- Number of sites where flood mitigation works has been carried out

3.4.6 Estimated Benefit to Consumers

We plan to update our flood risk assessments for 127 sites during RIIO_t2 and undertake mitigation works at identified sites. Through our programme of flood risk assessments and mitigation works, we aim to improve the resilience of our network to the effects of climate change. This provides a wider benefit to society through reduced likelihood of disruption due to climate-related incidents and contributes towards our overarching goal of 100% network reliability.

Achieving this goal has wider benefits for society by ensuring the security of electricity supply. There is a high economic and social cost for households and businesses if their supply of electricity is interrupted. A report commissioned by the Scottish Government forecast that a total shutdown of the Scottish electricity networks would cost the Scottish economy in the region of £930 million per day[53].

[53] 2EY Report to the Scottish Government, "Black Start Event – Assessment of the Socio-Economic Costs and Recovery Standards for Scotland", April 2018

4 Promoting the Natural Environment

Delivering biodiversity net-gain and driving environmental stewardship best practice.

4.1 Introduction

Promoting our natural environment encompasses many areas including (but not limited to) biodiversity, woodland and forestry, visual amenity, oil and noise management. This broad definition is consistent with the international standard for environmental management, ISO 14001, under which we are working towards certification this financial year (2019/20).

As a responsible network owner, we have a responsibility to protect and promote the natural environment that we rely on. It is essential that we pursue environmental stewardship and ensure our activities are undertaken in a sustainable manner to protect our natural environment now and for future generations.

Based on our statutory obligations and stakeholders' views, we propose the following areas of focus for RIIO-T2:

1. Protecting and enhancing biodiversity
2. Woodland and forestry
3. Visual amenity
4. Oil management
5. Noise Management

4.1.1 Stakeholder Expectations

There are strong views in the north of Scotland and across GB that our actions must be environmentally sensitive. These views are reflective of the scale of our ambition.

We will work to ensure that our activities follow best environmental practice (for example, for noise, oil leakage, woodland and forestry, biodiversity and species management). We introduced and consulted on our environmental ambitions for RIIO-T2 at our Stakeholder workshop in November 2018[54]. This was supplemented through an environmental roundtable in March 2019[55] and stakeholder feedback has strongly recommended that biodiversity and woodland planning across our portfolio be a core ambition of our future plan. Visual amenity is also a key topic of interest and ambition, particularly during project consultations. Stakeholders believe other areas of environmental values such as oil management and noise reduction should be prioritised on a materiality and risk basis.

Over the summer of 2019, we ran a consultation on our proposed approach to Biodiversity Net Gain (BNG), held meetings with key stakeholders and ran two specialist workshops, one in Glasgow and one in London. The consultation on BNG was welcomed by all stakeholders. It was recognised that we are at the forefront of applying BNG in Scotland and developing the approach[56]. There was also strong recognition and support for the leadership and proactive engagement on BNG that we are providing. Please see final Approach to Biodiversity Net Gain for a full summary of the feedback received[57].

Since our draft business plan submission in July we have also undertaken further stakeholder engagement on our existing Visual Impact of Scottish Transmission Assets (VISTA) policy[58]. There was overwhelmingly positive support for extending the policy in its current form into RIIO-T2. In addition, there was also support for us to engage with stakeholders during the next price control to test the appetite and potential methodologies for extending the policy to areas out with National

[54] SHE Transmission (2018) RIIO-T2 Stakeholder Workshop – November 2019
[55] SHE Transmission (2019) Environment Workshop – February 2019
[56] SHE Transmission (2019) Biodiversity Net Gain Consultation
[57] www.ssen-transmission.co.uk/riio-t2-plan/our-approach-to-implementing-biodiversity-net-gain/
[58] SHE Transmission (2019) RIIO-T2 Stakeholder Workshop – August 2019

Parks and National Scenic areas (due to the unique sensitives of many landscapes in the north of Scotland). As a result, we have updated our VISTA policy to include a commitment to developing potential methodologies and where appropriate, outline potential future schemes that may be appropriate to include in future price controls.

4.2 Biodiversity

Outcomes

- Achieve biodiversity 'No Net Loss' on new projects gaining consent in 2020 onwards.
- Contribute towards the establishment of Common natural capital reporting methodology with the goal of applying this beyond 2025.

Long Term Target

Achieve biodiversity 'Net Gain' on projects gaining consent in 2025 onwards.

4.2.1 Introduction

Whilst biodiversity[59] is valuable in its own right, it is also crucial to the maintenance of the natural systems on which we all depend such as the crop pollination, flood management and air quality.

To positively contribute to the UN and Scottish Government Biodiversity strategies[60], we aim to achieve an overall 'No Net Loss' on new infrastructure projects gaining consent in 2020 onwards and achieve 'Net Gain' on projects gaining consent in 2025 onwards.

Please read our Approach to Biodiversity Net Gain:
www.ssen-transmission.co.uk/riio-t2-plan/our-approach-to-implementing-biodiversity-net-gain/

4.2.2 Current Performance

The focus on biodiversity over RIIO-T1 has been centred on impact minimisation and legal compliance. Biodiversity is currently considered throughout our project optioneering and development phase. This incorporates assessments of habitats and protected species when we select new routes for overhead lines and sites for substations. We manage our construction and operational works by following Species Protection Plans (SPPs) that have been agreed with Scottish Natural Heritage (SNH) to ensure that impacts are minimised.

We have been recognised for our forward-thinking approach to biodiversity management and were awarded two Scottish Green Apple Awards[61] for Environmental Best Practice in recognition of its Great Yellow Bumblebee biodiversity project at Thurso South substation in Caithness and its osprey mitigation works near Alyth in Perthshire. In addition, we also gained three awards, including 'Overall Winner' at the BIG Biodiversity Challenge Awards in 2018[62], and the 'Client Award' in 2019[63].

[59] The term Biodiversity, short for biological diversity, refers to the diversity of life forms, species, genetic variation, and ecosystems. UK Biodiversity Indicators, (DEFRA, 2018) available at: www.jncc.defra.gov.uk/pdf/UKBI_2018.pdf
[60] 2020 Challenge for Scotland's Biodiversity (Scottish Government, 2013) available here: https://www.gov.scot/publications/2020-challenge-scotlands-biodiversity-strategy-conservation-enhancement-biodiversity-scotland/
[61] SSEN Transmission pips rivals to scoop prizes at Scottish Green Apple Awards (SSEN Transmission, 2019) available at: https://www.ssen-transmission.co.uk/news-views/articles/2019/3/ssen-transmission-pips-rivals-to-scoop-prizes-at-scottish-green-apple-awards/
[62] www.bigchallenge.info/2018-winners
[63] www.bigchallenge.info/2019-winners

4.2.3 Opportunities and Challenges

The outcome of our Sustainability Strategy consultation was that our activities should not only maintain the existing biodiversity balance, but help to enhance biodiversity, targeting a 'Net Gain'. We will utilise the mitigation hierarchy by avoiding impacts by considering biodiversity in project design.

Over the past year we have trialled incorporating 'Biodiversity Net Gain' principles into substation design. This has proved successful with most substation projects capable of delivering a 'Net Gain' by incorporating changes in layout and landscape reinstatement design.

The Defra 25-year Environment Plan includes a key commitment to embed an 'Environmental Net Gain' principle for development. Specifically for the marine environment, it also includes a commitment to reverse the loss of marine biodiversity and, where practical, to restore this environment. Proposals to 'mandate' biodiversity net gain within the planning system in England through the new (draft) Environment Bill[64] has been progressed throughout 2019.

An emerging trend also receiving attention in government policy is the promotion of the terms 'Environmental Net Gain' and 'Natural capital'. However, the integration of biodiversity valuation into natural capital reporting is still in its infancy and there is currently no industry wide accepted methodology for these assessments. We propose to engage with our stakeholders to further understand the opportunity to use existing natural capital valuation methodologies in our business decision-making and participate in external forums to help develop, trial and where appropriate adopt a common approach to natural capital reporting mechanisms in the future.

We will work collaboratively with our stakeholders, including the other Transmission Owners, throughout RIIO-T2 to develop and where appropriate pilot a common approach for delivering Biodiversity Net Gain (BNG) alongside Natural Capital assessment and enhancement.

4.2.4 Benchmarking

In July 2019, we became the first UK network licensee to consult on our approach to Biodiversity Net Gain (BNG) and are at the forefront of applying BNG in Scotland. We have been commended for leading the way in promoting protecting and enhancing biodiversity.

4.2.5 Action Plan

As we plan for RIIO-T2 and based on a review of existing biodiversity guidelines and governance documents, we have been developing 'Biodiversity Net Gain' assessment guidelines and a tool to calculate biodiversity units pre- and post-development of future infrastructure (on the land). Following our stakeholder consultation, we have published our final approach to Biodiversity Net Gain. These procedures will be incorporated into our assessments and project design during 2019/20. Our next steps include:

- Setting and monitoring biodiversity;
- Develop and implement procedures for 'Net Gain' on new projects gaining consent from 2025 onwards;

[64] www.services.parliament.uk/bills/2019-20/environment.html

- Engage stakeholders and review operational wayleave vegetation management activities of overhead lines to identify opportunities for reduced activity and enhancement; and
- Engage stakeholders and review biodiversity management opportunities for marine projects.

Actions		Outputs	When
Biodiversity	Embed Terrestrial BNG procedures into Business as usual and design no-net loss into future projects.	No Net Loss on new projects. Confirmed through Project BNG Report and annual reporting Baseline Transmission Estate bio-diversity Report Attendance at meetings/forums.	Short Term 2021/22
	Develop methodology and implement baseline biodiversity calculation of existing transmission estate.		
	Engage with stakeholders to understand and contribute to development of marine biodiversity methodologies.		
	Participate in Natural Capital external forums and contribute to development of consistent methodologies.		
	Design Net Gain into development projects due to be consented from 2025.	BNG dashboards for projects	Medium Term 2023/24
	Review corridor / substation vegetation management practices to identify opportunities to enhance biodiversity.	Report with recommendations	
	Marine biodiversity environmental trial.	Trail report with recommendations	
	Trial Natural capital approach.	Trail report with recommendations	
	Design Biodiversity Net Gain into project applications.	Net Gain on new projects. BNG Report and annual reporting	Long Term 2025/26
	Update and implement operational vegetation management practices where appropriate.	Updated procedures. Transmission Estate bio-diversity Report	
	Adopt an industry standard approach to marine biodiversity reporting, where appropriate.	Updated BNG approach	
	Adopt an industry standard approach to Natural Capital reporting, where appropriate.	Natural Capital approach as appropriate	

Measuring Performance

Our performance on achieving Biodiversity No Net Loss outcomes on new projects consented in 2020 onwards will be measured based on the delivery of the above action plan and the following KPIs:

- Percentage of Projects designed to achieve No Net Loss (%)
- Percentage of Projects designed to achieve Net Gain target (%)
- Overall BNG percentage designed into project portfolio (%)

4.2.6 Estimated Benefit to Consumers

Biodiversity is essential for the fundamental ecosystem processes that provide a broad range of ecosystem services (such as food production, protection from floods, climate regulation or opportunities for recreation) that are critical to our wellbeing and prosperity. Biodiversity is therefore important not just because people value it for its own sake, and the enjoyment or inspiration it provides, but because human survival also depends upon it.

Climate change represents a significant threat to global biodiversity and our role in enabling the decarbonisation of the UK energy sector plays a role in reducing that threat. Our leading approach towards biodiversity provides a wider benefit to society by ensuring that the necessary growth of the infrastructure required to enable the low carbon transition does not result in adverse environmental impacts. By moving from compliance, to No Net Loss and ultimately to Biodiversity Net Gain we are aiming to ensure that our projects deliver a net benefit to society through enhanced biodiversity.

During RIIO-T2, there will be around 24 sites gaining consent for which we are committed to achieving No Net Loss outcomes. Through learnings from these projects and development of our approach, subsequent projects gaining consent from 2025 onwards will be targeted towards Biodiversity Net Gain.

4.3 Woodland and Forestry

Outcome

Attain 'No Net Loss' of all woodland cover on new projects consented from 2021.

4.3.1 Introduction

In our operations and the development of our network we regularly interact with different types of woodland. This includes the felling of corridors for the construction of new overhead lines, or the selective felling of trees encroaching on safety and clearance distances. Our aspiration is to attain 'No Net Loss' of all woodland cover for new projects consented from 2021.

4.3.2 Current Performance

Woodland and forestry resource are currently integrated at the earliest level of our planning and decision-making. When we develop new overhead lines, we adopt a mitigation hierarchy for our impact on woodland on forestry. Where possible we avoid impacts and any impacts that cannot be avoided are then assessed. Where necessary measures to reduce these are then identified. This can include activities such as encouraging the regeneration of redundant overhead line corridors or planting new trees.

4.3.3 Opportunities and Challenges

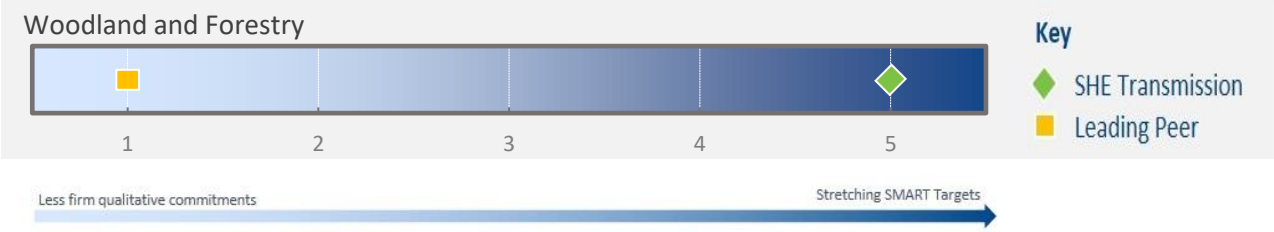
Following public consultation, the Scottish Government have published ‘Scotland’s Forestry Strategy – 2019-29’ which outlines the a 10-year framework for action to achieve a 50-year vision for Scotland’s woodland. It aims to promote sustainable woodland expansion, appropriate forest management and integrating forestry with other land uses and businesses. All to support a strong economy and to play a great part in Scotland’s Natural Capital.

In addition to, and supporting this strategy, the Scottish Government’s policy on control of woodland removal implementation guidance[65] was published in 2019. This policy identifies that woodland loss may be acceptable where it would achieve significant and clearly defined public benefits. Our biodiversity, woodland and forestry ambitions for ‘No Net Loss’ are interlinked and seek to support the Scottish Governments forestry strategy.

[65] Scotland Control of Woodland Removal Implementation Guidance (2019). Available at: www.forestry.gov.scot/support-regulations/control-of-woodland-removal

4.3.4 Benchmarking

The benchmark results found that peers have not publicly set targets on forestry and woodland cover. Our commitment for No Net Loss of all woodland, alongside our biodiversity commitment is seen as leading in the sector.



4.3.5 Action Plan

Our aspiration is to attain 'No Net Loss' of all woodland cover on new projects consented from 2021. We believe we can make an active contribution to the Scottish Government's vision for sustainable forest management[66]. Focusing on all woodland types, we propose to develop a woodland strategy and implementation plan for new projects that adopt a combination of the following approaches:

- Promote appropriate natural regeneration of old corridors;
- Appropriate management of new corridors; and
- Where there is still a 'Net Loss', the balance would be delivered through partnership planting and supporting replacement woodland.

Actions		Outputs	When
Woodland and Forestry	Develop woodland strategy and implementation plan for new projects.	Woodland strategy and implementation plan.	Short Term 2021/22
	Incorporate woodland No Net Loss principles into business as usual.	Updated processes/procedures.	
	Design No Net Loss for woodland into project.	No Net Loss on new projects. Confirmed through woodland calculations in consents.	
	Monitor and Review.	Annul KPI review.	Continuous

Measuring Performance

- Percentage of projects meeting No Net Loss of woodland
- Percentage of change in woodland cover for the portfolio (new projects)

4.3.6 Estimated Benefit to Consumers

Woodlands provide a range of benefits to society, from supporting biodiversity and resilience to climate change to providing recreation and cultural value. While we will always aim to avoid felling in the first instance, the growth of low carbon infrastructure will necessitate some degree of felling activity for the construction of new overhead lines, or the selective felling of trees encroaching on safety and clearance distances.

[66] Scotland's Forestry Strategy 2019–2029 (Scottish Government, 2019). Available at: http://www.gov.scot/publications/scotlands-forestry-strategy-20192029/

However, through afforestation (the establishment of forests on lands that have ever been forested or have not been forested for a long period) and reforestation (the reestablishment of forests on lands where the forests were recently destroyed). From early analysis, we aim to plant in the region of 905 hectares of forests to compensate for any felling associated with new projects consented from 2021. Through this restorative activity we can address some of the local impacts associated with building the infrastructure necessary to enable the low carbon transition.

4.4 Visual Amenity issues relating to infrastructure

Outcomes

- Apply modern interactive technology to inform stakeholders of possible changes to landscape and visual amenity in new project proposals.
- Submit or undertake regulatory proposals for at least 5 visual amenity projects during RIIO-T2.
- Work with stakeholder to co-create an evidence-based approach to assessing visual amenity improvement proposals out-with designated landscape by the end of the price control.

4.4.1 Introduction

We operate in Scotland's most precious natural landscapes, yet our essential operations require infrastructure that can affect visual amenity. Our commitment is to ensure that the visual impact of new infrastructure is fully considered in our projects from conception and is reduced as far as practical.

For new project proposals, we also believe it is important to consider new ways in which we can ensure stakeholders have the best possible information in which to inform their views and these are fully and transparently considered in our project development process.

Read our Visual Impact of Scottish Transmission Assets (VISTA) – Our Approach for RIIO-T2:
www.ssen-transmission.co.uk/riio-t2-plan/vista-our-approach-for-riio-t2/

4.4.2 Current Performance

In order to build a new overhead line or substation we need to secure a variety of consents under the Electricity Act 1989 (as amended) and Town and Country Planning (Scotland) Act 1997 (as amended). As part of these consenting processes we are required to demonstrate consideration and assessment of the landscape and visual effect of the proposed development, including how it meets planning policy at a national, regional and local level.

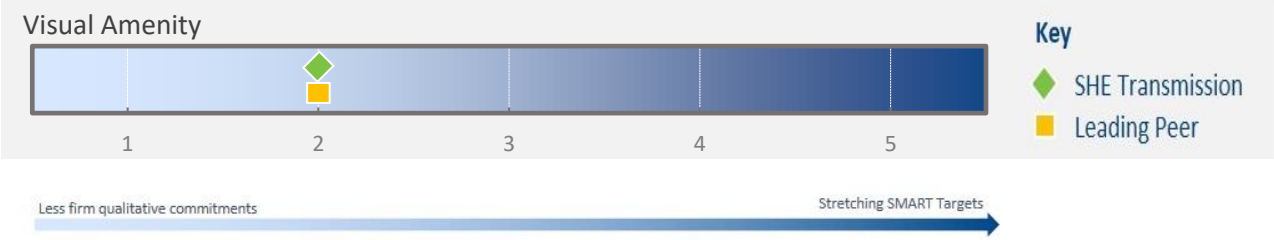
Therefore, for new overhead infrastructure, landscape and visual considerations are an important part of each stage of option selection. Typically, our preferred approach is an overhead line solution due to efficiency, flexibility and fault detection benefits. Where it can be demonstrated that a particular impact associated with an overhead line is significant and alternatives such as re-routing will not sufficiently reduce the impact, we will consider the option of undergrounding.

The Visual Impact of Scottish Transmission Asset (VISTA) scheme, administered by Ofgem, allows the three GB electricity transmission owners to bid for funding to mitigate the impact of historic electricity infrastructure in National Parks and National Scenic Areas. Our VISTA project team has been working closely with key stakeholders and landowners to progress the development of the schemes. This has involved detailed design of both technical and non-technical visual impact mitigation projects, ranging from undergrounding to woodland enhancement and tower painting.

During 2018/19 we finalised environmental assessments, engaged with key consultees and provided a submission to Ofgem for funding to remove 12km of overhead transmission lines and 46 transmission towers from the Cairngorms National Park and replace them with underground cabling. As a result of this work, in May 2019 Ofgem approved the release of £39.1m in funding. High stakeholder support for this undergrounding project was a significant factor in this success.

4.4.3 Benchmarking

Our industry has adopted similar approaches for Visual Amenity based on the Ofgem guidance. However, based on our stakeholder feedback we will seek to co-create an evidence-based approach to assessing visual amenity improvement proposals out with designated landscape by the end of the RIIO-T2 price control which can be seen more ambitious than our peers. We have since also included a target on the number of visual amenity proposals we aim to submit to Ofgem during RIIO-T2.



4.4.4 Opportunities and Challenges

We recognise that our infrastructure and activities have a landscape and visual impact on people and the natural environment. We are committed to minimise the impact of our infrastructure on the visual amenity of landscapes, while balancing the provision of cost efficiency and ensuring a safe and secure supply of electricity. The landscape and visual implications of our infrastructure are one of the most important topics in our stakeholder consultations.

There is strong support for the steps we are taking under our VISTA[67] scheme to mitigate existing landscape and visual impacts and there was overwhelmingly positive support for extending the policy in its current form into RIIO-T2. In addition, there was also support for us to engage with stakeholders during the next price control to test the appetite and potential methodologies for extending the policy to areas out with National Parks and National Scenic areas (due to the unique sensitives of many Scottish landscapes in the north of Scotland). As a result, we have updated our VISTA policy to include a commitment to developing potential methodologies and where appropriate, outline potential future schemes that may be appropriate to include in future price controls.

4.4.5 Action Plan

We will continue to learn from our experience and seek to adopt best practice in communicating with our stakeholders on landscape and visual amenity considerations. From the beginning of RIIO-T2 we will:

- Publish a technical options position statement for new transmission infrastructure;
- Use modern interactive technology to help inform stakeholders and members of the public, of the possible changes in landscapes and visual amenity that are likely to result from our developments (e.g. 3D visualisation software, virtual reality and new technology);
- Develop new proposals for VISTA in collaboration with our stakeholders; and
- Test the appetite and potential methodologies for extending to the scope VISTA out with designated landscapes based on Cost Benefit Analysis and stakeholders' views.

[67] See: www.ssen-transmission.co.uk/sustainability-and-environment/vista/

Actions		Outputs	When
Visual Amenity	Develop technical options position statement and informative brochures/materials.	Position statement	Short Term 2021/22
	Embed existing visualisation technology into Business as usual.	Updated procedures	
	Define opportunities to enhance interactive visualisations.	Recommendations report	
	Select new undergrounding projects under VISTA for delivery in RIIO-T2.	Selection study	
	Agree an implement enhanced interactive visualisation opportunities where available.	Visualisations used on projects	Medium Term 2023/24
	Detailed VISTA project design and Ofgem application for selected projects.	Ofgem applications	
	Consultation with stakeholders on the desire to extend VISTA beyond NP/NSA.	Events/report on consultation	
	Initiate construction of VISTA undergrounding projects.	Project approval	Long Term 2025/26
	Develop and publish a methodology for assessing assets out with NP/NSA for potential consideration for VISTA in RIIO-T3.	Methodology document	
	Initiate construction of VISTA undergrounding projects.	Project approval	
	Develop and publish a methodology for assessing assets out with NP/NSA for potential consideration in RIIO-T3.	Methodology document	

Measuring Performance

Our performance on visual amenity will be measured based on the delivery of the above action plan and the following KPIs:

- Number of projects where visualisation technology is delivered
- Number of investment proposals to improve visual amenity
- VISTA Project delivery and associated benefits

4.4.6 Estimated Benefit to Consumers

The natural scenic beauty present in the north of Scotland has an intrinsic value which has strong recreational, cultural and economic dimensions. As detailed above, visual amenity has been a consistently important issue for our stakeholders. Through our VISTA scheme and our approach to minimising the impact of our infrastructure on visual amenity we are committed to the conservation of the value provided to society by the scenic landscapes in our network area.

In addition to the VISTA schemes being delivered in RIIO-T1, we are currently planning further schemes to be delivered during the RIIO-T2 period. These schemes will involve replacing existing overhead lines by installing underground cable. This will allow the removal of a minimum of 72 towers and 19.8km of overhead line from within National Parks and National Scenic Areas, contributing towards a reduced impact on visual amenity.

4.5 Oil Management

Outcomes

- Complete contaminated land remediation for all high-risk sites during the RIIO-T2 period.
- Remove all equipment containing Polychlorinated Biphenyls (PCBs) by 2025 in compliance with regulation[68].

4.5.1 Introduction

Oil management is a key aspect of our ISO 14001 environmental management system. In the design and construction of new sites, we will continue to ensure regulatory compliance and apply best practice for oil use and storage. For pre-existing sites and legacy oil storage measures, we will adopt a proactive and risk-based approach to identify and undertake any remedial action required.

Polychlorinated Biphenyls (PCBs), a form of Persistent Organic Pollutant, have long been recognised as posing a threat to the environment because of their toxicity, persistence and tendency to bioaccumulate (i.e. to build up in the bodies of animals, particularly at the top of the food chain). As a result, their use is controlled by legislation.

4.5.2 Current Performance

To operate and maintain our network we store and manage large quantities of oil. Oil is a toxic substance and, if leaks occur, has the potential to harm the environment. For all new substation sites and upgrades to existing sites, we design our oil storage, transformer bays and site drainage to the highest standards meeting all regulatory requirements. This is further reinforced by a design agreement with the Scottish Environment Protection Agency (SEPA) that sets out the parameters and specifications that our contractors must meet.

4.5.3 Opportunities and Challenges

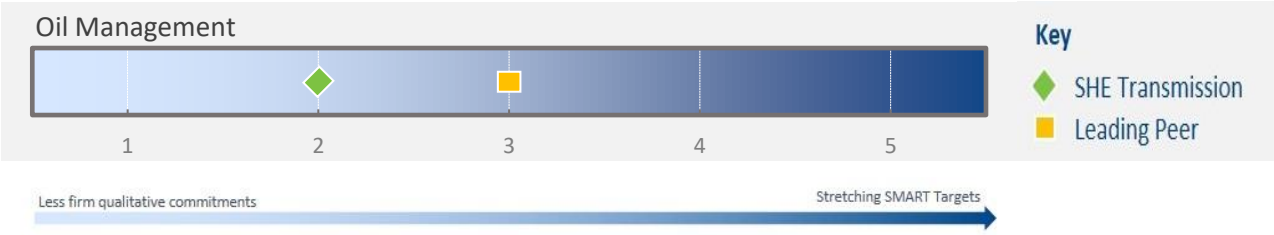
Whilst we have existing, strong controls over oil management and maintenance, a significant proportion of our transmission network was built in the 1950s and 1970s. Since this period, there has been a significant increase in the scope and granularity of regulatory requirements, for the design and construction of electricity transmission infrastructure, including in relation to oil management. While we have very few oil incidents, there is potential for contaminated land on our older sites (designed to historical requirements) to require remediation.

Furthermore, many assets on our network contain insulating oil and a number were manufactured prior to 1987 when the use of PCBs in insulating oil was permitted. It is therefore possible that these assets contain PCBs above the 50ppm threshold where replacement is required. Earlier this year, there has also been an update to the Persistent Organic Pollutants (Various Amendments) Regulations 2019[69] that requires the identification and removal of equipment containing more than 50ppm PCBs and volumes greater than 5 litres as soon as possible but no later than the end of 2025. Taking consideration of the above, we will remove all equipment that meets these thresholds or is manufactured pre 1987 and cannot be verified.

4.5.4 Benchmarking

Peers have similar commitments around oil management, although some demonstrated clearer reporting on oil use and management. Our plan action plan now includes targeted action to improve our oil management reporting.

[68] In line with ER Regulation 2019/1021 for equipment containing more than 5 litres of fluid where PCB content exceeds 50ppm, and equipment that is impractical to sample and test.
[69] The Persistent Organic Pollutants (Various Amendments) Regulations 2019. Available at www.legislation.gov.uk/uksi/2019/1099/contents/made



4.5.5 Action Plan

For existing sites, we propose to use risk assessments to categorise our sites, identifying the risk of existing contaminated land or future releases of oil. It will identify where no action is required, ongoing monitoring and containment should take place, or where immediate remedial work should be instigated to protect the environment.

We will remove all equipment manufactured pre 1987 where the PCB content is greater than 50 ppm and volumes greater than 5 litres. We will also remove all equipment that manufactured pre 1987 that cannot be verified.[70]

For new transformers, we will consider the installation of synthetic ester-based transformer fluid (which is readily biodegradable) at new high risk and environmental sensitive substations sites where technology is available (currently 132kV assets).

Actions		Outputs	When
Pollution to the local environment	Participate in industry groups to determine national solutions for inaccessible PCB equipment.	Attendance/ collaborative approaches	Short Term 2021/22
	Establish and initiate programme for replacement of equipment containing PCBs.	Programme	
	Undertake contaminated land risk assessment of existing sites.	Contaminated land RA and recommendations report	
	Develop Risk assessment methodology for implementation of synthetic based transformer fluid.	Risk assessment methodology	
	Initiate contaminated land remediation of high-risk sites and monitor medium risk.	Project specific deliverables/ monitoring reports	Medium Term 2023/24
	Embed RA methodology for synthetic based transformer fluid in business as usual.	Updated processes/ procedures	
	Remove all equipment containing PCBs.	Audit/assurance report	Long Term 2025/26
	Remediation of all high-risk contaminated land sites complete.	Close out report	
	Improve our reporting on Oil Use across the network.	Annual Reporting	Continuous

Measuring Performance

Our performance on Oil Management will be measured based on the delivery of the above action plan and the following measures:

- Number of sites that have undergone contaminated land remediation

[70] Please refer to the Persistent Organic Pollutants Management Justification paper (T2BP-EJP-004) for further information.

- Number of PCB containing assets removed from the Network
- Oil reporting as required by the Ofgem Environmental Action Plan data table

4.5.6 Estimated Benefit to Consumers

Our approach to complete contaminated land remediation for all high-risk sites seeks to avoid further impact to the local environment. In addition, as part of our commitment to reduce our impacts on the local environment, we will take concerted action to remove all PCB-containing equipment from our network by 2025 at the latest. This would involve the removal of around 241 assets which have a PCB content greater than 50 ppm or which were manufactured before 1987 and cannot be verified.

This removal of pollutants from our network reduces the risk that a potential release would result in wider contamination due to the long-lasting effects of PCBs, thereby reducing the risk of harm to the local environment and the ecosystem services it provides for communities.

4.6 Noise Management

Outcomes

Undertake baseline noise monitoring and noise assessments for our strategically important substation sites, implementing noise management plans by the middle of the price control.

4.6.1 Introduction

Over our network we have core substations sites that are hubs, collecting and redistributing electricity across the network. These substations tend to have been in-situ for many decades (albeit at a smaller scale) with residential development occurring organically around the sites or in relatively close proximity. Throughout the current price control these hubs have undergone significant development and expansion, increasing the footprint and noise emitting equipment onsite.

4.6.2 Current Performance

Noise impacts on residential properties are a material consideration in the planning process and it is necessary to demonstrate no adverse impact. In addition to noise considerations within the planning process, noise impacts can be considered by the local authority at any point under the statutory nuisance provisions[71].

As part of planning applications for new substations we routinely undertake a noise impact assessment with proposed noise reduction mitigation measures necessary to reduce noise to an appropriate level. We have updated our overhead line route selection and substation site selection guidelines to incorporate noise threshold distances as part of our standard technical parameters.

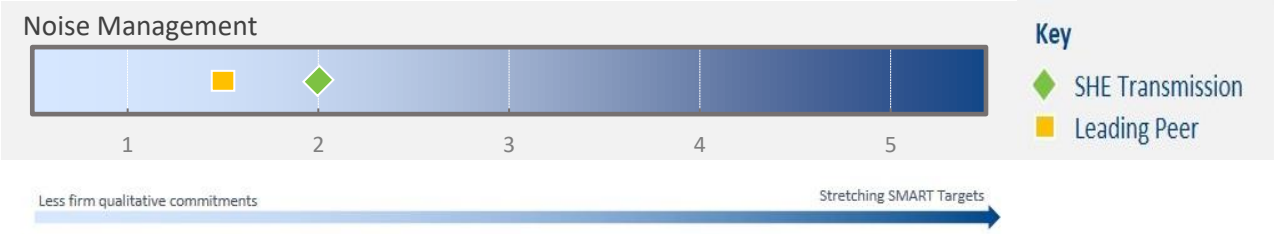
4.6.3 Opportunities and Challenges

Some of our strategic hub substation sites that have recently undertone development or expansion in recent years have also experienced residential development near the substations. It is important that we establish baseline noise monitoring and develop longer term noise management plans for these sites to ensure that they can meet future network requirements.

[71] Environmental Protection Act (1990)

4.6.4 Benchmarking

Noise impact assessments and management is an important regulatory requirement, however, the benchmarking found that we have included further details around our plans for noise management in comparison to our peers.



4.6.5 Action Plan

Alongside compliance with noise emission regulations, we will identify strategic hub substations that will require ongoing modifications as part of our network development activities. For these sites we will:

- Undertake baseline monitoring and establish noise assessment models;
- Design in future mitigation options (e.g. space for barriers, separate cooler banks on transformers) where necessary; and
- Develop and implement long term noise management plans for sites at or near current noise capacity.

Actions		Outputs	When
Noise	Undertake baseline noise monitoring and develop noise models for strategically important substations.	Baseline Monitoring Report	Short Term 2021/22
	Develop and implement noise management plans for strategically important substations.	Noise Management Plans	Medium Term 2023/24

Measuring Performance

Our performance on Noise Management will be measured based on the delivery of the above action plan and the following measures:

- Number of sites with noise assessment models
- Number of sites with long term noise management plans

4.6.6 Estimated Benefit to Consumers

Our approach towards noise management is driven by stakeholder considerations and the need to ensure that strategically important substations are able to perform their core function of collecting and redistributing electricity without having adverse local impacts.

Through the action plan detailed above, up to 9 sites will have comprehensive noise models and assessments completed by the end of the price control. We will build on this information to develop noise management plans for strategically important substations, looking at ways to avoid or mitigate noise outputs that may create a nuisance for local communities.

5 Optimising Resources

Managing resources for a circular economy; achieving zero waste to landfill, increasing resource efficiency and using sustainable materials.

5.1 Introduction

Many of the resources we use in building our infrastructure are non-renewable resources, such as steel, aluminium and copper. Increasing material scarcity, the environmental impact of extracting and manufacturing these resources and inconsistency in local end-of-life material solutions, means that we need to work harder to ensure we make best use of resources. Our Optimising Resources ambition looks to address how we use resources across the lifecycle of our assets and so that we can play a role in the transition to a circular economy.

The BS 8001 Circular Economy Standard[72] defines a circular economy as 'a systemic approach to the design of business models, enabling the sustainable management of resources in products and services' and the Ellen MacArthur Foundation outlines the following principles which underpin the concept[73]:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

In line with these principles, we will seek to optimise our designs for sustainability, keep resources in use for as long as practicable, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life. We will seek to achieve zero waste to landfill to reduce the environmental impacts of waste on the natural environment.

Transitioning to a circular economy will present numerous challenges, including the need for more recycling and remanufacturing infrastructure, but will also open up new opportunities to reduce costs and deliver a more sustainable future where resources are kept in circulation and products are designed from a "cradle-to-cradle" perspective. The Scottish Government's Circular Economy Strategy[74] outlines a pathway towards this future through targets such as the recycling and reuse of 70% of all construction and demolition waste by 2020 and the diversion of 95% of all waste from landfill by 2025.

The transition to a circular economy is also intertwined with the low carbon transition through the concept of embedded carbon – the carbon dioxide emitted during the manufacture, transport and construction of products and materials. In addressing the selection of alternative sustainable materials or seeking to reduce resource use, embedded carbon will be the lens through which we measure the impact of our actions.

Delivering on our Optimising Resources ambition will involve embedding sustainable practices across our business. Through our Sustainable Procurement Policy we will work with our supply chain to embed circular economy requirements in our contracts and through our Innovation Strategy[75] we will identify, trial and embed sustainable design solutions as business-as-usual. We will work with other TOs and infrastructure companies to define and develop the frameworks which will enable us to measure and manage embedded carbon across the lifecycle of assets.

[72] www.bsigroup.com/en-GB/standards/benefits-of-using-standards/becoming-more-sustainable-with-standards/BS8001-Circular-Economy/
[73] www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy
[74] www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/4/
[75] www.ssen-transmission.co.uk/riio-t2-plan/innovation-strategy/

5.1.1 Stakeholder Expectations

Through our Sustainability Strategy consultation in February 2018, it was clear that issues relating to the circular economy were important to our stakeholders. As a result, we included a new sustainability ambition, Optimising Resources, aligned with the UN SDG 12 – Responsible Consumption and Production. Through subsequent consultations on our Sustainability Plan, in February 2019, our Annual Executive Level Statement, in August 2019, and a RIIO-T2 stakeholder engagement event in November 2018, our stakeholders identified that this ambition should focus on the following three areas:

- Minimising waste
- Resource efficiency
- Embedded carbon

In addition, during 2019 we have engaged with other TOs, subject matter experts like Zero Waste Scotland and attended infrastructure forums (such as the Scottish Infrastructure Circular Economy Forum) to understand what is best practice and where we can make the most significant interventions. Through such engagement we identified embedded carbon as a metric for understanding the impacts of our construction activities which we would need to include in our planning going forward.

Recognising that the vast majority of our resource impacts come from our construction projects, we have also engaged extensively with our supply chain. In March 2019 we held an environment forum with our principal contractors involved in the construction of our network. The purpose of this meeting was to source feedback on our resource and waste reporting proposals to help inform our approach and ensure we were gathering the correct data. As a result of feedback at the meeting we revised our proposed data reporting template to better align with our contractors' internal reporting systems, facilitate ease of use and focus on most material categories of greenhouse gas emissions, resource use and waste. This was followed up by supply chain surveys in June and September 2019 which sourced feedback on the feasibility of our proposals to achieve zero waste to landfill and tackle embedded carbon. The response from our supply chain partners was largely positive and provided reassurance that they are also committed to playing a role in the transition to a circular economy.

5.2 Waste

Outcomes

- Achieve zero waste to landfill (excluding compliance waste) by the end of the RIIO-T2 period.
- Achieve a recycling, recovery and re-use rate of >70% across our waste streams by the end of the RIIO-T2 period.
- Establish and implement best practice waste reporting for all waste stream by 1 April 2021.

5.2.1 Introduction

Where waste cannot be designed out or avoided it is vital that it is disposed of in a manner which reduces its environmental impact. In a circular economy this means diverting waste from landfill and increasing the volume of waste that is recycled or composted. Where waste cannot be practically recycled, combustion or anaerobic digestion are also viable disposal routes with a typically lower impact than landfill.

We aim to achieve zero waste to landfill for all waste streams from our sites. This will require stretching and ambitious action. Our largest sources of waste stem from our construction projects. We will therefore need to work closely with our supply chain to explore novel ways to minimise waste and recycle or re-use resources. Through our Sustainable Procurement Policy, requirements on waste and resource use will be a feature of our contracts. We will seek to align our

business with the BS 8001 Circular Economy Standard[76] and through our parent company, SSE plc, we will take action to address the waste streams from our shared offices and depots.

5.2.2. Current Performance

Our current waste management approach has been focused on compliance. Through our Consents & Environmental Specification, contractors working on our projects must provide site waste management plans and demonstrate compliance with relevant legislation such as the Waste (Scotland) Regulations Act[77]. This specification also requires contractors to comply with our environmental ground rules which includes a commitment to minimise and segregate waste for re-use and recycling.

Our most material waste streams stem from our construction projects. To improve our understanding of the waste streams arising from construction we have implemented new waste reporting requirements in our Consents & Environmental Specification site works document and produced a standardised waste reporting template for our contractors to use. These requirements are now embedded as part of our procurement process.

As reporting on waste data streams is a new requirement for RIIO-T2, there are currently no baselines for the RIIO-T1 period. However, from engagement with our supply chain we have identified the main waste streams on our construction projects – metals, aggregates, asphalt, concrete, timber, and soil and stones – and their typical disposal routes. The vast majority of these wastes are re-used or recycled however mixed construction waste would appear to be the main waste stream going to landfill that requires further analysis and intervention.

Through our parent company, SSE plc, a new waste management framework contract is being established for all our offices and depots. This will include waste data and waste minimisation requirements which will drive reductions across our own sites, particularly in municipal waste streams. We are continuing to play a role in shaping the direction of this framework to address key issues such as food waste and single-use plastics.

5.2.3 Opportunities and Challenges

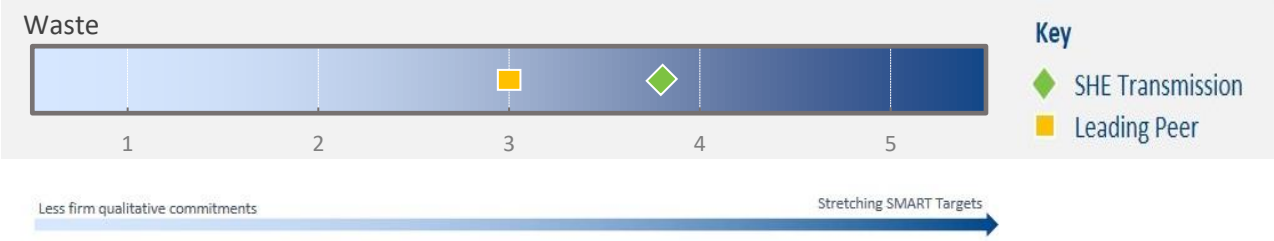
A significant obstacle to tackling waste is due to a lack of recycling infrastructure in Scotland. This means that a large percentage of waste has to be transported further south, or indeed overseas to be processed, outweighing many of the benefits of recycling due to increase impacts from transportation. This is compounded by the remoteness of many of our sites in the north of Scotland. The development of new recycling infrastructure in Scotland, such as an electrical arc furnace for metals recycling, would greatly advance the transition to a circular economy. The ambitions in the Scottish Government's Circular Economy Strategy[78], and the forthcoming Circular Economy Bill[79], may help address these challenges.

Another challenge lies in ensuring the availability and accuracy of waste data. Different approaches and reporting methodologies creates complexity and additional costs. We have implemented a new standardised reporting template for our supply chain and we will continue to work with other TOs and infrastructure providers to ensure that reporting requirements are as consistent as possible. Through our Sustainable Procurement Policy, we will embed circular economy principles in our procurement process, including our waste and recycling targets and a requirement to provide quarterly reporting on waste and resource use. For more information on our commitments to reporting on waste and recycling in our supply chain, please see our Supplier Code in section 8.3.1.

[76] www.bsigroup.com/en-GB/standards/benefits-of-using-standards/becoming-more-sustainable-with-standards/BS8001-Circular-Economy/
[77] www.gov.scot/publications/waste-legislation/
[78] www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/
[79] www.gov.scot/news/circular-economy-bill/

5.2.4 Benchmarking

Our benchmarking review identified that we are leading in terms of our commitments to achieving zero waste to landfill. While other TOs have made similar commitments, our timeline for achievement and the scope of our target (across all waste streams including construction and demolition wastes) was deemed to be more ambitious. Our commitments on recycling and recovery were identified as being in the pack but we were seen to be lagging in terms of a commitment on reducing single use plastics in our offices. On the latter issue we will work with our parent company, SSE, to identify ways in which we can take action across our shared offices. Further details on how we aim to maintain leadership in this area are detailed in the Action Plan below.



5.2.5 Action Plan

Actions		Outputs	When
Waste	Develop a targeted waste management approach.	Implement waste minimisation initiatives for most significant waste streams.	Short Term 2021/22
	Work with SSE and waste management framework contractors to reduce waste from shared offices.	Establish KPIs for waste minimisation, including a specific target on single use plastics.	Long Term 2025/26
	Focus efforts to increase recycling of waste (as opposed to incineration or anaerobic digestion).	Achieve a recycling rate at or above national targets – 70%.	Medium Term 2023/24
	Achieve zero waste to landfill.	External assurance of zero waste to landfill.	Long Term 2025/26

Measuring Performance

In measuring progress on waste minimisation we will report annually on the following for both our direct (from our offices and depots) and indirect (from construction wastes) waste streams:

- Waste produced and disposal routes (landfill, recycled, re-used, incineration etc.) (tonnage and percentage)
- Most significant waste streams (by tonnage and tCO_2e)
- Carbon saving from landfill diversion (tCO_2e)

5.2.6 Estimated Benefit to Consumers

Achieving zero waste to landfill has a wider benefit to society through reduced costs to the consumer and avoided carbon emissions. To quantify the benefits to society from reducing waste to landfill we have developed a model that estimates the costs of waste based on a combination of:

- Waste management costs (i.e. landfill taxes)

- Carbon emission costs (using the BEIS carbon factors for different disposal routes multiplied by the non-traded carbon price)

To produce a high-level estimate of waste for RIIO-T2 we have applied typical construction wastage rates to an estimate of the projected resource consumption from our Certain View projects over the price control period. An additional uplift was added to account for waste generated from excavation and site clearance activities. This produced an indicative estimate of 978,000 tonnes of waste across RIIO-T2. The application of baseline rates for recycling, incineration and landfill showed that an estimated 228,000 tonnes of this waste would go to landfill during RIIO-T2 under business-as-usual conditions. However, if we achieve zero waste to landfill by 2025/26, through waste minimisation and recycling initiatives, the diversion of this waste would result in a cost saving to society of £0.9m. When compared to a business-as-usual scenario where we achieve zero waste to landfill by 2045/46, in accordance with the Scottish Government's Net Zero target, the benefit to society rises to £2.3m through avoided carbon emissions and landfill tax over this time period. This value does not include additional benefits that come from reduced waste to landfill such as improved visual amenity or impacts on local house prices.

5.3 Resource Use

Outcomes

Achieve a recycling, recovery and re-use rate of >70% across our waste streams by the end of the RIIO-T2 period.

5.3.1 Introduction

Resource efficiency means using the resources we have wisely, to get the most out of our assets and thereby reduce the need to consume new resources. Through our Asset Management Strategy we aim to extract maximum value from our assets, using condition-based risk assessment and remote monitoring technology to maximise asset lifespans. At the end of asset life, we will make cost-effective decisions on whether they can be refurbished (potentially for re-use as spares) or broken down to recover components and materials for recycling. Through our Innovation Strategy we will explores avenues for the remanufacturing and re-conditioning of assets at end of life.

Another critical resource efficiency issue is water consumption. Around the world, water is becoming an increasingly scarce resource, due to increased demand, and the impact of climate change on rainfall patterns. Recognising the value of water as a resource, we will take steps to address our own water use and seek to understand the embodied water of our assets – the water extracted in the manufacture, transport and construction of products and materials – through our Sustainable Procurement Policy.

5.3.2 Current Performance

In recent years we have sought to improve resource efficiency through the use of innovation in our assets. For example, the polymer composite poles used on the Dorenell overhead line (OHL) have reduced maintenance requirements and longer operational life than their wooden counterparts. Likewise, the new OHL structures being developed through the New Suite of Transmission Structures (NeSTS) project aim to improve resource efficiency through reduced land, construction and maintenance requirements in comparison to alternatives.

Through our approach to asset management we have continuously sought to keep our assets in service for as long as possible. This includes using a condition-based decision-making system to determine the optimal time to make maintenance interventions. Through the implementation of new systems for managing asset inspection and maintenance we have improved our understanding of our asset base and made more targeted and preventative interventions to avoid asset failures which would necessitate replacement. For example, we frequently refurbish steel lattice OHL towers through our projects, performing steel and concrete repairs to keep them in service for longer and avoiding the need to replace them.

Where possible, we have sought to re-use assets or their components as spares. A prime example of asset re-use was in the creation our Blackhillock training site. Building a new state-of-the-art substation at Blackhillock was a key component of the £1.1bn Caithness-Moray HVDC link project, completed in January 2019. Instead of demolishing the old substation a decision was made to convert it into a training facility capable of giving engineers and apprentices hands on training in a genuine operational environment. This has allowed assets to be re-used to enhance the expertise of our workforce.

Through our parent company, SSE plc, we have also taken steps to address water consumption in our offices and depots. SSE has a water efficiency and savings programme in its non-operational offices, data centres and depots, and also runs a behavioural change campaign in its non-operational buildings to encourage water savings at work and at home. SSE monitors the average water use per person per day in these non-operational buildings and has a target to reduce the water consumption every year by 2.5%. In 2018/19, water use per person averaged 16.9 litres/employee/day, compared to 20.33 litres in 2017/18, meaning SSE was 15.7% ahead of its target for the year. SHE Transmission therefore had an overall water consumption of 8,128.9 litres per day.

5.3.3 Opportunities and Challenges

For many legacy assets, condition is often a barrier to refurbishment and re-use. Many such assets are not in a condition where refurbishment would be cost effective for consumers and are instead recycled for their components and materials. Offline rebuilds (which involve building a new asset without taking the original offline during construction) are often the most cost-effective option for many projects as they typically avoid adverse impacts on network reliability and stability. Furthermore, the aftermarket for legacy assets tends to be small, given the age of these assets and costs of re-certification. The increasing importance of circular economy principles is however driving innovative research and development in the re-manufacturing and re-conditioning of assets. While this is at an early stage, we will pursue opportunities through our Innovation Strategy to understand how we retain assets at a higher level of value instead of breaking them down for recycling.

Increasing digitalisation of our network will also enable improvements in resource efficiency. New remote performance monitoring technologies being installed on our network will give our engineers a better indication of asset health. This will enable us to perform predictive maintenance on assets and operate them in ways that maximise their lifespan.

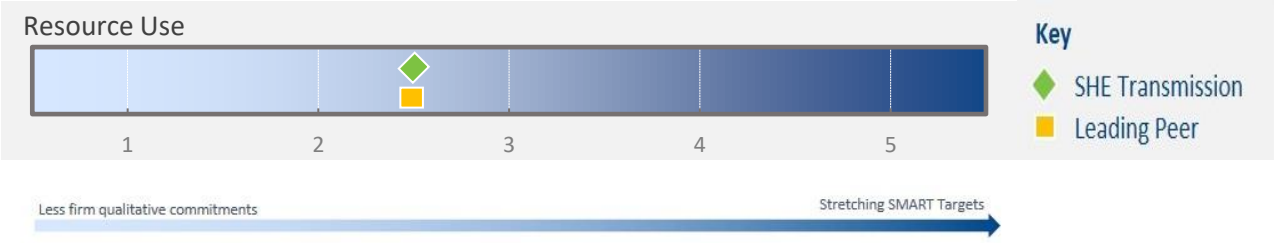
While water consumption forms a small part of our overall resource consumption, it is a key area of environmental concern and an important issue for our stakeholders. Reports by the Environment Agency indicates that a combination of population growth and climate change could leave the UK with severe water shortages in the next 20 to 25 years[80]. We therefore believe that taking steps to reduce water use in our offices and depots should be of equal importance to other resource considerations. Taking steps to ensure more efficient use of water requires employee engagement. In this regard, an established water savings and efficiency behavioural change programme through our parent company, SSE plc, gives us a solid foundation on which improve our performance over RIIO-T2. Embodied water is also becoming a more pertinent issue which, like embedded carbon, is directly related to the resources we procure. Our Sustainable Procurement Policy will offer an opportunity for us to better understand and manage this through a requirement for all key assets to have Environmental Product Declaration (EPD) certificates. EPDs are a type of life cycle analysis which includes data on water use involved in the manufacturing of a product.

5.3.4 Benchmarking

Our benchmarking review identified that we are broadly in the pack in terms of our commitments towards resource efficiency. Other TOs shared our commitments on transitioning towards a circular economy by seeking to re-use assets where possible and taking steps to tackle resource efficiency in their supply chains. The review also identified that we were lagging in terms of our commitment to water consumption, relative to another TO which had an ambitious reduction

[80] www.gov.uk/government/speeches/escaping-the-jaws-of-death-ensuring-enough-water-in-2050

target. To address this, the Action Plan below outlines how we will take steps to improve our resource efficiency and achieve leadership during RIIO-T2.



5.3.5 Action Plan

Actions		Outputs	When
Resource Use	Develop our understanding of disposal routes for our assets.	Implement end-of-life strategies for asset fleets.	Short Term 2021/22
	Implement recycled content reporting across our supply chain.	Reporting framework for recycled content in procured assets and materials.	Continuous
	Explore opportunities for re-use of assets.	Research program on re-manufacturing, re-conditioning and re-use of assets.	Medium Term 2023/24
	Extend asset lifespan through preventative maintenance.	Implement digital technologies to improve asset condition monitoring.	Long Term 2025/26
	Monitor and reduce water consumption in our offices through communications and awareness initiatives.	Achieve a reduction in water use per employee by the end of the price control.	Long Term 2025/26

Measuring Performance

As we develop a better understanding of the practicalities and opportunities for asset re-use, we will look to establish baselines against which we can measure performance. This would include annual reporting on the following:

- Number and type of assets refurbished
- Embedded carbon saving from refurbishment (tCO_2e)

We will also continue to monitor water consumption (litres per person per day) and seek reductions in accordance with the SSE Group target.

5.3.6 Estimated Benefit to Consumers

Aside from the direct saving of reduced procurement costs, the re-use of assets provides a wider benefit to society by avoiding the need for the extraction and refining of additional raw materials and the manufacturing of brand-new assets. The carbon emissions associated with these activities – the embedded carbon of the asset – is thus likewise avoided. This benefit to society can be quantified by multiplying the avoided emissions with the BEIS non-traded carbon price.

During RIIO-T2, we will be procuring a number of assets to utilise as operational strategic spares, enhancing the resilience of our network. Where possible, we will seek to re-use existing assets as strategic spares instead of procuring brand-new assets. For example, we intend to re-use 7 transformers which are being removed as part of RIIO-T2 projects, as strategic spares. Using an estimate of the embedded carbon present in different transformer types, the potential avoided carbon as a result of asset re-use can estimated at around 6,420 tonnes of CO_2 equivalent. Multiplying this value by the BEIS non-

traded carbon price equates to an estimated cost saving to society of approximately £460,000. While this estimate includes only the benefits from re-use of these transformers we will seek further opportunities to realise benefits from the re-use of other assets types or their components as we deliver our projects in RIIO-T2.

Alongside improving resource efficiency in our assets, we aim to achieve a reduction in our water consumption. Through employee engagement we aim to achieve an annual 2.5% reduction in litres per person per day (l/p/d), as per the SSE Group target. From a 2018/19 baseline of 16.9 l/p/d, by the end of RIIO-T2 we will aim to achieve a target of 14.2 l/p/d. This would mean that, by the end of RIIO-T2, every employee would be saving around 694 litres per year compared to 2018/19.

5.4 Embedded Carbon

Outcomes

Contribute to the development of a common standard for embedded carbon assessment and reporting, with the goal of PAS 2080 Carbon Management in Infrastructure compliance by the end of the RIIO-T2 price control period.

5.4.1 Introduction

The most effective way to reduce waste and embedded carbon is to design it out early in project development. Likewise, optimising early designs, to reduce the quantity of resources required, realises both direct cost savings (from reduced materials procurement) and indirect benefits (from reduced environmental impacts) to consumers. Embedding sustainable design principles into our projects is therefore a crucial element of reducing their overall lifecycle impacts and offering value for money. As part of strategic optioneering we will assess the full lifecycle carbon impacts of our projects at a high level through our CBA framework. As a project progresses further through it's lifecycle we will look to refine this assessment and seek opportunities to improve the sustainability of our designs through actions in the following areas:

- Life Cycle Analysis (LCA) – implement frameworks, such as PAS 2080[81], to manage carbon and other environmental impacts across the lifecycle of our assets.
- Sustainable materials – through our Innovation Strategy, identify, trial and implement alternative materials which offer reduced environmental impacts relative to their traditional counterparts e.g. steel or concrete with a lower embedded carbon value.
- Sustainable design tools – implement the use of Building Information Modelling (BIM) software to help augment our ability to design out waste, minimise resource use and reduce embedded carbon. Further information on our approach to BIM can be found in the IT Investment Plan (Non-Op Capex)[82].

Underpinning these initiatives will be the need for sustained engagement with our supply chain partners, tapping into their expertise to understand the most cost-effective ways to reduce the embedded carbon in our designs, and collaboration with other TOs, to share best practice and align reporting standards. Furthermore, through the development and implementation of an industry-standard framework for measuring and managing embedded carbon we will be able to set meaningful reduction targets to guide our actions in this area.

5.4.2 Current Performance

Much of our activity to date has been on understanding the different approaches and methods towards quantifying, reporting and managing embedded carbon in our designs. As outlined above, this has included close engagement with our supply chain, TOs and other infrastructure providers. In particular, we have focused on establishing the data

[81] www.shop.bsigroup.com/ProductDetail/?pid=000000000030323493
[82] SHE Transmission IT Investment Plan (Non-Op Capex)

requirements that we will need to source from our supply chain partners in order to understand the embedded carbon content of the materials and assets we procure.

Many of our current construction practices, such as maximising the use of 'site-won' materials as aggregates, already contribute towards a more sustainable design by reducing the volume of new resources that need to be extracted and transported to site. We aim to augment these practices with BIM design tools to facilitate greater reductions in resource requirements, and thus reduced embedded carbon. To this end, we have engaged with BIM experts within our supply chain to better understand the potential benefits these tools can bring to our design process.

As reporting on embedded carbon will be a new requirement for RIIO-T2 there are no current baselines for RIIO-T1. However, high level estimates on embedded carbon for the projects in our Certain View capital delivery programme have been produced through the carbon pricing model in our CBA framework. These estimates are suitable for high level decision-making, such as early optioneering and site/route selection, however, as we build our datasets and sustainable design tools, we will be able to factor embedded carbon into detailed design and procurement decisions.

5.4.3 Opportunities and Challenges

As the UK energy system decarbonises, emissions associated with the operation of buildings and assets will reduce. However, as the UK Government's Infrastructure Carbon Review[83] makes clear, this will result in the relative growth of embedded carbon as a component of overall carbon footprints. To achieve carbon reductions consistent with a Net Zero future, governments and companies will therefore need to increasingly take action to address the embedded carbon in the goods and services they procure. For network owners this presents a unique challenge. While continued network growth is required to connect renewable generation and low carbon technologies, the increasing amount of resources required for construction projects will result in the growth of embedded carbon.

Industry stakeholders generally agree that there is a high chance that the measurement, management and reduction of embedded carbon in construction projects could soon become a mandatory requirement in the UK[84]. Many construction companies are taking action now to manage the embedded carbon in their projects. Industry frameworks like PAS 2080 Carbon Management in Infrastructure have been developed to provide a basis on which to manage carbon across the lifecycle of the project and seek avenues for reduction. Technologies like BIM offer the ability to carry out carbon 'hotspot' analysis of designs, allowing areas of high embedded carbon to be designed out before construction even starts. New sustainable materials and innovative design practices such as materials passports provide alternatives to their traditional counterparts which reduce environmental impacts or increase the lifespan of buildings or their components.

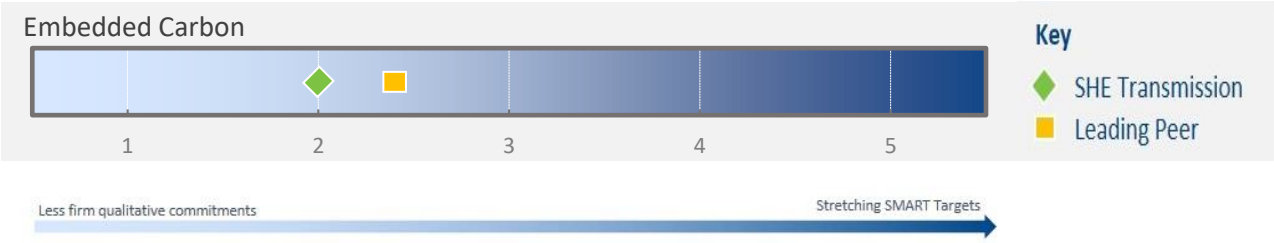
These aspects of sustainable design provide potential opportunities to reduce the embedded carbon in our network assets. However, they are reliant on the implementation of new business processes, new skills, collaboration with industry partners and, above all, data from our supply chain. Through our Sustainable Procurement Policy, we will establish processes to source the information we need to understand and manage embedded carbon in our designs. This will include a requirement for suppliers to report embedded carbon projections at the tender stage and actual embedded carbon during project delivery. Suppliers will also be required to provide Environmental Product Declaration (EPD) certificates, a standardised type of life cycle analysis which includes data on embedded carbon, for key assets and materials. For more information on our commitments to reporting on embedded carbon in our supply chain, please see our Supplier Code in section 8.3.1.

5.4.4 Benchmarking

Our benchmarking review identified that we are currently lagging in this area relative to another TO and peers in the water industry. These peers have established methods of measuring embedded carbon and have SMART targets for

[83] www.gov.uk/government/publications/infrastructure-carbon-review
[84] www.wrap.org.uk/system/files/priv_download/Business%20Case_Embodied_Carbon_Infrastructure_.pdf

reduction. They are therefore important stakeholders that we will engage with in developing best practice. The review also identified that we are in the pack in terms of committing to establish an industry-wide approach for measuring and managing embedded carbon and leading in terms of our commitments on sustainable materials. To push forward and achieve leadership in this area we will therefore work with our peers to establish best practice and seek opportunities to leap ahead in progress by addressing embedded carbon within our projects through innovation. The Action Plan detailed below provides further detail on the steps we will take in this area.



5.4.5 Action Plan

Actions		Outputs	When
Embedded Carbon	Develop our approach to managing carbon across lifecycle of our projects.	Adopt an industry standard framework for managing carbon in infrastructure (e.g. PAS 2080).	Short Term 2021/22
	Implement embedded carbon reporting across our supply chain.	Reporting framework for embedded carbon in procured assets and materials (e.g. EPD certificates) – see section 8.3.1 for more details on including embedded carbon in our Supplier Code.	Continuous
	Develop means of measuring embedded carbon in materials and design.	Implement a BIM Level 2 solution with a materials carbon specification on all major projects.	Medium Term 2023/24
	Review baseline data and establish an appropriate embedded carbon reduction target.	Reduction target for embedded carbon.	Medium Term 2023/24
	Through innovation, identify and trial sustainable materials with reduced embedded carbon relative to their traditional counterparts.	Implement a Sustainable Materials Catalogue allowing designers to select from options to reduce embedded carbon.	Long Term 2025/26

Measuring Performance

In measuring progress on our approach to embedded carbon, we will report annually on the following:

- Progress against an embedded carbon reduction target (to be developed)
- Embedded carbon in new projects (tCO_2e)
- Embedded carbon saving from innovations (tCO_2e)

5.4.6 Estimated Benefit to Consumers

In assessing the indicative benefits of sustainable design practices to wider society we have focused on the potential reductions in embedded carbon achievable through the implementation of BIM and from selecting more sustainable materials. For direct savings on project costs from the implementation of BIM, further details are included in the IT Investment Plan (Non-Op Capex).

Embedded carbon savings attributable to BIM implementation can be estimated based on case studies from other projects. Discussion with industry experts indicates that carbon savings of 10-20%, from avoided resource consumption, can be realised through effective implementation of a BIM Level 2 solution. Based on high-level estimates of resource consumption across our Certain View projects in RIIO-T2, this would potentially allow reductions in embedded carbon of between 23,000 and 47,000 tonnes of CO_2 equivalent. Furthermore, case studies indicate that the selection of sustainable materials, such as aggregates or metals with higher recycled content, can provide additional carbon savings in the region of 8-15%. When compared against the same Certain View resource consumption estimate this results in reductions of embedded carbon of between 18,500 and 35,000 tonnes of CO_2 equivalent.

Collectively, embedding these sustainable design principles in our projects offers the potential to reduce embedded carbon between 42,000 and 82,000 tonnes of CO_2 equivalent. When multiplied with the BEIS non-standard carbon price this provides a potential benefit to society of between £3 - 6 million.

We will work collaboratively with our stakeholders, including the other Transmission Operators, throughout T2 with the aim of assessing and managing capital carbon on our projects, driving efficiencies throughout our supply chain, and sharing best practice.

6 Supporting Communities

Meeting the needs of vulnerable consumers and maximising the local benefit of our investments.

6.1 Introduction

One of the most significant impacts we have on the areas we operate in is the local economic benefits created through some of our major development projects. We have a responsibility to ensure all our customers, communities around our operations and society at large all thrive as a result of our operations. Without the continued support of the communities, we would not be the business we are today or become the business we want to be in the future.

Our ambition is to ensure we meet the needs of vulnerable consumers and support local supply chains when developing, constructing and operating assets so that communities benefit from our investments. We can also provide additional support to our communities across our network through community support funds and our employees committing their time to community projects.

Community and locally owned energy projects are also a priority for the Scottish Government and the government aims to target an increase in the amount of community and locally owned renewable energy generation. Scotland's energy strategy includes 'A smarter local energy model' as a core principle which is underpinned by ambitious plans to support 1 GW of local and community energy by 2020 and 2 GW by 2030. As a result, it is expected there will be an increasing number of community energy projects seeking to connect to our network. Recognising the ambitions of the Scottish Government and the ever-changing energy landscape it will be important that we are a proactive partner in facilitating these ambitions. We will engage with stakeholders, Local Area Energy Planning (LAEP)[85] and Local Heat and Energy Efficiency Strategies (LHEES)[86] to facilitate the growth of local and community owned renewable energy schemes in our network area as part of the wider low carbon transition.

For further information on our approach to supporting local and community energy please see Section 2.4 and our Local Energy Area and Community Energy plans:
www.ssen-transmission.co.uk/riio-t2-plan/local-energy-area-plans-community-energy/

6.1.1 Stakeholder Expectations

Stakeholders and society expect companies to introduce measures to support and contribute to the communities in which they operate. During the development of our Sustainability Strategy in early 2018 we received broad support for our approach to support local supply chains and the commitments to measuring our contribution to communities[87].

Towards the end of 2018, the Scottish Government consulted on a draft Fuel Poverty Strategy for Scotland and we received feedback on our Sustainability Plan (2019/20)[88] that we could strengthen our community engagement plans. Based on this stakeholder feedback we expanded our ambition to also focus on meeting the needs of vulnerable consumers and proposed to adopt a supporting role and co-ordinate activities with the Distribution Network Operator (DNO), local authorities and other agencies to meet the needs of vulnerable consumers.

Stakeholders welcomed our plans to support vulnerable consumers in our draft RIIO-T2 business plan consultation. We have been actively engaging with our stakeholders through a targeted stakeholder roundtable event[89] and a bilateral meeting with the Scottish Government to strengthen our plans for meeting the needs of vulnerable consumers. Our stakeholders felt that TOs do have a pro-active role in supporting vulnerable consumers, with a joined-up approach with DNOs and other relevant stakeholders. We received overarching support for plan to coordinate activities with essential

[85] www.es.catapult.org.uk/news/ssh1-local-area-energy-planning/
[86] www.gov.scot/policies/energy-efficiency/energy-efficient-scotland/
[87] SHE Transmission (2018) Sustainability Strategy Consultation
[88] SHE Transmission (2019) Our Sustainability Plan Consultation
[89] SHE Transmission (2019) RIIO-T2 Sustainability, Whole System and Competition Stakeholder Workshop – September 2019

services. Stakeholders have encouraged us to integrate these plans within our wider community stakeholder engagement plans and form partnerships with relevant organisations.

6.2 Vulnerable Consumers

Outcomes

- Achieve >95% of our employees trained in supporting vulnerable consumers by the end of 2022.
- Implement best practice in accessible communications and media by the end of 2023.
- Develop and implement partnerships with third parties that can utilise our existing engagement activities to support vulnerable consumers within our communities.

6.2.1 Introduction

Supporting vulnerable consumers and tackling fuel poverty is vital to ensure a fairer, socially just and sustainable future. The Scottish Government has since ratified its Fuel Poverty Act (2019)[90] that sets ambitious targets to support the goal of eradicating fuel poverty. This new law sets a target of no more than 5% of Scottish households in fuel poverty by 2040, and no more than 1% of households being in extreme fuel poverty. There are also targets to reduce household fuel poverty levels as progress is made towards meeting the 2040 targets.

6.2.2 Opportunities and Challenges

Our regulator, Ofgem, has decided that TOs should not consider actions to support vulnerable consumers and communities as business as usual[91]. In the latest business plan guidance, Ofgem has proposed possible consumer value propositions for strategies and implementation plans likely to deliver positive impacts for current and future consumers, including consumers in vulnerable situations.

There is no simple definition that captures every aspect of consumer vulnerability in the energy sector. Based on stakeholder feedback, we believe it is vitally important to address high-risk categories of consumers in the north of Scotland and islands. This includes consumers living in rural communities, suffering from fuel poverty or reliant on electric heating. In our network area, around 150,000 consumers are currently on our Priority Services Register (PSR)[92] in the north of Scotland.

A recent report commissioned by Citizens Advice Scotland (CAS)[93] on consumers in vulnerable situations highlights good practice in the energy sector in providing support but concludes that there is not yet an integrated approach between essential service providers. As a result, not all vulnerable consumers eligible and wishing to receive additional support are aware of the services available. We are supportive of all policy measures that will help to support energy efficiency and reduce fuel poverty especially for our most vulnerable consumers. There is an opportunity for us to take a supporting role and co-ordinate activities with the DNO, Local Authorities and other agencies to raise awareness, support and meet the needs of vulnerable consumers. It is important to ensure that the consumers and stakeholders we interact with, who are both eligible and wishing to receive support are aware of the services available.

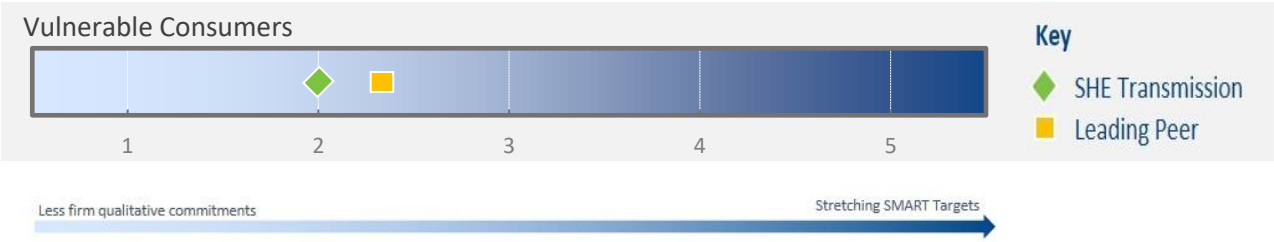
[90] Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019. Available at: www.legislation.gov.uk/asp/2019/10/contents/enacted
[91] www.ofgem.gov.uk/publications-and-updates/riio-2-sector-specific-methodology-decision
[92] As at the end of March 2019.
[93] Making it Easy: Simpler Registrations for Customers in Vulnerable Situations (Citizens Advice Scotland, 2018) available at: www.cas.org.uk/system/files/publications/2019_03_29_cas_making_it_easy_simpler_registration_for_consumers_in_vulnerable_situations.pdf

6.2.3 Current Performance

Addressing consumer vulnerability[94] has not previously been seen as a core function for GB transmission owners; however, stakeholders' expectations have changed. Whilst we agree the central provision of support should be provided by the most capable and directly relevant organisation, we believe we have a role to play in addressing consumer vulnerability and we want to do more in RIIO-T2. Over the past year we have been actively engaging with stakeholders directly and via our Stakeholder Advisory Panel to understand where we can best contribute and develop our plan for meeting the needs of vulnerable consumers during RIIO-T2.

6.2.4 Benchmarking

Our wider peers such as the regulated water industry and the distribution network companies are required to undertake action to support vulnerable consumers. Despite Ofgem deciding Transmission companies should not consider actions to support vulnerable consumers as business as usual, we have included plans to support vulnerable consumers below. We have included plans to establish partnerships to meet the needs of vulnerable consumers and there is an opportunity to collaborate and learn for our peers' approach to supporting vulnerable consumers.



6.2.5 Action Plan

In is important to note that cost efficiency and network reliability remain key considerations when developing reinforcements to our network to ensure that we deliver the most economic investments for our customers. Our regulatory obligations require us to ensure a robust and reliable service whilst ensuring that all possible options for cost efficiency are explored to ensure best value outcomes for our customers. In collaboration with our stakeholders we are developing our approach to support vulnerable consumers and introduce measures to tackle fuel poverty. Alongside our goal for 100% network reliability for homes and businesses, we have identified several additional actions to support vulnerable consumers:

- Impact assessment: Undertake stakeholder impact assessments for project delivery. For example, we will utilise a risk mapping tool to assess how consumers may be impacted by planned outages and coordinate plans with the DNO. This will allow proactive contact with consumers on the Priority Services Register (PSR).
- Employee training: We will deliver mandatory training to ensure staff are proficient in recognising signs of consumer vulnerability and fuel poverty and have knowledge of the support services available.
- Partnerships: Create partnerships with third parties to help deliver and promote activities in addressing consumer vulnerability and fuel poverty during our stakeholder engagement activities.
- Accessible communication, events and media: Introduce accessible communications and encourage accessible consultations events. We will adopt an accessibility software solution for our website that allows consumers to view content in different languages and alter text sizes. This will promote accessible information that is particularly important for consultation documentation on projects.

[94] Ofgem defines consumer vulnerability as: vulnerability is when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where they are: (1) significantly less able than a typical consumer to protect or represent their interests in the energy market, and/or (2) significantly more likely than a typical consumer to suffer detriment, or that detriment is likely to be more substantial.

Actions		Outputs	When
Vulnerable Consumers	Develop and implement a mandatory e-learning training programme to ensure employees are proficient in recognising the signs of consumer vulnerability and have knowledge of the support services available (such as the Priority Services Register).	>95% of our employees trained in supporting vulnerable consumers.	Short Term 2021/22
	Improve usability and accessibility of our current website; introducing accessibility tools where possible such as using subtitles on our video content.	Update to current website.	
	Promote our project information widely on social media platforms to appeal to different demographics.	Project information on social media as appropriate.	
	Ensure our engagement and consultation events are accessible to all (including the provision of appropriate materials and information).	Event planning for accessibility.	
	Review our current and future initiates, and research who we can partner with to help us support vulnerable consumers.	Formalise partnerships for supporting vulnerable consumers.	
	In collaboration with partners, create a bespoke training course for staff responsible for stakeholder engagement.	Training needs assessment and training course developed.	Medium Term 2023/24
	Continue to review the information on our website and its capability, updating it where required. We will also work with external specialists to improve its accessibility, including applying the 'Recite Me' tool, ensure it is capable of hosting interactive GIS Maps, 3D modelling tools and the user of different languages.	New website launched to promote practice in accessible communications and media.	
	Develop, roll out and use one consistent process for assessing our impact on stakeholders (including vulnerable consumers). Including the use of mapping tools to assess. This will be formally captured in our decision-making processes to ensure we meet stakeholders' needs.	Stakeholder Impact Assessments undertaken as per our Stakeholder Engagement Action Plan.	
	Develop and implement partnerships with third parties that can utilise our existing engagement activities to support vulnerable consumers within the community. For example, partners to provide fully trained energy advisors to attend our external engagement events who will provide impartial advice, and signpost to appropriate support services.	Partnership initiatives to support vulnerable consumers.	Long Term 2025/26
	Review vulnerable consumers course content throughout Price Control to ensure it is as accurate and up to date.	Relevant vulnerable consumer training materials.	Continuous

	Co-ordinate plans with DNO to minimise impact of projects within same geographical area.	Project planning to minimise impact to vulnerable communities.	Continuous
	Continue to, and improve, our use of communication tools/aids to increase inclusiveness of both our published communications and at our events.	Communication tools and aid to support vulnerable consumers.	Continuous
	Assess stakeholder's satisfaction of our work to support vulnerable consumers through our annual stakeholder survey.	Annual stakeholder satisfaction survey.	Continuous

Measuring Performance

Performance in meeting the needs of vulnerable consumers will be measured based on delivery of the above action plan and the following measures:

- Employees trained in community vulnerability (%)
- Define and develop and approach to report on the accessibility of our communications
- Partnership initiatives

6.2.6 Estimated Benefit to Consumers

In delivering the above action plan, we aim to go above and beyond minimum requirements by ensuring that the service we provide encompasses the needs of vulnerable consumers in the north of Scotland. Through our coordination with the DNO, this enhanced service delivery seeks to benefit the 150,000 consumers on the Priority Services Register in the north of Scotland and through our employee training, partnerships and accessible communications we will aim to reach an even wider population. Furthermore, in delivering this action we will seek to support our overarching goal of £100m in efficiency savings. This will be achieved through the integration of these plans into our approach to stakeholder engagement and through the forming of partnerships with third parties to help deliver and promote activities in addressing consumer vulnerability for the industry.

6.3 Local Supply Chains

Outcome

Maintain >25% of our approved suppliers located in the north of Scotland.

6.3.1 Introduction

Stakeholders consistently prioritise the need to ensure local businesses benefit from our construction projects. Building on the SSE Responsible Procurement Charter[95] that encourages the use of local supply chains and ensuring that we continue to maximise the local benefit of our investments, we aim to support local employment and local supply chains where feasible during the development, construction and operation of our assets.

We will measure and understand the impact we have on communities, through the local socio-economic impact of each pound spent during our investments and the local content ratio of our major project investments.

[95] Responsible Procumbent charter (SSE, 2018) available at: www.sse.com/media/530653/Responsible-Procurement-Charter_0818.pdf

6.3.2 Opportunities and Challenges

The UK Government, Scottish Government and local authorities are increasingly promoting that a proportion of infrastructure investment be spent locally, where it can deliver the greatest benefit to local communities. For example, the current target for UK Government spend with SMEs is 33% by March 2022[96].

In order to make improvement, it is first important to establish an accurate baseline with a clear definition of what local spend means for our business. This is key in helping us to understand the current situation. During RIIO-T2 we will focus on delivering our Meet the Buyer initiative, promoting the Open4Business programme and gathering further data on our local supply chain including details relating to the size of companies, the nature of services they provide and the amount of spend they are currently receiving. Once we have further understanding of the local content in our projects, we can target further improvements where practical under procurement regulations.

6.3.3 Current Performance

We want to support local supply chains when developing, constructing and operating our assets. Currently 27% of our approved suppliers are registered in our license area. We have two main initiatives in this area to promote local supply chains: the online platform, Open4Business (O4B) and our local "Meet the Buyer" events. Both of these initiatives aim to attract local businesses to tender for sub-contract opportunities on our large projects, enhancing benefits to local communities.

In 2012, SSE established the Open4Business (O4B) Highlands and Islands portal as a simple and free way to link small and medium sized businesses in the Highlands and Islands to the business opportunities from our construction projects. Alongside the financial success of the portal, there have been several key achievements including over 750 opportunities posted, over 465 contracts awarded and over 1600 organisations registered since 2012. By the end of the last financial year 2018/19, our transmission projects had awarded around £14.6m of contracts through O4B. This portal has now begun its next chapter of success under the stewardship of Highlands and Islands Enterprise (HIE). The move enables other large companies and SMEs, including those in the wider energy sector, to use the platform to advertise contract opportunities across the north of Scotland. In total there are now around 1,000 suppliers registered on the portal. SSE has committed to continue supporting O4B and using it to post and award contracts for its projects across this area.

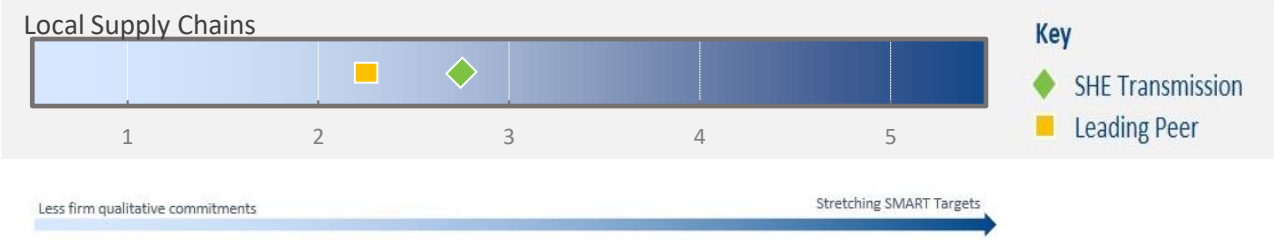
Last year we held "Meet the Buyer" events for two of our projects to share with the local supply chain our future network investment plans and potential future local employment opportunities on these projects. We also have a track record of quantifying the contribution that our major projects make to the UK and Scottish economies, often engaging independent consultants to support with this work. For example, this analysis has included the measurement of the local-socio-economic benefits of our Beauly-Denny and Caithness-Moray projects. The Caithness-Moray project was estimated to have added approximately £643m of value to UK GDP, of which at least £265m was expected to contribute to the Scottish economy[97].

[96] Home Office (2019) Small and Medium Enterprise (SME) Action Plan 2015-2022. Available at: www.assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/824132/Home_Office_2019_SME_Action_Plan.pdf

[97] Caithness Moray Delivering economic and social benefits (SSE, 2018) available at: www.sse.com/media/421062/Caithness-Moray-Delivering-economic-and-social-benefits.pdf

6.3.4 Benchmarking

Ofgem does not have minimum requirements for supporting local supply chains and we have included these plan to support the communities in which our assets are located. The benchmarking indicated that we are currently leading with our plans and approach for supporting local supply chains.



6.3.5 Action Plan

We are committed to ensuring that the local supply chain is utilised where possible on our projects. Each of our project requirements are different, but there are a range of possible opportunities for local businesses. To build on our approach during RIIO-T2, we will:

- Hold Meet the Buyer engagement events between our primary project contractors and local businesses at the outset of large capital projects to discuss local business opportunities;
- Openly report on the local supply chain spend of our projects on an annual basis and determine the appropriateness of set a minimum threshold for the share of local content in our portfolio projects where practical under procurement regulations; and
- Continue to promote the Open4Business programme for the north of Scotland; and
- Undertake and publish socio-economic impact assessments for all investments >£100m.

Actions		Outputs	When
Local Supply Chains	Include our Sustainable Procurement Policy in key framework contracts for the start of the price control that will include a requirement for our key framework contractors to: Report on the local content of our projects on an annual basis; use the Open4Business web-sourcing portal to advertise all appropriate subcontractor and supplier opportunities; and promote the considerate constructors' scheme.	Sustainable Procurement Policy included in key framework contracts.	Short Term 2021/22
	Undertake an industry review of local spend reporting approaches and determine our methodology for local supply chain reporting.	Guidance and definitions for local supply chain reporting.	
	Promote the Open4Business programme for the north of Scotland during our stakeholder engagement events.	Stakeholder engagement materials.	
	Review local spend reporting during RIIO-T2 and determine the appropriateness of setting a minimum threshold for the share of local content in our portfolio	Local supply chain spend data review.	Long Term 2025/26

	projects where practical under procurement regulations.		
	Undertake and publish socio-economic impact assessments for all investments >£100m.	Socio-economic impact reports for investment >£100m	
	Hold Meet the Buyer engagement events between our primary project contractors and local businesses for regional project activities to discuss local business opportunities.	Meet the Buyer events tailored to regional project activity on an annual basis.	Continuous
	We will measure and report on the local supply chain spend of our projects on an annual basis.	Reporting in Annual Performance for Society Report	Continuous

Measuring Performance

Performance in promoting local supply chains will be measured based on delivery of the above action plan and the following measures:

- The local content ratio of our major project investments;
- How our projects compare against the UK Government target for SME procurement;
- Local supply chain spend in each postcode area within our network; and
- Annual survey on O4B usage that includes respondent success rates.

6.3.6 Estimated Benefit to Consumers

Communities thrive when more of the money from goods and services in their area stays in their area. Research on spending by local authorities shows that for every £1 spent with a small or medium-sized business, 63p stayed in the local economy, compared to 40p for every £1 spent with a larger business[98].

We are committed to building a better understanding of how our local spend contributes towards communities in our network area and we will report annually during RIIO-T2 to assess our performance. To provide an indicative range for benefits to communities during RIIO-T2 we have estimated the potential scale of local spend using two methods.

The first method has been based on the value of contracts awarded through the Open4Business (O4B) programme during RIIO-T1 relative to total capital expenditure. Using a similar spend profile for projected RIIO-T2 capex suggests a further £11.2 million could be awarded through this programme across the next price control period. It is important to note however that not all of our local spend is from contracts awarded through O4B.

The second method is based on supplier feedback around how much of our spend with them translates into local spend with subcontractors and other businesses. Based on this feedback, we have estimated that approximately <20% of our project spend is local. When these rates are applied to projected RIIO-T2 capex spend, this means that there is a potential benefit to communities of up to £406m from our spend with local supply chains.

Furthermore, our Cost Benefit Analysis (CBA) framework[99] provides an indication of the Gross Value Add (GVA) for society from our RIIO-T2 Certain view capital delivery programme for offshore and onshore wind projects enabled by our connections. GVA is a measure of the value generated in an economy by any unit engaged in the production of goods and services. SHE Transmission has developed a tool to quantify the estimated regional GVA on the regional Scottish economy and for GB resulting from expenditure associated with the new generation connections enabled, and the work associated with SHE Transmission investments. Total GVA is calculated by measurements at three levels – direct which relates to the

[98] www.nao.org.uk/wp-content/uploads/2016/03/Governments-spending-with-small-and-medium-sizes-enterprises.pdf
[99] www.ssen-transmission.co.uk/riio-t2-plan/cost-benefit-analysis-methodology/

value generated from direct project expenditure, indirect for the value generated from employment of sub-contractors and demand for goods and services from suppliers down the supply-chain, and induced which is the value generated from greater demand and spending on goods and services such as accommodation, food, fuel and retail by employees who are employed as a result of the direct and indirect impact. Direct GVA for GB for the generation projects that are enabled through our certain view is estimated at £663m, with induced and indirect totalling £666m. For our own load and non-load investments, the direct GVA is estimated at £433m with induced and indirect totalling £479m (all undiscounted values).

6.4 Giving back to communities

Outcome

Maintain employee volunteering in the community through the 'Be the Difference' programme during the price control.

6.4.1 Introduction

Communities represent one of our most important and valued stakeholder groups. We have a number of initiatives designed to promote community engagement and support communities, primarily our 'Be the Difference' programme, an initiative through which employees volunteer their time to supporting projects in our communities, and the SSEN Resilient Communities Fund.

6.4.2 Opportunities and Challenges

We currently provide support to communities across our network by allocating a minimum of 33% of any Stakeholder Engagement Incentive income that we receive to the Resilient Communities Fund. The fund is currently used to support projects that will help the community during extreme weather events or when electricity supply is lost, with a focus on vulnerable consumers.

During our RIIO-T2 engagement programme, we received mixed views from our stakeholders on the effectiveness of the fund as an appropriate way to support communities. Stakeholders remained neutral to the value and effectiveness of this fund and many felt that funds of this nature should be the responsibility of distribution companies and the funds could be better utilised to benefit communities[100]. We want to ensure our community fund support is appropriate during RIIO-T2.

6.4.3 Current Performance

In 2018/19 we awarded £136,000 to communities in the north of Scotland through the Resilient Communities Fund. This funding has been awarded to projects such as replacing a 4x4 ambulance based in Thurso, procuring or improving equipment (such as communications, generators and medical equipment), aiding community resilience planning and providing support for vulnerable members of the community.

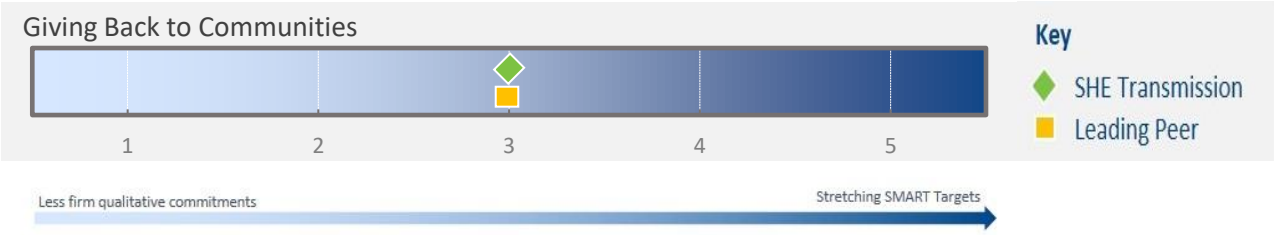
We also value the importance of employees giving back to their local communities and offer them the opportunity to volunteer a working day each year through the 'Be the Difference' programme. We also match employee fundraising up to £150. In 2018/19 our employees volunteered around 1,185 hours with community groups and projects.

You can read about the Be the Difference programme:
www.sse.com/communities/bethedifference/

6.4.4 Benchmarking

The benchmarking noted similar commitments across the industry in relation to volunteering in the community.

[100] SHE Transmission (2018) RIIO-T2 Stakeholder Workshop (November 2018)



6.4.5 Action Plan

As communities represent one of our most important and valued stakeholder groups, we will continue to offer and encourage our employees to take the opportunity to volunteer through our 'Be the Difference' programme during RIIO-T2.

We want to ensure that our community investment funds continue to benefit our local communities and maximise value for local people. We therefore commit to engage with our stakeholders during RIIO-T2 to determine how we can best provide additional support to community initiatives.

Actions		Outputs	When
Giving Back to Communities	Work with our stakeholders to determine how we can best provide additional support to community initiatives.	Consultation and recommendation report	Short Term 2021/22
	We will continue to offer our employees the opportunity to volunteer through our 'Be the Difference' programme during RIIO-T2.	Community volunteer days	Continuous

Measuring Performance

Performance for meeting the needs of vulnerable consumers will be measured based on delivery of the above action plan and the following measures:

- Metrics for supporting community initiatives (TBC)
- The number of volunteering hours used in local communities

6.4.6 Estimated Benefit to Consumers

Our 'Be the Difference' programme provides a direct benefit to communities through the contribution of volunteer days to community organisations and charities, and an indirect benefit to wider society by contributing towards the range of social and environmental causes which these organisations support. The activities undertaken through this programme can vary considerably and have historically included examples such as tree-planting, supporting those with additional support needs and picking up litter. Based on SHE Transmission's average rate of employee participation during RIIO-T1, it is estimated that 6,279 hours will be invested into local communities through our volunteering programme in RIIO-T2.

7 Growing Careers

Ensuring a safe inclusive culture for our employees; adding value through good jobs, training and development.

7.1 Introduction

Our long term success as a business depends upon the people we can attract, retain and develop. Growing Careers is therefore a critical component of our ability to deliver on our strategic purpose of facilitating the transition to a low carbon economy. With the continued need for network growth to support the low carbon transition, our workforce is expected to continue to grow and develop to meet new challenges.

With an aging workforce and set against a projected industry skills gap in the future, our expanding network requires an increasing number of skilled employees to keep it running effectively and to manage the transition to an increasingly decarbonised and decentralised energy system. Central to addressing this challenge is our plan to become a more inclusive employer; attracting skilled employees from a wider pool of talent and helping to address the lack of diversity in our industry. This in turn also ensures we better reflect the customers and society we serve, enabling us to meet their needs in a more effective way.

Our Sustainable Workforce Strategy outlines how we will address these challenges, summarised in our People Vision for SHE Transmission – we will ensure that our people are equipped, engaged and empowered to deliver our objectives in an innovative and positive way. We will attract, retain and develop a talented, diverse and engaged workforce, that are led and supported in a way that allows them to effectively contribute to the delivery of plans and strategic commitments.

Read our Sustainable Workforce Strategy:
www.ssen-transmission.co.uk/riio-t2-plan/sustainable-workforce-strategy/

Underpinned by our Sustainable Workforce Strategy, our Growing Careers ambition outlines how creating high quality work, attracting and developing skilled employees, and fostering a more inclusive workplace culture will help deliver a more sustainable future with wider benefits to society, as embodied in the UN SDG 8 – Decent Work and Economic Growth.

Our sustainability outcomes for Growing Careers are aligned with the People ambitions outlined in the Sustainable Workforce Strategy. These are as follows:

- A Healthy, Happy and Safe Workplace
- Right People, Right Skills
- One Inclusive and Engaged Team
- Empowered Inspirational Leaders

The following action plan is a summary of the actions we aim to implement to deliver on these ambitions. For full details, read our Sustainable Workforce Action Plan:
www.ssen-transmission.co.uk/riio-t2-plan/sustainable-workforce-action-plan/

7.1.1 Stakeholder Expectations

In considering and evolving our approach to Growing Careers, we have worked with stakeholders across SSE and within the wider industry. Our Sustainable Workforce Strategy was reviewed by two external user groups – the Stakeholder Engagement User Group and the SHE Transmission Independent User Group which advises Ofgem. These groups have capital delivery expertise alongside SHEPD and the ESO and are comprised of experts representing local authorities and vulnerable consumer groups. We also engaged trade union and employee representatives at an early stage to share their views on our areas of focus.

Further inputs into the development of our approach came from our sector peers through our active participation in the Energy & Utility Skills National Skills Academy for Power (NSAP). NSAP's report on the challenges we face as a sector have been instrumental in steering our direction and forming the foundations on which our targeted approach is based. Participation in NSAP has enabled us to collaborate and share information and data with colleagues in organisations including Scottish Power and National Grid and we see this continued collaboration and engagement as vital to our success. The industry will benefit from working together to improve the sector's reputation and brand appeal as we endeavour to attract and retain new talent.

A number of internal employee focus groups have also been held in different SHE Transmission offices across Scotland during 2019 to offer everybody the opportunity to contribute to the development of our plans and to raise what they perceive to be our greatest areas of opportunity for the future. Our annual Great Place to Work survey provides us with further information on the areas where we are achieving our aims and the areas where we need to make more progress. One-to-one engagement sessions and the opportunity to contribute inputs via email have also been utilised to guarantee our approach is both well considered and targeted, and thereby ensuring SHE Transmission is set for success.

Feedback from our external sustainability consultations, in February 2018 and February 2019, also highlighted areas that external stakeholders thought we should prioritise in our Growing Careers approach. Through this process, we identified the key areas in which our stakeholders want to see further action. Understandably, issues relating to work arrangements, employee recognition and training and development were highlighted. However, issues relating to mental health and inclusion and diversity were also prominent. From the clarity and consistency of the feedback, it became clear that a well-rounded workforce plan would need to factor all of these elements into our approach for Growing Careers. These expectations shaped the development of our Sustainable Workforce Strategy and formed the basis of our four People Ambitions.

7.2 A Happy, Healthy and Safe Workplace

Outcomes

Continue to manage health and safety by caring for our people – if our employees face challenges with physical or mental health, we will be there to support their wellbeing.

7.2.1 Introduction

If it's not safe, we don't do it. As one of our six SSE values, safety sits at the heart of our business and underpins everything we do. As we attract new people into SHE Transmission, we want one of the draws to be how we look after each other, in and outside of the working environment. We want to create a working environment that is happy, healthy and above, all else, safe.

While recognising that physical safety is vitally important, our employees' wider wellbeing is equally as important. Indeed, a significant component of providing a happy, healthy and safe workplace involves recognising and taking steps to address the increasing prevalence of mental health issues in the workplace. In 2017/18, work-related stress in the UK accounted for 44% of all work-related ill health cases and 57% of all working days lost due to ill health. As a responsible employer, we have a duty of care to our employees which includes providing adequate support and a workplace culture that helps them get through difficult times. This not only benefits our employees but also the business and wider society through the avoidance of lost working days and reduced productivity.

Through our Sustainable Workforce Strategy we will deepen our commitment to having a happy, healthy and safe workplace by launching a communication programme, to ensure employees are aware of the support programmes already on offer, and taking steps to shape workplace culture, by gaining a better understanding of the conditions that give rise to work-related health issues and seeking to de-stigmatise discussion around mental health. Through these initiatives we aim to make a step-change in employee wellbeing.

7.2.2 Opportunities and Challenges

Addressing mental health issues is one of the most significant challenges facing the modern workplace. Understanding the workplace factors that contribute to conditions like anxiety, stress and depression, and making meaningful interventions, requires employee engagement. Through employee feedback and a better understanding of trends in absence data we can identify work-related issues which we can address through targeted interventions and ensure that support programmes are tailored to meet our employees' needs.

Likewise, ensuring that our employees are aware of and willing to utilise these support programmes requires further employee engagement. This includes internal communications on how to access these programmes but more importantly it also involves creating a workplace culture where mental health is treated with the same level of significance as physical health. In SHE Transmission, we have the opportunity to build on existing programmes in place through our parent company SSE Plc. These are detailed in the Current Performance section below.

Given the scale of the challenge, this is not something that one company can tackle alone. Therefore, alongside programmes offered through our employee benefit schemes, we will also seek opportunities to work with local partners in the communities in which we are based. This can range from simply making employees aware of other support options local to them or providing space for charities and support groups to hold talks and engagement sessions.

7.2.3 Current Performance

SHE Transmission is a contributor to SSE's 50by20 safety initiative. With the target of a 50% reduction in its combined employee and contractor total recordable injury rate (TRIR) per 100,000 hours worked and 50% of people active on health by 2020/21, the 50by20 initiative sets ambitious goals. Through this programme, we continue to see significant improvement in our safety, health and environmental performance and overall engagement from colleagues. We have also seen an increased focus on occupational health and wellbeing. Through SSE's 50by20 safety initiative we are targeting not only a step reduction in our injury rate but also seeking a step increase in the wider health and activity of our workforce. This includes putting mental health on an equal footing with physical health.

Through our employee benefits scheme we offer our employees access to a range of health benefits including discounts on health assessments, free eye tests, gym membership, assistance to quit smoking, and access to a Back to Health programme for employees on long term sickness absence. We also provide access to an Employee Assistance Programme (EAP) aimed at providing support to our employees and helping to build a mentally healthy workplace. The EAP includes the following:

- CareFirst Employee Assistance Programme – this programme offers access to a free phoneline for professional, independent and impartial information, support and counselling; and
- Anxiety, Depression and Stress Support with Nuffield Health – this programme offers Cognitive Behavioural Therapy (CBT) and counselling for employees facing a wide range of emotional distress and anxiety.

Our commitment to support our employees is further supported through our mental health first aider scheme. We have trained mental health first aiders across all our sites to provide a first line of support and help guide our employees to the additional support they need. Through communications and employee engagement we aim to ensure that our employees are aware that these support programmes are available to them any time they are in need.

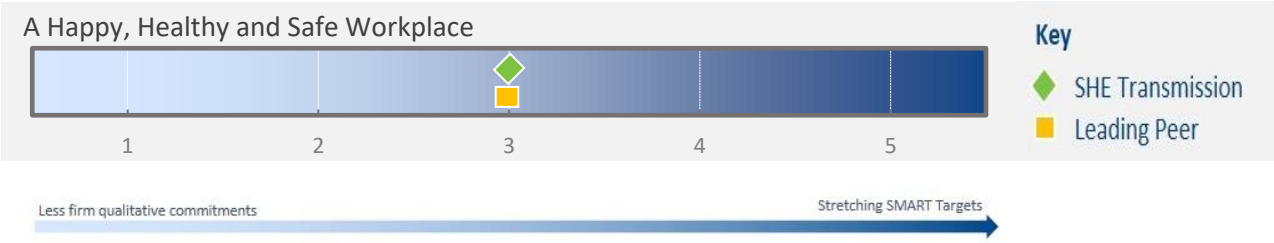
Another central element of a happy, healthy and safe workplace is ensuring our employees are able to achieve a work-life balance suitable to their needs through flexible working. Research from the Chartered Institute of Personnel and Development (CIPD) has shown that implementing flexible working practices helps people to better deal with the ups-and-downs of everyday life, reduce stress and improve productivity[101]. Through SSE's 'The Way We Work' programme we aim to encourage and support different working patterns to help allow people to carry out work in a way that meets both

[101] www.cipd.co.uk/knowledge/work/trends/megatrends/flexible-working

their own needs and the needs of the business. This has included ensuring people have remote access to Microsoft Office applications through Office 365 and ensuring that job adverts make clear that agile working arrangements are on offer. The SSE Group's 2019 Great Place to Work employee survey showed that employees who are adopting the principles of The Way We Work were 12% more engaged than those who had not.

7.2.4 Benchmarking

Our benchmarking review for this area showed that our commitments are similar to other TOs and slightly lagging when compared to peers in the water industry. This was largely due to a similar level of commitment around occupational health and wellbeing initiatives between all three TOs and a commitment to a larger scale of mental health first aid training by a peer within the water industry. Through our Action Plan below we will take measures to achieve leadership in this area over the course of the next price control period.



7.2.5 Action Plan

Actions		Outputs	When
A Happy, Healthy and Safe Workplace	Develop communication programme to raise awareness of our wellbeing offering.	Increased employee awareness of existing offerings including our Employee Assistance Programme, the Nuffield 'Back to Work' programme and our mental health first aiders.	Short Term 2021/22
	Ensure our employees feel mentally equipped to deal with our changing and growing business.	Offering change management and resilience training to all of our workforce.	Medium Term 2023/24
	Understand the factors contributing to absenteeism and attrition.	Quarterly reviews of absence reporting patterns, occupational health referrals and exit interviews.	Medium Term 2023/24

Measuring Performance

Performance in delivering a happy, healthy and safe workplace will be measured based on delivery of the above action plan and the following KPIs:

- Reductions in absenteeism (in particular periods of extended leave due to illness)
- Reductions in attrition rate
- Number of managers completed mentally healthy workplace training
- Number of mental health first aiders across all sites

7.2.6 Estimated Benefit to Consumers

Aside from the advantages to our employees and our business, there is a wider benefit to society from our commitment towards occupational health and wellbeing. Absences due to ill health have a cost to society through lost productivity, healthcare and rehabilitation costs. Through our support programmes to create a happy, healthy and safe workplace we hope to produce a reduction in absenteeism due to work-related stress, anxiety and depression, and thus reduced costs to society.

The Health & Safety Executive (HSE) estimates that, on average, 21.3 working days are lost each year per employee due to work-related stress, anxiety and depression[102]. The cost associated with each absence are estimated by HSE as £1,109, broken down as follows:

- £374 human cost – representing a monetary estimate of the loss of quality of life, and loss of life in the case of fatal injuries.
- £645 financial costs – the sum of the following: productivity costs; production costs; the cost of Employer's Liability Compulsory Insurance, less compensation pay-outs to individuals; health and rehabilitation costs, such as NHS costs; administrative and legal costs, such as costs of administering benefits claims.

We offer a range of occupational health and wellbeing programmes designed to help our employees cope with work-related mental health issues. While it is difficult to estimate the future uptake of these programmes, a conservative estimate of 10% employee uptake per annum over RIIO-T2 offers a baseline on which to assess potential benefits. Using an NHS Scotland target[103] as a basis for comparison, a 0.5% reduction in absences has been used to provide an estimate for the number of lost working days that would be avoided by employees using these support programmes. This equates to the avoidance of 32 lost working days over RIIO-T2 with a benefit to society of approximately £34,000. While this shows a value to consumers as a result of improved productivity it is important to note that ensuring our employees' safety and wellbeing is at the core of our values and that the true value of these programmes goes beyond purely financial terms.

The methods used within this calculation target work-related absences due to work-induced stress, anxiety and depression. These types of absences represent a proportion of other absences which might be linked to physical and mental health and wellbeing. In addition, the estimated annual work days lost due to work-related stress, anxiety and depression are averages for Great Britain.

7.3 Right People, Right Skills

Outcomes

Maintain our five-year ahead resourcing plan, supporting by talent pipelines and succession plans that match our forecast business activities.

7.3.1 Introduction

The safety, reliability and sustainability of our network relies on having the right people with the right skills at the right time. The past decade has been a period of rapid change in the energy sector and, for SHE Transmission, huge growth. As we continue the journey towards a more decarbonised, decentralised and digitalised network, our workforce will need to grow further and acquire new skillsets. With a looming industry skills gap and an aging workforce this presents a unique challenge.

To address this challenge, we need to attract, retain and develop the best talent. We have a responsibility to ensure our workforce has the required skills to meet our future business requirements, as well as the opportunities to develop and grow their careers within SHE Transmission and the wider SSE group. Leading up to and during RIIO-T2 we will grow our

[102] www.hse.gov.uk/statistics/causdis/stress.pdf
[103] www.sehd.scot.nhs.uk/pcs/PCS2019(AFC)02.pdf

business with skilled recruits to help deliver our Certain View programme and we will provide a comprehensive training offer to allow our people to grow their careers.

7.3.2 Opportunities and Challenges

The skills gap facing our sector arises from a number of factors including a large percentage of skilled workers approaching retirement age, a reducing number of new recruits with the necessary STEM skills and competition from other sectors. To address these factors we need to ensure we attract the right people with the right skills and ensure that our organisation offers opportunities for career progression and skills development.

Becoming a more attractive employer will require more effective engagement with schools, colleges and universities. Currently only 1% of those leaving higher education choose to work in the energy and utilities sector[104]. We know we need to work with our colleagues across the sector to ensure that changes. In particular, as the growth of new digital technologies occurs on our network, we need to ensure that we draw in people with critical STEM skills like data analytics.

We also need to appeal to, and recruit from, a broader and more diverse pool of talent. The challenge of the skills gap and increasing diversity are intertwined in that making progress on the latter is essential to addressing the former. More detail on this is shown in the One Inclusive and Engaged Team section below.

Career progression and succession planning will offer both challenges and opportunities. While the retirement of senior employees with years of experience and knowledge will be a loss to our organisation's collective capability, having a suitable pipeline of talented employees to backfill their positions will offer opportunities for progression, in turn making SHE Transmission a more attractive prospect for those seeking to advance their careers. Central to this transition however is ensuring that succession planning takes place so that potential candidates can have the time to develop the requisite skills and that those approaching retirement can have the opportunity to impart their knowledge onto the new generation, leaving a lasting legacy within our organisation.

7.3.3 Current Performance

Our employees are our greatest strength. Without their skills, experience and knowledge we wouldn't have been able to achieve the successes we've had over RIIO-T1. Our current workforce, comprising 481 employees across our sites in Scotland, embodies a significant amount of human capital. Human capital is defined as "the stock of habits, knowledge, social and personality attributes (including creativity) embodied in the ability to perform labour so as to produce economic value". Through our recruitment, training and development plans for RIIO-T2 we aim to enhance the human capital embodied in our employees, growing both their careers and our business.

For 2018/19, our annual investment in training and development was approximately £1 million, split out across operational and safety training. This training is fundamental to providing our employees with the skills they need to maintain the safe and reliable operation of our network. Going forward, we intend to branch out our training offering to include greater consideration of digital skills and our employees' broader developmental needs.

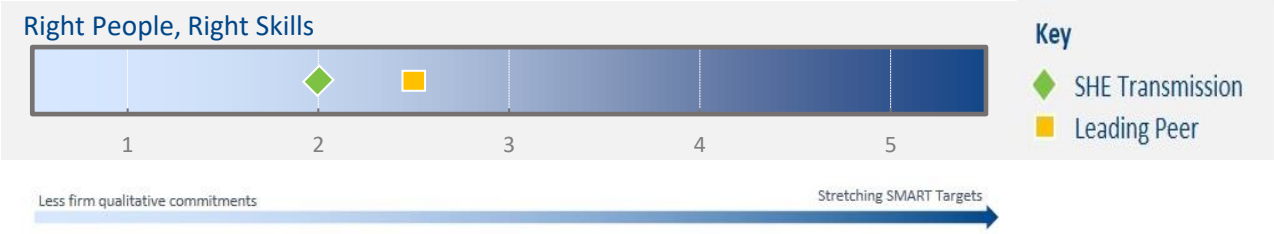
Through our new Transmission Operating Model, we have established a dedicated Workforce Development team to drive the implementation of our Sustainable Workforce Strategy. This team will manage our strategic workforce plan and a rolling 5-year resource plan to ensure there is the continued resource and capability to deliver our commitments.

7.3.4 Benchmarking

Our benchmarking review showed that we were slightly lagging in our commitments to recruitment and training compared to other TOs but largely in line with peers in other sectors. Our peer TOs have quantitative targets around training and have typically published more on their plans in this area. We have already begun taking steps to address this

[104] www.euskills.co.uk/wp-content/uploads/2017/11/Workforce-Renewal-and-Skills-Strategy-2020.pdf

in RIIO-T1, with the establishment of our Workforce Development team and our new Sustainable Workforce Strategy. We will continue to raise our ambitions in RIIO-T2, through the Action Plan below, and strive for leadership in this area.



7.3.5 Action Plan

Actions		Outputs	When
Right People, Right Place	Ensure job roles are independently evaluated in line with industry standards.	Deliver a consistency review and benchmarking of all existing job roles including those to be advertised.	Short Term 2021/22
	Recruit from a diverse pool of talent to fill resource gaps.	Promote inclusive recruitment through adoption of a strengths-based recruitment approach – looking at strengths rather than skills and ensuring job advertisements are as open as possible.	Short Term 2021/22
	Collaborate with energy sector partners to address industry-wide skills shortages and increase the attractiveness of the sector to skilled candidates.	Deliver a positive action campaign through university and career fair engagement. Create STEM ambassadors to generate awareness of raise interest in these subjects and related careers in the energy sector. Establish a working group with SPEN, NGET and our supply chains to establish best practices and ways to address the skills gap.	Medium Term 2023/24
	Build digital and analytical capabilities through recruitment and development.	Develop new sourcing strategy to identify talent pools for data and analytical roles. Recruit an IT Business Partner for SHE Transmission to focus on digital requirements of our business plan.	Medium Term 2023/24
	Future proof our workforce though recruitment and development of talent.	Expand our early years talent pipeline to ensure further investment in our graduates, apprentices and technical trainees.	Long Term 2025/26

Measuring Performance

Performance for ensuring we have the right people with the right skills will be measured based on delivery of the above action plan and the following KPIs:

- Number of training hours completed
- Investment in pipeline programmes and training programmes

- Reduction in average time to hire
- Reduction in contingent workers (by upskilling our employees to avoid skills gaps within our workforce)

7.3.6 Estimated Benefit to Consumers

Human capital represents the productive capacity of an individual or group of individuals – our capacity to produce goods and services and generate ideas. A higher level of human capital can raise economic productivity and increase earnings. It is therefore in the interest of employee, employer and wider society to invest in the development of human capital.

To calculate the total value of SHE Transmission's human capital we have used the SSE Group model from the Valuable People report[105]. We have updated this model to reflect SHE Transmission specific circumstances and used our own employee data. The income-based approach used by this model assumes the value of each individual's human capital is equivalent to their discounted expected lifetime earnings. Lifetime earnings are estimated for each employee based on assumptions around their job function and expected future earnings based on projected career progressions. A length of service adjustment takes into account factors such as average attrition rates.

This model uses employee data such as age, job function and salary as inputs and calculates a total asset value which embodies the human capital of all our employees. Based on current employee data from November 2019, the human capital embodied in our workforce is estimated as £210,313,762. This has been estimated to rise to £251,439,155 by the end of RIIO-T1 and £271,598,485 by the end of RIIO-T2, based on current recruitment profiles in our resourcing plan. This equates to a human capital value of approximately £435,000 per employee.

While human capital does not represent the full value of our workforce or their contribution to society it can show how things like investment in recruitment and training, and retaining employees for longer, delivers value by enhancing the productive capacity of our employees, improving our ability to innovate and provide a quality service.

7.4 One Inclusive Engaged Team

Outcomes

- **Expand our inclusion and diversity programme, including >95% of employees having received training.**
- **Develop a methodology for our pipeline intake to be local diversity representative and implement a target by 1 April 2021.**

7.4.1 Introduction

As SHE Transmission, we know we have a lot in common – from our vision to our values. But we also know that greater diversity leads to broader debate, which in turn leads to better decisions that result in better business delivery. We refer to this as the '4 D's of Diversity'. To tackle the challenges that lie ahead in our industry we will require the broader range of thoughts, ideas and experiences that greater diversity brings. Whilst diversity is a fact of life, we know that inclusivity is the behaviour that attracts it. By focusing on creating a truly inclusive workplace we aim to encourage more diversity IN to SHE Transmission, create a culture where people want to stay ON and a workplace where everyone has the opportunity to progress UP in the business. We call this our IN, ON, UP inclusion strategy, which the SSE Group has developed over a number of years with support from inclusion experts, Equal Approach.

An inclusive workplace is also an important way to keep employees engaged. An engaged team, which feels it is part of a wider community, is a productive team. We will ensure we place increased focus on celebrating our successes, recognising and rewarding our people and working closely with our employee consultative forums, trade union partners and other formal groups to create an inclusive, productive and engaging environment in which to work.

[105] www.sse.com/media/306295/SSE-Human-Capital_Final_For-Web.pdf

7.4.2 Opportunities and Challenges

Becoming a more inclusive employer will require a sustained, engaged approach. Gender diversity remains low in our sector, with the energy industry continuing to be male-dominated. This is the result of a number of factors, including a long history of far higher proportions of men in STEM education and going on into STEM-related careers. Through SSE's IN, ON, UP strategy we know we need to bring more women IN, encourage women to stay ON, and support women to move UP to the highest levels.

Another challenge, shared across businesses, is the need for data to drive change. For example, ethnicity pay gap reporting and transparency of this information could accelerate progress in this area. However, in order to have representative and meaningful ethnicity pay gap reporting there needs to be an appropriate ethnicity self-reporting rate by employees.

Likewise, in order to ensure that we better reflect the communities we serve we need more accurate data on the demographics of those communities. The next national census, currently scheduled for 2021, should provide this basis on which we can measure our performance.

7.4.3 Current Performance

SHE Transmission shares the wider SSE Group ambition to become a more inclusive employer. The IN, ON, UP inclusion strategy challenges us to focus on fewer, more important factors using an evidence-based approach that drives real change. With the recent adoption of a new Transmission Operating Model and the creation of a Sustainable Workforce Strategy, we are well placed to create one inclusive and engaged team.

SHE Transmission's median gender pay gap at 5th April 2019 was 32.4% and the overall proportion of women in the business was just 19.1%. This reflects the need for significantly more work in this area, and in particular, the need to ensure a more equal spread by gender across all four pay quartiles in SHE Transmission. With the establishment of our new Transmission Executive Committee we now have a committee of Directors leading the business comprising 27% women (3 out of 11 committee members). This is a step in the right direction, but we need to do more.

Taking action at an early stage is essential to address the current gender pay gap. In alignment with SSE Group strategy, we are focusing on three key drivers for change:

1. Get the job description right and widen thinking around what kind of skills and experience are really required for the role;
2. Ensure all vacancies are openly advertised and open to all to apply; and
3. Challenge traditional thinking around an ability to work differently and flexibly – not offering agile working arrangements should be the exception rather than the rule.

The SSE Group, including SHE Transmission, has made significant progress over 2018/19 in these areas. As well as a gender bias language review of all adverts and 'inclusive prompts' being built into SSE's role profile template as standard, inclusive hiring manager training and inclusion and diversity awareness training is now mandatory. SSE has also increased governance around all roles being advertised openly, with 80% of roles across the Group advertised openly in the last four months of 2018/19, and has updated its AAA-rated accessible career site with a broader range of diverse case studies.

Much of our focus to date has been on gender diversity, reflecting a better understanding of the issues in this area. However, we also know we must take action to ensure our inclusive approach works for all other forms of diversity too, such as age, disability, religion, sexual orientation, ethnicity, thought or social background. As per the Opportunities and Challenges section above however, there is currently limited data on employee diversity and demographics. While all SSE employees have the option to provide self-disclose their demographic information voluntarily, only around 11% of employees chose to do so last year. In late 2019, SSE launched a communications campaign and drive for more employees, including those within SHE Transmission, to provide this information, should they wish to do so. Key to the

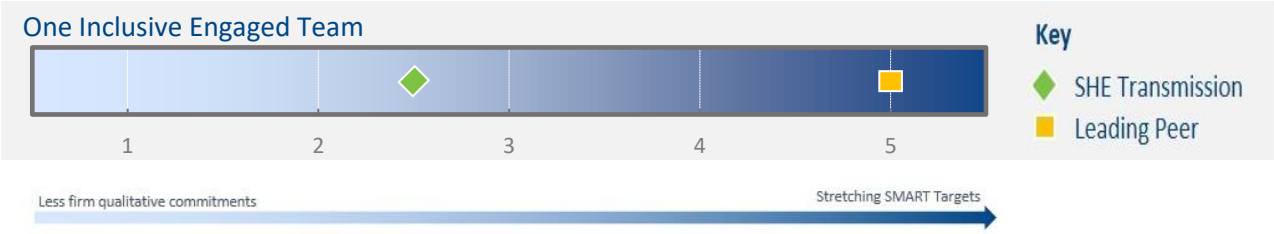
success of this initiative will be establishing trust with employees and providing transparency around why the information is being collected.

Extensive work has also been carried out at the Group level to show the business benefits from investment in inclusion and diversity programmes. In early 2017, SSE worked with inclusion experts Equal Approach to calculate the financial value generated from its investment in gender diversity initiatives, as well as the expected value of continued investment in wider inclusion and diversity initiatives up to 2020 – showing the potential additional value from a more strategic approach to investment.

The calculation was carried out by Equal Approach using their specialised 'Return on Inclusion' (ROI) tool[106]. The results showed that for every £1 invested by SSE, there was a £4.52 ROI for gender diversity initiatives in 2017. Continued investment without a change in the allocation of resources was predicted to achieve a £7.56 ROI by 2020, demonstrating the long term nature of diversity activities. While this result is significant in financial return terms, the results for future ROI in 2020 showed there was the potential to greatly increase this value by SSE becoming more focused on creating a truly inclusive workplace in a wider sense. The ROI tool showed that SSE should be able to increase its ROI to £15 per £1 invested by 2020 with a refocus towards targeted inclusion initiatives that Equal Approach has found to have measurable impact and value for other organisations. SSE has committed to rerunning its ROI calculation each year with the aim of achieving this £15 ROI. In 2018, SSEs ROI had increased to £7.51 from £4.52 the year before.

7.4.4 Benchmarking

Within the inclusion and diversity space, our benchmarking review showed that we are in the pack when compared to other TOs but lagging when compared to peers in other sectors. Compared to other sectors, we have a higher gender pay gap and have historically had less ambitious targets in terms of the gender split of specific roles. We recognise that there is more work to be done in this area and to get to a place where we can start to make this kind of progress, we need to get the foundations right. By building an inclusive workplace culture that attracts and retains diversity, we believe we can make progress in this area. The below Action Plan outlines the steps we will take to achieve leadership in inclusion and diversity.



[106] Further information on the Return on Inclusion approach is detailed in SSE's Valuing Difference report – www.sse.com/media/481527/DiversityReport_FINAL.pdf

7.4.5 Action Plan

Actions		Outputs	When
One Inclusive Engaged Team	Provide increased engagement with senior leadership.	Embed our Director accessibility initiative, through roadshows and 'meet and greet' sessions with the Managing Director for all new starts.	Short Term 2021/22
	Develop improved diversity and inclusion metrics to ensure our workforce is reflective of the local communities we serve.	Establish and adopt diversity targets for our new intake based on 2021 census demographics and an increased diversity self-reporting drive. Carry out an annual review of SHE Transmission's gender pay gap statistics and drivers, with the aim of reducing this differential for the long term.	Medium Term 2023/24
	Create a more inclusive working environment.	Deliver an inclusive behaviours programme, including inclusive meeting facilitation training and an online inclusion and diversity hub for all employees.	Medium Term 2023/24
	Develop ways to ensure our employees feel valued for their work.	Establish an employee recognition scheme and an employee continuous improvement and innovation suggestion scheme.	Long Term 2025/26

Measuring Performance

Performance in building a more inclusive workplace will be measured based on delivery of the above action plan and the following KPIs:

- Reduction in our gender pay gap
- Gender diversity across all pay quartiles in SHE Transmission
- Gender diversity on SHE Transmission Executive Committee
- Number of managers completed inclusive hiring training
- Demonstrated improvement in Great Place to Work scorings year on year

We will also establish broader diversity targets reflecting the 2021 census data and contribute towards SSE's targets of increasing gender balance at the company's highest levels, including the Group Executive Committee and direct reports, sub-committees to the Group Executive Committee and representation on the SSE plc Board.

7.4.6 Estimated Benefit to Consumers

Cultivating an inclusive workplace culture and a diverse workforce enables us to make better business decisions and stimulates more creative, innovative solutions. This provides a benefit to consumers through improved service delivery and value for money. As per the SSE Group Valuing Difference report referenced previously, we have an ambition to achieve a Return on Inclusion of £15 for every £1 spent on inclusion and diversity initiatives. This will only be achieved by successfully implementing our targeted inclusion initiatives that have a measurable impact and demonstrable value.

Across RIIO-T2, we aim to invest £155,000 in driving forward inclusion and diversity initiatives. This includes both SHE Transmission specific initiatives and our contribution to wider SSE Group initiatives. Our approach will be fully aligned with the SSE Group Inclusion Strategy and we will therefore be aiming to achieve a Return on Inclusion consistent with

the ambitions for 2020. Maintaining this level of return, and based on our expected RIIO-T2 spend, this would provide an indicative return of between £1,756,150 and £2,325,000.

7.5 Empowered Inspirational Leaders

Outcomes

Work with leaders at all levels to develop their leadership capabilities and encourage and support those who are seeking to move into leadership roles. We are committed to ensuring there are no gaps in leadership potential or practice.

7.5.1 Introduction

We recognise the power of the positive, empowered and inspirational leader. As part of our Group Operating Model assessment, we have reviewed our leadership structure and affirmed what we expect from our leaders. This includes how their roles share collective responsibility for ensuring delivery of the RIIO-T2 commitments and how the ways in which they behave and engage with employees and colleagues will build trust and empowerment to enable a step change in performance.

As key decision makers within SHE Transmission, our managers and leaders have a significant opportunity to impact and influence our workforce. Through our leadership development programmes, we are committed to identifying and nurturing leadership talent to help all of our leaders achieve their potential. By creating opportunities for our employees to grow and develop their leadership skills we will not only be creating upward mobility within our organisation but also producing leaders who can inspire our people to continuously improve our service delivery.

7.5.2 Opportunities and Challenges

Similar to the challenges outlined in the Right People, Right Skills section, the aging workforce is expected to result in a number of SHE Transmission's senior employees with leadership skills retiring from the business, leaving a potential skills gap. The same opportunities around providing career progression and succession planning will apply here.

In seeking to develop new leaders, it is important to remember than there are multiple styles of leadership which have different development pathways. Tailoring development programmes to the needs of the candidate, as well as the business, is therefore central to this process. It is also important to be clear on the definition of 'talent'. Many of the strengths and qualities associated with leadership are distinct from technical competencies but they have an equally important role in driving a business forward. When recruiting or progressing candidates through talent programmes, it is therefore important to recognise the contribution these attributes make to the task of helping our business address future challenges and nurture them accordingly.

In today's busy environment, where targets and results create pressure, there can be too few opportunities to take time out to plan and put development and career plans into practice. There can be even less opportunities to do this with the support of a relevant leader and role model. Yet, research shows that having this opportunity is one of the critical components of successful personal and leadership development. In this area, we have an existing platform of leadership development programmes on which to build our approach.

7.5.3 Current Performance

Within SHE Transmission we aim to have a workplace culture that encourages our employees to stay on and move up into more senior roles through promotion. We aim to provide a high degree of mobility and opportunities to develop the skills required to take on greater responsibilities. We currently have several programmes available to our employees to cultivate leadership talent and management skills. This includes the following:

- Career Development Programme – this provides the ability to assess the capability and aspirations of employees for future business and functional leadership roles.

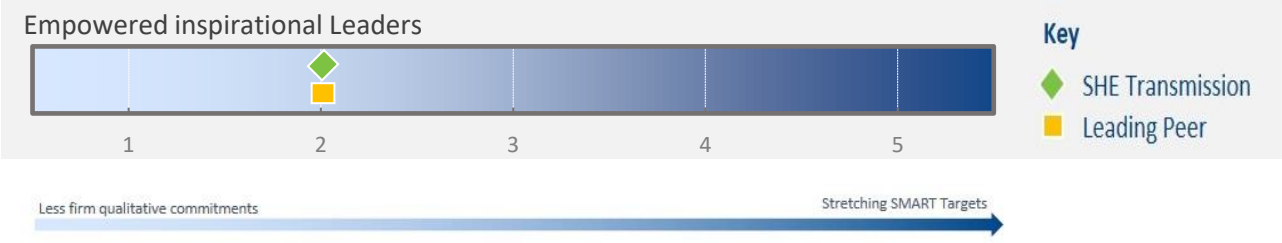
- Mentoring & Coaching – this provides the opportunity for employees to be paired with a mentor, drawn from senior managers across SHE Transmission, who is independent from their reporting line. Mentoring is a developmental relationship focused on the needs of the mentee, their development and moving their career forward.
- Transmission Shadow Board – this is a new initiative to encourage diverse viewpoints from across the business to inform key business decisions and provide development opportunities business for those interested in leadership.

Through our Sustainable Workforce Strategy and Strategic Workforce Plan, these programmes will form part of our ongoing commitment to workforce resilience by enabling a pipeline of leadership candidates to backfill roles.

It is also important to recognise that empowerment and leadership development is not just confined to those in managerial roles. Inspiring and empowering all our people to show situational leadership within their own roles is equally important. Our new Transmission Operating Model has resulted in an organisation where roles and responsibilities are clearer and people better understand their place within the organisation. By giving our employees clarity on how they contribute to our strategic aims and outlining what is expected of them we can give them the confidence to flourish in their roles and make empowered decisions.

7.5.4 Benchmarking

Our benchmarking review identified that we are broadly in the pack for commitments to provide ongoing development opportunities for staff. This was true both when compared to other TOs and peers in other sectors. Through our Sustainable Workforce Strategy, we aim to push further ahead in this area by better highlighting the work we are already doing to create development opportunities and by implementing new initiatives in RIIO-T2. The Action Plan detailed below provides more details on how we will achieve leadership in this area over the next price control period.



7.5.5 Action Plan

Actions		Outputs	When
Empowered Inspirational Leaders	Ensure all leadership roles have a clearly communicated blueprint of leadership behaviours.	Deliver a revised and updated Leadership Blueprint along with a communication and awareness campaign.	Medium Term 2023/24
	Identify and develop candidates with leadership talent.	Launch an Inclusive Leadership Programme to support those at early career stages who are future leaders.	Medium Term 2023/24
	Ensure leaders and their teams have a high degree of self-awareness and understanding how to get the best from working relationships.	Roll out 'Insights' personality profiling to all employees.	Medium Term 2023/24

Measuring Performance

Performance in creating empowered inspirational leaders will be measured based on delivery of the above action plan and the following KPIs:

- Number of internal job transfers and promotions
- Average length of service
- Senior and critical roles with succession plans

7.5.6 Estimated Benefit to Consumers

Increasing the leadership capabilities of our employees results in better decision-making and a more engaged, productive workforce. This leads to better service delivery which in turn has a benefit to consumers through reduced costs.

Over RIIO-T2, we aim to invest £1,790,000 in development initiatives for our employees, including opportunities for our graduates, apprentices and trainees. Estimates from the ONS 'Characteristics and benefits of training at work' report[107] show that, for every £1 spent, there is an equal return on investment in training and development. This does not cover incidental training of employees by other employees.

[107] https://www.ons.gov.uk/releases/characteristicsandpremiaofinworktraining

8 Sustainable Procurement

Outcome

>80% of our suppliers (by value) meet the sustainability requirements in our Sustainable Procurement Policy.

8.1 Introduction

Value chain sustainability is the management of environmental, social and economic impacts and the encouragement of good governance practices throughout the full lifecycles of goods, works and services.

To achieve the step change we want, we must look beyond our own operations and take responsibility to address environmental, social and economic issues across our entire value chain. To deliver each of our sustainability ambitions we are collaborating and working in partnership with our supply chain and stakeholders.

The UN Global Compact[108] recognises procurement is a powerful instrument for organisations wishing to behave in a responsible way and contribute to sustainable development. By integrating sustainability in procurement policies and practices, organisations can manage risks (including opportunities) for sustainable environmental, social and economic development across their value chains[109].

Sustainable procurement can therefore be defined as, 'using procurement to deliver long term social, economic and environmental benefits'[110].

8.2 Current Performance and Supplier Feedback

SSE takes a responsible approach to procuring goods, works and services. It has developed a range of tools to encourage responsible business practices, including its Responsible Procurement Charter and robust clauses which cover sustainability topics in all standard contracts. SSE has zero tolerance of modern slavery and forced labour, both in its direct operations and supply chain. It is also a champion of the real Living Wage across its business and supply chain.

All potential new suppliers for SSE must register on SSE's Supplier Registration System which includes sign-on to SSE's Responsible Procurement Charter. Read more about SSE's responsible procurement charter: www.sse.com/sustainability/reporting-and-policy/policies/

Over the past year, SHE Transmission has taken proactive steps to improve our supply chain sustainability reporting. We have introduced a mandatory reporting requirement in new contracts for greenhouse gases, resource use and waste in our supply chain. These new requirements are included in our Consents & Environmental Specification Works document, whereby our contractors are obliged to provide quarterly reports on emissions from our project construction activities. In addition, suppliers are required to produce a Site Carbon Reduction Plan detailing the actions they intend to take to reduce these emissions. This seeks to help us better understand our scope 3 emissions and identify areas where we can work with our contractors to make improvements. This approach will allow us to provide an enhanced and more accurate report on carbon performance for our next annual sustainability report.

Throughout our RIIO-T2 stakeholder engagement, we have been encouraged to focus on sustainable procurement when procuring goods, works and services that are key to implement our sustainability strategy[111]. We have received positive responses from our supply chain sustainability questionnaires[112] in support of our sustainability ambitions and goals and

[108] See: www.unglobalcompact.org/what-is-gc/our-work/supply-chain
[109] Sustainable Procurement – Guidance ISO 20400:2017 (International Organization for Standardization 2017) available at: https://www.iso.org/standard/63026.html (accessed 26 June 2019)
[110]Supply Chain Sustainability – A Practical Guide for Continuous Improvement (UN, 2015) available at: https://www.unglobalcompact.org/library/205
[111] SHE Transmission (2018) Stakeholder Workshop Recommendations and SHE Transmission (2019) Our Sustainability Plan Consultation
[112] SHE Transmission (2019) Supply Chain Sustainability Questionnaires. For example, our suppliers' feedback they currently achieve high recycling rates and achieving zero waste to landfill was achievable in the 2020s, but some remote sites will be a challenge.

there is a significant opportunity to collaborate with our supply chain to improve sustainability performance and drive innovation.

8.3 Approach to Supply Chain Sustainability

There are increasing societal expectations for supply chains to minimise impact on the environment, respect human rights and increase transparency. We therefore aim to integrate sustainability into our procurement processes aligning with ISO 20400 guidance.

Building on our Responsible Procurement Charter, we will engage and collaborate with our contractors and suppliers throughout RIIO-T2 to communicate our sustainability commitments, explain requirements and set improvement targets[113]. We have worked closely with our supply chain during the development of this RIIO-T2 business plan. Together we have committed to:

1. Hold regular contractor and supplier engagement forums on sustainability to discuss best practice and opportunities for improvement;
2. Introduce sustainability commitments and requirements (supplier code) into our key procurement framework agreements to deliver sustainable outcomes from the materials, works or services provided by our supply chain;
3. Incorporate sustainability credentials in our tender evaluation criteria and processes to ensure sustainability is factored into procurement decisions; and
4. Report annually on the percentage of our suppliers (by value) meeting our Sustainable Procurement Policy (supplier code).

8.3.1 Supplier code

To further enhance our existing environmental and social requirements in our supply chain contracts, we will develop a Transmission specific Sustainable Procurement Policy reflecting both the SSE Group's sustainability objectives and the SHE Transmission specific sustainability ambitions. This will be included within our key RIIO-T2 framework agreements[114] accompanied by a contractual obligation to adhere to this policy. This Sustainable Procurement Policy will act as our supplier code for meeting our sustainability goals. Table 9 provides an indication of the likely requirements in our Sustainable Procurement Policy that will be published in 2020.

Table 9 Draft Supplier Code Requirements in Sustainable Procurement Policy

Tackling Climate Change	Business Carbon footprint (BCF)	Quarterly carbon reporting for our projects. Two thirds of our suppliers by spend to set a science-based target by 2025 (this is likely to apply to projects over £20m).
	Transmission Losses	Suppliers to publish losses ratings and cost benefit analysis for transformers supplied.
Promoting Natural Environment	Biodiversity	Capital investment projects gaining consent after April 2020 to have Biodiversity No Net Loss outcomes.
	Environmental compliance	Maintain environmental requirements within our Consents & Environmental Specification Works document.
	Waste and resource use	Achieve zero waste to landfill on our construction projects by 2025.

[113] SSE Responsible Procurement Charter (SSE, 2018) available at: www.sse.com/media/530653/Responsible-Procurement-Charter_0818.pdf

[114] Key framework agreements include: substations, overhead lines and underground cabling works and associated key plant.

Optimising Resources		Achieve >70% recycling, recovery and re-use of construction and demolition waste by 2025. Quarterly waste and resource use reporting for our projects.
	Embedded carbon	Contractors to report embedded carbon projections at tender stage and actual embedded carbon during project delivery. Supplier and contractors to provide Environmental Product Declaration (EPD) certification for key assets supplied.
Supporting Communities	Local Content	Provide annual reporting on local spend on our projects. Contractors to participate in the regional Meet the Buyer events. Promote the Considerate constructors' scheme on large projects.
	Human Rights	Pay employees working regularly on our sites the real Living Wage and are meet the requirements of the Modern Slavery Act 2015
Growing Careers	Inclusion and Diversity	Report on diversity and inclusion metrics such as the gender pay gap.
	Right Team, Right Skills	Workforce disclosure such as reporting the number of trainees on our projects.

8.3.2 Tender Evaluations

Our supply chain's approach to sustainability shall be evaluated at both the prequalification and tender stages, ensuring that appropriate sustainability and environmental capability, capacity, experience and credentials are factored into selection and award decisions. Consideration shall also be given to mandatory pass/fail questions in relation to sustainable criteria and will be incorporated into the development of our framework agreements in 2020.

8.3.3 Reporting

During RIIO-T2 we aim to enhance the public disclosure of our supply chain sustainability and implement best practice reporting for our scope 3 carbon emissions. Environmental and sustainability performance metrics shall be encompassed within the wider KPIs and appropriately measured and incentivised. We will introduce a new sustainability reporting system for suppliers to efficiently report against these sustainability metrics.

8.3.4 Sustainable Supply Chain Action Plan

Actions		Outputs	When
Sustainable Procurement	Introduce sustainability commitments and requirements (supplier code) into our procurement framework agreements.	Sustainable Procurement Policy and guidance for key framework agreements.	Short Term 2021/22
	Incorporate sustainability credentials in our tender evaluation criteria and processes to ensure sustainability is factored into procurement decisions.	Sustainability Criteria included in framework tender evaluation processes.	
	Pilot the introduction of a new supply chain sustainability reporting system.	Development of supply chain sustainability reporting system.	
	Annually report on and review our supply chain sustainability performance against our Sustainable Procurement Policy requirements (supplier code).	Target >80% of our suppliers (by value) meeting the sustainability requirements in our Sustainable Procurement Policy.	Continuous

	Hold regular contractor and supplier engagement forums on sustainability to discuss best practice and opportunities for improvement.	Contractor and supplier forums held at least annually.	Continuous
	Participate in industry collaborations for supply chain sustainability such as the Supply Chain Sustainability School and the Carbon Disclosure Project (CDP).	Industry collaborations for best practice knowledge sharing.	Continuous

Measuring Performance

We will continue to report our scope 3 carbon emissions and waste and resource use in our supply chain. We will also measure the delivery of the above action plan and the will publicly report (disclose)[115] our supply chain sustainability performance in our Annual Performance for Society Report using the following KPIs:

- Actual percentage of suppliers (by value) which meet the sustainability requirements in our Sustainable Procurement Policy.
- Supply chain metrics will be applied to our key procurement frameworks to demonstrate that the requirements of the supplier code (Table 9) are being achieved e.g. Carbon, Waste and Resource Use, Local Content, and I&D metrics.

[115] SHE Transmission will publicly disclose metrics on our supply chain sustainability performance and our suppliers meeting our sustainable procurement policy (Supplier Code) through aggregating reporting from our suppliers on an annual basis in the 'Performance for Society' Report.

9 Summary

Connecting for Society

Working collaboratively to deliver a whole system solution that promotes affordability, considers societal benefits and supports community renewable connections.

RIIO-T2 Outcomes	Transport the renewable electricity that powers 10 million homes.
	Apply our new social, environmental and economic CBA framework to all applicable capital investment decisions made during the RIIO-T2 period and report on the outcomes.
	Implement our Local Area Energy Planning Framework.
Long Term Objective	A Network for Net Zero.
Leading Action	Leading through our focus on Net Zero and our social, environmental and economic CBA framework.

Estimated Benefits

Addition of **3GW** renewable energy to our network

24m tCO_2e displaced from renewable energy connections

Consideration of wider sustainability criteria in our strategic optioneering

estimated **£313 million** carbon benefit

Tailored, accessible connections service that could provide

Framework for local area energy planning to help facilitate Scottish Government **2GW** target by 2030

Tackling Climate Change

Managing resources over the whole asset lifecycle to reduce our greenhouse gas emissions in line with climate science and become a climate resilient business.

RIIO-T2 Outcomes	One third reduction on our scope 1 and 2 greenhouse gas emissions from 2018/19 baseline.
	Two thirds of our suppliers by spend set a science-based target by 2025.
	Target an Insulation and Interruption Gases (IIG) leakage rate of 0.15% of installed volumes by the end of RIIO-T2.
	Establish and implement best practice GHG emissions reporting (including for scope 3).
	Implement our Losses strategy to monitor and minimise the level of power losses on the network.
	Update our flood risk assessments in line with best practice.
Long Term Targets	SBT: 45% absolute reduction in scope 1 and 2 carbon emissions by 2030 to meet the 1.5-degree climate science pathway from a 2018/19 baseline.*
	EV 100: 100% of vehicles up to 3.5t and 50% of vehicles up to 7.5t to be electric by 2030.
	Our longer-term goal is to remove all SF6 from our Network by 2050 subject to cost benefit analysis
Leading Action	Leading with our Science Based Target commitment.

Estimated Benefits

Over **2,816 tCO_2e** avoided per annum at the end of the price control.

Invest in new technologies to remove the need to install **19.9t of SF_6** during RIIO-T2

Around **£33m** value to the consumer based on carbon price saving and energy efficiency savings.

Annual reporting on the delivery of our Transmission Losses strategy.

Updated flood risk assessments on **127 sites** and mitigation measures on identified sites.

**Subject to verification by the Science Based Target Initiative*

Promoting Natural Environment

Delivering biodiversity net-gain and driving environmental stewardship best practice.

RIIO-T2 Outcomes	Achieve biodiversity 'No Net Loss' on new projects gaining consent in 2020 onwards.
	Contribute towards the establishment of Common natural capital reporting methodology with the goal of applying this to our planning beyond 2025.
	Attain 'No Net Loss' of all woodland cover on new projects consented from 2021.
	Apply modern interactive technology to inform stakeholders of possible changes to landscape and visual amenity in new project proposals.
	Submit or undertake regulatory proposals for at least 5 visual amenity projects during RIIO-T2.
	Work with stakeholders to co-create an evidence-based approach to assessing visual amenity improvement proposals outwith designated landscape by the end of the price control.
	Remove all equipment containing Polychlorinated Biphenyls (PCBs) by 2025 in compliance regulation.
	Undertake baseline noise monitoring and noise assessments for our strategically important substation sites and implement noise management plans by the middle of the price control.
Long Term Target	Achieve biodiversity 'Net Gain' on projects gaining consent in 2025 onwards.
Leading Action	Leading with our Biodiversity Net gain and Forestry No net Loss commitments.

Estimated benefits

About **24** sites gaining consent providing no net loss outcomes

About **900** hectares may have to be reforested

72 towers removed and **19.8km** of cables underground on our current VISTA projects in development

241 assets removed which may contain PCBs

Up to **9** sites having comprehensive noise assessments

Optimising Resources

Managing resources for a circular economy; achieving zero waste to landfill, increasing resource efficiency and using sustainable materials.

RIIO-T2 Outcomes	Achieve zero waste to landfill (excluding compliance waste) by the end of the RIIO-T2 period.
	Achieve a recycling, recovery and re-use rate of 70% across our waste streams by the end of the RIIO-T2 period.
	Establish and implement best practice waste reporting for all waste stream by 1 April 2021.
	Contribute to the development of a common standard for embedded carbon assessment and reporting, with the goal of PAS 2080 Carbon Management in Infrastructure compliance.
Long Term Objective	Support the transition to a Circular Economy.
Leading Action	Leading with our commitment to zero waste to landfill across all waste streams by the end of RIIO-T2.

Estimated Benefits

Potential for **£3m - 6m** of embedded carbon savings through more sustainable project designs enabled by sustainable materials and BIM

6,420 tCO_2e embedded carbon displaced through re-use of transformers as strategic spares

£0.9-2.3m of potential savings from displaced carbon emissions and avoided waste management costs as a result of zero waste to landfill

Supporting Communities

Meeting the needs of vulnerable customers and maximising the local benefit of our investments.

RIIO-T2 Outcomes	Achieve >95% of our employees trained in supporting vulnerable consumers by the end of 2022.
	Implement best practice in accessible communications and media by the end of 2023.
	Develop and implement partnerships with third parties that can utilise our existing engagement activities to support community vulnerability.
	Maintain >25% of our approved suppliers located in the north of Scotland.
	Maintain employee volunteering in the community through the 'Be the Difference' programme during the price control.
Long Term Objective	Work with our stakeholders to determine how we can best provide additional support to community initiatives.
Leading Action	Leading with our approach to promoting local supply chains and pushing ahead on plans to meet the needs of vulnerable consumers compared to other TOs

Estimated Benefits to Consumers

Approximately **£11.2m** could be awarded through Open4Business, based on contracts awarded during RIIO-T1.

Potentially up to **£406m** is spent locally on our projects.

Our plans seek to provide additional support to vulnerable consumers in the North of Scotland

6,279 hours could be invested into communities through our Be The Difference Programme based on our volunteering in RIIO-T1

Growing Careers

Ensuring a safe and inclusive culture for our employees; adding value through good jobs, training and development.

RIIO-T2 Outcomes	Continue to manage health and safety by caring for our people – If our employees face challenges with physical or mental health, we will be there to support their wellbeing.
	Maintain our five-year ahead resourcing plan, supporting by talent pipelines and succession plans that match our forecast business activities
	Expand our inclusion and diversity programme, including >95% of employees having received training.
	Develop a methodology for our pipeline intake to be local diversity representative and implement a target by 1 April 2021.
	Work with leaders at all levels to develop their leadership capabilities and encourage and support those who are seeking to move into leadership roles. We are committed to ensuring there are no gaps in leadership potential or practice
Long Term Objective	Overcome the industry skills gap and become to a more inclusive employer
Leading Action	Comparable to other TOs and DNOs but pushing ahead in inclusion and diversity compared to other TOs.

Estimated Benefits to Consumers

Avoided absences from work-related mental health about **£34,000**

About **£60m** Growth in human capital through recruitment and training over RIIO-T2

An estimated **£1.76 - £2.33m** return on investment from I&D initiatives

10 References

Key Supporting Documents

- Approach to Biodiversity Net Gain. Available at: www.ssen-transmission.co.uk/riio-t2-plan/our-approach-to-implementing-biodiversity-net-gain/
- Business Plan Data Tables (BCF 4.3 and EAP 4.4). Available at: www.ssen-transmission.co.uk/riio-t2-plan/business-plan-data-tables/
- Cost Benefit Analysis Methodology. Available at: www.ssen-transmission.co.uk/riio-t2-plan/cost-benefit-analysis-methodology/
- Local Energy Area Plans & Community Energy. Available at: www.ssen-transmission.co.uk/riio-t2-plan/local-energy-area-plans-community-energy/
- Losses Strategy. Available at: www.ssen-transmission.co.uk/riio-t2-plan/losses-strategy/
- Our Strategy for the Management of Insulation and Interruption Gases (IIG). Available at: www.ssen-transmission.co.uk/riio-t2-plan/our-strategy-for-the-management-of-insulation-interruption-gases/
- Planning for Net Zero – Scenarios, Certain View and Likely Outturn. Available at: www.ssen-transmission.co.uk/riio-t2-plan/planning-for-net-zero-scenarios-certain-view-and-likely-outturn/
- Sustainability Strategy. Available at: www.ssen-transmission.co.uk/sustainability-and-environment/sustainability-strategy/
- Sustainable Workforce Action Plan. Available at: www.ssen-transmission.co.uk/riio-t2-plan/sustainable-workforce-action-plan/
- Sustainable Workforce Strategy. Available at: www.ssen-transmission.co.uk/riio-t2-plan/sustainable-workforce-strategy/
- Visual Impact of Scottish Transmission Assets (VISTA) – Our Approach for RIIO-T2. Available at: www.ssen-transmission.co.uk/riio-t2-plan/vista-our-approach-for-riio-t2/

Other Supporting Documents

- Stakeholder Engagement Strategy. Available at: www.ssen-transmission.co.uk/media/3560/shet-stakeholder-engagement-strategy-final-document.pdf
- Stakeholder Engagement Action Plan. Available at: www.ssen-transmission.co.uk/information-centre/our-stakeholder-engagement/implementing-the-strategy/
- Commercial and Connections Policy. Available at: www.ssen-transmission.co.uk/riio-t2-plan/commercial-and-connections-policy/
- Network Access Policy. Available at: www.ssen-transmission.co.uk/riio-t2-plan/network-access-policy/
- Draft Business Plan Consultation Report: Available at: www.ssen-transmission.co.uk/riio-t2-plan/draft-business-plan-consultation-report/
- Stakeholder Engagement Reports. Available at: www.ssen-transmission.co.uk/riio-t2-plan/riio-t2-our-stakeholder-engagement-journey/

List of Investment Decision Pack Submissions that consider Carbon Impacts

As noted in Section 1.3.4 and 2.2, we have expanded the scope of our planning by analysing and quantifying the wider social, environmental and economic impacts in our new Cost Benefit Analysis (CBA) framework. A list of the engineering justification papers that have an associated CBA analysis that includes the quantification of carbon is included in the table below. The Engineering Justification papers (EJP) have an accompanying cost benefit analysis assessment that includes carbon modelling impact estimates for: (1) Carbon displacement (only load projects) (2) Business carbon footprint (including SF_6 and vehicle mileage); and (3) losses where applicable. We are developing our approach to carbon modelling and embedding it within optioneering.

Note T2BP-EJP-0002 Climate Change & Sustainability is the engineering justification paper that includes our costed plans for carbon reduction measures on existing substations, EV charging infrastructure for our operational transport and flood mitigation action.

Ref	Engineering Justification Paper (EJP) Title
T2BP-EJP-0002	Climate Change & Sustainability Justification paper
T2BP-EJP-0016	North East 400kV Justification Paper
T2BP-EJP-0017	East Coast Onshore 400kV Upgrade Justification Paper
T2BP-EJP-0022	Port Ann - Crossaig 132kV OHL Works Justification Paper
T2BP-EJP-0023	Kinardochy Reactive Compensation Justification Paper
T2BP-EJP-0025	Sloy - Windyhill East 132kV OHL Works Justification Paper
T2BP-EJP-0026	Sloy - Windyhill West 132kV OHL Works Justification Paper
T2BP-EJP-0027	Sloy Substation Works Justification Paper
T2BP-EJP-0031	Willowdale Substation Works Justification Paper
T2BP-EJP-0037	Foyers Substation Works Justification Paper
T2BP-EJP-0041	St Fillans Substation Works Justification Paper
T2BP-EJP-0043	Keith Substation Works Justification Paper
T2BP-EJP-0044	Kintore Substation Works Justification Paper
T2BP-EJP-0045	Harris - Stornoway 132kV OHL Works Justification Paper
T2BP-EJP-0049	Peterhead - Inverugie 132kV OHL Works Justification Paper

Annex 1 Glossary of Terms

BAU	Business as Usual
BCF	Business Carbon Footprint
BEIS	Department for Business, Energy and Industrial Strategy
BIM	Building Information Modelling
BNG	Biodiversity Net Gain
CBA	Cost Benefit Analysis
CCC	Committee on Climate Change
CCS	Carbon Capture and Storage
CDP	Carbon Disclosure Project
CVP	Consumer Value Proposition
DNO	Distribution Network Operator
DSO	Distribution System Operator
EDR	Environmental Discretionary Reward
EMS	Environmental Management System
EPD	Environmental Product Declaration
ESO	Electricity System Operator
EV	Electric Vehicle
GGR	Greenhouse Gas Removal
GHG	Greenhouse Gas
GIS	Gas Insulated Switchgear
GSP	Grid Supply Point
GVA	Gross Value Added
GW	Gigawatt
HVDC	High Voltage Direct Current
IIG	Insulation and Interruption Gas
IPCC	Intergovernmental Panel on Climate Change
kWh	Kilowatt hour
LAEP	Local Area Energy Planning
LCA	Life Cycle Analysis
LHEES	Local Heat and Energy Efficiency Strategies
LO	License Obligation
MW	Megawatt
NAP	Network Access Policy
O4B	Open4Business

OHL	Overhead Line
PCB	Polychlorinated Biphenyl
PCD	Price Control Deliverable
PSR	Priority Services Register
PV	Photovoltaics
RIIO-T2	Revenue = Incentives + Innovation + Outputs (Transmission period 2)
RRP	Regulatory Reporting Pack
SBT	Science Based Target
SDG	United Nations Sustainable Development Goals
SEPA	Scottish Environmental Protection Agency
SF_6	Sulphur hexafluoride
SHEPD	Scottish Hydro Electric Power Distribution
SHE Transmission	Scottish Hydro Electric Transmission
SICEF	Scottish Infrastructure Circular Economy Forum
SPP	Species Protection Plan
SSEN	Scottish and Southern Electricity Networks
TCFD	Task Force on Climate-related Financial Disclosures
tCO_2e	Tonnes of carbon dioxide equivalent
TO	Transmission Owner
TWh	Terawatt hour
UM	Uncertainty Mechanism
VISTA	Visual Impact of Scottish Transmission Assets

Annex 2 Meeting Ofgem Minimum Requirements

Ofgem Guidance (October 2019)	SHE Transmission Action
In the SSMD, we decided to introduce a common environmental framework across Electricity Transmission, Gas Transmission and Gas Distribution. Within this framework, we expect companies' focus to be on the following impact areas:	Section 1.1.3 provides an overview of how Our Sustainability Action addresses these three impact areas and meets the Ofgem Guidance.
decarbonising the energy networks – with a focus on business carbon footprint and embedded carbon in networks	Section 3 Tackling Climate Change provides our plan to reduce our business carbon footprint. Section 5 Optimising Resources provides our action plan on embedded carbon.
reducing networks' other environmental impacts i.e. pollution to local environment; resource waste; biodiversity loss; and other adverse local effects that are specific to each sector	Section 4 Promoting the Natural Environment provides our plans for Biodiversity, Forestry and Woodland, Visual Amenity, Oil and Noise Management. Section 5 Optimising Resources provides our plans for waste and resource use.
supporting the transition to an environmentally sustainable low carbon energy system	Section 2 Connecting for Society presents how we are supporting the low carbon transition. Section 8 Sustainable Procurement present our plans for improving our supply chain sustainability.
Required features of an Environmental Action Plan In the SSMD, we set out that companies should embed considerations for the three impact areas above into their RIIO-2 Business Plans in the form of an Environmental Action Plan (EAP). The EAP should explain how a company will take responsibility for the environmental impacts of their network in RIIO-2. EAPs included in Business Plans should:	Refer to Section 1 for our overarching approach to developing our sustainability strategy and plan.
include a robust methodology that has been used to assess the environmental impacts of the company's network and Business Plan in RIIO-2 to inform its EAP. The assessment methodology should set out: • a comprehensive review of the significant environmental impacts arising from its network • the opportunities and challenges for addressing material impact areas	Section 1.3.1 documents our methodology for assess and prioritising environmental and wider sustainability impacts to inform this plan. Section 1.3.2 provides a review of the environmental impact areas arising from our Network. Each material impact area also includes a comprehensive review of our current performance, describing the 'Opportunities and

	Challenges' of addressing this impact, benchmarking or proposed action, an action plan and estimated benefits. Please also refer to our sustainability Strategy that documents our approach to assessing materiality: www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf
• an options analysis to identify value for money impact reduction initiatives	Annex 4 (Confidential) documents our approach to costing the plan and the benefits to consumers. Each material impact area in the plan has a section describing the estimated benefit to consumers.
• evidence that consideration of impacts was coordinated with the company's wider business planning processes and decisions	Section 1.3.4. documents how our environmental plan has been in integrated into our wider business plan and is a key aspect of our RIIO-T2 business plan.
• evidence that wider stakeholders have been involved in the assessment	Section 1.2 present our approach to stakeholder engagement and meeting stakeholder expectations in our environmental and sustainability planning. Each of sustainability ambition sections includes a summary of stakeholder expectations.
clarify their long term overall targets/objectives for the network's environmental impacts, which might be longer- term than the RIIO-2 period	Section 9 provides a summary of RIIO-T2 outcome and long-term targets. Each section also includes the overall targets and outcomes for the RIIO-T2 price control period.
include an assessment of the network's potential environmental impacts in RIIO-2, in comparison to its current impacts	Section 1.3.2 presents a comparison of the impact area focus in RIIO-T1 and RIIO-T2. Refer to Table 2, the BCF and EAP data table and each impact area in the plan.
set out clear links between the impact areas it has prioritised for in the EAP, action in RIIO-2 and how these are linked to the company's long term environmental targets/objectives	Section 9 provides a summary of RIIO-T2 outcome and long term targets. Each section also includes the overall targets and outcomes for the RIIO-T2 price control period.
set out the role the company envisages playing in supporting the low carbon energy transition	Section 2 Connecting for Society presents how we are supporting the low carbon transition.
set out the deliverables, outputs or environmental benefits the company proposes to deliver from implementing the EAP.	Each material impact area has an action plan that documents the key actions and outputs. A section has also been included on the estimated benefit of the actions.

We expect that EAPs will to draw together the direct carbon impacts claimed in Investment Decision Pack submissions (for example leakage, losses, EV fleet) and will include a list of all Investment Decision Pack submissions where: carbon reduction is the main driver of the proposal carbon reduction contributes to a substantial part of the benefits claimed by the projects. For example, intervention on the gas network justified mainly on avoided leakage	Refer to Section 10 - List of Investment Decision Pack Submissions that consider Carbon Impacts This includes a list of our Engineering Justification papers that have an accompanying cost benefit analysis assessment that includes carbon modelling impact estimates for: (1) Carbon displacement (only load projects) (2) Business carbon footprint (including SF_6 and vehicle mileage); and (3) losses where applicable. We are developing our approach to carbon modelling and embedding it within optioneering. A Climate Change and Sustainability Engineering Justification Paper includes our costed plans for carbon reduction measures on existing substations, EV charging infrastructure for our operational transport and flood mitigation action. Section 3.3.6 presents the estimated carbon benefits for our actions to meet our science-based carbon target. Section 2.3 also describes our approach to Social, Environmental and Economic Cost benefit analysis.
Business carbon footprint (BCF) Adopt science-based target for company to reduce its scope 1 and 2 BCF by 20XX, without relying on international GHG offsetting. Commit to efficient and economic actions to address controllable BCF in RIIO-2 Identify metrics to track outcomes of implementing actions and overall progress towards science-based target Commit to reporting on scope 3 emissions.	Refer to Section 3.2 At the time of writing we are in the process of setting our 2030 science-based carbon target with the science-based target initiative. Our RIIO-T2 target is one third reduction in our scope 1 and scope 2 greenhouse emissions from 2018/19 baseline that is aligned with the Net Zero pathway and meeting our 2030 SBT target. Section 3.2.5 presents our action plan to reduce controllable carbon. This also includes our proposed metrics to track outcomes of implementing actions and progress towards the science-based target. We have reported scope 3 emission during RIIO-T1 as presented in Section 3.3.2 and will continue to report scope 3 emissions during RIIO-T2. We have also set a scope 3 target of, “Two thirds of our suppliers by spend set a science-based target by 2025” and will establish and implement best practice GHG emission reporting (including scope 3) during the price control.

Transmission losses (ET only) Develop and adopt strategy to contribute efficiently to fewer losses on network, including over the long term, than would otherwise be the case in the absence of strategy Report on key milestones of implementing losses reduction strategy Contribute to evidence base on proportion of losses that network companies can influence/control	Refer to Section 3.3. Refer to Section 3.3.5 for our losses action plan that includes milestones for implementing the losses strategy. We remain committed to transparently reporting on losses on our network, progress implementing our strategy and action plan, and contributing to the evidence base on the proportion of the losses that Network companies can influence and control. Also see our Losses strategy: www.ssen-transmission.co.uk/riio-t2-plan/losses-strategy/
Embedded carbon Monitor and report on embedded carbon in new projects Collaborate with supply chain on addressing challenges to reduce embedded carbon in network Commit to establishing baseline and a target to reduce embedded carbon on new projects during RIIO-2	Refer to Section 5.4 This section outlines our approach to monitoring and report on embedded carbon and details the initiatives we will explore to enable reductions in embedded carbon for new projects. Our action plan (Section 5.4.5) includes a commitment to establish a baseline and a target to reduce embedded carbon on new projects during RIIO-2. Also see Section 8.3.1 for our approach to reporting embedded carbon in our supply chain
Supply chain Adopt high standards of environmental management in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs. Adopt target of more than 80% of suppliers (by value) meeting code in RIIO-2. Report on actual percentage of suppliers (by value) meeting code.	Refer to Section 8 Section 8.3 presents our action plan for sustainable procurement and how we will publicly disclose metrics of our supply chain sustainability performance.
Resource use and waste Update procurement processes to embed Circular Economy principles Adopt a target for: Zero waste to landfill by 20XX Recycled and re-used materials as a percentage of total materials by 20XX Report on actual waste to landfill, recycling and re-use as a percentage of total	Refer to Section 5. Our Optimising Resources ambition details how we will tackle issues relating to waste, recycling and resource efficiency. Section 5.2 focuses on how we will report on and achieve zero waste to landfill and a recycling rate above national targets.

	Section 5.2.5 describes how we will report on actual waste to landfill, recycling and re-use as a percentage of total alongside total tonnes Section 8.3.1 details our draft supplier code which shows how we will embed circular economy principles in our approach to supply chain sustainability. Further description of our approach to
Biodiversity/natural capital Adopt appropriate tool to assess net changes in natural capital from different options for new connections and network projects Adopt appropriate tool to monitor the provision of ecosystem services from network sites and report annually	Refer to Section 4, particularly the Section 4.2 Biodiversity and Section 4.3 Woodland and Forestry. Our RIIO-T2 outcomes are: Achieve biodiversity 'No Net Loss' on new projects gaining consent in 2020 onwards. Achieve biodiversity 'Net Gain' on projects gaining consent in 2025 onwards. See our RIIO-T2 Approach to Biodiversity Net Gain on . Contribute towards the establishment of Common natural capital reporting methodology with the goal of applying this to our planning beyond 2025. Section 4.2.5 documents our approach to performance measuring. See our RIIO-T2 Approach to Biodiversity Net Gain.

Annex 3 Benchmarking Methodology

In developing its Sustainability Action Plan, SHE Transmission has conducted a benchmarking exercise, with the support of consultants, to determine what may be considered as current standard and emerging best practice, in terms of relevant sustainability goals, targets and general level of ambition. Table 10 below shows the organisations that were selected to be included in the benchmarking exercise. Organisations have been selected on the basis of similarity of operations (e.g. nature and/or scale), regulation, turnover, and/or regulated asset value.

Table 10 Organisations selected for benchmarking exercise

	Name of organisation	Justification for selection
UK Network Companies regulated by Ofgem	Scottish Power Transmission	Electricity TO for the south of Scotland.
	National Grid Electricity Transmission	Electricity TO for England and Wales.
	UK Power Networks	Electricity DNO covering South East England, the East of England and London.
	Western Power Distribution	Electricity DNO for the Midlands, South Wales and the South West.
Other UK regulated companies	Scottish Water	Regulated by Water Industry Commission for Scotland (WICS). A statutory corporation that provides water and sewerage services across Scotland; accountable to the public through the Scottish Government.
	Anglian Water	Regulated by the Water Services Regulation Authority (Ofwat). A private limited company that supplies water and water recycling services to more than 6 million customers in the east of England and Hartlepool.
	Yorkshire Water	Regulated by the Water Services Regulation Authority (Ofwat). Water supply and treatment utility company servicing West Yorkshire, South Yorkshire, the East Riding of Yorkshire, part of North Lincolnshire, most of North Yorkshire and part of Derbyshire.
	Network Rail	Regulated by ORR. Own and operate UK railways, supporting 4.8m passenger journeys and the delivery of 200,000 tonnes of goods by freight each day.
EU Network company	TenneT	Regulated by Netherlands Authority for Consumers and Markets (ACM) and the German federal network agency Bundesnetzagentur (BNetzA). Electricity TO for the Netherlands and in a large part of Germany.
Other UK companies	Balfour Beatty	Similar company value. Balfour Beatty Group is a leading international infrastructure group that finance, develop, build and maintain infrastructure. A key supplier for SHE Transmission. Number of employees: 26,000.
	Royal Mail	Similar company value UKPIL comprises c.141,000 employees, 37 Mail Centres, c.1,350 Delivery Offices, c.11,400 Local Collect locations and c.48,0004 Vehicles.

Information was sourced from the corporate websites of each organisation above, including publicly available documents such as Annual Reports, Sustainability Strategies, Annual Sustainability Statements/ Reports, draft RIIO-T2 Business Plans, and RIIO-ED1 Business Plans; with the latest reported data used (as at 10 Sept. 2019).

For each of SHE Transmission's sustainability goals and targets as set out in the Leadership in Sustainability section of the draft RIIO-T2 Business Plan Table 11 shows the scoring criteria used to benchmark SHE Transmission's goals and targets against the peers selected in Table 10; firstly identifying the presence and type of a similar goal or target, and secondly evaluating the level of ambition of the identified goal or target compared to SHE Transmission's.

Table 11: Benchmarking Scoring criteria

Criteria	N/A	1	2	3	4	5
Presence and type of goal or target	Review has not identified reference to this specific goal/target because it is not directly relevant	Review has not identified reference to this topic, but it is relevant	Review has identified reference to this topic, but no quantitative target has been identified	Review has identified a quantitative target, but target is not SMART	Review has identified a normalised SMART target	Review has identified an absolute SMART target
Ambition level of goal or target[116]	Unable to compare target (e.g. different metrics, boundary, period, baseline)	Goal/target appears to be significantly less ambitious than SHE Transmission	Goal/target appears to be less ambitious than SHE Transmission	Goal/target appears to be as ambitious as SHE Transmission	Goal/target appears to be more ambitious than SHE Transmission	Goal/target appears to be significantly more ambitious than SHE Transmission

Scores were collated and averaged for each of SHE Transmission's outcomes, and based on the scoring, it was then determined if each of SHE Transmission's sustainability outcomes was 'leading', 'lagging' or 'in the pack' compared to peers and why.

[116] 'Ambition of target level' criteria indicates the indicative level of ambition. It is interpretative, based on professional opinion and publicly available information, and was scored without undertaking detailed calculations to compare targets.

Scottish & Southern Electricity Networks

TRANSMISSION

We are a Living Wage Employer

SSEN Community @ssencommunity

ssen-transmission.co.uk

FairTax