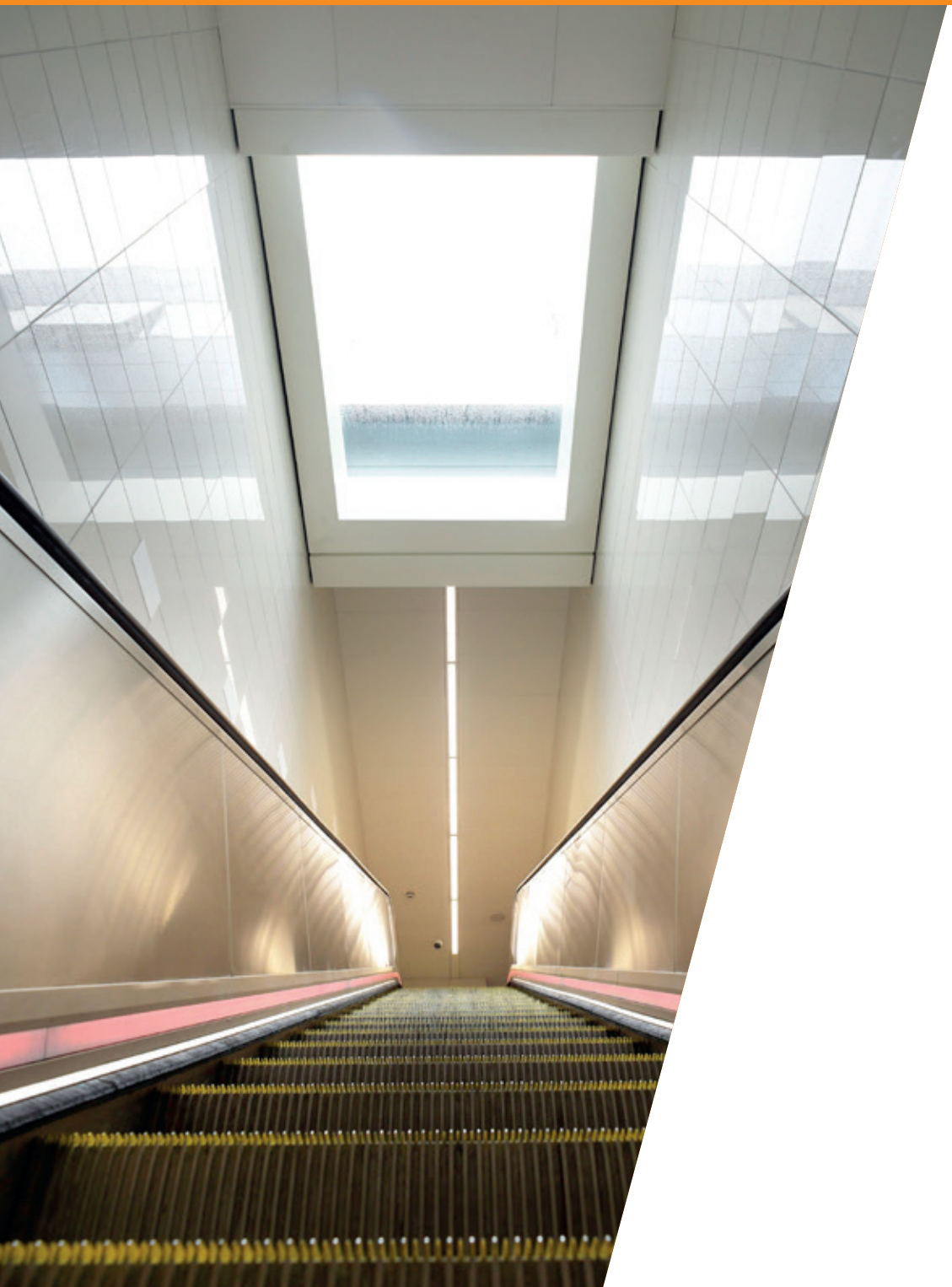
Strathclyde Partnership for Transport

Climate Change & Net Zero Strategy



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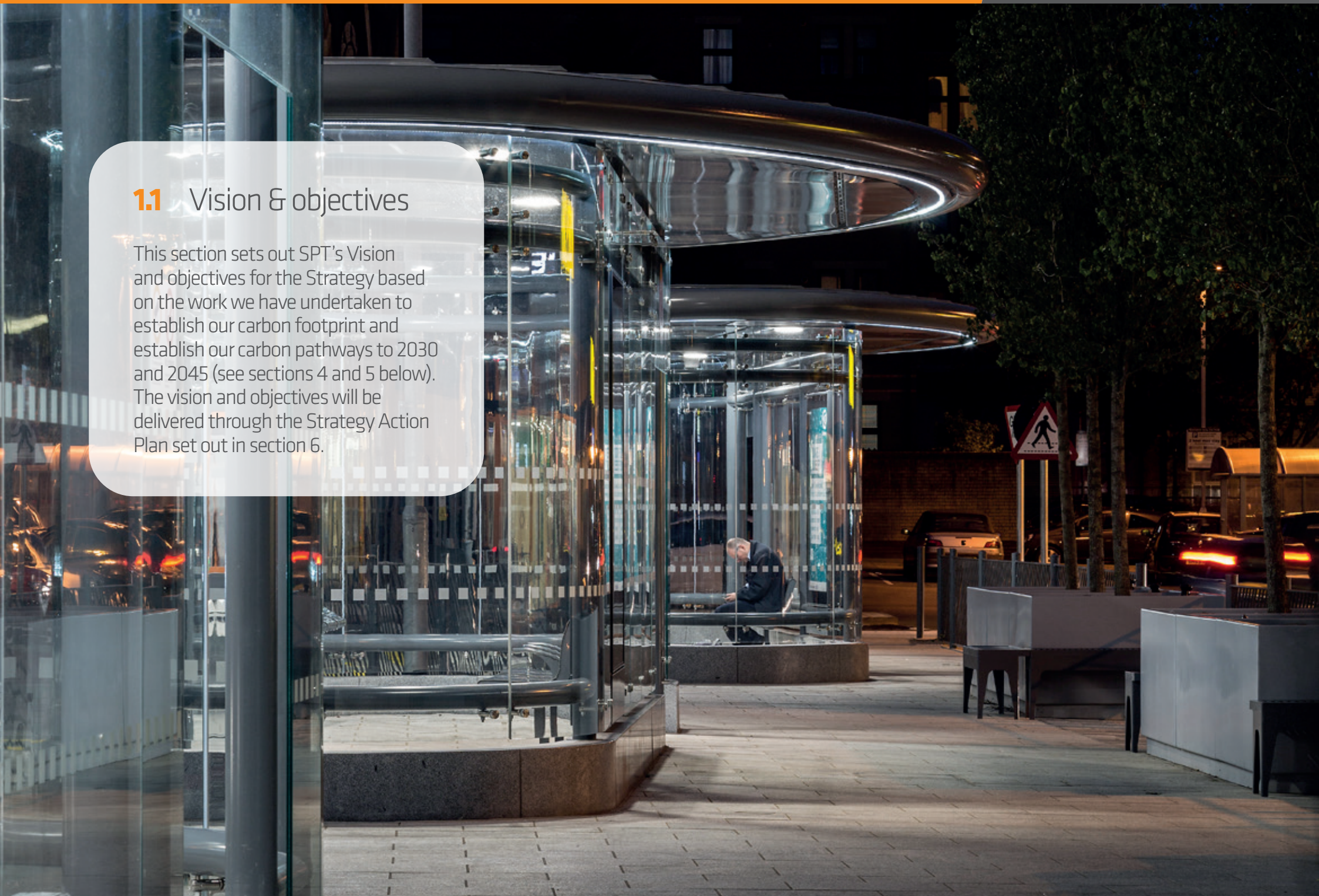
Glossary of Terms

Term	Definition
Activity data	A quantitative measure of a level of activity that results in greenhouse gas (GHG) emissions (e.g., litres of fuel consumed, or kilograms of material purchased).
Carbon footprint	An estimate of the types, scopes, and quantities of greenhouse gas emissions from an organisation based on a defined classification of activities and processes giving rise to those emissions.
Carbon neutral	Usually referred to in the context of an organisation or process, carbon neutrality involves balancing carbon emissions with those from emissions removals which are typically associated with carbon offsetting. Carbon neutrality usually involves a wider definition of emissions removals than for Net Zero and may not necessarily include all indirect emissions in the value chain. It also may not include greenhouse gases other than carbon dioxide.
Carbon offsetting	A process involving paying for the removal or reduction of carbon dioxide or other emissions elsewhere, to compensate for the emissions being produced by an organisation.
Circular economy	The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible.
Climate adaptation	The process of making adjustments in processes, practices, and structures to moderate potential damage from predicted climate change impacts to infrastructure and communities.
Climate change risk	Risk results from the interactions between climate vulnerability, exposure over time, the nature of the hazard(s) and likelihood of the hazard's occurrence. In relation to climate impacts, risks refer to the potential for adverse consequences to human or ecological systems. The IPCC defines the risk of climate-related impacts as resulting from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems.
Climate mitigation	Efforts to reduce or prevent greenhouse gas emissions from human activities which directly impact global temperatures or to enhance carbon sinks.

Term	Definition
Climate resilience	The capacity of social, economic, and environmental systems to cope with a climate induced hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure whilst also maintaining the capacity for adaptation, learning and transformation.
Decarbonisation	The process by which countries, governments and organisation aim to achieve zero fossil carbon use and emissions. Typically, it refers to a reduction of the carbon emissions associated with sectors such as electricity, industry, and transport.
Direct emissions	Greenhouse gas emissions from sources that are owned or controlled by the reporting entity typically from their site or fuel used for their vehicles (also see definition for emissions scopes).
Embodied carbon	Refers to emissions associated with the creation of an asset. Also known as 'capital' carbon, it is analogous to capital cost.
Emissions factors	The relationship (usually a ratio) between the quantity of a raw material burnt / processed and the resulting quantity of pollutant produced. Used to convert 'activity data' such as distance travelled, litres of fuel used, or tonnes of waste disposed into units of carbon dioxide equivalents.
Emissions inventories	A register of the type of pollutants and estimated quantities of emissions from defined organisational sources.
Emissions scopes	In the account of greenhouse gas emissions, three scopes are typically referred to: Scope 1 (direct emissions) includes emissions from the combustion of fossil fuels in activities directly controlled by the organisation; Scope 2 (indirect) emissions arise from generation of purchased electricity or heat used by the organisation; Scope 3 (indirect) emissions are not directly controlled by the organisation and arise from the purchase of materials and supplies, staff travel to/from work and other supply chain sources.
Indirect emissions	Greenhouse gas emissions that are a consequence of the activities of the reporting entity (associated with consumption and purchasing) but which occur at sources owned or controlled by another entity (also see definition for emissions scopes).
Just Transition	Both the outcome and the process to achieve a fairer, greener future for all associated with the pathway to Net Zero, in partnership with those impacted by the transition.
Location-based emissions	The location-based method uses emission factors that provide an average of the emissions from all power sources within a specific geographic region over a given period of time. They are typically calculated based on data from a grid operator or power market, and take into account the mix of energy sources, fuel types, and generation capacity in a given region.

Term	Definition
Market-based emissions	The market-based method differs from the location-based method in that it considers specific information from contractual energy procurement instruments, such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs). Rather than applying local grid conditions to energy usage, market-based emissions factors take into account the actual sources of purchased energy based on the direct arrangements an organization may have with its suppliers.
Net zero	The condition where emissions of all greenhouse gases from human activity are balanced by at least an equivalent quantity of emissions removals (for example through carbon sequestration) over a specified period. Net zero usually implies following a specific emissions reduction trajectory to a target year so that all emissions are reduced to an absolute minimum prior to the need for sequestration.
Operational boundary	The scope of emissions to be included in carbon emissions assessment. This boundary determines whether only Scope 1 and 2 emissions are accounted for, or whether to also account for relevant Scope 3 emissions.
Operational carbon	Refers to emissions associated with the operation of an asset. It is analogous to operational cost and is quantified in tCO_2e/year.
Operational control	An approach to determining the emissions sources (primarily for scope 1 and 2 emissions) that should be included within an organisation's GHG emissions reporting boundary. An organisation is considered to have operational control where it has the full authority to introduce and implement operating policies for assets and operations.
Organisational boundary	The scope of emissions to be accounted for relevant to an organisation's facilities, assets, and operations.

1 Executive Summary



1.1 Vision & objectives

This section sets out SPT's Vision and objectives for the Strategy based on the work we have undertaken to establish our carbon footprint and establish our carbon pathways to 2030 and 2045 (see sections 4 and 5 below). The vision and objectives will be delivered through the Strategy Action Plan set out in section 6.

1.2 Our commitments

SPT recognises the urgency of making rapid and sustained emissions reductions along the pathway to 2030 and 2045 to help avoid the worst effects of climate change. The framework, approved by the Partnership in 2023, defined the Strategy vision, objectives, and targets, incorporating an expanded emission boundary to include Scope 3 emissions sources which reflect the true extent of SPT's environmental impact from its operations and services. This Strategy aims to align with the Scottish Government's statutory 2045 targets as well as Glasgow City Council's 2030 targets.

1.2.1 Carbon mitigation

We have built on the significant emissions reduction progress achieved in response to our existing Carbon Management Plan[1] and the commitments we have made through the Sustainable Glasgow Charter to reduce the emissions of our workplace, staff travel and operations. We will continue to focus efforts on reduction of emissions associated with our corporate activities and from energy use of the buildings and public transport assets we directly operate to align with the 2030 net zero emissions targets of our regional partners.

1.2.2 Decarbonisation of the transport sector

SPT aims to reduce transport sector emissions within our direct control including Subway and bus stations and staff travel and facilitate and influence emission reductions in transport services and infrastructure that are administered, managed and/or funded by SPT, including MyBus and supported bus services. Working with our partners, SPT will also continue to aim for the decarbonisation of the wider regional transport through our strategic transport framework set out in the Regional Transport Strategy (RTS).

1.2.3 Adapting to climate change

Adapting to climate change that is already taking place and which is unavoidable in the future is of equal importance to action on climate mitigation. Our work on adaptation will continue to be guided by the statutory requirements of the Climate Change (Scotland) Act 2009 and through partnership working with our regional partners, in particular through Climate Ready Clyde and the Regional Transport Climate Resilience Group chaired by SPT and our work with Glasgow City Council's Sustainable Glasgow initiative. Through this Strategy, and the roll out of future implementation plans, we will progress a systematic framework of climate risk assessment to inform action planning within SPT.

1.2.4 Taking action and monitoring progress

We will continuously monitor our performance and review the targets and commitments for climate mitigation and adaptation to reflect progress and priorities together with any future changes in national legislation and policy. We will review and refresh this Strategy at least every five years.

1.3 Our Vision

By 2030, SPT will be a low carbon, resource efficient and climate resilient organisation with a robust net zero carbon pathway to 2045 across all of our operations and supply chains. We will have a green organisational culture and a workforce highly trained in climate change mitigation and adaption. We will have a leading role in delivering a decarbonised and adapted transport network in the west of Scotland and will have strong partnerships in place to maximise co-benefits of green investment and innovation and ensure a Just Transition.

1.4 Our Objectives

The objectives we want to achieve through delivery of this strategy are as follows:

Emissions reduction	to achieve rapid and sustained cuts in SPT's greenhouse gas emissions consistent with supporting national and regional commitments to net zero carbon and taking account of life cycle emissions in carbon management.
Climate adaptation	to build the resilience of the transport network to a changing climate which can adapt to more frequent and severe extreme weather events wherever possible.
Just transition	to consider all equalities aspects in our work and support national and regional plans and commitments for a Just Transition to net zero which benefits all our communities and sustains our environment.
Engagement and communication	to work with national and regional partners to promote, share and embed best practices in carbon management and climate adaptation in our processes and to publicly communicate our progress with clarity and integrity.
Facilitate and Influence	to facilitate and influence transport sector decarbonisation through market engagement and specifications.
Processes	to embed energy and carbon management systems and climate risk assessment processes into our plans, policies, investment decisions and communications which promotes cultural change and provides us with accurate information about our progress.

1.5 SPT Baseline and priority hotspots

The biggest contributor to SPT's Scope 1 emissions is natural gas used for heating SPT's buildings including our bus and Subway stations. This represents 97% of SPT's Scope 1 emissions and 3% of our overall emissions across Scopes 1, 2 and 3.

SPT's Scope 3 emissions contribute to 97% of the overall SPT baseline footprint. The highest contributory emission source is Downstream Leased Assets at 61% of the overall SPT baseline footprint. Downstream Leased Assets refer to SPT owned buses which are leased to commercial bus operators through contracts for supported bus services and MyBus. Capital Goods and Purchased Goods and Services are also identified emission hotspots contributing 29% and 5% respectively.

1.6 SPT's Targets

SPT's policy-based targets are based upon national climate change targets set out in legislation. These targets are specific to SPT's operational emission boundary.

- **Target 1:** SPT aims to have zero carbon emissions across our Scope 1 and Scope 2 operational emission boundary by 2030.
- **Target 2:** SPT aims to have net zero carbon emissions across our full operational emission boundary by 2045.

These targets reflect quantitative carbon reduction pathways established for different parts of the business. This helps ensure the targets are ambitious, but feasible. Additionally, any changes in emission accounting best practice over the next few years may require adjustments to the targets and carbon emission pathways.

Target 1: SPT aims to have zero carbon emissions across our Scope 1 and Scope 2 operational emission boundary by 2030.

Target 2: SPT aims to have net zero carbon emissions across our full operational emission boundary by 2045.

2 Introduction

2.1 Background

2.1.1

Tackling climate breakdown is now a priority for governments, regional and local authorities, corporations, and communities across the world. This reflects a recognition internationally that we will need to drastically reduce emissions of greenhouse gases if we are to keep future average global temperatures to a level which will avoid the worst effects of climate change. In parallel, and recognising that despite emissions reductions, there will still be significant changes in our climate and that concerted effort is required to adapt our built and rural environments to climate change to be resilient to future weather extremes.

The purpose of this Strategy is to outline SPT's actions to end our direct contribution to greenhouse gas (GHG) emissions[2] as soon as possible and adapt our property portfolio and transport services in preparation of changing climatic conditions. Our Climate Change Strategy is focused on areas that are most within SPT's control to directly change. This includes our supply chain, our property portfolio, our staff and business travel, our operations, and the transport services and projects administered, managed and/or funded by SPT. Within this setting, SPT is aiming to be a zero-carbon emitter across our property portfolio and operations by 2030 and net zero carbon across our operational boundary by 2045.

Through the development and implementation of this Strategy, we have and will continue to expand the coverage of our carbon accounting process to include indirect emissions. We understand that this will increase SPT's carbon 'footprint' from the activities which have been reported on to date through the Public Bodies Climate Change Duties (PBCCD)[3] process. The targets therefore align and help to meet the trajectories set out in the relevant legislation establish by Scottish Government to achieve net zero emissions by 2045.

2.1.2

Preparation of the Strategy has involved a detailed review of relevant climate change policy and legislation and industry best practice including different methodology, standards, and tools to aid development of a comprehensive Climate Change strategy for SPT, covering adaptation, mitigation, carbon accounting, carbon assessment and climate risk assessment.

The Strategy has the following benefits and opportunities for SPT:

- Informing and facilitating key decisions that will set SPT's strategic vision for Climate Change and Carbon emission reduction;
- Scoping and quantifying SPT's carbon 'footprint' and identifying the specific actions that SPT will take to reduce our footprint in line with the agreed approach and timescales for the Strategy;
- Developing SPT's approach and activities in relation to climate change adaptation; and
- Differentiating between SPT's 'corporate' emissions, which will be the subject of this Strategy, and wider transport decarbonisation policy, which will be tackled through other mechanisms under the new Regional Transport Strategy framework.

SPT recognises that there are a range of societal, environmental, and economic factors driving the development of this Strategy. These include poor air quality, inequality, and the nature emergency. Understanding these factors ensures that SPT's approach to climate change is cross-cutting and will deliver co-benefits across our business and the wider region.

2.2 About SPT

SPT is the largest of Scotland's seven Regional Transport Partnerships and we have a critically important role in supporting national, regional, and local policies to reduce carbon emissions from both our own activities and from the wider transport network in the west of Scotland.

SPT's responsibilities include: operation of the Glasgow Subway and six regional bus stations; supporting socially necessary local bus services, including the MyBus demand responsive service and community bus services; managing bus stop infrastructure; providing school transport on behalf of our partner Councils; acting as the Secretariat for the Strathclyde Concessionary Travel Scheme on behalf of our councils; administering the ZoneCard ticket on behalf of participating operators; and supporting smartcard ticketing. SPT also works with our partner Councils to support investment in the region's transport infrastructure through our capital programme.

SPT has a key statutory duty under the Transport (Scotland) Act 2005 to produce a Regional Transport Strategy[4]. The RTS is a transport strategy for the west of Scotland, which sets the long-term direction for transport in the region and includes a commitment to working with our partner councils, Transport Scotland, transport operators and other stakeholders to reduce emissions from and support adaptation of the transport sector. However, this Strategy principally covers SPT's corporate responsibilities including those emissions that arise directly as a result of SPT's operations and from our estate.

This Strategy sets out SPT's Vision and Objectives for emission reductions and adaptation of SPT's operations and estate, summarises the work undertaken to establish SPT's carbon footprint, explains the approach we have taken to identifying our priority carbon 'hotspots', the carbon pathway for reduced emissions, our emission reduction targets, and an Action Plan to support delivery.

3 Policy & Legislative Context

This section sets out the policy and legislative background to SPT's Climate Change Strategy which helps to inform and drive our approach.

3.1 Net-Zero Science and Policy Drivers

Net-Zero is the internationally agreed goal for mitigating global warming as stated in the Paris Agreement[5], a legally binding international treaty on climate change that entered into force on 4 November 2016. The Agreement provides a framework to guide a co-ordinated international effort to reduce emissions and adapt to climate change. A key aspect of the treaty is for all nations to achieve 'climate neutrality' which means to 'achieve a balance between anthropogenic (human made) emissions by sources and removals by sinks of greenhouse gases in the second half of this century' (Article 4, UNFCCC, 2016). Net-zero refers to a state in which the anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.

SPT's Strategy is in alignment with the Institute of Environmental Management and Assessment (IEMA) Greenhouse Gas Management Hierarchy. This promotes Net-Zero through:

- Emissions that are first reduced in line with a 'science-based' trajectory with any residual emissions neutralised through offsets.
- Setting of a Net Zero goal that communicates to stakeholders an organisation's climate commitment and strategy.
- Having targets that can motivate staff, help drive long-term strategies and save money for the organisation through energy efficiency projects.

Key national and international policies are set out below.

3.1.1 International Policy – IPCC 2018

In 2018, the Intergovernmental Panel on Climate Change (IPCC) published a special report on the impacts of global warming of 1.5˚C. The report highlighted the severe climate impacts that would occur with 1.5˚C of warming above pre-industrial levels, and how those effects would be significantly worse with a global temperature increase of 2˚C. It also stated that global emissions would need to peak before 2030 to achieve net zero emissions by 2050 to limit temperature rises to 1.5˚C from pre-industrial levels.

3.1.2 National Policy – UK Climate Change Act 2008

In 2019, the UK Government declared a Climate Emergency and updated the Climate Change Act (2008)[6] with a more ambitious, legally binding target for the UK to be Net Zero by 2050. A key provision of the Act with respect to climate change mitigation, is a requirement for the Government to set legally binding carbon budgets limiting the amount of carbon emitted in the UK over a five-year period. These budgets currently cover the period to 2037. The Sixth Carbon Budget enshrined in law in June 2021 is the first budget to take account of the UK Government's 2050 net zero target.

3.1.3 National Policy - Climate Change (Scotland) Act 2009

As part of Climate Change (Scotland) Act 2009[7], Scotland created a framework for greenhouse gas emissions reductions by setting an interim 42% reduction target for 2020, and an 80% reduction target for 2050. Scotland led the world in becoming one of the first nations to declare a global climate emergency in April 2019. Reflecting the urgency of the situation, Scotland updated its Climate Change Plan[8] in 2020 and increased its ambition with the setting of a new target to become 'Net Zero' by 2045, five years ahead of the rest of the UK and new interim targets of 75% by 2030 and 90% by 2040.

3.1.4 Glasgow's Climate Plan

Glasgow City Council declared a climate and ecological emergency at its meeting on 16 May 2019. The Climate Emergency Working Group produced a report, with the input of many expert stakeholders, which made 61 recommendations, with a target for the city to achieve **carbon neutrality by the year 2030**. Glasgow's Climate plan[9] sets out a timeline of activities against the 61 recommendations from the Working Group to deliver a healthier, more equitable and resilient city.

3.2 Changing policy landscape

Through this strategy, we acknowledge the evolving policy landscape driven by the global imperative to address climate change. In recent years, the ambition and scope of climate policy has changed significantly, and the increasing prevalence of climate emergency declarations set by local authority partners underscores the urgency of the situation. It is widely recognised that national targets, though challenging, are long overdue.

Given the enduring nature of the climate crisis and uncertainty of future outcomes, it is crucial that we continuously monitor and adjust our policies to reflect the evolving challenges of the climate emergency. We must also be aware of and respond to recent and emerging policy. For example, the Heat Networks (Scotland) Act 2021 signifies a change in pace on climate policy in Scotland, with the Scottish Government introducing regulation requiring the public sector to carry out an energy assessment of their buildings. Similarly, the Scottish Government has developed 'Scotland's Circular Economy & Waste Route Map to 2030'[10] which sets out four strategic aims to accelerate progress between now and 2030 to strengthen the circular economy.

3.3 Building on success

Since 2015, SPT has reported our emissions through the Public Bodies Climate Change Duties (PBCCD)[11] via the Sustainable Scotland Network (SSN). Through the delivery and implementation of this Strategy, we have broadened the coverage of our carbon accounting process to improve the precision of SPT's Scope 3 reporting.

SPT has had a Carbon Management Plan (CMP) in place since 2008/2009 which has been instrumental in delivering emissions reductions across our estate. SPT's 'corporate' carbon footprint has reduced significantly over the last 10 years, with a 57% reduction in 2019/2020 from the original 2008/2009 baseline. This has been achieved through investment in a range of initiatives such as utilising solar power and voltage optimisation at Buchanan Bus Station, an LED lighting upgrade on the Subway, and innovative initiatives such as a ground source heat pump at Broomloan depot which provides up to 40% of the heating load of staff facilities. In addition, we have installed air source and water source heat exchangers in several of our Subway stations making use of the 12-14°C water and air temperatures prevalent in the Subway tunnels

4 The process

This section sets out the process SPT has undertaken in developing this Strategy to establish and analyse our carbon footprint. This has included: setting an operational boundary around our activities as a framework to guide action; undertaking a data collection process to identify SPT's priority carbon hotspots; developing pathways to emission reductions; and the establishment of targets for the Strategy that align with local, regional, and national targets culminating in a Strategy Action Plan that sets out SPT's near term and longer-term actions to deliver emission reductions.

4.1 SPT's Carbon Footprint

SPT's carbon footprint measures the total greenhouse gases produced directly or indirectly by our operations and activities including in areas such as energy use, staff travel, waste and bus and Subway operations.

4.2 Baseline year

A baseline year is a reference point in time against which emission reductions in the future are measured. The carbon footprint assessment detailed within this strategy provides a baseline total of GHG emissions for SPT for April 2022 – March 2023.

4.3 Operational boundary

In order to most effectively establish our carbon footprint, it has first been necessary to set an organisational boundary for SPT's activities. Our operational emissions boundary map, as shown in Figure 1, has been developed using best practice and guidance including the GHG Protocols noted earlier. The map provides a clear representation of the direct and indirect emissions that SPT is including within its Climate Change Strategy. Further detail on SPT's emissions boundary can be found in Appendix 3.

Fig 1: SPT Operational Emmissions Boundary

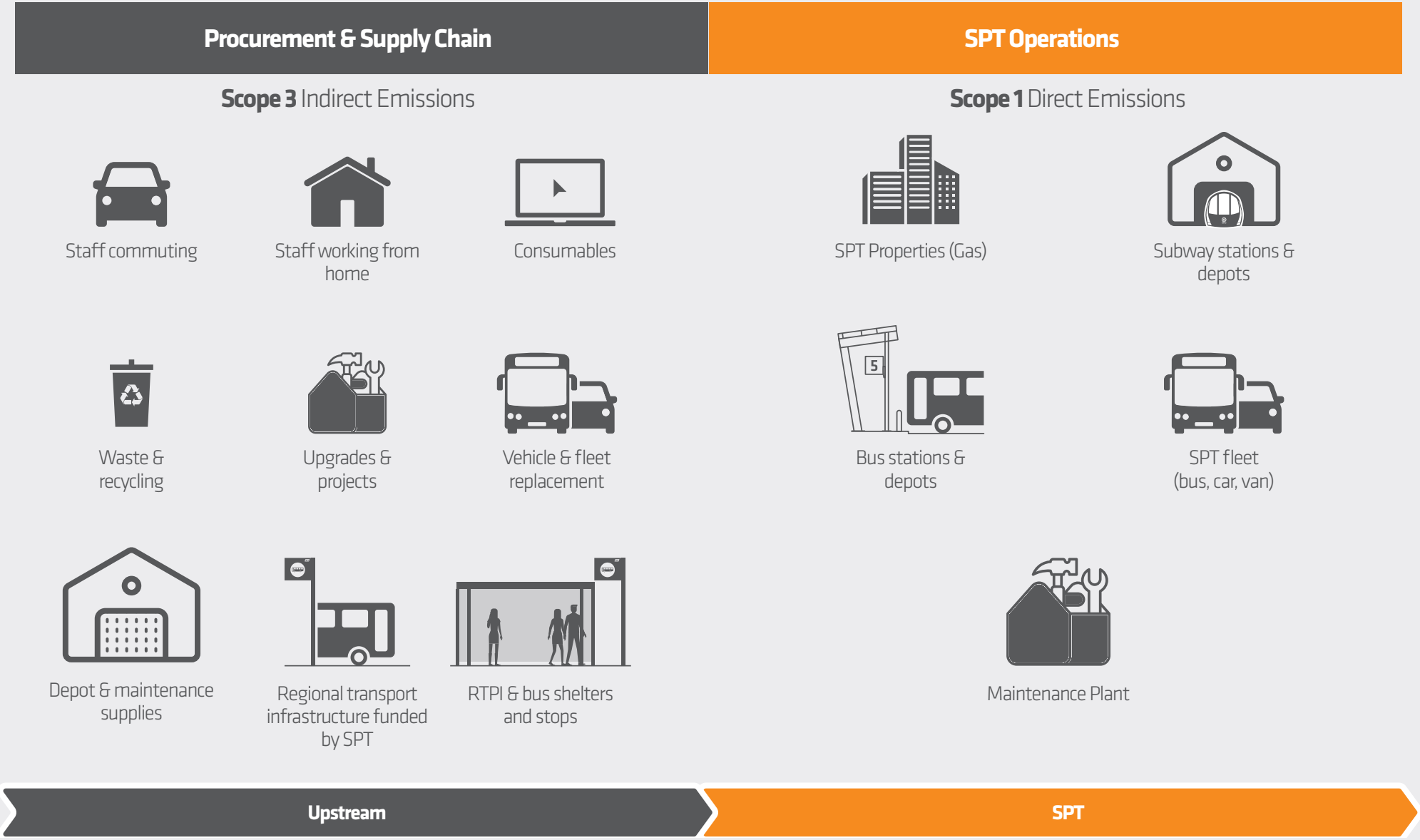
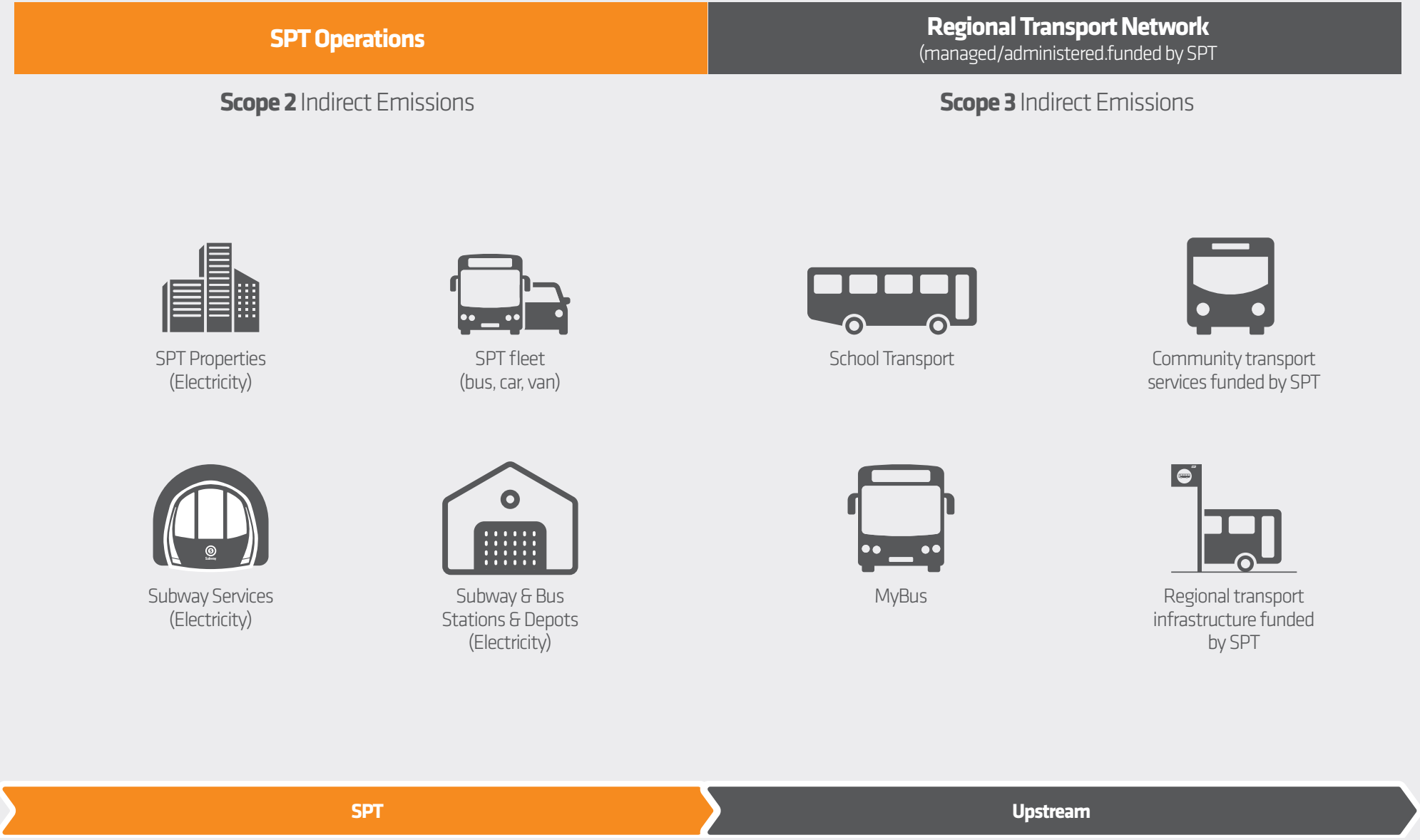


Fig 1: SPT Operational Emmissions Boundary (cont'd)



4.4 Emission boundary

SPT recognises the wider influence our operation and activities have on emissions generation, and in alignment with best practice for public sector reporting of emissions sources, we have included Scope 1, 2 and 3 emissions within our reporting boundary. These respective Scopes provide a method of categorising the different kinds of carbon emissions SPT creates in its operations, and wider value chain.

For reference, the different emission Scope categories are defined as:

- **Scope 1:** all emissions from activities the organisation controls or owns that are released in situ (referred to as direct emission sources) e.g., fuel combustion on site in gas boilers, fleet vehicles or air conditioning leaks.
- **Scope 2:** indirect emission from electricity purchased and used by organisation.
- **Scope 3:** All other indirect emissions from sources the organisation does not own or control. These can be upstream or downstream emission sources.

More specifically, SPT's Scope 1 and 2 emissions incorporate direct and indirect emissions arising from sources that are owned and operated by SPT. For example, Scope 1 includes activities related to the burning of fossil fuels, combustion emissions from our fleet, as well as gas and boiler use; while Scope 2 includes indirect greenhouse gas emissions arising from the generation of purchased electricity for use within our office buildings, fleet vehicles, passenger information systems and Subway services.

Scope 3 emissions arise from sources not owned or controlled by SPT, but which are a consequence of our operations and policies i.e. the emissions arise due to SPT's demand for these services and goods. For SPT, Scope 3 'upstream' emissions are those associated with SPT's supply chain including purchased materials and services. Scope 3 'downstream' emissions are attributed to transport services and projects not directly operated or delivered by SPT, but resulting from SPT's role in specifying, administering, and funding transport services and infrastructure. It is important to emphasise that how Scope 3 emissions are accounted for without 'double counting' by one or more organisations is an ongoing challenge across the emissions sector. Similarly, it is a challenge to explain how specific Scope 3 emissions can be the responsibility of an organisation when decisions affecting them maybe out with their control and decision-making processes. However, the gathering and reporting of more detailed data on Scopes 1, 2 and 3 is beneficial overall as it provides a clearer and more comprehensive picture of overall emissions. While SPT's Scope 3 emissions are not ones over which SPT has direct accountability, they are ones over which we have degrees of influence and where we can identify strong opportunities to drive progress with our partners. SPT will continue to seek to clarify and refine its processes and reporting in this regard, in line with the Climate Change (Duties of Public Bodies; Reporting Requirements) (PBSSD).

As noted, SPT already prepares annual reporting on climate change emissions. However, going forward, we will employ improved methods for tracking emissions data to enhance transparency, auditability, and traceability for GHG reporting of the Strategy and PBCCD.

4.5 Emission sources

The emission sources considered in SPT's 2022-2023 carbon footprint assessment are detailed in Table 1.

Table 1: SPT GHG Inventory

Scope	Emmission Source	Activity Data Source	Unit
1	Natural Gas	Annual gas consumption from • Corporate (Building heating / energy consumption from estate) • Subway station and depot • SPT Bus Delivery (bus station and MyBus Call Center)	kWh
1	Fugitive emissions	Annual consumption to replace what has leaked	Kg Refrigerant type (e.g. HFC134a)
1	Fuel in company-owned vehicles	Mobile fuel combustion from • Corporate (Business fleet annual mileage) • Subway (subway business vehicles)	Distance (km/miles), Vehicle type and consumption litres
2	Electricity	Annual electricity usage from • Corporate (estate usage) • Operational network (subway) • SPT Bus Delivery (bus station and MyBus Call Center)	kWh
3	Purchased Goods and Services	Annual (reporting year) spend on (for example): • Bus operations • Corporate equipment • Depot & Maintenance Supplies	£

Scope	Emmission Source	Activity Data Source	Unit
3	Capital Goods	Annual (reporting year) spend on (for example): • Bus Shelters & Maintenance • Civil Engineering & Construction works • Grant Funding	£
3	Fuel and Energy Related	Annual consumption of electricity	kWh
3	Water	• Annual consumption • Wastewater assumed 95% of water consumption	m^3
3	Waste	• Quantity of waste disposed • Waste type • Waste disposal method	tonnes
3	Business Travel	• Mode (flights, car, public transport) • Vehicle type (GHG Protocol Definitions) • Distance (km/miles)	km/miles and car type
3	Commuting	• Mode of transport • Vehicle type (GHG Protocol Definitions) • Distance (km/miles)	miles/km and car type
3	Downstream leased assets	Distance travelled and vehicle type	miles/km and car type

4.6 Data collection and analysis

Evidence base

To develop a comprehensive baseline assessment (also known as a carbon footprint) for SPT, we adopted a strategic approach to evidence gathering, collecting activity data from across the organisation (see the emissions sources listed in table 1). Activity data relates to the quantitative levels of activity within SPT's operations which results in the potential release of Greenhouse Gas emissions. From the most to the least accurate data types, organisations can collect:

- Primary data from suppliers;
- Quantity data & Life Cycle Assessment;
- Extrapolations & assumptions on primary data; and
- Spend data.

For SPT, data gathered included Scope 1 and 2 emissions data from stationary (building heating and lighting) and mobile (SPT fleet vehicles and fuel) combustion sources as well as indirect Scope 3 data sourced from external partners e.g. Waste uplift records and end of life treatment[12] for SPT's waste.

As a first step, SPT conducted an internal data review to evaluate current accounting and reporting procedures across the organisational boundary and to identify improvement mechanisms for enhanced reporting of GHG emissions. This was a critical step in the data collection process, facilitating an informed, systematic examination of SPT's operational practices and data sources. In accordance with the GHG Protocol Corporate Accounting and Reporting Standard, and to account for the complexity and availability of data or information, data collection methods included:

- Quantitative methods e.g., Energy consumption records.
- Qualitative methods e.g., internal staff interviews, site audits/visits.
- Use of existing historical data: e.g., utility bills, fuel records.

Following this, a thorough data quality check was carried out to identify gaps in data and clarify assumptions made. This approach ensures consistency in data management and highlights key areas for optimisation, ultimately guiding formulation of a greenhouse gas emissions inventory for SPT. This is the most effective way to identify, account for, monitor and enhance emissions reporting at a corporate level and provides an 'Actionable emissions database' SPT can utilise for the benefit of:

- Risk management to SPT's assets and infrastructure;
- Improving efficiency across SPT's operations;
- Demonstrating leadership to the wider transport and public sectors; and
- Potential cost savings for SPT through carbon reduction measures and opportunities.

This process has enabled an accurate quantification of emissions across SPT's newly defined emissions boundary and baseline data, utilising the most up to date carbon emission factors for the calculation of emissions. A full list of data collection and quantification methods can be found in Appendix 2.

Through rigorous analysis and validation, the emissions inventory provides valuable insights into SPT's carbon footprint, enabling informed decision making and providing a robust basis for development of SPT's Net-Zero Action Plan.

4.7 Carbon accounting

Carbon accounting refers to the process used to measure how much carbon an organisation emits. A Carbon Footprint is the total GHG emissions caused directly and indirectly by an individual, organisation, event, or product. For the purpose of the organisational footprint, the emissions are measured as CO2e (carbon dioxide equivalent). As defined by the GHG Protocol, CO2e is the universal unit of measurement that considers the global warming potential (GWP) of each of the six greenhouse gases. GWP is a measure of the potency (global warming impact) of a greenhouse gas compared to one unit of carbon dioxide e.g., methane (CH4) has a GWP of 28 – meaning that it can cause 28 times more warming than carbon dioxide (CO2).

4.8 Summary of baseline results

Table 2 below details the outcome of the data collection process which forms the basis for SPT's updated baseline results for the year 2022-2023. This includes inclusion of the expanded emission boundary categories and the most up to date greenhouse gas conversion factors for carbon accounting. Results are presented below for Scope 1, 2 and 3 respectively.

Table 2: . SPT 2022-23 Carbon Baseline Assessment Results

Scope	Emmission Source	Definition	Emissions (tCO_2e)	% of footprint
1	Natural gas	Heating fuel used in SPT estate	414.000	3.149
1	Refrigerant	Refrigerants used in air conditioning equipment/processes.	0.002	0.000
1	Mobile fuel combustion	Fuel combustion from SPT owned and operated vehicles – business fleet	29.000	0.221
2	Electricity (purchased grid)	Purchased electricity (green tariff*)	0.000	0.000
3	Purchased Goods and Services	SPT supply chain	645.000	4.906
3	Capital Goods	Fixed assets, machinery, equipment, or tools. E.g., civil engineering & construction works and grant funding.	3770.000	28.678
3	Fuel and energy related	Transmission and distribution losses from electricity used in SPT buildings and EV vehicles	188.000	1.430
3	Water	Consumption/treatment of water	2.000	0.015
3	Waste	Waste arising and final fate	55.000	0.418
3	Business Travel	Staff travelling for work purposes within SPT	5.000	0.038
3	Downstream leased assets	Buses owned by SPT and leased to operators	8037.000	61.136
3	Commuting	Staff travelling to and from work	1.000	0.008
Total			13,146.002	100

The findings not only highlight areas where improvements can be made, but also lay the groundwork for establishing measurable targets and determining the effectiveness of future sustainability measures for SPT.

4.9 Identified carbon hotspots

The most contributory emission source for SPT is Downstream leased assets (this relates to SPT owned buses which are leased to bus operators as part of SPT contracts) at 61% of the SPT baseline footprint. This contributes to the scope 3 total of 12,702 tCO2e, which is 97% of the overall baseline footprint. Capital Goods and Purchased Goods and Services are also identified emission hotspots contributing 29% and 5% to the 2022-2023 SPT baseline (Table 3), respectively. This demonstrates the significant investment in capital goods and purchased goods. The contribution of refrigerant, water, business travel and commuting emissions to the baseline footprint total is a relatively small proportion of the overall total.

For the baseline year 2022-2023, SPT's electricity source for our building portfolio and operational subway network was supplied under a 'Select Renewables 100%' contract resulting in an emission total of 0 tCO2e for SPT's scope 2 emissions. This includes all electricity consumed within SPT operations.

Independently verified by the Carbon Trust, this tariff ensured that electricity supplied for the year ending 31 March 2023 was 100% covered by renewable certificates obtained by EDF Energy. SPT diligently report on location-based emissions, reflecting the direct on-site impact, and market-based emissions which consider net-zero energy generation. This dual reporting underscores our dedication to sustainability and transparency, and ensures that we adhere to best practices, showcasing our unwavering commitment to reducing energy consumption across our estate portfolio and operations[13].

Table 3: Mitigation priorities based on carbon hotspot analysis

Scope	Emmission Source	Emissions (tCO_2e)	Related SPT operation/asset	Key Priority
1	Natural gas	414	Property portfolio/SPT Estate(buildings)	Transitioning from natural gas
3	Downstream leased assets	8,037	Supported services	Schools transport Community transport Subsidised services
3	Capital Goods	3,770	Capital funding, LA capital programme	Capital Innovation
3	Purchased goods & services	645	Supply chain	Sustainable Procurement

5 Targets and Net-Zero Pathway

5.1 Science-based target setting

A science-based assessment was adopted to produce SPT's net zero emissions pathway and action plan to meet SPT's net zero targets. The methodology for setting science-based targets followed the best practice principles of the Science Based Target Initiative (SBTi).

Emission reduction targets are considered 'science-based' if they are in line with the latest climate science and thus meet the goals of the Paris Agreement – to limit global warming of 1.5 degrees above pre-industrial levels, by 2100. To achieve this, the UK aims to achieve net zero by 2050, while Scotland plans to achieve net zero by 2045, with interim targets of 75% by 2030 and 90% by 2040. From a business perspective, the SBTi sets out principles of a science-based target (SBT) to help businesses follow a pathway to net zero by 2050.

5.2 Our Targets

SPT has set targets for the strategy that are specific to SPT's operational emission boundary:

- Zero carbon emissions in Scope 1 and Scope 2 emissions by 2030
- Net zero carbon across Scope 3 emissions by 2045.

In addition, SPT's emissions will need to be reduced by at least by 50% by 2033 if we are to remain on course to meet the Scottish Government's national target to be net zero by 2045. The targets will require continuous review annually to ensure that they remain achievable. Additionally, any changes in emission accounting best practice over the next few years may require adjustments to the targets and carbon emission pathways.

We recognise that our targets are ambitious but are committed as a public sector body to ensuring that our targets are in alignment with Glasgow's Net-Zero target of 2030, and Scottish Government targets. We also need to acknowledge achieving emissions reduction across the region is a collaborative process which demands a collaborative effort. While sectoral collaboration will enable the delivery of positive climate actions for the region, as well as emissions reductions for SPT, as a public body we will rely heavily on continued government funding to ensure that we have the appropriate resources in place to deliver our action plan and achieve our net-zero ambition.

5.3 Our Net-Zero Pathway

In developing and evaluating our carbon reduction targets, SPT has developed a net zero pathway which sets a trajectory by which we must reduce our emissions to meet our respective 2030 and 2045 targets.

The net zero pathway is set out below (Figure 2) and is bespoke to SPT. The starting point for the decarbonisation trajectory reflects SPT's 2022-2023 baseline emission total of 13,145 tCO2e. The trajectory is then informed by near-term and long-term targets that follow the principles of the SBTi. This scenario sets an ambitious target of achieving Net Zero by 2030 for Scope 1 in alignment with Glasgow City Council's Net Zero carbon target of 2030.

SPT's baseline Scope 2 emissions are zero as our electricity is sourced from emission free sources. Therefore, SPT will focus on decarbonising Scope 1 emissions to achieve the 2030 target. Specifically, SPT will require to take action in the near term to eliminate or at a minimum, significantly reduce, our Scope 1 emissions, in particular from Natural Gas which contributes to 97% of SPT's Scope 1 emissions overall and Mobile Fuel Combustion which contributes to the remaining 3%.

To support our approach, we have established near-term and long-term targets for Scope 1 and Scope 3 as follows:

Scope 1:

The near-term target is set for 2028 – 50% reduction in scope 1 against the baseline.

The long-term target is set for 2030, meeting Glasgow's net zero target of 2030

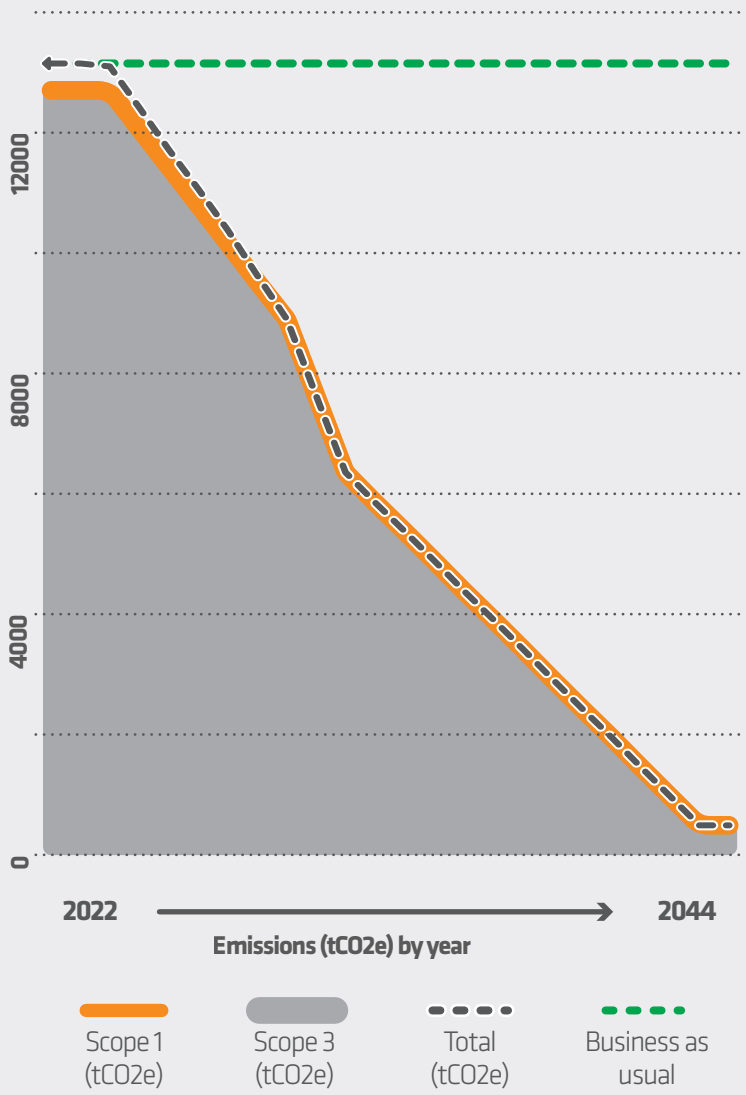
Scope 3:

The near-term target is set for 2032 – 50% reduction in scope 3 emissions against the baseline in accordance with the SBTi criteria; a 10-year target was selected to allow SPT the maximum amount of time to implement methods of emission elimination and mitigation within the near-term.

The long-term target is set for 2045, meeting Scotland net zero target of 2045.

The net zero trajectory was modelled taking into account the mitigation measures to be implemented in both the near-term and long-term (illustrated in Figure 5), along with additional assumptions. These are explained below according to their emission scope and detailed further within the Net Zero Action Plan.

Figure 2. SPT net zero trajectory
with near-term and long-term targets for scenario 1.



The emission reduction pathway is compared against a business-as-usual (BAU) pathway which provides a trajectory of the emissions assuming business remains the same at SPT i.e. with no significant mitigations being put in place. The BAU pathway (dotted green line) modelled does not account for any potential organic growth in SPT operations e.g., increase in building occupancy, number of employees or other forms of business development. The only consideration to emission reduction within the business-as-usual scenario is the impact of UK national grid decarbonisation which uses the estimated trajectory of CO2 intensity of electricity generation (gCO2/kWh) modelled by the National Grid ESO Future Energy Scenarios. However, this is not applicable for SPT as SPT's Scope 2 emissions are zero since our electricity is zero emission.

6 Net-Zero Action Plan

Drawing on the work undertaken to establish SPT's operational boundary, resultant carbon footprint and identified priority carbon 'hotspots', the following section sets out SPT's Net Zero Action Plan. The Plan reflects the evidence gathered in determining SPT's carbon footprint and reflects internal discussion undertaken, including through workshops with SPT's senior management team and department heads. It also adopts a best practice approach utilising the IEMA GHG Management Hierarchy which sets out four ways through which organisations can manage greenhouse gas emissions:

- Eliminate - Aiming to prevent GHG emissions altogether,
- Reduce - Aiming to achieve real and relative (per unit) reductions in carbon by increasing efficiency in operations, processes, fleet, and energy management;
- Substitute - Adopting renewables or low carbon technologies to reduce the carbon GHG intensity of energy use and of energy purchased; and
- Compensate - Where residual emissions are 'unavoidable' this should be balanced with removals or offsets, while supporting climate action and developing carbon markets.

6.1 Buildings and energy

6.1.1 SPT Property Portfolio

Emissions associated with SPT's property portfolio are direct Scope 1 and 2 emissions resulting from energy used in company owned facilities, vehicles, and plant equipment. Scope 1 includes direct emissions sources resulting from on-site stationary and mobile combustion sources e.g., heating and fuel, and Scope 2 are indirect emissions from power plants providing purchased electricity, steam, or heat. For the purpose of this Strategy, fleet vehicle emissions are detailed in the next section under 'Fleet and infrastructure'. SPT's estate is comprised of the following properties:

- Head office, St. Vincent Street, Glasgow
- 15 Subway stations including our Subway depot at Broomloan
- SPT bus stations - Buchanan, East Kilbride, Hamilton, Greenock, Govan Interchange and Partick Interchange.

Effective estate and asset management, as outlined in the Net-Zero Estate Playbook (NZE), plays a pivotal role in driving down emissions and costs for SPT. Through focus on the identified priority carbon hotspots and by implementing strategic processes to optimise energy use and foster efficient practices across our buildings and facilities, we will identify targeted interventions. This will enable SPT to systematically embed carbon mitigation measures into every aspect of estates management to reduce emissions and track progress to achieving our Net-Zero ambition and targets.

Our approach to reducing these emissions across our estate is twofold - we are committed to improving energy efficiency in our buildings and operations, and implementing measures that support a transition to cleaner energy sources including substituting where possible existing carbon energy use with the delivery of green/blue infrastructure.

6.1.2 Energy efficiency

SPT has a strong track record of improving energy efficiency across our estate. This includes the introduction of heat pumps to reduce the environmental impact of our heating systems, energy efficient lighting improvements at our Subway stations, and new LED lighting upgrades across our buildings. Most notably, a key step forward in SPT's progress on carbon reduction and energy efficiency, SPT's electricity including our fleet of electric Subway trains, is generated from renewable sources in the UK, backed by Renewable Energy Guarantees of Origin (REGOs) which have a zero emissions rating.

This establishes a strong foundation for our work going forward on operational energy efficiency, and we will advance in this area by implementing further energy efficiency improvements, detailed below.

Due to the varied nature of SPT's operations, our corporate estate has distinct energy requirements, particularly at Broomloan Depot which requires unique energy solutions to decarbonise. This diversity in energy needs underscores the importance of tailoring our approach to energy management across our estate. For instance, while our main office may prioritise energy-efficient lighting, heating, ventilation, and air conditioning (HVAC) systems, our Broomloan depot may require specialised equipment for vehicle maintenance and storage facilities. Recognising these differences, our action plan will target each site reflecting their unique demands.

Table 4: Energy efficiency measures for SPT property portfolio

Supplier engagement	Engage with key maintenance contractors to identify current processes in place to manage energy demand and explore opportunities for improvement.
Identify efficiency improvements	Install smart meters and energy monitoring tools
	Invest in energy-efficient equipment (lighting, plant, equipment, HVAC and IT)
	Understanding and seeking benefits of natural shading
Implement energy efficiency measures	Undertake optioneering to consider most appropriate measures for SPT.
	Explore potential funding opportunities for energy efficiency measures/projects.
Staff awareness / training / skills	Partake in 'Switch on to Switch Off' Campaign
	Survey equipment and appliances to develop an understanding of lighting/equipment shut down capability.
	Establish 'green team' or environmental dept. champions to take ownership of energy use in their departments.
	Provide online resources to develop employee awareness of being more energy efficient and how this can be embedded within work-from-home lifestyle

6.1.3 Decarbonising heat

Reducing reliance on natural gas as a heating source is pivotal to reducing our Scope 1 emissions. Our carbon baseline assessment identifies natural gas as a major contributor to SPT's Scope 1 emissions generating 414 tCO2e in 2022-2023.

In alignment with the IEMA hierarchy, SPT is committed to decarbonising heat through a strategic approach, first reducing reliance on natural gas as a heating source through energy efficiency measures and exploring opportunities to substitute current fossil-fuel technologies with clean energy alternatives.

6.1.4 Alternative heating sources, low-carbon retrofits, heat pumps

There is an opportunity for SPT to work with Glasgow City Council on its emerging district heat network. This has the potential to provide an accessible, reliable, and efficient source of heat across large parts of the city. District heating networks supply low carbon or renewable heat from a centralised source to multiple buildings. District heating can be less intensive than retrofitting solutions, and the Scottish Government's Heat in Buildings Strategy[14] has identified heat networks as a key strategic technology to decarbonise polluting heating systems. SPT is currently in conversation with Glasgow City Council officers to examine the options that are most suitable for SPT's estate.

Through SPT's Climate Change Strategy Action Plan, SPT will explore such alternative heating sources which have the potential not only to mitigate emissions arising from SPT's estate but also provide benefits in terms of the adaptation of our property portfolio by enhancing climate resilience.

6.1.5 Green/blue infrastructure – Nature based solutions (NBS)

The climate emergency is also exacerbating other global phenomenon including the nature emergency and biodiversity loss. Nature based solutions incorporate green infrastructure (GI) as a tool to restore ecosystems and provide ecological, economic, and social benefits to society. Examples of blue infrastructure include sustainable urban drainage systems (SuDS) or effective stormwater management.

In alignment with Adaptation Scotland guidance[15], SPT will assess the feasibility of embedding GI across our estate on a site-specific basis. This may include retrofitting our buildings to improve performance as climate impacts increase. For SPT, increasing GI throughout our property portfolio can reduce our Scope 1 emissions from natural gas for heating. For example, updating existing solar panels at Buchanan Bus Station and exploring options for a green or bio solar roof can improve building insulation, helping to reduce energy use and generate energy. As hot periods become more common, green roofs can provide natural insulation, reducing the need for heating in winter and cooling in summer.

In line with National Planning Framework 4 (NP4)[16], which defines blue and green infrastructure as a core principle to nature restoration, SPT will seek to maximise biodiversity net-gain across our estate, to support a green recovery and provide additional social benefits. For example, well-designed blue or green infrastructure can mitigate noise pollution, air pollution and address stormwater problems, helping to alleviate flood risk in an urban setting. In contrast to single functioning grey infrastructure, which commonly exacerbate drainage problems, green infrastructure has the potential to deliver multiple co-benefits for local communities. Green Infrastructure can provide better opportunities for active travel and physical activity, creating quality, nature positive green spaces and stronger healthier communities.

6.2 Fleet and infrastructure

A critically important aspect of decarbonisation of the transport network, is the adoption of electric vehicles (EVs). SPT is committed to working with our partners to facilitate and promote an accelerated transition to ultra-low emission road transport vehicles as well as the implementation of electric vehicle charging infrastructure.

Our strategy action plan will focus on our Scope 1 mobile fuel consumption emissions from SPT's business fleet. We will also support decarbonisation of staff travel and supported services through delivery of electric vehicle charging infrastructure (EVCI) at our bus stations. This will contribute to improving air quality in the region, as well as the phase out of new diesel and petrol public sector vehicles by 2025.

6.2.1 Business fleet electrification

Actions to mitigate these emissions will involve first reducing fuel consumption in the near term to minimise fuel waste, and then substitute in the long term through increasing electrification (e.g. hybrid gas-electric, plug-in hybrid, battery electric) to support a full transition to an electric business fleet.

SPT currently own and operate 21 business vehicles, 7 of which are electric vehicles (EV). We are committed to continuing work to transition our fleet to zero emission and have prepared an electric vehicle investment plan to convert SPT's vehicle fleet to zero emission vehicles over the next 5 years. The plan ensures that SPT supports the Scottish Government's Climate Change targets for phasing out diesel and petrol vehicles within public sector fleets by 2025.

In the short term, mitigation efforts will be focused on maximising fuel efficiency in our business vehicles to reduce fuel waste and provide further training and support for staff to achieve this.

6.2.2 SPT supported bus services

In accordance with the GHG Protocol Scope 3 guidance, SPT's fleet of 39 diesel buses that support delivery of local supported bus services are categorised as downstream leased assets for emissions reporting[17]. These emissions contribute to 61% of SPT's carbon baseline, and therefore are a significant mitigation priority albeit in the longer term.

While SPT is not directly responsible for the emissions of vehicles we do not own, emissions arising from supported service contracts are included in our Scope 3 emissions and SPT aims to work with Transport Scotland, bus operators and other partners towards the transition to zero emission buses.

In 2023, SPT submitted a bid to introduce zero emission buses to our fleet via the Scottish Zero Emission Bus Challenge Fund (ScotZEB2). Unfortunately, the bid was unsuccessful, but had it proceeded, the new zero emission buses would have delivered significant emission reductions for SPT, our passengers and the wider community. SPT is currently reviewing the opportunities to secure future funding and we are positive that a successful and compelling case can be made for such investment.

The availability of this type of funding is paramount to enabling our transition to a greener fleet and achieving our Net-Zero targets. Despite this setback, there are actionable steps within our own control that we intend to take to mitigate emissions from our supported bus fleet. These are set out in our Net-Zero Action Plan in Appendix 1. This includes tackling fuel waste idling and improving driving efficiencies.

Further collaboration with our council partners and bus operators will also be required to address emissions arising from SPT's subsidised bus services, schools transport and community transport. SPT will work to reduce these through enhanced reporting to collect more detailed fuel and mileage data within each contract or service.

6.2.3 Smart transport infrastructure

In alignment with the Regional Transport Strategy (RTS2) and to promote a regional and co-ordinated approach to electric vehicle network charging, SPT will work with regional partners to take forward our approach to electric vehicle charging across our estate. Mitigation actions to substitute emissions in the near term for both business vehicles and supported bus services include the implementation of EV charging stations and low carbon fuelling infrastructure.

The Strategy Action Plan will take forward actions to deliver electric vehicle charging infrastructure within our own estate and we have already made good progress in this area. SPT currently has 8 charging points in Buchanan Bus Station and 3 charging points in Broomloan depot. These charging points are used to charge SPT's fleet of electric vehicles (cars, vans).

In 2023, SPT developed an EV Charging Delivery Plan which explored the feasibility of options for our estate. This work will inform our forward approach as we aim to deliver further charging options for our wider estate, including the installation of additional EV charging infrastructure at Subway Park and Ride locations.

6.3 Circular economy and resource optimisation

At SPT, we understand that the way we procure goods and services has a far-reaching impact, and at 5% of our total carbon footprint, we also understand that supplier engagement and collaboration is critical to addressing this. We are committed to supporting a low carbon economy which prioritises sustainable goods and services and embeds sustainable considerations into our procurement processes. Through maximising opportunities to minimise waste generation and exploit re-use or recovery mechanisms in the near-term, we aim to enhance resource efficiency throughout our supply chains and develop mechanisms to improve wider sustainability in procurement.

SPT is obligated by the Procurement Reform (Scotland) Act 2014 to consider sustainability in all contracts offered to the market. This is referred to as the "Sustainable Procurement Duty" and applies to Supplies and Services contracts in excess of £50k and in Works contracts over £2m. In accordance with this, sustainable solutions are embedded within the specifications of all regulated contracts, with progress tracked and reported.

SPT has a skilled and knowledgeable Procurement team who understand the wider impact of, and the need to urgently reduce, our Scope 3 emissions. SPT's Procurement team and officers across SPT Departments have undertaken training and guidance on the Sustainable Procurement Duty. We have already begun work in this area and we aim to do more as described below.





6.3.1 Being more resource efficient (supply chain)

The first step to addressing indirect emissions from our supply chain is to undertake a review of our procurement activities to identify opportunities to minimise waste and promote the principle of the circular economy (where materials are re-used, recycled, or repurposed).

As a public body, our priority will be to address our non-production related procurement activities (indirect procurement) which will transform how we make purchasing decisions in relation to operations resource management (e.g. products used in office settings such as office supplies) and products used in manufacturing settings (e.g. depot and maintenance supplies, including spare and replacement parts). By prioritising sustainable goods such as items made from recycled materials or repurposed from waste materials and reducing the use of single use items like single use plastic packaging including paper towels or paper cups, we can decrease the need for raw material extraction, thereby lowering emissions associated with manufacturing processes.

6.3.2 Wider sustainability in procurement

We aim to drive emission reductions in our supply chains in the long term by fully embedding carbon impact considerations in procurement decisions. Work will be undertaken to develop a systematic approach to integrate whole-life costing and prioritise suppliers and products based on not only cost and quality, but also on their environmental and social impacts. This may include updating our tender process as new guidance emerges, to request increasingly accurate criteria on suppliers' net-zero commitments allowing SPT to fully consider the environmental impact of investment decisions.

Key to formalising this commitment to sustainability is the adoption of a Sustainable Procurement Strategy. We will liaise with our suppliers to establish and promote their commitment to reducing their impact through initiatives such as the Science Based Targets Initiative. This will enable SPT to significantly improve how we engage with the market and work together to promote a whole-life cycle approach and enhance transparency in our supply base.

Through improved supplier selection, engagement, and review, SPT will improve the accuracy of greenhouse gas impact reporting, as well as promote resilience in our systems, networks, and supplies.

6.3.3 Following best practice principles

As a significant public body, SPT has the ability to positively influence suppliers to drive decarbonisation efforts across our supply chains, while also helping us achieve our Net-Zero targets. SPT will prioritise collaboration with our stakeholders and key suppliers to develop a more accurate understanding of our procurement activity, and to ensure that we explore all available opportunities to innovate.

To maximise our impact and where we need to improve, we will liaise with suppliers to collect accurate primary (supplier-specific) data of Scope 1, 2 and 3 emissions. By engaging at the earliest opportunity, we can build on our current spend-based methodologies to gather supplier specific information, providing further detail on the sustainability of our supply chains. To inform this work, we will develop a supplier survey requesting information from our supplier base relating to their progress and commitment to Net-Zero through initiatives such as the Science Based Targets Initiative. We aim to gain a better understanding of our supplier's commitment to the following: -

- Net-Zero
- Emissions reporting and monitoring of data
- Progress on mitigation/adaptation
- Their requirements for improvement e.g., guidance on collaborating effectively
- The challenges/opportunities open to them to improve their emissions reporting

6.3.4 Waste management

SPT's approach to effective waste management is aligned to our work on improving sustainability throughout our supply chains. By increasing sustainable purchasing decisions and reducing waste generation at source, we avoid subsequent emissions resulting from transportation and disposal. By adopting a circular economy approach, waste management can become a driver for innovation, resilience, and long-term environmental stewardship.

We aim to build on our progress so far, where we have implemented a zero-waste to landfill policy and carry out regular reviews of our annual waste plan, to identify further efficiency improvements and opportunities. We will continue to explore innovative solutions to reduce our waste, maximising our involvement in opportunities for circular or zero-waste initiatives or recycling programmes.

6.4 Capital Goods

Carbon hotspot analysis highlighted that 29% of SPT's emissions are derived from our Capital Goods. As defined by the GHG Protocol and similar to financial accounting principles, capital goods are treated as fixed assets such as plant, property, and equipment (PP&E). Examples for SPT include equipment, machinery, buildings, facilities, and vehicles. These assets contribute significantly to greenhouse gas emissions throughout their lifecycle, from production to end of life disposal.

6.4.1 Capital programme

The actions below set out our priorities to address these emissions and highlight opportunities for SPT to engage with our local authority partners to reduce our impact collaboratively.

There are opportunities to embed Environmental, Social and Governance (ESG) considerations into SPT's capital expenditure. Early workstreams are underway to improve the data management and monitoring of capital projects. Extensive engagement with local authorities and suppliers will be required to ensure that there is a process in place to account for the carbon impact of SPT's spend.

6.4.2

In 2024/2025, SPT did not receive a capital grant from the Scottish Government which affects our ability to deliver our capital programme and associated mitigations. However, SPT remain committed to achieving our emission reduction targets and the implications of the funding situation for the Climate Change Strategy will be factored into our processes as we move forward.

6.4.3 Civil engineering and construction services

Through our in-house facilities team and working with our external contractors, SPT conducts both planned and reactive maintenance across our estate. As a longer-term ambition, SPT aim to improve how we procure and deliver construction projects. In order to understand where the impacts are, we plan to review capital purchases to minimise waste and increase circularity. This will be developed in line with our actions to reduce the impact from purchased goods and services.

For capital goods, such as equipment and infrastructure, the focus is on reducing upstream (i.e., cradle-to-gate) emissions associated with the entire lifecycle of goods we purchase. This may include maximising waste material recovery and utilising closed loop systems for on-site material recovery, something SPT already do at our Broomloan Depot. We intend to investigate low carbon materials and find alternatives to traditional concrete to reduce the amount of embodied carbon emitted during construction, maintenance, and end of life disposal.

The interconnected nature of SPT's capital goods and purchased goods and services means that we can review purchases holistically to identify synergies between capital investments and procurement decisions in alignment with our Net-Zero targets.

6.6 Climate Resilience and Adaptation

All climate change scenarios for the Glasgow City Region show that the region will experience increasing extreme weather, heavier rainfall in winter and drier summers, higher average temperatures, sea level rise and increased likelihood of flooding. The annual economic cost of climate change in Glasgow City Region is estimated to be £400 million each year by the 2050s - around 1% of current GVA[18]. By understanding our climate vulnerabilities and taking proactive, prioritised actions, SPT can reduce adverse impacts on our staff, passengers, infrastructure, and services and be a key partner in ensuring the transport network is reliable and resilient.

6.6.1 Approach

To ensure continued and effective functionality of SPT's operations and safeguard our assets and infrastructure under changing climatic conditions, we will develop a corporate approach to climate risk within our organisation which supports a green recovery and promotes sustainable, nature-based solutions where possible. This will provide a consistent approach to how we consider and respond to climate vulnerability across SPT's physical assets, transport services, future projects, and key infrastructure dependencies.

Adaptation is a legislative requirement for the public sector and is supported by policy drivers. The Climate Change (Scotland) Act 2009 requires the Scottish Government to implement a statutory Adaptation Plan. Using Adaptation Scotland's Climate Risk Assessment and wider set of supporting tools within the Adaptation Capability Framework, SPT will generate an organisation-wide climate risk assessment which will be integrated within existing corporate risk planning procedures. By setting a framework and knowledgebase for adaptation, subsequent planning and targeting of our adaptation response will help prioritise resources towards the most vulnerable receptors and highest risk activities.

It is important to recognise the need for adaptation, its integration with emissions management, and the wider impact our activities have. Therefore, as part of our future adaptation planning, climate risk associated with new infrastructure and other investments in public transport services will be measured through utilisation of an asset life cycle assessment. This will include a cross-compliance check in relation to emissions reduction potential, environmental impacts, and wider equalities issues. In turn, this will enable SPT to consider and develop nature-based interventions to help manage our climate risks. This will be delivered through the implementation of green/blue infrastructure within our property portfolio, reducing our Scope 1 and 2 emissions, and potentially providing valuable co-benefits for the wider community through increased flood defence, green space creation and biodiversity enhancement.

6.6.2 Climate Risk Screening

SPT has undertaken an initial screening to determine the high-level climate risks associated with our activities (see Appendix 4). This screening evaluated potential risks to infrastructure, disruption of operations, increased maintenance needs, and impacts on user safety and accessibility. A basic red-amber-green notation has been used in the map to assign an indication of relative prioritisation of the (grouped) climate risks to the SPT assets identified, together with an illustration of the principal types of climate-related hazards which each asset group likely to be exposed to. A similar scale has been used in the map to indicate relative upstream and downstream dependency of the supply networks and end users of transport systems respectively.

To build on this, the scope for the screening and wider Climate Change Risk Assessment (CCRA) is detailed below and contains the critical elements and relevant boundaries associated with our corporate activities.

	SPT Function
CCRA Scope	**1** Supply & Value chain (Upstream)
	Electricity supply networks
	Information & communication networks
	Local road networks
	Key suppliers and contractors
	2 SPT Operations - Assets and services
Climate Screening	SPT Estate (Properties)
	Subway system, depot & communications
	Bus stations, shelters & stops
	Operation of bus services
	3 Transport Users (Downstream)
CCRA Scope	Travelling Public (Customers)
	Other Public Transport Operations (Connecting Services & Facilities)
	Facilitating Business Travel
	Supporting Essential Community & Municipal Services

The full strategic climate risk assessment will include an analysis of regional climate characteristics relevant to the west of Scotland. These include temperature fluctuations, precipitation patterns, and the frequency and intensity of extreme weather events. Understanding this exposure is essential in making informed decisions and developing strategies and actions for climate risk mitigation. Areas for consideration include:

- SPT's transport infrastructure may be at risk from extreme weather events, sea-level rise, and flooding.
- Supply chains, integral to our operations, are susceptible to disruptions caused by shifts in weather patterns and the availability of resources.
- Operational downtime, arising from factors like extreme heat or participation poses risks to schedules and delivery of essential services for the travelling public.

By adopting a corporate approach to risk assessment, we can ensure consistency of consideration of climate vulnerability enabling SPT to develop an inventory or register of climate risks which can then be assessed to determine a quantified level of risk based on likelihood and level of impact.

6.6.3 Climate action engagement

Early engagement with key suppliers and partners is critical to promote resilience in inter dependant systems, networks, and supplies, as well as promote the need for adaptation action across the public and active transport sector in the west of Scotland. By doing so, SPT can raise expectations and demands in relation to the climate policies and procedures of our wider value chain.

Training will be provided for key SPT staff to support the Strategy's implementation and ensure an appropriate level of capacity to manage this within the organisation. This will include engaging with our Health and Safety and Facilities teams to integrate climate change adaptation with our health and safety procedures, particularly on emergency preparedness.

As noted, SPT is a member of the Climate Ready Clyde partnership, the regional adaptation partnership for the west of Scotland. Together with Network Rail, SPT is a joint lead of the Climate Ready Clyde Regional Transport Climate Resilience Group which works to increase co-ordination among transport partners on climate adaptation and resilience across the regional network. We also engage with other local authorities, infrastructure operators and national bodies through the Public Sector Climate Adaptation Network (PSCAN) to benchmark our progress and identify and share learning on climate change adaptation.

7 Delivery and implementation

Looking ahead its crucial to understand that our approach to delivering and implementing the Action Plan needs to be flexible. Given the fast-paced nature of change in this field, we must be ready to adjust our strategies accordingly. By staying adaptable, we can effectively respond to new policy developments, embrace innovative solutions, and maintain the relevance and effectiveness of our efforts in addressing climate change.

7.1 Governance

To ensure that SPT has oversight and accountability on emissions reduction progress and projects delivered through the Action Plan, collaboration is vital at strategic and operational levels. Through clear leadership, shared responsibility and collaboration, decision making, resource allocation and risk management can be effectively managed to enable SPT to navigate complex challenges and maximise mitigation and adaptation opportunities.

7.1.1 The Carbon Management Working Group (CMWG)

SPT has refreshed its climate change governance structure to ensure greatest focus on delivery of the CCS. A new Net Zero Delivery Group has been established which reports directly to SPT's Senior Management Team on a regular basis. In addition, there are regular net zero progress reports submitted to SPT's Strategy & Programmes Committee.

The Net Zero Delivery Group remit will reflect the priorities within the Action Plan, acting as a focal point for the strategic priorities within. The remit of the group will therefore reflect the Strategy objectives and net-zero targets, enabling clear leadership and direction across SPT. This will foster collaboration, engagement, and knowledge sharing, enabling shared responsibility and efficient and effective management of the Strategy Action Plan.

7.2 Collaborative climate action

SPT is committed to effecting change in our business practices to accelerate a reduction in climate emissions that contributes to Glasgow's 2030 net-zero carbon target[19], both as a partner and board member of the Sustainable Glasgow Initiative, and a Climate Change Champion signatory to the Green Economy Hub Charter. SPT's participation provides great opportunities to collaborate on effective climate action in the region, demonstrating our commitment as a significant public body, and contributing to emissions reduction of the wider transport network. Similarly, our membership of the Climate Ready Clyde Partnership and our commitment to the Glasgow City Region Adaptation Strategy provide valuable opportunity to influence the adaptation of the west of Scotland's transport network.

7.3 Data and understanding

Effective monitoring and on-going evaluation of the Strategy will rely on the availability of robust data to inform decision making and enable enhanced greenhouse gas reporting. It is crucial that the data on which our Strategy relies becomes increasingly accurate over time, building on annual emissions reporting as more up to date data becomes available. Available data from partners and stakeholders will be continually evaluated as climate change data, legislation and policy evolves.

7.3.1 Continuous improvement

By implementing effective improvement mechanisms, emissions data and carbon accounting methodology can be improved annually to increase accuracy and ensure that we develop a deeper understanding of the complex dynamics of climate change and the impacts for SPT, our staff and our passengers and customers. This will allow us to refine both the Strategy and our targets, making it more responsive. A key example of this is the development of an environmental management system (EMS)[20] to centrally organise this data for improved emissions tracking and reporting purposes.

7.4 Staff training and upskilling

Achieving net-zero will require contributions and commitment from SPT staff at every level, to inspire change and encourage participation in climate positive behaviours for the organisation. Behavioural change is essential to the implementation of our Action Plan. It is crucial that SPT's staff understand their contribution to emissions arising from staff commuting or waste generation and how they can contribute to mitigating our impact to achieve our Net-Zero targets through informed decision making.

By embedding climate change considerations into staff induction training for example, we can ensure that staff awareness of climate change impacts and how they can contribute to reducing them is clear from the outset of their career at SPT. This will not only build environmental awareness and stewardship across the organisation, but it will also help to drive efficiency and reduced costs for energy consumption. By making our staff more aware of their impacts we can build opportunities for positive behavioural change in the workplace.

7.5 Monitoring and reporting

We will continuously monitor our performance and review the targets and commitments for climate mitigation and adaptation to reflect progress and priorities taking into account future changes in national legislation and policy. SPT will prepare regular reports to SPT's Partnership Board on the progress of the Strategy Action Plan and targets and plan to review and refresh this Strategy at least every five years.

7.6 Way forward

As we take forward the Strategy, we will refine the Action Plan to support effective implementation including detailed prioritisation, feasibility, and costing. The Strategy will also guide development of new master planning or projects within SPT, providing a strong foundational framework to embed climate change considerations into future work. The development of the Clyde Metro will therefore provide significant opportunity for SPT to demonstrate our increasing commitment to climate change mitigation and adaptation, while contributing to the City Region's ambitions to improve the health and wellbeing of its people by delivering a decarbonised and climate resilient transport network.

While this SPT Climate Change Strategy is, as noted, a corporate strategy relating principally to SPT's operations and estate, it nonetheless aligns with SPT's Regional Transport Strategy and its commitment to support the wider decarbonisation of the transport network. SPT's approach to the decarbonisation of our estate and operations complements our wider strategic role working with our partner Councils, Transport Scotland, transport operators and other stakeholders to deliver reduced emissions and promote adaption of the transport network.

Further details on the actions we will take to support decarbonisation of the west of Scotland's transport network will be published shortly through the RTS Delivery Plan.

Appendices

Appendix 1: **SPT's Net Zero Action Plan**

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action

1	**Natural gas**	Reduce	Near-term	High	**Move away from gas for heating offices, buildings, and bus stations:**
					• Improve energy efficiency measures in property portfolio (buildings) where gas is in use such as
					  ◦ Installing smart meters and energy monitoring tools
					  ◦ Investing in energy-efficient equipment (lighting, plant, equipment, HVAC, and IT)
					  ◦ Understanding and seeking benefits of natural shading
					• Investigate the feasibility of alternatives (heat pumps/electric) for longer term
					• Investigate the local area / stakeholder commitment for decarbonising energy systems
					• Scope to include sustainable technology alternatives such as heat pumps within master planning.

		Substitute	Near-term	Medium	**Green/blue (nature-based) infrastructure** • Replace dated solar panels and explore options for bio solar roof. • Review estate on site-specific basis to explore opportunities to implement green infrastructure.
1	**Mobile Fuel Combustion**	Reduce	Near-term	Medium	• Reduce fuel consumption from vehicles e.g., minimise fuel waste
		Substitute	Long-term	High	• Switch to electric fleet for SPT owned vehicles • Increase vehicle electrification (hybrid gas-electric, plug-in hybrid, battery electric)

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action
2	**Electricity**	**Reduce**	Long-term	Medium	**Improve energy efficiency measures in property portfolio (buildings) where gas is in use such as** • Installing smart meters and energy monitoring tools • Investing in energy-efficient equipment (lighting, plant, equipment, HVAC and IT) • Understanding and seeking benefits of natural shading **Implement an effective Energy Efficiency Policy to reduce energy consumption for SPT's building portfolio. This may include:** • Prioritise obtaining more accurate and localised readings on energy consumption. • Partake in 'Switch on to Switch Off' campaign ◦ Survey equipment and appliances to develop an understanding on what is able to be turned off at the end of each day ◦ This could be managed by delegated 'environmental champions' of the office ◦ Develop signage to encourage participation in recycling initiatives and promote environmental awareness • Ensure optimal use of heating ◦ setting office thermostat around 19 degrees with the addition of internal heat gains from equipment and lighting ◦ Invest in a Building Management System (BMS) (Capability to reduce energy costs by 10% or more) • Increase use of highest energy-rated appliances • Prioritise use of Light Emitting Diode (LED) lighting and Passive Infrared (PIR) sensors • Brief staff and new starters on Energy Efficiency Policy • Provide online resources to develop employee awareness of being more energy efficient and how this can be embedded within work-from-home lifestyle

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action
3	Downstream Leased Assets	**Reduce**	Near-term	Low	**Fuel waste** Reduce the fuel waste during vehicle idling & improve driving efficiencies
		Substitute	Near-term	Medium	**Fleet Electrification** • Bid to secure funding for electric buses (EVs) • Convert SPT's vehicle fleet to zero emission vehicles • Investing in Fuel cell vehicles (FCVs) • Investing in Plug-in hybrid vehicles (PHEVs) **Smart Transport Infrastructure** • Provide EV charging station • Low carbon fuelling infrastructure
			Long-term	High	• Full electric infrastructure • Electric fleet policy in place • Switch to low/zero carbon fuel e.g. hydrogen

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action
3	Capital Goods	**Substitute**	Near-term	High	**Electrification of vehicles** • Consider investing in electric or lower carbon (hybrid) alternatives • Explore further opportunities to provide funding support to SPT partner councils to promote more sustainable transport modes including enhanced electric bus infrastructure across the network.
		Substitute	Long-term	High	**Full electric fleet** • Prioritise purchase of Electric Vehicles (EV) instead of diesel • Local Civil engineering & construction services / companies • Construction waste material recovery, utilise closed loop system for waste disposal • Review of purchases to minimise waste and increase circular economy principles • Investigate in low carbon materials and find alternatives for traditional concrete in construction work (e.g. GGBS, LC3 cement, ...) **Capital Innovation Programme** • Update process and plans to improve data management/monitoring of projects • Include ESG consideration into contracts

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action
3	Purchased Goods and Services	Reduce	Near-term	Medium	**Being more resourceful** • Prioritise purchasing more sustainable goods e.g., recycled paper, no single-use plastic packaging • Use local suppliers where possible • Reducing waste which will reduce spend and emissions • Review of purchases to minimise waste and increase circular economy principles
			Long-term	High	**Wider sustainability in procurement** • Request suppliers to commit to the 1.5-degree limit ambition e.g., set a net zero target for 2050 (the latest) if they don't have one • Add climate/carbon to procurement decisions to allow consideration of suppliers' carbon footprint in investment decisions ◦ Updating tender process to include further criteria on carbon/net zero plans ◦ Engage with brands/products which have recycled content/sustainable accreditation or labelling • SPT adopt a Sustainable Procurement Strategy ◦ Use suppliers that have signed up to SBTi ◦ Use suppliers that use renewably sourced electricity ◦ Use local suppliers that have net zero commitment ◦ Use suppliers that utilise plastic free packaging (e.g., for IT suppliers) ◦ Prioritise strategy which focuses on supplier selection, engagement and review **Following best practice principles** • Engaging with suppliers to collect accurate primary (supplier-specific) data of Scope 1, 2 and 3 emissions • Potential for a supplier survey to engage with suppliers and ensure they are actively working towards Net-Zero/climate change commitments etc. • Work with councils and operators to identify ways of reducing emissions from Schools transport

Scope	Emission Type	IEMA GHG Management Hierarchy	Net Zero by 2030	Indicative Cost Hierarchy	Action
3	Fuel and Energy Related Activities	Reduce	Near-term	Low	• Reduce energy use (resulting in reduction in well-to-tank and Transmission and Distribution (T&D) losses related emissions)
		Substitute	Long-term	High	• Invest in low carbon technologies which have lower T&D losses.
3	Waste	Reduce	Near-term	Low	Ensure effective waste management practices are in place to increase efficiency throughout all waste streams e.g. recycling, food waste.
			Near-term	Low	Promote purchasing of office goods that don't use single-use packaging
			Near-term	Low	Minimise use of harmful chemicals in cleaning products used in office environment
			Near-term	Medium	Opt for zero landfill waste disposal methods only
			Near-term	Low	Donate old computers and associated equipment to charities and send remaining e-waste (including laptops, monitors and other e-waste) to recycling plants
			Near-term	Medium	Maximise participation in recycling/zero-waste initiatives e.g.., Terracycle for traditionally non-recyclable materials e.g., batteries, office supplies or empty snack wrappers.
3	Business Travel and Commuting	Eliminate	Long-term	Medium	Presumption against domestic flights for business travel purposes
		Reduce	Near-term	Low	Effective promotion of active and public transport across SPT for both commuting and business travel.
			Near-term	Low	Increase bike lock and storage facilities and promote cycle-to-work scheme
		Substitute	Long-term	Medium	Only hire electric vehicles
		Compensate	Long-term	Medium	Sustainably offset residual emissions

Appendix 2: **Data collection methods**

Scope	Category	Method	Emission factors	Assumptions	Improvement mechanisms
1	**Natural gas**	Data gathered from energy system data. Calculated using Greenhouse Gas Accounting Tool and the appropriate stationary combustion emission factor for natural gas.	UK Government conversion factors for company reporting of greenhouse gas emissions 22/23	N/A	N/A
	Refrigerant (fugitive)	Lack of data on specific leakage rates/quanitity and type of equipment resulted in average method exploited e.g. average leakage rate. E.g. fugitive emissions (kg CO2e) = Quantity of equipment X DEFRA Average annual leakage rate (%) for refrigeration/air-con/HVAC	UK Government conversion factors for company reporting of greenhouse gas emissions 2022/2023	Average leakage rates used for calculation.	Lack of consistent data records on maintenance, leakage rates/top up for air conditioning equipment. Future reporting should include accurate service records to capture top up refrigerant (kg) used per piece of equipment. Compilation of full asset list of equipment required to capture entirety of emissions impact.
	Mobile fuel combustion (Fuel in company-owned vehicles)	Taken from fuel data records. Quantity of vehicle type (diesel), distance travelled in reporting year (km/miles), fuel consumption (litres). E.g., Fuel consumption by type X conversion factor for diesel.	UK Government conversion factors for company reporting of greenhouse gas emissions 2022/2023	Carbon intensity of electricity grid (energy mix)	Further work is required to capture useable data to monitor and report on annual mileage and vehicle types for the reporting year.
2	**Electricity use**	Location based - Annual kwh of elec X grid factor Market based- Considers use of renewable electricity = Zero carbon for reporting year	UK Government conversion factors for company reporting of greenhouse gas emissions 2022/2023	N/A	N/A

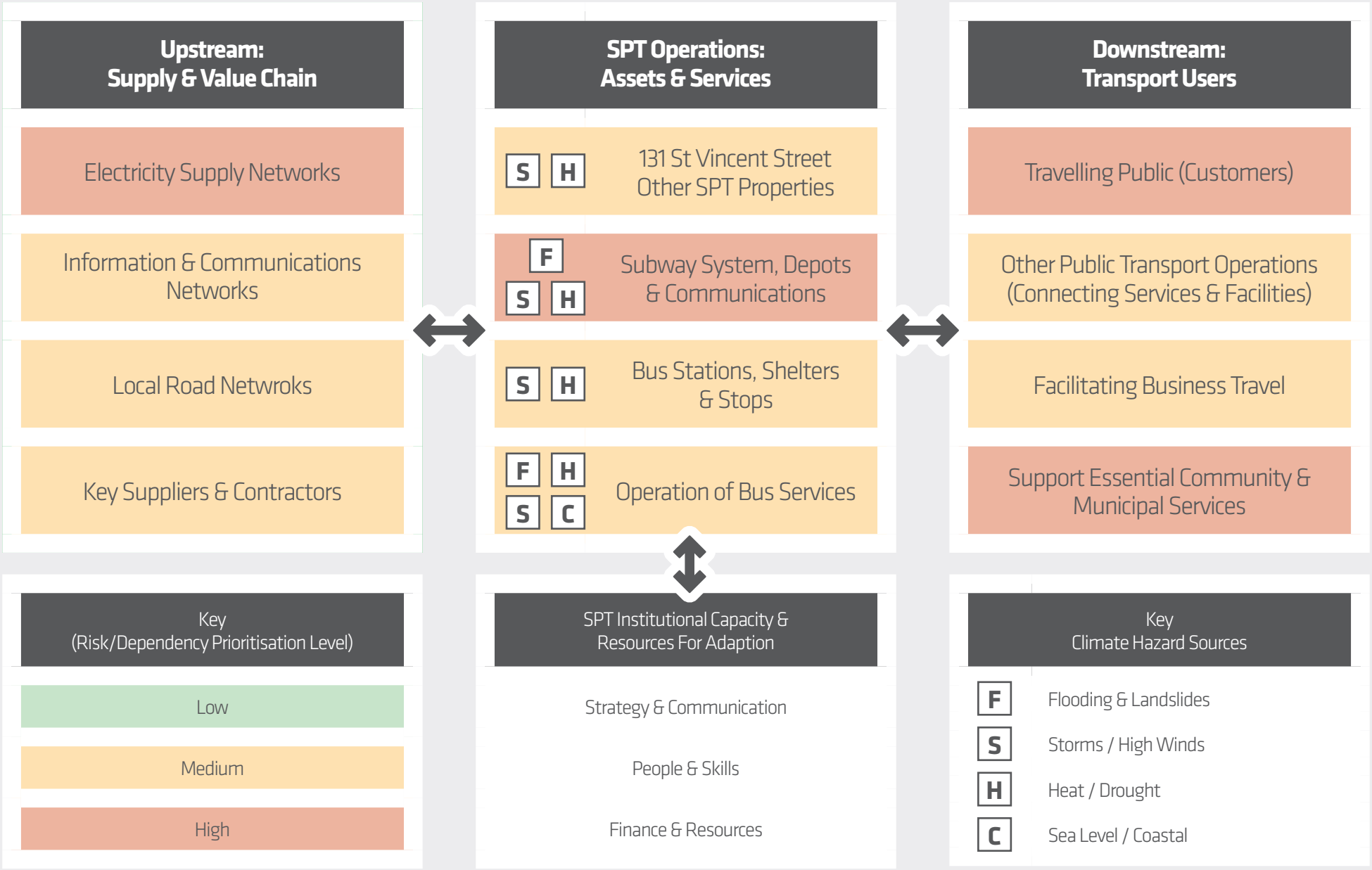
Scope	Category	Method	Emission factors	Assumptions	Improvement mechanisms
3	**Purchased Goods and Services**	Spend-based method. E.g. GHG (kg CO2e per £ X total spend £). Utilising purchase (spend) data from internal systems.	The Department for Business, Energy & Industrial Strategy (BEIS) - Standard industrial classification of economic activities (SIC), Environmentally Extended Input-Output (EEIO) emission factors		Further work will be required to improve accuracy of methodology for this category, aim to obtain supplier-specific data e.g. product-level cradle-to-gate GHG inventory data from goods suppliers.
	Capital Goods	Spend-based method. E.g. GHG (kg CO2e per £ X total spend £) Due to data limitations, supplier-specific method, hybrid method and average data method under the GHG Protocol were not possible. Used average spend-based method by collecting data on the economic value of capital goods and multiplying them with the appropriate secondary (E.g., industry average) and Environmentally Extended Input-Output (EEIO) emission factors which provide a simple and robust method for evaluating the links between economic consumption activities and environmental impacts, including the harvest and degradation of finite natural resources.	The Department for Business, Energy & Industrial Strategy (BEIS) - Standard industrial classification of economic activities (SIC), Environmentally Extended Input-Output (EEIO) emission factors		Further work will be required to improve accuracy of methodology for this category, aim to obtain supplier-specific data e.g., product-level cradle-to-gate GHG inventory data from goods suppliers.
	Fuel and energy related	T&D – UK Electricity (kWh) Emission factor X Total annual kWh	UK Government GHG Conversion Factors for Company Reporting		N/A

Scope	Category	Method	Emission factors	Assumptions	Improvement mechanisms
	Water	Included in waste category below.	UK Government GHG Conversion Factors for Company Reporting		N/A
	Waste	Waste type specific method. E.g. (total tonnes waste X average emissions facot of waste treatment method kg CO2e/tonne)	UK Government GHG Conversion Factors for Company Reporting		Further work required to establish disposal method for C&D (construction and demolition) waste to update average landfill carbon conversion factor to waste type specific.
	Business Travel / Staff Commuting	Distance based method utilising SPT Staff Commuting Survey data. ∑ (distance travelled by vehicle type (vehicle-km or passenger-km)× vehicle specific emission factor (kg CO2e/vehicle-km or kg CO2e/ passenger-km)	UK Government GHG Conversion Factors for Company Reporting		Further scope to carry out survey analysis to gain further insight into homeworking emissions/detailed journey data.
	Downstream leased assets	Based on the average data method under the GHG Protocol, the carbon accounting process used the annual mileage (km) per type of vehicle based on capacity, and the conversion factor for an average bus (passenger km). Conversion factors used for this category are based on those used for 'Business Travel – Land', using the factor for 'Average local bus'.	UK Government GHG Conversion Factors for Company Reporting	Worst-case scenario under the assumption of full capacity (full buses) in accordance with industry best practice to provides a more accurate representation of emissions. Average annual year used.	Further work will include extensive engagement with bus operators to obtain specific fuel and mileage data. Will enable enhanced reporting of emissions in this category. To enable a more accurate calculation, collection of precise fuel records for each owned and leased bus (in litres or tonnes) could be used to calculate emissions for this category which would provide a more detailed carbon accounting process for this category based on the Asset-specific-method under the GHG Protocol.

Appendix 3: **SPT's operational emissions boundary**

Scope	Type	GHG Protocol Definition[21]	Source	Corporate	Subway	SPT Bus Delivery
1	Direct	Direct emission sources resulting from company owned facilities, vehicles or plant equipment.	On-site stationary and mobile combustion sources. (Heating and fuel)	SPT Estate (Buildings) - Energy consumption and SPT Business Fleet Vehicles – Fuel consumption.	Subway stations and depot, subway maintenance vehicles and plant equipment.	SPT Bus stations, SPT Business Fleet Vehicles – Fuel consumption
2	Indirect	Indirect emissions from power plants providing purchased electricity, steam or heat.	Purchased electricity, steam or heat.	Electricity, steam or heat used in SPT Estate (Buildings) SPT Fleet - EV Vehicles/ Charging	Operational network - Subway stations & depot - Electricity used to power trains and other infrastructure. (Stations, lighting, heating, ventilation.)	Electricity, steam or heat used for MyBus call centre and bus stations. Passenger Information & Communication Systems (Including Realtime)
3	Indirect	All other indirect emissions generated up and down the value chain, as a result of systems activities but are not owned or controlled by SPT.	• Purchased goods & services (Supply chain) • Extraction and processing of raw materials • Waste generated in operations • Staff Commuting	• Business Waste • Water-use • Staff commuting/ WFH	• Depot & Maintenance Supplies • Modernisation Projects • Manufacture and maintenance of trains • Waste arisings and EOL vehicles	• Supported services (SPT owned vehicles) • MyBus operation • Bus Shelters and stops (including maintenance and renewals) • Bus fleet vehicle replacement.

Appendix 4: **SPT Organisational Climate Risk Map**



Notes & References

[1] Details of SPT's Agenda 11 here: www.spt.co.uk/documents/latest/SP221119_Agenda11.pdf.

[2] Greenhouse gases are generally defined as a 'basket' of 6 gases which have varying global warming potential. Carbon dioxide (CO2) is the most abundant of these gases. To simplify reporting of GHG inventories, these gases are usually expressed as a carbon dioxide equivalent (CO2e) and this document follows this approach. References to 'carbon emissions' are also used interchangeable and intended to be synonymous with GHG emissions

[3] Details of the Public Bodies Climate Change Duties process can be found at https://sustainablescotlandnetwork.org/reports

[4] SPT Regional Transport Strategy (RTS2) www.spt.co.uk/about-us/what-we-are-doing/regional-transport-strategy/

[5] IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, 616 pp. https://doi.org/10.1017/9781009157940.

[6] UK government Climate Change Act 2008, available at: Climate Change Act 2008 (legislation.gov.uk)

[7] Scotland Climate Change Act 2009, available at: Climate Change (Scotland) Act 2009 (legislation.gov.uk)

[8] Scotland Climate Change Plan 2019, available at: Climate change - gov. scot (www.gov.scot)

[9] Glasgow's Climate Plan, 2019, available at: https://glasgow.gov.uk/media/3879/Glasgow-s-Climate-Plan/pdf/Glasgows_Climate_Plan.pdf

[10] Scotland's Circular Economy and Waste Route Map to 2030' available at: https://www.gov.scot/publications/scotlands-circular-economy-waste-route-map-2030/

[11] Known as the Public Bodies Climate Change Duties (PBCCD), the annual reporting of which must comply with requirements set out in The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015 (as amended)

[12] End of life (EOL) refers to the final stages of a product or material's phase of use. https://ghgprotocol.org/sites/default/files/2022-12/Ch5_GHGP_Tech.pdf

[13] From 01 April 2024 SPT's new energy tariff will take effect. This is a UK Renewable tariff which includes mix of all UK renewables. This does not affect emissions quantification for the baseline year 22-23.

[14] Scottish Governments Heat in Buildings Strategy – Achieving net zero emissions in Scotland's buildings - www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/

[15] Adaptation Scotland, Climate Ready Places www.adaptationscotland.org.uk/

[16] www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf

[17] This category defines emissions from the operation of assets owned by SPT and leased to other entities that are not already included in Scope 1 and 2. (https://ghgprotocol.org/sites/default/files/standards_supporting/Chapter13.pdf)

[18] https://climatereadyclyde.org.uk/gcr-adaptation-strategy-and-action-plan/

[19] As set out in the Glasgow Climate Plan www.glasgow.gov.uk/CHttpHandler.ashx?id=50623&p=0

[20] ISO14001:2015 is an international recognised framework for Environmental Management Systems (EMS) helping to comply with regulation and enhance credibility in environmental impact reporting. (www.bsigroup.com/en-GB/capabilities/environment/ems-iso-14001-environmental-management-system/)

[21] World Resource Institute. 2015. A Corporate Accounting and Reporting Standard (online). Greenhouse Gas Protocol. Available at: Corporate Standard | Greenhouse Gas Protocol (ghgprotocol.org)

[i] IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, 616 pp. https://doi.org/ 10.1017/9781009157940.

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