

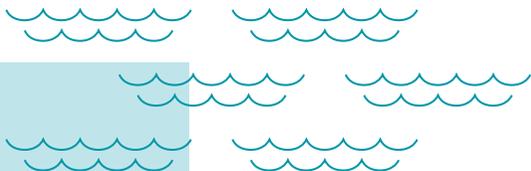
# GHG Emissions and Water Reporting

SSE's Criteria



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# About SSE

SSE plc provides energy needed today while building a better world of energy for tomorrow.

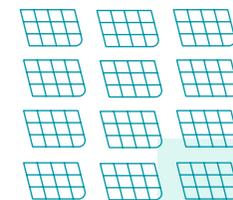
It invests in, develops, builds, and operates low-carbon electricity infrastructure in support of the transition to net zero. This includes onshore and offshore wind, hydro power, flexible thermal generation, electricity transmission and distribution networks, and localised energy systems. It also provides energy products and services for businesses and other customers.

## Aim of this document

This document details the reporting approach used by SSE plc (SSE) to report on GHG emissions and water usage during the financial year (1 April 2022 to 31 March 2023) as a result of operational activities undertaken by the SSE Group.

## Organisational boundaries included for this reporting period

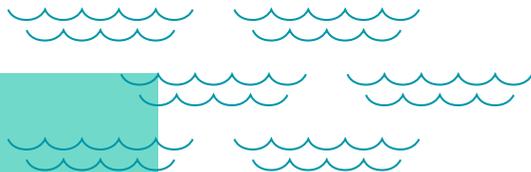
There are two methods that are described in the UK Government Environmental Reporting guidelines (March 2019), Greenhouse Gas Protocol and ISO14064-1:2018 standards: the equity share and control (financial or operational) approaches. SSE used an operational control consolidation approach to account for emissions, as per the Greenhouse Gas Protocol definition. **Table 1** describes the business units that are within the operational boundary approach.



**Table 1:** Brief description of business units included within the scope of GHG and water reporting process.

Company / Business Unit	Description
<b>Networks businesses</b>	
SSEN Transmission	SSEN Transmission, operating under licence as Scottish Hydro Electric Transmission plc ( <b>SHET</b> ), owns, operates and maintains the high voltage 132kV, 275kV and 400kV electricity transmission system in the north of Scotland and its islands. Its network consists of underground cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass crossing some of its most challenging terrain. Following a minority stake sale completed in November 2022, the business is owned 75% by SSE plc and 25% by Ontario Teachers' Pension Plan Board.
SSEN Distribution	SSEN Distribution, operating under licence as Scottish Hydro Electric Power Distribution plc ( <b>SHEPD</b> ) and Southern Electric Power Distribution plc ( <b>SEPD</b> ), is responsible for safely and reliably maintaining the electricity distribution networks supplying over 3.8 million homes and businesses across central southern England and the north of Scotland. SSEN Distribution's networks cover the greatest land mass of any of the UK's Distribution Network Operators with over 75,000km <sup>2</sup> of extremely diverse terrain.
<b>Energy businesses</b>	
SSE Renewables	SSE Renewables develops and generates zero carbon electricity at scale from wind farms and provides clean flexible power from its hydro schemes. The business comprises existing operational assets and those under development in onshore wind, offshore wind, flexible hydro electricity, run-of-river hydro electricity, pumped storage, as well as solar and battery technology co-located on existing domestic sites and new international markets. Its operational offshore wind installed capacity is 487MW with its onshore wind and hydro-electric installed capacity at 1,969MW and 1,459MW respectively.
SSE Thermal	SSE Thermal owns and operates conventional flexible thermal generation in the UK and Ireland. These assets play a key transitional role in the SSE Group and wider energy system on the journey to net zero, providing much-needed system flexibility to ensure stability and security of supply in the short term. SSE Thermal is actively developing options to progressively de-carbonise its fleet, most notably in carbon capture and storage and hydrogen technologies. SSE Thermal holds around 40% of the UK's conventional underground gas storage capacity. These assets support stability and security of gas supply and can potentially be converted to hydrogen storage for a net zero future.

Company / Business Unit	Description
<b>Energy businesses</b>	
<p><b>Customers</b></p>	<p>SSE Business Energy in Great Britain (non-domestic) and SSE Airtricity on the island of Ireland (domestic and non-domestic) provide a shop front and route to market for SSE’s generation, renewable green products and low-carbon energy solutions. Across Great Britain and Ireland, the focus remains on supporting customers to reduce energy consumption, modernise systems and expand the green energy product offering to ensure the business grows its position as a trusted partner to customers on their net zero journey.</p> <p>In Great Britain, SSE Business Energy markets its products under the SSE Energy Solutions brand alongside SSE Distributed Energy, selling power to around 469,000 non-domestic customers across GB. The SSE Airtricity brand serves over 743,000 home and business customers across the island of Ireland.</p>
<p><b>SSE Distributed Energy</b></p>	<p>SSE Distributed Energy is a reportable segment of the SSE Group that invests in, builds and connects localised, flexible energy infrastructure. Distributed energy activities relate to embedded generation, EV infrastructure, heating and cooling networks and smart buildings. A solar and battery arm of the business, which is developing a growing pipeline of grid-scale solar generation and battery storage assets, transferred across to SSE Renewables in April 2023.</p>
<p><b>Energy Portfolio Management</b></p>	<p>Energy Portfolio Management (EPM) is the energy markets heart of SSE, trading commodities for SSE’s market-based Business Units – ensuring the Group has the energy supplies it requires to meet the needs of customers; procuring the fuel and carbon allowances required by the generation plants and selling the power output from our wind farm, hydro and thermal assets.</p> <p>SSE trades the principal commodities to which its asset portfolios are exposed, as well as the spreads between two or more commodity prices (e.g., spark spreads): power (base load and other products); gas; and carbon (emissions allowances). Each commodity has different risk and liquidity characteristics, which impacts the quantum of hedging possible.</p>



## Recalculation policy

The reporting criteria has been established on the basis of management's interpretation of the Greenhouse Gas Protocol.

The Greenhouse Gas Protocol has guided SSE's principles on its recalculation policy and takes account of significant changes to its inventory that arise from significant structural changes, significant changes in calculation methods and discovery of significant errors. The significance test threshold is set at 10%. For structural changes (including joint ventures) arising from acquisition or disposal, the significance of an acquisition or divestment in a reporting year is assessed based on its total emissions (scopes 1, 2 and 3) in the year of acquisition or divestment versus the total emissions in SSE's base year inventory of 2017/18. For structural changes that do not exceed the +/-10% threshold, emissions are only accounted on a prospective basis, from the date of acquisition or divestment.

The environmental data associated with any divestments above the significance threshold are removed from the baseline, intervening years and current year to ensure relevant comparisons and consistent performance towards the green bonds. Similarly, environmental data associated with any acquisitions that significantly changes the structural makeup of SSE is added to the baseline and intervening years. This policy applies to both SSE's greenhouse gas and water data (joint ventures are excluded from SSE's water reporting, see page 26).

On the 1st of September 2022, SSE completed the joint acquisition of Triton Power Limited with Equinor. Following the scope 3 guidance set out by Greenhouse Gas Protocol in its chapter 'Category 15: Investments', SSE accounted for the proportional operational emissions of Triton Power Limited based on its equity share of 50%. The SSE share of Triton Power Limited emissions from the date of acquisition was compared to the total emissions (scopes 1, 2 and 3) in SSE's base year inventory of 2017/18. SSE's 50% share of Triton Power Limited's emissions in 2022/23 was below the significance test threshold (10%) based on management's assessment, therefore no recalculation of the baseline was triggered.

<sup>1</sup> A Power Purchase Agreement (PPA) is a long-term contract between an electricity generator and a customer. Where SSE has sold a PPA to a customer using electricity generated at one of its joint venture power stations, SSE will take 100% of the emissions generated at the joint venture asset.

## Organisational business units and entities excluded from inventory

Under the operational control approach, SSE includes emissions from all joint arrangements over which it has operational control in its scope 1 and 2 inventory (including for those Joint Ventures with a 100% Power Purchase Agreement<sup>1</sup>).

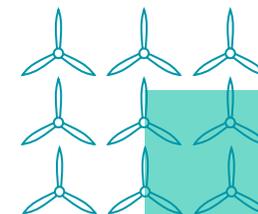
For those activities that SSE does not have operational control, the emissions from the most material joint arrangements (where SSE holds an equity share of equal to or greater than 50%) are included in its scope 3 inventory under Category 15: Investments.

For joint arrangements where SSE does not have operational control and holds an equity ownership of less than 50%, these are excluded from the emissions inventory.

Below is a list of some of the largest business units and entities excluded from the inventory. For a full list of SSE's subsidiaries, partnerships, joint associates, please refer to pages 289 to 299 of SSE's Annual Report 2023.



Business	Activities	Reason for Exclusion
<p><b>Neos Networks</b></p>	<p>Investment in telecommunications business Neos Networks Limited (formerly SSE Telecommunications Limited).</p>	<p>In the year ending 31 March 2019, the SSE Group disposed of 50% of its stake in Neos Networks Limited (formerly SSE Telecommunications Limited). SSE retains a 50% joint venture investment in Neos Networks Limited, but the Group does not have operational control over the activities undertaken by the company. Following the Greenhouse Gas Protocol’s operational control consolidation approach, SSE have excluded Neos Networks Limited from its GHG and water inventory.</p> <p>Neos Networks Limited publish its total emissions annually and have selected calendar year 2019 as its base year. Total emissions (scopes 1, 2 and 3) in 2022 were reported as under 2,900 tCO<sub>2</sub>e, which falls under SSE’s materiality threshold for inclusion at 1% of total SSE Group emissions. As emissions arising from Neos Networks Limited activities are considered de-minimis, SSE excludes these emissions from its scope 3 emissions under Category 15: Investments.</p>
<p><b>SSE Renewables activities outside of the United Kingdom and Republic of Ireland.</b></p>	<p>Small offices in Japan, United States and other carefully selected markets and the acquisition of Siemens Gamesa Renewable Energy’s (SGRE) southern Europe onshore wind development portfolio.</p>	<p>SSE Renewables activities outside of the United Kingdom and Republic of Ireland are excluded for the GHG and water inventory.</p> <p>SSE’s activities overseas cover employees based at small offices working on renewable energy development opportunities. Overseas operations are considered de-minimis as emissions arising from SSE Renewables’ international activities fall under SSE’s materiality threshold for inclusion at 1% of total SSE Group emissions.</p> <p>Approximately 40 employees were on-boarded from SGRE in 2021/22, representing a fraction of the SSE Group total FTEs.</p>



## GHG Reporting Criteria

This section outlines the annual greenhouse gas (GHG) emissions reporting approach used by SSE plc (SSE) to report the tonnes of carbon dioxide equivalent (CO<sub>2e</sub>) from the Group's operational activities.

This section outlines the annual greenhouse gas (GHG) emissions reporting approach used by SSE plc (SSE) to report the tonnes of carbon dioxide equivalent (CO<sub>2e</sub>) from the Group's operational activities.

The document provides details of the amount of GHG emissions that can be directly attributed to SSE operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with requirements of the UK Government's environmental reporting guidelines (BEIS, March 2019); the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition) developed by the World Resources Institute and the World Business Council for Sustainable Development (2004); and ISO 14064-1:2018 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

This document aims to detail the GHG collection, collation, conversion and reporting process used by SSE to report annual GHG emissions.

SSE continuously seeks to improve the coverage of its GHG reporting and to ensure that its GHG inventory is prepared in line with the latest internationally recognised methodologies. There were no updates to the frameworks and methodologies used.

## GHG emissions source inclusions

The GHG emissions sources included in this inventory are those required by [BEIS reporting standards](#), [GHG Protocol](#) and [ISO14064-1:2018 standards](#). GHG emissions are classified, in accordance with these standards, into the following categories:

- **Direct GHG emissions (scope 1):** GHG emissions from sources that are owned or controlled by the company (this includes Power Purchase Agreements with 100% contractual arrangement).
- **Indirect GHG emissions (scope 2):** GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- **Indirect GHG emissions (scope 3):** GHG emissions that occur as a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Inclusion of other scope 3 emissions sources is done on a case-by-case basis in accordance with the guidance given in the Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Supplement to the GHG Protocol Corporate Accounting and Reporting Standard).

The following emission sources from SSE operations are included in the GHG emissions reporting:

- **Generation power stations** – gas, oil and biomass consumed in SSE's thermal power generation plant (including Power Purchase Agreements<sup>2</sup> with 100% contractual arrangement) to generate electricity.
- **Gas consumption in buildings** – this is the gas consumed by SSE's non-operational buildings (offices, depots, data centres and warehouses) to maintain building temperatures. This data excludes leased buildings and offices outside the UK and Ireland (which represent less than 1% of employees).
- **Network fuel consumed** – this includes gas oil used by fixed generators on islands and diesel used in mobile generators to generate electricity to maintain the distribution network.
- **Company vehicles** – this is the petrol or diesel used by SSE's operational vehicles for business activities (operational vehicles are those vehicles that are owned by SSE and used by employees for SSE business activities).
- **Fugitive emissions** – use of sulphur hexafluoride (SF<sub>6</sub>) in the transmission and distribution networks for conductivity (used in the switchgears and substations).

<sup>2</sup> A Power Purchase Agreement (PPA) is a long-term contract between an electricity generator and a customer. Where SSE has sold a PPA to a customer using electricity generated at one of its joint venture power stations, SSE will take 100% of the emissions generated at the joint venture asset.

The indirect emissions (scope 2) cover:

- **Electricity consumption in buildings** – this is the electricity consumed by SSE’s non-operational buildings (offices, depots, data centres and warehouses). This data excludes leased buildings and offices outside the UK and Ireland (which represent less than 1% of employees).
- **Electricity consumption in networks** – this is the electricity used by SSE’s operational buildings (e.g., substations) in the transmission and distribution network.
- **Electricity consumption in thermal power stations** – this is the electricity used by SSE’s GB thermal power stations for the generation of electricity. This data excludes power stations below 100MW which do not have metering and thermal power stations in Ireland.
- **Distribution losses** – this is the electricity lost in SSE’s distribution network in the north of Scotland (**SHEPD**) and southern central England (**SEPD**) transporting electricity to the customer.

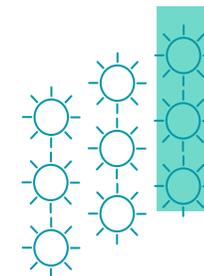
The indirect emissions (scope 2) cover:

- **Business travel** – domestic (between UK airports), short haul (international flights to/from UK less than 3,700km, usually to European destinations), long haul (international flights to/ from UK greater than 3,700km, usually to non-European destinations) and international (international flights to/ from non-UK destinations) travel by air, rail and car miles travelled using third party transport (this is vehicles owned and operated by other organisations that SSE employees use to conduct business activities).
- **Well to tank emissions** – this is the GHG emissions associated with the extraction, refining and transportation of the raw fuel sources to SSE’s sites before they are used to generate electricity at the power station, as defined by BEIS reporting guidelines.
- **Gas sold to customers** – the amount of gas sold to customers (industrial and commercial business customers in the UK and Ireland and domestic customers in Northern Ireland and the Republic of Ireland) that is then used by SSE’s customers for heating and power purposes. This figure is calculated

by taking the amount of gas sold (millions of therms) converting it to kWh and then applying a carbon dioxide conversion factor provided by [BEIS reporting guidelines](#).

- **Transmission losses** – the electricity lost in the SHE Transmission network (the network between the generator and the distribution company) in the north of Scotland. The transmission of electricity is managed by the network operator, National Grid.
- **Transmission and distribution losses** – this is the transmission and distribution losses (the energy loss that occurs getting the electricity to SSE non-operational buildings from the power plant) associated with the electricity consumed by SSE’s non-operational buildings (offices, depots, data centres and warehouses) and operational buildings (substations and thermal power stations). This figure is calculated by taking the scope 2 electricity consumption figure for non-operational buildings and electricity consumption in networks and thermal power stations and applying a carbon dioxide conversion factor provided by [BEIS reporting guidelines](#). This data is separate to the losses that SSE’s transmission and distribution networks report.
- **Vessels** – this is the fuel purchased by a third party for use in third party vessels that service offshore wind farms in which SSE has an ownership share and operates on behalf of joint venture partners. For example: Beatrice Offshore Wind Farm Limited (SSE Renewables share 40%); and, Greater Gabbard Offshore Wind Farm (SSE Renewables share 50%).
- **Investments in Thermal electricity generation** – gas consumed in thermal power generation plant (for example, Seabank and Triton Power with SSE’s 50% ownership share) where SSE does not have operational control but has a 50%-and-over equity interest. The emissions associated with the generation of electricity is calculated using greenhouse gas emissions data from the generator’s operating company.

The emissions sources are explained in detail in **Table 2**.



## GHG intensity for Scope 1

Intensity ratios compare emissions data with an appropriate business metric or financial indicator, such as sales revenue or square metres of floor space.

To calculate an intensity ratio, emissions are divided by an appropriate activity metric (full time employee equivalents) or financial metric (£ million sales). The results of this provides a normalised data point which is called an intensity ratio.

For SSE the most appropriate business metric is the output from its electricity generation activities (kWh). Using an intensity ratio allows organisations to compare performance over time and with other similar types of organisations.

SSE calculates its intensity ratio based on the Scope 1 GHG intensity of its generated electricity. The data points that SSE reports on is based on:

1. SSE's carbon dioxide equivalent (**CO<sub>2e</sub>**) from its scope 1 emissions data; and
2. The total output from SSE's electricity generation, both thermal (gas, oil, biomass) and renewables (onshore and offshore wind, hydro and pumped storage).

This intensity ratio is used to measure SSE's performance against its 2030 goals and its Science Based Targets which have been approved by the Science Based Target Initiative (**SBTi**).

In February 2022, SSE refreshed its 2030 Goals, making them more ambitious and ensuring they remain stretching to the end of the decade. SSE's previous intensity target was measured using GHG emissions from electricity generated only. When SSE reset its SBTi-verified carbon targets to align to a 1.5oC pathway in November 2021, the intensity metric was updated from electricity generation GHG emissions to all scope 1 GHG emissions. GHG emissions from electricity generation contribute around 99% of SSE's scope 1 GHG emissions, so a reasonable comparison can be made between both the current and previous target

## Output reporting (GWh – gigawatt hours)

Output (or volume) from all of SSE's in-scope electricity generation plant is taken from the period 1 April 2022 to 31 March 2023. The output volumes refer to the renewable and thermal power generation plant (including Power Purchase Agreements<sup>3</sup>) that SSE operates to generate electricity. The output volumes include projects that are operational. For projects that move from construction to operation during the reporting period, output data is taken from the date of commissioning.

The output refers to the generation from the thermal and renewable generating sites at the Notional Balancing Point. This is the point on the national transmission system where demand is managed and is comparable across the industry for trading and monitoring.

Output data is based on meter points at the Notional Balancing Point. This data is collected by Elexon, stored on SONET (an external database that stores electricity settlement data) and managed through an internal finance management system by business finance at SSE. The data excludes the constrained output .

## Scope 1 emissions data

All direct emissions in carbon dioxide equivalent arising from sources that are owned or controlled by the company from the period 1 April 2022 to 31 March 2023. The largest source of SSE's scope 1 emissions is released following fuel consumption at SSE's thermal power generation plant (gas, oil and biomass). The sources for all direct emission are explained in detail in **Table 2**.

<sup>3</sup> Output volume excludes Thermal generation from power stations SSE does not operate but has a 50%-and-over equity interest. This is to reflect the fact that scope 1 emissions exclude activities in which SSE does not operate. As a result, the emissions from Seabank Power Ltd and Triton Power Ltd is categorised as a scope 3 emission in accordance with SSE's 50% ownership share.

In previous years, output did include 100% of output from Seabank power station up to 31 September 2021 when SSE's power purchase agreement ended. Output from SSE's 50% ownership share of Seabank is excluded from October 2021 onwards

<sup>4</sup> Constrained refers to output that SSE could have potentially generated had there not been physical constraints on the network. National Grid provide SSE with payment to reduce or shut down output to maintain system stability and manage flows on the network.



**Table 2:** GHG emissions sources included in the inventory.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
<b>SSE Thermal</b>	Fuel used by power stations to generate electricity – gas, oil and biomass	Scope 1	Fuel used (gas, oil and biomass) is measured through meters and weight tickets and converted using UK ETS guidelines for the United Kingdom and EU ETS guidelines for the Republic of Ireland for the calendar year. However, SSE reporting period is from 1 April to 31 March, hence Energy Portfolio Management ( <b>EPM</b> ) team estimate GHG emissions in the final quarter using the power generation data and composition of the fuel used. The estimation is reconciled annually prior to EU ETS calendar year submission. EPM estimates power station emissions based on known plant activity, closures/ acquisitions and power generation data for emissions trading purposes.	kWh	SSE’s new 893-MW Keadby 2 CCGT in North Lincolnshire entered commercial operations mid-March. Emissions from Keadby 2 will be excluded in SSE’s 2022/23 reporting.
<b>All business units combined</b>	Operational vehicles & plant (diesel)	Scope 1	Fuel is bought using fuel cards from independent fuel suppliers or dispensed at onsite fuel depot. Fuel card data is provided by independent fuel suppliers to Fleet Services. Fuel cards are reconciled with supplier invoices. Fuel dispensed from onsite depots is recorded and consolidated with fuel dispensed data from the independent suppliers.	litres	N/A
<b>All business units combined</b>	Operational vehicles & plant (petrol)	Scope 1	Fuel is bought using fuel cards from independent fuel suppliers or dispensed at onsite fuel depot. Fuel card data is provided by independent fuel suppliers to Fleet Services. Fuel cards are reconciled with supplier invoices. Fuel dispensed from onsite depots is recorded and consolidated with fuel dispensed data from the independent suppliers.	litres	Fuel invoices do not include fuel dispensed a few days before the invoice so there is delay in reporting periods however these balances during the year and between financial reporting periods.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
All business units combined	Mobile plant (used when substations fail) – diesel	Scope 1	<p>Fuel purchased is recorded through a fuel card or through purchase of fuel stock – all recorded in fleet database.</p> <p>From 1 April 2022, the UK Government announced that it was removing the entitlement to use gas oil from most sectors, except for agriculture, rail and non-commercial heating. Diesel was the only fuel used in SSE's mobile generators during 2022/23.</p>	litres	N/A
SSEN Transmission and SSEN Distribution	Fugitive emissions (SF <sub>6</sub> ) – SHE Transmission, SHEPD & SEPD	Scope 1	Transmission and distribution engineers record SF <sub>6</sub> top ups and exception events requiring SF <sub>6</sub> top up in the asset management system, Maximo. The ENA model gives typical loss rate figure as a result of normal operation.	kg	N/A
SSEN Distribution	Losses (SHEPD & SEPD)	Scope 2	Figures for network losses are calculated using standard distribution losses guidance (produced by Elexon) to compute the losses in the distribution system.	GWh	Based on industry standards for line losses and distribution losses
SSE Thermal	Thermal power station electricity consumption	Scope 2	There are 20 operational thermal power stations in the UK and Ireland. The large power stations (with capacity greater than 100 MW) have automatic electricity meters. Meter reading data of electricity use are transmitted through Elexon. This data is recorded on SSE's finance system TM1 and then downloaded onto an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.	kWh	Some thermal power stations are excluded from the data because they are below 100MW (16 sites) and they do not have meters to measure consumption. Data excludes thermal power stations in Ireland.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
<p><b>All business units combined</b></p>	<p>Non-operational building electricity consumption</p>	<p>Scope 2</p>	<p>Non-operational buildings are classed as offices, depots, warehouses and call centres. There are around 69 non-operational sites. Most non-operational buildings have automatic electricity meters. Records of electricity use are transmitted through automatic meter readings to SSE Clarity. SSE Clarity integrates with SSE Business Energy Intelligence (BEI) to aggregate non-operational buildings data. Daily exports are automatically emailed and loaded into energy management software, SystemsLink, where the electricity use is downloaded into an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.</p> <p>Where tenants occupy a share of SSE's non-operational buildings, electricity consumption is apportioned based on the floor area that the tenants occupy. The electricity consumption that takes place within the communal areas of shared non-operational buildings is also split using the same building wide apportionment between SSE and the tenant.</p>	<p>kWh</p>	<p>Not all non-operational buildings are on half hourly meters. Some are based on submitted actual meter reading, or estimated on billing system.</p> <p>Data excludes leased buildings with small number of employees and offices outside the UK and Ireland (less than 1% of employees).</p> <p>Exceptions to the apportionment approach of electricity consumption in communal areas have been applied to SSE's Forbury Place (Reading) and Perth Campus sites. Access to some communal areas at these sites has been restricted to SSE staff only. In such examples, SSE has taken the total electricity consumption from these communal areas.</p>

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
<p><b>All business units combined</b></p>	<p>Non-operational buildings – gas usage</p>	<p>Scope 1</p>	<p>Non-operational buildings are classed as offices, depots, warehouses and data centres. There are around 69 non-operational sites. Most non-operational buildings have automatic gas meters. Records of gas use are transmitted through automatic meter readings to SSE Clarity. SSE Clarity integrates with SSE Business Energy Intelligence (BEI) to aggregate non-operational buildings data. Daily exports are automatically emailed and loaded into energy management software, SystemsLink, where the gas use is downloaded into an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.</p> <p>Where tenants occupy a share of SSE’s non-operational buildings, gas consumption is apportioned based on the floor area that the tenants occupy. The gas consumption that takes place within the communal areas of shared non-operational buildings is also split using the same building wide apportionment between SSE and the tenant.</p>	<p>kWh</p>	<p>Not all non-operational buildings are on half hourly meters. Some are based on submitted actual meter reading or estimated on billing system. Where actual consumption data is not available, gas consumption is estimated based on the prior year’s consumption data.</p> <p>Data excludes leased buildings with small number of employees and offices outside the UK and Ireland (less than 1% of employees).</p> <p>Exceptions to the apportionment approach of gas consumption in communal areas have been applied to SSE’s Forbury Place (Reading) and Perth Campus sites. Access to some communal areas at these sites has been restricted to SSE staff only. In such examples, SSE has taken the total gas consumption from these communal areas.</p>

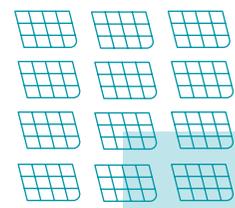
Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
SSEN Distribution	Substations – SHEPD & SEPD	Scope 2	<p>Substation electricity consumption is estimated as there are no meters in place. This is done by classifying the types of consumption and estimating the energy use of using the electrical load of the appliance. This includes:</p> <ul style="list-style-type: none"> <li>• <b>Space Heaters:</b> Based on multiples of 3kW off peak heating on for 6hrs per day for 4 months of the year in the south and 6 months in the north (only 10% of buildings heated in HV sites).</li> <li>• <b>Panel Heaters:</b> Based on multiples of 0.07kW (only 10% of HV sites with separate lv panels).</li> <li>• <b>Lighting:</b> Based on multiples of 0.2kW, on for 10 days during the year.</li> <li>• <b>Battery-Chargers:</b> Based on multiples of 0.5kW continuous supply to DC standing loads.</li> <li>• <b>Mains powered equipment:</b> Based on 0.5kW continuous supply.</li> <li>• <b>Transformer Coolers:</b> Based on cooler ratings of individual transformers. Substations are assumed to have 2 transformers on average, with coolers in operation for 10 days of the year.</li> <li>• Electrical load has been calculated for each type of substation, using the principles detailed above. The calculated average annual load has then been multiplied by the relevant number of substations giving total figures in kWh.</li> </ul>	kWh	Substations are not metered so their energy consumption is based upon estimates which are based on the size of the substation, electricity capacity and the operation activities of each building through the financial year.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
SSEN Transmission	Substations	Scope 2	<p>Substation electricity consumption is mostly estimated as there are few meters in place at substations across the network.</p> <p>Five substations were installed with meters in 2022/23 and collected actual electricity consumption data for 12 months. Where this is available, this is the preferred approach to collect electricity consumption data.</p> <p>Four substations have historical electricity consumption data. Where this is available and there have been no significant changes to the substation, average measured data is used to estimate 12 months of electricity consumption.</p> <p>An estimation for the electricity consumption at the remaining substations is achieved by confirming the number of connected circuits at each substation (using the SSEN network map) and by confirming the number of transformers at each substation (stored in Maximo). An annual electricity consumption benchmark per circuit connection and transformer is then applied to the number of connected circuits and transformers where measured data is unavailable.</p>	kWh	Most substations are not metered so their energy consumption is based upon measured consumption from a small number of substations which are equipped with electricity meters during the financial year.
All business units combined	Flights – domestic Flights – short haul Flights – long haul Flights – international	Scope 3	Booked through SSE's web-based travel booking system provided by Capita, which provides distances in km for all journeys.	km	The actual flight distance may not always be exactly as standard for the route, the conversion factors used take account of the fact that distances travelled may not be representative of the journey due to changes in flight paths for safety/ weather/ etc.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
All business units combined	Train	Scope 3	Booked through SSE's web-based travel booking system Capita, which provides distances in km for all journeys.	km	Small % of train journeys will be booked direct through the train company rather than using the SSE travel desk system.
All business units combined	SSE & SEC Cars (petrol, diesel and electric vehicles)	Scope 3	Claims made through expenses system for business purposes using employees' own cars or car ownership scheme (COS) cars. The mileage relates to the date the miles were claimed. The mileage claim data is run through the Harmony system. Distances are in miles and converted to km (using 1.609 conversion factor).	km	N/A
SSE Thermal	Greenhouse gas emissions from electricity generation at power stations where SSE has an equity investment but does not have operational control.	Scope 3	Data is provided by the third-party owner of the generation site for the financial year.	CO <sub>2</sub>	N/A
SSE Thermal	Fuel purchased – gas, oil and biomass for generation of electricity	Scope 3	Fuel purchased during the financial year (gas, oil and biomass) is measured through meters and weight tickets and converted into kWh using standard industry recognised conversion factors or supplier specific factors.	kWh	Fuel purchased (diesel and oil) may not necessarily be used in the year, or in the reporting period, as there are on-site storage facilities for these fuels.

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
<b>Business Energy and SSE Airtricity</b>	Gas sold to customers	Scope 3	<p>Gas volumes are based on settlement data published by Xoserve. SSE receives an allocation of the settlements data based on the total amount of gas used by the local distribution zone based on its portfolio of customers. This number covers both domestic (for the island of Ireland) and business customers (industrial and commercial) for Great Britain and the island of Ireland.</p> <p>The GHG emissions are calculated by taking the scope 3 gas sold to customers and applying the carbon dioxide conversion factor provided by BEIS reporting guidelines.</p>	Million therms	In line with gas settlement industry standard, gas reported contains a portion of unidentified gas supplied. This is to ensure total supply matches demand for the UK gas delivery.
<b>All business units combined</b>	Electricity use in non-operational buildings	Scope 3	This is the transmission and distribution losses (the energy loss that occurs getting the electricity to SSE non-operational buildings from the power plant) associated with the electricity consumed by SSE's non-operational buildings (offices, depots, data centres and warehouses.). This figure is calculated by taking the scope 2 electricity consumption figure for non-operational buildings and applying a carbon dioxide conversion factor provided by BEIS reporting guidelines.	kWh	N/A
<b>SSEN Transmission and SSEN Distribution</b>	Electricity use in substations	Scope 3	This is the transmission and distribution losses (the energy loss that occurs transporting electricity to SHE Transmission, SEPD and SHEPD substations from the power plant) associated with the electricity consumed in SHE Transmission, SEPD and SHEPD substations. This figure is calculated by taking the scope 2 substation electricity consumption and applying a carbon dioxide conversion factor provided by BEIS reporting guidelines.	kWh	N/A

Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
SSE Thermal	Thermal power station electricity consumption	Scope 3	This is the transmission and distribution losses (the energy loss that occurs getting the electricity to SSE non-operational buildings from the power plant) associated with the electricity consumed by SSE's large power stations (with capacity greater than 100 MW) in Great Britain. This figure is calculated by taking the scope 2 electricity consumption figure for the power stations and applying a carbon dioxide conversion factor provided by BEIS reporting guidelines.	kWh	N/A
SSEN Transmission	Losses (National Grid)	Scope 3	<p>When transferring power across the SHE Transmission System, some of the power is 'lost' known as 'Transmission Losses'.</p> <p>Figures for transmission losses are calculated using standard transmission losses guidance (produced by Elexon) to compute the losses in the transmission system.</p> <p>This data is reported by National Grid as the system operator. They report this figure for the period of July to June to SSE for its assets. The figure is for the previous financial year as a result of the timing of the data capture process. This means for the financial year 1 April 2022 to 31 March 2023 the data will be based on the previous financial year July 2021 to June 2022. The data is verified by an independent third party, WSP, for National Grid.</p>	kWh	Based on industry standards for transmission losses



Business unit	GHG emissions source	GHG emissions level scope	Data source & collection process	Data collection unit	Uncertainty (description)
<p><b>SSE Renewables</b></p>	<p>Fuel used by vessels to travel to and from offshore wind farms</p>	<p>Scope 3</p>	<p>There are two Joint Ventures that are operational and use vessels to maintain offshore windfarms in the UK and Ireland.</p> <p>Fuel data is collected from the third party that owns and operates the vessels. Scottish Fuels supply all the fuel data for Beatrice Offshore Windfarm Limited (<b>BOWL</b>) and ASCO provide fuel data for Greater Gabbard Offshore Windfarm Limited (<b>GGOWL</b>).</p> <p>This data is sent by each third party and collected by BOWL and GGOWL SHE teams. The fuel data is stored by Renewables SHE and consolidated into one report to cover all offshore vessel activities using excel. All data is verified using monthly invoices.</p>	<p>Litres</p>	<p>Fuel used by third party in vessels contracted to support SSE's operation of offshore wind farms.</p> <p>Fuel used by the third-party is based on purchased invoices that are stored in tanks on site, rather than measured consumption in the vessels.</p> <p>First power at SSE's 1,075MW Seagreen Offshore Wind Farm was achieved in August 2022 and Seagreen is expected to enter commercial operation in Q2 2023. Fuel purchased data for the vessels used to construct and maintain Seagreen Offshore Wind Farm was unavailable for 2022/23.</p>



## GHG conversion factors

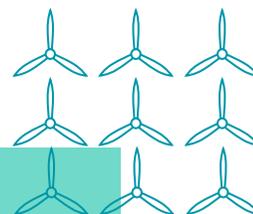
To calculate all the fuel sources into GHG emissions the BEIS UK conversion factors spreadsheet is downloaded annually from [BEIS website](#) - The following conversion factors are applied to each source of emissions (**Table 3**).

For the fuel used by generation the emissions are calculated by the power stations and converted using the EU ETS guidelines. This is then verified by independent third parties and evidence submitted to regulators in accordance with EU ETS legislation.

**Table 3:** GHG emissions conversion factors source.

Activity	Conversion Factor Source	Emissions Factor Year	Category of emission factor used
<b>Generation</b>	UK and EU ETS statements	2022	As per UK and EU ETS categories
<b>Operational vehicles &amp; plant</b> (Diesel)	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
<b>Operational vehicles &amp; plant</b> (Petrol)	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
<b>Mobile plant</b> – Gas oil	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
<b>Fugitive emissions</b> (SF <sub>6</sub> ) – SHE Transmission, SHEPD & SEPD	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Refrigerant & other
<b>Fuel combustion</b> – for mobile and fixed generation on distribution networks (diesel) – SHEPD & SEPD	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
<b>Losses</b> (SHEPD & SEPD)	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	UK Electricity

Activity	Conversion Factor Source	Emissions Factor Year	Category of emission factor used
<b>Non-operational building electricity consumption – Great Britain</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	UK electricity and overseas electricity
<b>Non-operational building Electricity consumption - Ireland</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2016	Overseas electricity
<b>Thermal power station electricity consumption</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	UK Electricity
<b>Non-operational buildings – gas usage</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
<b>Substations – SHE Transmission, SHEPD &amp; SEPD</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	UK Electricity
<b>Flights - Domestic</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Air
<b>Flights – Short haul</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Air
<b>Flights – Long haul</b>	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Air



Activity	Conversion Factor Source	Emissions Factor Year	Category of emission factor used
Flights – international	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Air
Train	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Land
SSE & SEC cars (Petrol & Diesel)	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Land
SSE & SEC cars (Electric)	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Business travel – Land
Transmission and distribution losses for electricity use in non-operational and thermal power stations buildings	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Transmission and distribution
Transmission and distribution losses for electricity use in SHE Transmission, SEPD and SHEPD substations	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Transmission and distribution
Transmission and distribution losses in the transmission (National Grid) network	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2021	UK Electricity

Activity	Conversion Factor Source	Emissions Factor Year	Category of emission factor used
Well to tank emissions for fuel purchased for generation	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	WTT - Fuels
Gas sold to customers	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels
Vessels fuel use	<a href="#">Government conversion factors for company reporting of greenhouse gas emissions</a>	2022	Fuels

## GHG emissions source exclusions

Emissions sources in **Table 4** have been identified and excluded from the GHG emissions inventory. Exclusions are reviewed on an annual basis to ensure that these sources of emissions are still relevant and fall below the materiality threshold. Any activities representing under 1% of total Group emissions are considered de-minimis by SSE.

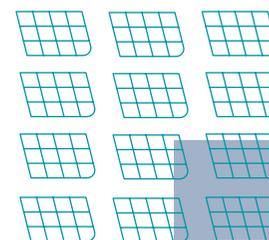
**Table 4:** GHG emissions sources excluded from the inventory

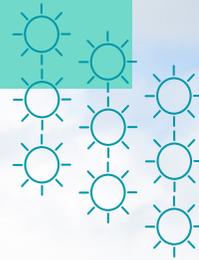
GHG Emissions source	GHG emissions level scope	Reason for Exclusion
Operational vehicles on the island of Ireland	Scope 1	Minimal
Gas consumption in non-operational buildings outside of the UK and Ireland.	Scope 1	Minimal
Gas consumption in residential property, leased buildings and generation sites where it is used for heating purposes on the site itself.	Scope 1	Minimal
Fugitive emissions of methane from Gas Storage venting	Scope 1	Minimal
SF <sub>6</sub> from Generation Thermal switchgear and embedded distribution fixed generation sites.	Scope 1	Minimal

GHG Emissions source	GHG emissions level scope	Reason for Exclusion
Emissions from fuel consumption at Keadby 2 power station.	Scope 1	<b>Minimal</b> – within SSE’s operational control boundary for less than two weeks of the financial year.
Electricity consumption in residential property and leased buildings.	Scope 2	<b>Minimal</b>
Electricity consumption in non-operational buildings outside of the UK and Ireland.	Scope 2	<b>Minimal</b>
Thermal power station electricity consumption at sites with capacity lower than 100MW ( <b>16 sites</b> ) that do not have meters to measure consumption. Thermal power stations in Ireland are excluded.	Scope 2	<b>Minimal</b>
Bus travel	Scope 3	<b>Bus not used for business travel</b>
Taxi travel	Scope 3	<b>Minimal</b> – taxis only taken on short journeys – distances not logged.
Hire car travel	Scope 3	<b>Minimal</b>
Helicopter travel	Scope 3	<b>Minimal</b>
Waste to Landfill	Scope 3	<b>Minimal</b>
Water & Wastewater	Scope 3	<b>Minimal</b>
Well to tank emissions from other fuel use in operations that is not related to generation activities	Scope 3	<b>Minimal</b>

## GHG emissions calculations and results

GHG emissions for the organisation are calculated in excel spreadsheet ‘**Appendix 1**’ where they are stated by greenhouse gas, by scope, by business unit and as total emissions.





# Water reporting criteria

This document aims to detail the water data collection, collation, conversion and reporting process used by SSE to report annual water volumes in millions of cubic meters (**millions m<sup>3</sup>**) for the reporting period.

## Water source inclusions

The water sources included in this inventory are those required by BEIS reporting standards and include the total water (million m<sup>3</sup>):

- **Abstracted** – the volume of water taken from rivers, lochs, sea, estuaries and mains supplies for operational activities;
- **Consumed** – the volume of water used by the business to conduct its operations; and
- **Returned** – the volume of water returned to source (river, loch, sea or estuary).

SSE uses water for four main purposes:

1. To cool its generation plant (thermal generation operations);
2. As process water for a variety of operations (thermal generation operations);
3. As a source of energy in hydro generation schemes; and
4. For amenities in offices and buildings.

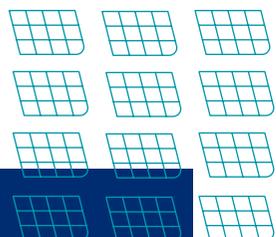
SSE seeks to include water data from all ventures over which it has operational control. All joint ventures where SSE does not have operational control have been excluded from SSE's water reporting.



The table below details the source of the water data, how the water data is collected and reported, and any uncertainties in the water data.

**Table 5:** GHG emissions sources excluded from the inventory

Business Unit	Water volume source	Data source & collection process	Uncertainty (description)
<p><b>SSE Thermal</b></p>	<p>Water volumes abstracted and returned at entry and exit points of each power plant</p>	<p>Flow meters transfer water volumes automatically from the flowmeters to the PI (process information) system. Water use data is automatically downloaded from this system into excel.</p> <p>For Great Island power station in Ireland, water for cooling is measured using a pump running hours methodology rather than flowmeters as these are not available. This methodology uses the pump performance and pump curve to measure flow rates and has been agreed with the EPA.</p> <p>This data also includes water volumes from Lerwick (SSE Distribution) and Slough (SSE Distributed Energy) power stations.</p>	<p>For the power stations that use flow meters, if there is a failure in the flowmeter PI system then there is backup process used which involves pump running hours (this takes account of pump performance and the pump curve to measure flow rates) and has been agreed with the Regulators.</p> <p>Water volumes for March 2023 have been estimated by the SSE Thermal SHE team.</p>
<p><b>SSE Renewables:</b> Hydro generation</p>	<p>Water volumes abstracted and returned is the water that passes through the hydro generation turbine at the SSE power station</p>	<p>Volumes of water abstracted and returned are measured via telemetry. The telemetry system collects and records the input data (which is based on the water head (the intake and the loch level) and the power generation) to estimate the volume of water that passes through a turbine each time. The input data uses the power generated to calculate the flow of water that would have been required (and so effectively uses the turbine as a flowmeter).</p>	<p>N/A</p>



Business Unit	Water volume source	Data source & collection process	Uncertainty (description)
<p><b>All business unit combined</b> (Non-operational offices and buildings)</p>	<p>Water</p>	<p>Non-operational buildings are classed as offices, depots, warehouses and data centres. There are around 69 non-operational sites. Water meter readings are provided on a regular basis for facility managed sites with the largest desk capacities and occupancies. Monthly meter readings are manually recorded at the 17 sites and logged centrally.</p>	<p>Water consumption is based on 17 key properties that are metered.</p>
<p><b>SSE Thermal</b> (offices and buildings)</p>	<p>Water</p>	<p>Monthly meter readings are manually recorded at the sites and logged centrally.</p>	<p>N/A</p>

