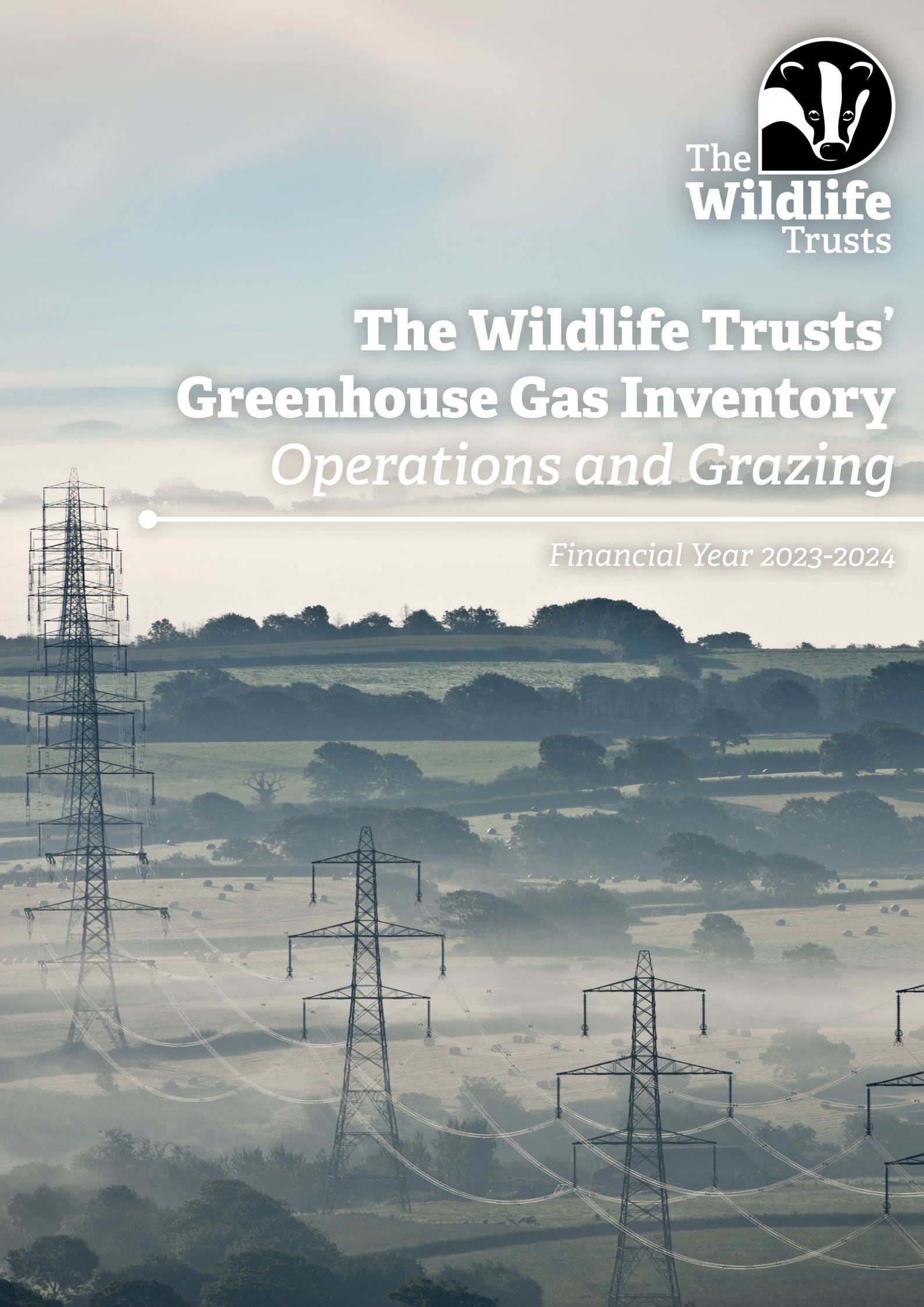

The Wildlife Trusts

# The Wildlife Trusts' Greenhouse Gas Inventory

## *Operations and Grazing*

*Financial Year 2023-2024*

# The Wildlife Trusts' Greenhouse Gas Inventory Financial Year 2023 - 2024 – Operations and Grazing

| | |
|---|---|
| **Target** | Collectively, The Wildlife Trusts are working to achieve net zero greenhouse gas emissions by 2030 |
| **Accounting Year** | FY 2023-24 |
| **Baseline Year** | FY 2019-20 |

**The Wildlife Trusts - working together on climate action**

Climate action is embedded right across The Wildlife Trusts' strategic goals to bring nature back (Strategy 2030). A synthesis of The Wildlife Trusts' collective response to climate change, related to both net zero and adaptation, can be found in our collective Position Statement.

Together we are working towards net zero greenhouse gas (GHG) emissions by 2030 across our scope 1, 2 and 3 operational emissions, as well as putting in place robust adaptation measures across all our work areas.

As a grassroots movement working across every part of the UK, on Alderney and the Isle of Man, The Wildlife Trusts are major landowners, habitat managers, energy users, consumers of water, venue and event providers, educators, vehicle fleet operators, and employers (to name just a few). Whilst these elements all contribute to achieving our charitable objectives, we want to minimise their negative environmental impacts and pursue more sustainable alternatives.

## About this Report

This mitigation report sits under one of two parts of work on climate change we are undertaking as The Wildlife Trusts federation, the other being our adaptation work programme, stemming from our 2022 'Changing Nature' report.

On our journey to net zero, our priority is to cut GHG emissions right across the work we do, and free ourselves from fossil fuel use and dependencies.

This annual report presents the GHG emissions from our operations in Financial Year (FY) 1 April 2023 to 31 March 2024. Emissions are given as tonnes of carbon dioxide equivalent, or $tCO_2e$, which is the standard unit used to compare and account for emissions.

We are taking an evidence-led approach to understand, reduce, and report on our GHG emissions across our value chain, and measure progress towards our collective net zero 2030 target. As such, the scope and approach to this has, and will continue to evolve, as we develop more efficient data collection systems and completeness of our activities and align to evolving best practice guidelines.

This report covers GHG emissions associated with our operations and livestock. Emissions from our conservation grazing activities have been collected separately from emissions from operational activities and are included in a separate section in this report.

Estimating the emissions and removals from our habitats is an ongoing area of research and in the future will be accounted and reported separately (see further details in Appendix 1).

This report also brings together some of the high-level highlights and challenges of decarbonisation progress across The Wildlife Trusts over the reporting period.

## The Wildlife Trusts in 2023-24

The Wildlife Trusts are a federation of 46 Wildlife Trusts across the UK, Isle of Man and Alderney, and a central body, the Royal Society of Wildlife Trusts (RSWT).

In FY2023-24, The Wildlife Trusts collectively[1]:

- Managed more than 2,600 nature reserves, covering an area of 101,412 hectares.
- Responded to 4,197 planning applications supporting a total of 5,810 hectares of land being improved for nature.
- Employed 2,915 full-time equivalent staff.
- Were supported by 38,412 volunteers providing 1,376,277 volunteer hours.
- Welcomed 126,142 visitors from schools, colleges, universities, care homes and youth groups, covering 3,247 organisations.
- Arranged 6,688 corporate volunteering days covering 36,200 hours.

## The Wildlife Trusts' Operations Greenhouse Gas Emissions FY2023-24

In FY2023-24, The Wildlife Trusts were collectively responsible for **26,814.4 $tCO_2e$** of GHG emissions across our operational activities (not including livestock). This compares to 20,598.6 $tCO_2e$ in FY2022-23, with the short-term increase being driven by scope 3 purchasing emissions. Our baseline year, FY2019-20, did not include as many GHG emissions categories, such as purchases, which now make up 68% of our total operational emissions. In FY2019-20 we reported emissions of 8,575 $tCO_2e$. This baseline value is not directly comparable to today's values.

Our scope 1 and scope 2 emissions accounted for 2,611.2 $tCO_2e$ in the reporting year. Scope 1 and 2 emissions have decreased by 187.9 $tCO_2e$ compared to FY2022-23 and decreased by 938.3 $tCO_2e$ compared to our baseline. This is a very important step towards reaching net zero because we are reducing direct dependence on fossil fuels in our scope 1 and 2 emissions.

Our indirect emissions, known as our scope 3 emissions, accounted 24,203.3 $tCO_2e$ in the reporting year. Scope 3 emissions have increased by 6,403.7 $tCO_2e$ compared to FY2022-23. The increase has been driven by a combination of changes to the government emissions factors that we use, and increases in the amount spent on purchasing being reported in the most recent financial year. We are currently reviewing our methodology for estimating emissions from purchases and working from home. This is due to concerns that the current approach, using data based on national averages, is overestimating emissions, given our particular circumstances. We will update on this in our FY2024-25 inventory.

See **Table 1** and **Figure 1** for a breakdown of GHG emissions by scope and activity. Details of the methodology used can be found in Appendix

[1] The Wildlife Trusts, Strategy 2030 Impact Measures Report - 2023/2024 Financial Year. Available at: https://www.wildlifetrusts.org/about-us/publications

## Description of methodologies and data used.

**Table 1. GHG emissions from our operations FY2023-24 by scope and emissions category.**

| Scope and category | | Activity Type | GHG Emissions ($tCO_2e$) | % of total |
|---|---|---|---|---|
| **Scope 1** | | **Total** | **2,075.3** | **7.7** |
| | | Building fuel (stationary combustion) | **489.8** | **1.8** |
| | | Fleet and equipment fuel (mobile combustion) | **1,584.1** | **5.9** |
| | | Fugitive emissions (refrigerants) | **1.4** | **0.0** |
| **Scope 2** | | **Total** | **535.8** | **2.0** |
| | | Purchased electricity (location-based) | **830. 7** | |
| | | Purchased electricity (market-based) | **535.8** | |
| **Scope 3** | | **Total** | **24,203.3** | **90.3** |
| Category | **1** | Purchased goods | **6,787.2** | **25.3** |
| | **1** | Purchased services (excluding water) | **7,874.2** | **29.4** |
| | **1** | Water use and wastewater treatment | **24.9** | **0.1** |
| | **2** | Capital goods | **3,659.5** | **13.6** |
| | **3** | Fuel-and energy-related activities (not included in scope 1 or scope 2) | **783.7** | **2.9** |
| | **4** | Upstream transportation and distribution | **0.1** | **0.0** |
| | **5** | Waste generated in operations | **230.1** | **0.9** |
| | **6** | Business travel (employees) | **824.6** | **3.1** |
| | **6** | Casual staff and volunteers travel | **431.9** | **1.6** |
| | **7** | Employee commuting | **2,838.8** | **10.6** |
| | **7** | Employees working from home | **741.5** | **2.8** |
| | **8** | Upstream leased assets | **6.9** | **0.0** |
| | **9** | Downstream transportation and distribution | excluded | n/a |
| | **10** | Processing of sold products | excluded | n/a |
| | **11** | Use of sold products | excluded | n/a |
| | **12** | End-of-life treatment of sold products | excluded | n/a |
| | **13** | Downstream leased assets | excluded | n/a |
| | **14** | Franchises | excluded | n/a |
| | **15** | Investments | excluded | n/a |
| **Total reportable emissions (scopes 1 – 3)** | | | **26,814.4** | **100%** |
| Out of scope | | Biogenic emissions (scope 1) | **527.9** | |

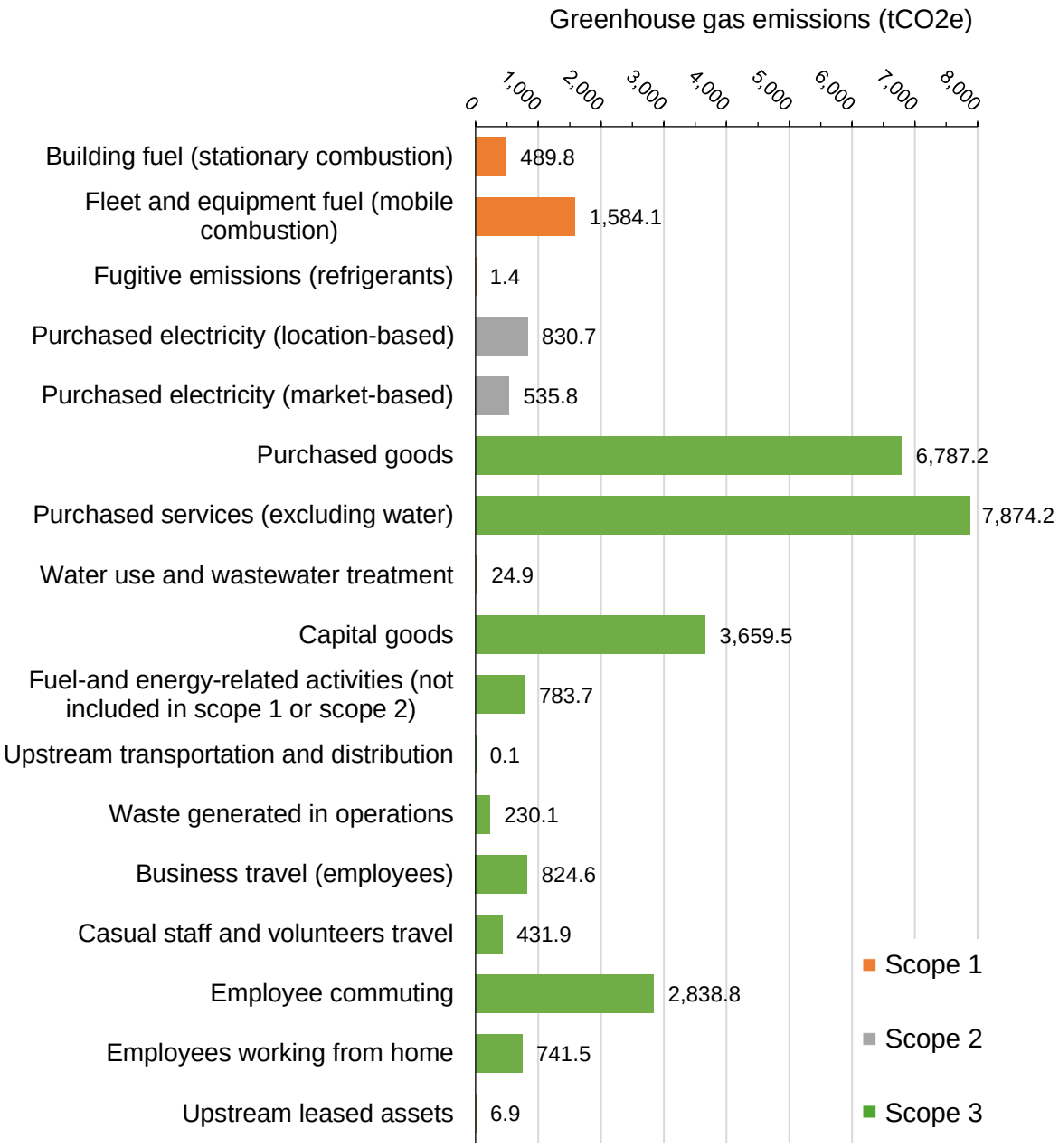


**Figure 1. GHG emissions FY2023-24 from all Wildlife Trust operations* by scope and category.**

*Note:

FY2022-23 data was carried forward for all categories for four Trusts who were unable to report on emissions in the current reporting period.

FY2022-23 data was carried forward for certain categories in the accounts for two Trusts where they were unable to collect data for those categories in the current reporting period.

Accounts were estimated for two Trusts, based on emissions from similar-sized Trusts, where data could not be carried forward from previous years.

## Progress against carbon reduction trajectory

The Wildlife Trusts first undertook a collective GHG account in FY2019-20, which serves as our baseline year against which to compare progress towards our net zero target.

Since FY2019-20, the scope of our GHG account has expanded to include fugitive emissions, working from home, waste, purchased goods and services (previously reported in a limited way as material use), purchased capital goods, upstream leases, upstream transportation and distribution, and fuel-and energy-related activities. Iterative improvements have also been made to data collection and accuracy.

**Table 2** sets out our GHG emissions for the most recent reporting years for each activity type. This is presented alongside our 2019-20 baseline for the activities previously included in our reporting.

**Table 2** provides updated FY2022-23 figures to those presented in our previous inventory report[2]. These updates are due to some corrections being made to the tool used to calculate emissions, in particular the employee commuting and working from home methodologies, and how the scope 2 totals are displayed.

Scope 1 and 2 emissions have both fallen compared to the baseline, scope 1 by 11.5% and scope 2 by 56% (using the market-based total for FY2023-24).

We are unable to accurately compare scope 3 emissions between FY2023-24 and FY2022-23 due to updates to government emissions factors for the purchases categories which we are currently unable to apply to all accounts. Alongside this, we have some uncertainty about the accuracy of these purchases emissions factors in terms of how well they reflect the activities and procurement decisions made by The Wildlife Trusts (see Appendix, section 2 for details). Across the Federation, the spend being reported on purchasing has also increased, but it is difficult to determine how much of this relates to real increases in spend and how much is due to more accurate reporting.

[2] The Wildlife Trusts' Greenhouse Gas Inventory 2022-23 – Operations and Grazing

**Table 2. Operational emissions for the most recent reporting years and our 2019-20 baseline.**

| Scope | Activity Type | GHG Emissions ($tCO_2e$) | | |
|---|---|---|---|---|
| | | 2019-20 | 2022-23 | 2023-24 |
| **Scope 1 Total** | | **2,344.7** | **2,110.7** | **2,075.3** |
| 1 | Building fuel (stationary combustion) | **497.8** | **510.4** | **489.8** |
| 1 | Fleet and equipment fuel (mobile combustion) | **1,846.9** | **1,598.7** | **1,584.1** |
| 1 | Fugitive emissions (refrigerants) | excluded | **1.5** | **1.4** |
| **Scope 2 Total** | | **1,204.8** | **688.4** | **535.8** |
| 2 | Purchased electricity (location-based) | **1,204.8** | **769.6** | **830.7** |
| 2 | Purchased electricity (market-based) | excluded | **688.4** | **535.8** |
| **Scope 3 Total** | | **5,025.8** | **17,799.6** | **24,203.3** |
| 3 | Purchased goods | excluded | **2,949.3** | **6,787.2** |
| 3 | Purchased services (excluding water) | excluded | **7,378.7** | **7,874.2** |
| 3 | Water use and wastewater treatment | **111.3** | **22.3** | **24.9** |
| 3 | Capital goods | excluded | **2,039.0** | **3,659.5** |
| 3 | Fuel-and energy-related activities (not included in scope 1 or scope 2) | **96.4** | **730.8** | **783.7** |
| 3 | Upstream transportation and distribution | excluded | **0.0** | **0.1** |
| 3 | Waste generated in operations | excluded | **281.7** | **230.1** |
| 3 | Business travel (employees) | **752.5** | **670.0** | **824.6** |
| 3 | Casual staff and volunteers travel | **608.1** | **382.0** | **431.9** |
| 3 | Employee commuting | **3,457.2** | **2,491.5** | **2,838.8** |
| 3 | Employees working from home | excluded | **849.8** | **741.5** |
| 3 | Upstream leased assets | excluded | **4.6** | **6.9** |
| **Total reportable emissions (scopes 1 – 3)** | | **8,575.3** | **20,598.6** | **26,814.4** |
| Out of scope | Biogenic emissions (scope 1) | **33.5** | **527.9** | **527.9** |

## Decarbonisation highlights and challenges, FY2023-24

In FY2023-24, The Wildlife Trusts continued to work on decarbonisation across operational activities, including:

- **Improving the energy efficiency of buildings and/or exploring possible measures**. For example, through switching to LED lighting, reviewing and adjusting heating usage, improving building insulation, and exploring options such as air source heat pumps.

- **Installation of solar panels and battery storage** by some Trusts, with others exploring the options to do so.

- **Actions to decarbonise fleet and equipment** such as replacing fuel-powered tools with battery-powered tools when they reach end of life, acquisition of EVs to replace petrol/diesel vehicles and reduce fuel use, and installation of electric charging points.

- **Electric vehicle (EV) salary sacrifice schemes** have been introduced by a number of Trusts, enabling staff to lease a zero-emission EV, helping to reduce emissions from staff travel. The Royal Society of Wildlife Trusts partnered with Octopus Energy to provide this scheme, which is also available for individual Wildlife Trusts to administer.

- **Actions to support sustainable travel choices by staff.** For example, providing bike shelters and encouraging use of the cycle to work scheme, as well as encouraging walking to work, public transport use and car sharing.

- **Considering which routine communications for members can be provided in digital format only** to reduce the impact from posting hard copies.

- **Reviewing and updating procurement policies,** for example to include sustainability checklists for selecting suppliers of goods and services.

- **Implementing water saving measures** such as rainwater harvesting systems, turning off water supplies to livestock troughs when not in use and flush savers on toilets.

Current challenges facing The Wildlife Trusts in our decarbonisation journey include:

- **We have some uncertainty in our methods for estimating emissions** for some categories, for example purchases and working from home. However, we can still implement carbon reduction actions regardless of this measurement uncertainty, and we will continue to do so alongside improving our methods.

- **Reporting coverage is increasing** which leads to higher emissions totals on paper but does not necessarily reflect an increase in emissions, just better reporting.

- **The availability and affordability of the technology we need to decarbonise.** For example, offroad vehicles are essential for Trusts to access more rural sites and to aid habitat management. Decarbonising our fleet vehicles would require transitioning to electric offroad vehicles. However, there currently is not an affordable option with the required specifications for this to be possible. Affordability of decarbonisation measures for our buildings is also a challenge, which is often enhanced in cases where buildings are old or listed, and it is more difficult or not possible to retrofit newer measures that are designed for newer buildings.

## The Wildlife Trusts' Livestock Greenhouse Gas Emissions FY2023-24

During 2023-24, The Wildlife Trusts continued to consolidate their approach to estimating and reducing GHG emissions arising from their conservation grazing operations. The bespoke Wildlife Trusts' Conservation Grazing GHG Emissions Calculator, developed over previous years, was used to estimate the federation's collective livestock emissions again in 2023-24 (see the background explanation of how and why this was developed, in The Wildlife Trusts' GHG Inventory report for 2022-23[2]). The headline results of the application of this calculator to Wildlife Trusts' grazing livestock data since April 2020 (including 2023-24) are given in **Table 3**.

On the basis of the data available and this year's analysis, we have concluded that:

- Total combined GHG emissions from the grazing animals that contributed to the management of Wildlife Trust landholdings in FY2023-24 were approximately **14,300 $tCO_2e$** (using $GWP_{100}$, see **Table 3** for more details), of which 92% were in the form of methane (486 tonnes; 13,110 $tCO_2e$) and 8% nitrous oxide (4.3 tonnes; 1,186 $tCO_2e$).
- The overall level of grazing on Wildlife Trust land increased in 2023/24 compared to 2022/23. The amount of grazing (measured in animal years) increased by about 3.1% while the grazing pressure delivered by these animals (measured by the number of Livestock Unit years of active grazing) increased by about 2.0%. The smaller increase in grazing pressure compared to amount of grazing implies a slight overall increase in the amount of conservation grazing delivered by larger animals (such as cattle) and a similarly slight decrease in the amount delivered by smaller ones (such as sheep).
- Conversely, over the three years from 2020-21 to 2023-24, grazing pressure has reduced by a total of about 11.8%. It is not yet clear what the implications of this are for the wildlife and nature conservation value of the semi-natural habitats being grazed.
- Between 2022-23 and 2023-24, there has also been a slight movement towards conservation grazing operations containing proportionally higher 'lower emitting' animals such as ponies, leading to a 3.2% decrease in emissions per annual Livestock Unit (Livestock Unit year) of grazing activity. This means that on average the animals used have become more efficient per unit of grazing activity.
- Despite the increase in reported grazing activity in 2023-24, associated emissions of GHG have fallen slightly – methane by about 0.7% (12.2% since 2020-21) and nitrous oxide by about 6.7% (10.2% since 2020-21).
- Combined, these emission reductions suggest that between April 2020 and March 2024, the long-term global warming impact of Wildlife Trust conservation grazing operations (over a 100 year time period) has reduced by about 12.0% and their short-term impact (over a 20 year timeframe) by about 12.1%. It is likely that the reductions observed are at least partly a consequence of more precise recording and reporting, alongside actual reductions in livestock grazing.
- For the first time, in 2023-24, it has been possible to report a year-on-year change in the estimated GHG emissions per hectare of land grazed. Between 2022-2023 and 2023-24, this reduced from 0.66 $tCO_2e$ per hectare to 0.57 $tCO_2e$ per hectare – a 13.6% improvement. A substantial part of this will have been driven by a significant increase in the reported area of land being grazed in 2023-24 (by 22% to 27,104 ha, from 22,181 ha the previous year). It may also reflect a combination of an increase in the efficient targeting of grazing effort (allowing the delivery of conservation land management goals with fewer grazing animals) and a move towards lower-emission animals (such as ponies). Some of it may reflect improvements in the accuracy of land area reporting.

**Table 3. A summary of the estimated GHG emissions from The Wildlife Trusts' conservation grazing operations from April 2020 to March 2024 inclusive.**

| | Year | Conservation grazing operation | | GHG emissions ($tCO_2e$) | | | | | | Carbon intensity (using $GWP_{100}$ for $CH_4$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Annual grazing pressure | | Long-term Global Warming Impact (using $GWP_{100}$ for methane) | | | Short-term Global Warming Impact (using $GWP_{20}$ for methane) | | | | |
| | | Headage (animal years) | Livestock Units (LU years) | Methane ($CH_4$) | Nitrous oxide ($N_2O$) | Combined $CH_4$ & $N_2O$ | Methane ($CH_4$) | Nitrous oxide ($N_2O$) | Combined $CH_4$ & $N_2O$ | ($tCO_2e$ per LU year) | ($tCO_2e$ per hectare) |
| Values (units) | 2020-21 | 19,012 | 5,916 | 14,932 | 1,322 | **16,254** | 44,357 | 1,322 | **45,679** | 2.75 | N/A |
| | 2021-22 | 18,977 | 5,734 | 14,413 | 1,245 | **15,658** | 42,815 | 1,245 | **44,060** | 2.74 | N/A |
| | 2022-23 | 16,254 | 5,060 | 13,208 | 1,272 | **14,481** | 39,237 | 1,272 | **40,509** | 2.80 | 0.66 |
| | 2023-24 | 16,764 | 5,163 | 13,110 | 1,186 | 14,297 | 38,945 | 1,186 | 40,132 | 2.71 | 0.57 |
| Changes (%) | 2020-21 to 2021-22 | *-0.2%* | *-3.1%* | *-3.5%* | *-5.8%* | ***-3.7%*** | *-3.5%* | *-5.8%* | ***-3.5%*** | *-0.3%* | *N/A* |
| | 2021-22 to 2022-23 | *-14.3%* | *-11.7%* | *-8.4%* | *2.2%* | ***-7.5%*** | *-8.4%* | *2.2%* | ***-8.1%*** | *2.1%* | *N/A* |
| | 2022-23 to 2023-24 | *3.1%* | *2.0%* | *-0.7%* | *-6.7%* | *-1.3%* | *-0.7%* | *-6.7%* | *-0.9%* | *-3.2%* | *-13.6%* |
| | 2020-21 to 2023-24 | **-11.8%** | **-12.7%** | **-12.2%** | **-10.2%** | **-12.0%** | **-12.2%** | **-10.2%** | **-12.1%** | **-1.5%** | ***N/A*** |

Livestock Units (LU) – a measure of grazing pressure, allowing stocking rate comparison between livestock types[1].

An animal year – a composite measure of grazing activity, combining the number of animals present with the length of time (in years) for which each animal is present.

Global Warming Potential (GWP) – the index used to translate the level of emissions of various gases into a common measure to compare the relative radiative forcing (warming influence) of different gases over a specific time period[1]. $GWP_{20}$ and $GWP_{100}$ consider time periods of 20 and 100 years respectively.

The 2023-24 data collection exercise secured returns from 34 of the 47 Trusts, three of which used no domestic grazing animals during the year.

Data from previous years' returns were used for 13 Trusts, on the assumption that their grazing operations had been maintained at a consistent size from the previous year. These approximate returns represented about 20% of the federation's grazing activity for the year, and about 22% of the federation's estimated livestock emissions.

We are continuing to develop our approach to estimating and reducing the GHG emissions associated with our conservation land management, including carrying out more detailed analysis and extension of our research collaborations. We have worked with the *Wild Business* consultancy to produce a series of case studies looking at the relationship between delivery of biodiversity outcomes, conservation grazing practices and GHG emissions at a varied selection of English nature conservation sites. These case studies model the likely implications of changing conservation grazing regimes for their associated GHG emissions. They will be published in 2025.

There has been considerable debate concerning the relative merits of using different timeframes and calculation methods when estimating and reporting the climate implications of methane ($CH_4$) emissions from grazing animals. As a short-lived but extremely potent greenhouse gas, $CH_4$ exerts most of its warming influence within 20 years of release, before being oxidised. Over a 100-year period, a tonne of $CH_4$ emitted causes about 27 times as much global warming as a tonne of $CO_2$, over a 100-year period. But, over the first 20 years of this, a tonne of $CH_4$ causes nearly 81 times as much global warming as a tonne of $CO_2$ released at the same time. Consequently, both the short-term impacts of $CH_4$ emissions and the short-term benefits from reducing them are much greater than these impacts and benefits in the long term.

For many livestock farmers and nature conservation land managers, there is a concern that estimates that treat $CH_4$ emissions from livestock as one-off single releases don't accurately reflect the reality of these emissions. It is often argued that if livestock numbers and grazing regimes are kept constant on a particular piece of land over a period of many years (more than 20), the resulting $CH_4$ emissions will be similarly constant. So will the rate of (relatively rapid) decay of the $CH_4$ already released by previous generations of grazing animals, resulting in far lower overall global warming impact from that livestock operation. Consequently, many have argued that using the established estimation approach, using global warming potentials (GWP) to convert quantities of $CH_4$ into 100-year $CO_2$ equivalents (using a $GWP_{100}$ of 27), or 20-year equivalents (using a $GWP_{20}$ of 81), don't do what's needed.

For the first time, in 2023-24 we have also estimated The Wildlife Trusts' direct livestock-related emissions using the alternative GWP* methodology, which takes explicit account of the short-lived nature of $CH_4$ molecules in the air and the steady-state pipeline nature of $CH_4$ emissions from a herd or flock of grazing animals maintained at an approximately constant size over a period of 20 years or more on the same land. Methods using $GWP_{20}$ and $GWP_{100}$ emphasise the direct $CO_2$ equivalence of the $CH_4$ produced and highlight $CH_4$'s greater potency as a greenhouse gas (especially in the short term, using $GWP_{20}$). The method using GWP* indicates a 'warming impact' equivalency with comparable emissions of $CO_2$ and it can help to clarify the relative contribution of steady-state $CH_4$ emissions from livestock, compared to other (non-livestock) sources of $CO_2$.

This approach seems to be particularly applicable on sites of high nature conservation value, where a habitat or mosaic of habitats has been maintained in a state of dynamic equilibrium for several decades using grazing animals to continuously sustain desirable communities of wild plants and animals for a long time. We will continue to use all three GWP metrics going forward for the time being.

**Error! Reference source not found.** illustrates the livestock emission reductions achieved a cross The Wildlife Trusts' conservation grazing operations from 2020-21 to 2023-24, using three different estimation methods. There are still some issues to be resolved in the application of GWP* to the annual reporting of grazing emissions in this way (such as how to estimate historical (steady state, 'benchmark') grazing levels and regimes when these are not known and current grazing practice changes from year to year). Bearing this in mind, this first comparison suggests that while the use of different global warming potentials and different estimation methods clearly produces different numbers, the trends and patterns they reveal are still very similar across all three sets of estimates.

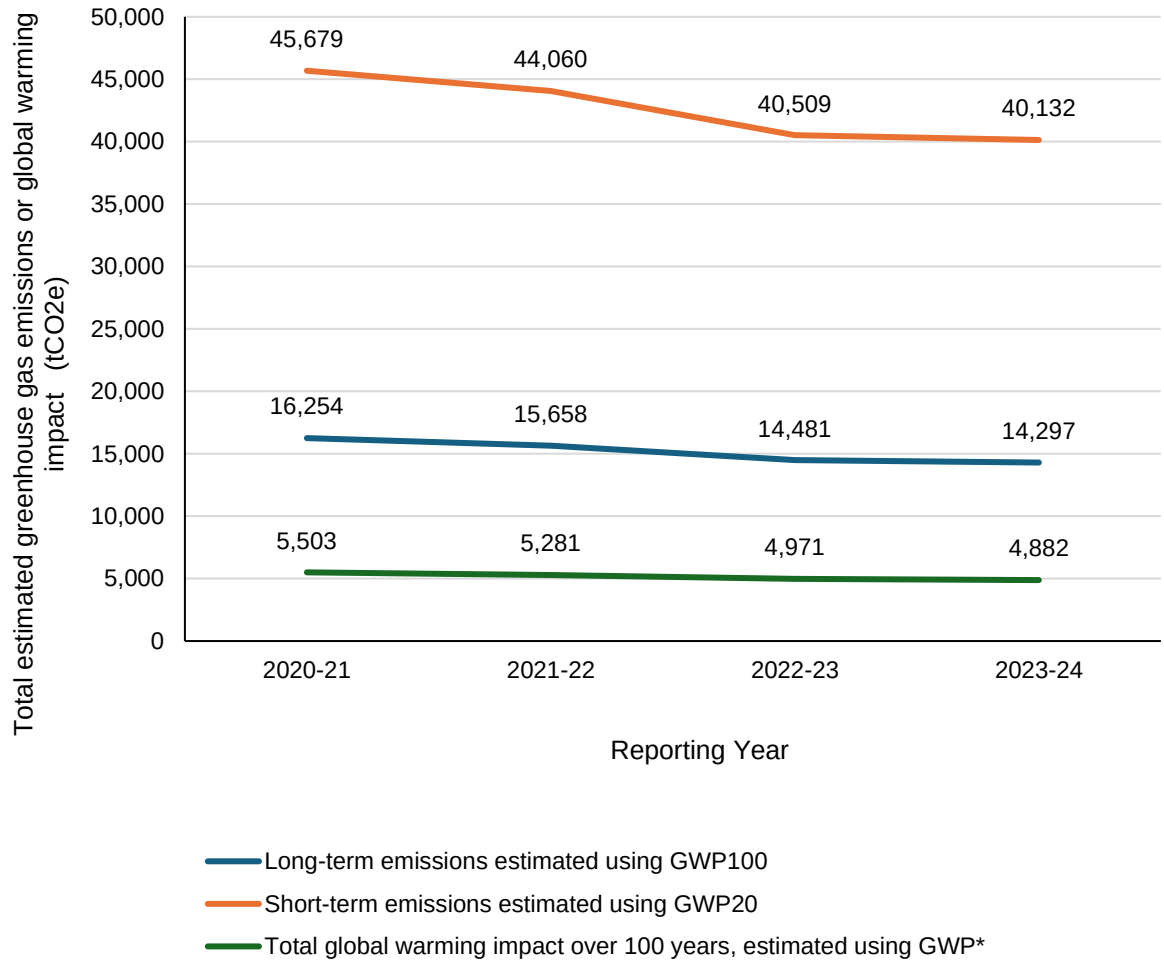


**Figure 2. The Wildlife Trusts' changing annual GHG emissions directly from grazing livestock, 2020 to 2024.**

For the purposes of tracking and illustrating annual changes in emissions and informing strategy intended to reduce these, all three approaches paint the same general picture (a steadily declining trend with slight annual variations).

Further detail on the methods used and the continuing development of our approach to livestock-related emissions are given in **Appendix 1, section 3**.

## Appendix

### 1. Description of methodologies and data used

The Wildlife Trusts are aligning our GHG Inventory so far as practically possible with best practice set out by the Greenhouse Gas Protocol. In 2022, an external audit of our accounting method was undertaken, and this report reflects we are now acting on its recommendations to meet best practice.

All Wildlife Trusts and RSWT use a consistent operational control boundary and tool to do this. Our operational boundary includes both Wildlife Trust activities and those of our subsidiaries such as our consultancies.

We expanded the boundary of our GHG inventory in FY2022-23, to increase the coverage of scope 3 activities and include fugitive emissions from refrigerants. Efforts to improve the accuracy and efficiency of data collection methods were also made across several areas, including introducing a market-based method for calculating purchased electricity emissions which will reflect the reduction in emissions as Trusts switch to renewable energy suppliers.

The categories included within the scope of The Wildlife Trusts' GHG Inventory for FY2023-24, and indicative data sources can be found in **Table 4** to **Table 6**, exclusions are listed in **Table 7**. Where primary data was not available to calculate emissions, sensible estimates were employed.

**Table 4. Descriptive information about our GHG Inventory approach.**

| Information | Response |
|---|---|
| Chosen consolidation approach (equity share, operational control or financial control) | Operational control |
| Description of the businesses and operations included in the company's organisational boundary | Material activities of the main charities and their subsidiaries, including trading arms. |
| The reporting period covered | Financial year 2023-24 |
| A list of scope 3 activities included in the report | See Table 6 |
| A list of scope 1, scope 2, and scope 3 activities excluded from the report with justification for their exclusion | See Table 7 |
| The year chosen as base year and rationale for choosing the base year | FY2019-20, the first year a GHG inventory was undertaken and pre-COVID baseline |
| Once a base year has been established, the chosen base year emissions recalculation policy. If base year emissions have been recalculated, the context for any significant emissions changes that triggered the recalculation. | To be decided |

**Table 5. Scope 1 and 2 activities included in The Wildlife Trusts' GHG Inventory FY2023-24.**

| Scope and category | Description of the types and sources of data used | Data quality* | Description of methodologies, allocation methods, and assumptions used to calculate emissions |
|---|---|---|---|
| **Scope 1** | | | |
| Building fuel (stationary combustion) | Supplier invoices of fuels used for heating, generators, and cooking. Including gas, oil, liquefied petroleum gas (LPG), diesel, petrol. | H | Consumption data (kWh, litres) x emissions factor |
| Fleet and equipment fuel (mobile combustion) | Fuel card and supplier invoices for fuels used in fleet vehicles, machinery, and other mobile activities. | H | Consumption data (litres) x emissions factor |
| Fugitive emissions (refrigerants) | Supplier invoices of refrigerant top ups in air conditioning units or refrigerators in reporting year. | H | Consumption data (kg) x emissions factor |
| Biogenic (out of scope) | Supplier invoices for quantities, in tonnes, and types of feedstock (e.g. logs, chips, pellets, grass/straw) for heating.<br><br>Biodiesel methyl ester or hydrotreated vegetable oil (HVO) fuel for vehicles, in litres. | H | Consumption data (tonnes) x emissions factor |
| **Scope 2** | | | |
| Purchased electricity (location-based) | Supplier invoices of purchased electricity, cooling and heating. | H | Consumption data (kWh) x emissions factor (average UK grid) |
| Purchased electricity (market-based) | Supplier invoices of purchased electricity, cooling and heating. | H | Consumption data (kWh) x emissions factor (tariff specific) |

**Table 6. Scope 3 activities included in The Wildlife Trusts' GHG Inventory FY2023-24.**

| Scope and category | Description of the types and sources of data used | Data quality* | Description of methodologies, allocation methods, and assumptions used to calculate emissions |
|---|---|---|---|
| **Scope 3** | | | |
| **1: Purchased goods and services** | Spend data of all purchased goods and services. | M | Either consumption data (weight, volume, etc.) x emissions factor<br><br>Spend (£) x spend-based emissions factor |
| **1: Water use and wastewater** | Supplier invoices of mains water use and wastewater treatment, in cubic meters (m3). | H | Consumption data (kWh) x emissions factor<br><br>Assume water treatment is the same as water supply unless otherwise stated. |
| **2: Capital goods** | Invoices for spend on capital assets purchased during the reporting period, following organisation's rule for capitalisation. | M | Spend (£) x spend-based emissions factor<br><br>Full cost reported, not amortised. |
| **3: Fuel-and energy-related activities (not included in scope 1 or scope 2)** | Function of fuel and energy use in other categories, including electricity transmission and distribution and well-to-tank emissions covering heat, travel, bioenergy, travel mileage and public transport emissions covered by the Inventory. | H | Fuel consumption x emissions factor |
| **4: Upstream transportation and distribution** | Use of couriers including inbound and outbound logistics: Distances, weight as proportion of containment and mode of transport.<br><br>Data supplied by couriers. | M | Activity (transport type, total distance travelled and weight transported) x emissions factor |

| Scope and category | Description of the types and sources of data used | Data quality* | Description of methodologies, allocation methods, and assumptions used to calculate emissions |
|---|---|---|---|
| **5: Waste generated in operations** | Waste weights generated in operations entering different waste streams.<br><br>This includes landfill, incineration, commercial recycling by material type, and composting. | M | Estimated on bin volume equated to weight, typical proportion filled and number of lifts in reporting year.<br>Or<br>Waste service provider reports<br><br>Weight (tonnes) x emissions factor |
| **6: Business travel (employees)** | Distance and mode of travel incurred by employees to deliver organisation's operations.<br><br>Activity data obtained from the expense system. | H | Activity (km and mode of travel) x emissions factor |
| **6: Casual staff and volunteers travel** | Distance and mode of travel by casual staff (non-permanent, contract) and volunteers deployed to deliver Wildlife Trust activities.<br><br>Done through various methods, e.g. estimations, surveys, rarely actual activity data. | L | Estimate of activity (km and mode of travel) x emissions factor |
| **7: Employee commuting** | Staff survey to estimate distance and mode of travel by employees' commuting from their homes to their registered place of work. | M | Extrapolated estimate of activity (km and mode of travel) x emissions factor |
| **7: Employees working from home** | Staff survey to estimate additional fuel and energy emissions associated with staff working from home. | M | Extrapolated estimate of total working from home hours x emissions factor<br><br>Function to distinguish additional energy use more readily based on household occupancy and devices. |

| Scope and category | Description of the types and sources of data used | Data quality* | Description of methodologies, allocation methods, and assumptions used to calculate emissions |
|---|---|---|---|
| | Based on average working from home hours per month reported by each employee and extrapolated. | | |
| **8: Upstream leased assets** | Supplier invoices or activity data for the use of leased assets including energy use in buildings with no control over supplier, and electricity use for leased electric vehicles where not already included in scope 2. | M | Consumption data (unit dependent on fuel/energy type used) x emissions factor |

***Data quality key:**

- High - activity and consumption data used
- Medium - some proxies / estimates
- Low - estimates and proxies only
- None - no data available

## 2. Emissions Factors

Emissions factors are used to calculate GHG emissions for an activity. We use emissions factors to convert either consumption (weights, volumes etc.) or spend-based data (£) into estimated GHG emissions.

Two datasets are leveraged to calculate this GHG Inventory:

1. **Government conversion factors for company report**[3]

   The majority of emissions factors used in our GHG Inventory calculations are taken from the Government's annually published conversion factors for company reporting of GHG emissions. For the reporting year FY2023-24, the 2024 dataset was used.

2. **UK and England's carbon footprint consumption emissions factors**[4]

   The UK and England's carbon footprint emissions factors published by Defra have been used to estimate emissions for purchased goods, purchased services, and purchased capital assets. In most cases, spend-based emissions factors are used but consumption-based factors can be used for some purchased goods where weight or volume data is available, for example.

   For the reporting year FY2023-24, the 2021 dataset was used which was the most recent dataset available at the time. There tends to be a three-year lag in the availability of these factors. The categories used (Standard Industrial Classification codes) and emissions factors are usually updated by Defra annually, but this is not guaranteed.

   We are currently unable to accurately compare our FY2023-24 and FY2022-23 purchases emissions. The three-year time lag in factors being released means they need retrospectively updating in previous accounts for accurate comparisons to be made. At the time of producing the FY2022-23 accounts, the 2020 emissions factors were the most up to date factors available as published by Defra, the 2021 dataset has since been published and was used for the FY2023-24 accounts. It is recommended that the FY2022-23 accounts are updated to use the more recent 2021 emissions factors, however this is not currently feasible due to the time required to update the accounts for every Trust, particularly when they will need to be updated again when the 2022 update is released. Nearly 80% of emissions factors in 2021 update were higher than those in the 2020 release, partly explaining the increase in our purchases emissions between FY2022-23 and FY2023-24.

   We also recognise that these factors will vary from other spend-based emissions factors and will have a bearing on the resulting emissions estimates. Defra's carbon footprint consumption emissions factors are based on average emissions from the activities covered. We recognise that the suppliers chosen by Wildlife Trusts may result in different emissions to the Defra averages for the goods and services they provide. Additionally, certain goods and services purchased by Wildlife Trusts, such

[3] Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2024). Government conversion factors for company reporting of GHG emissions. Available at: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting (Accessed: 12/07/2024).

[4] Department for Environment, Food & Rural Affairs (2024). Official Statistics: UK and England's carbon footprint to 2021. Available at: https://www.gov.uk/government/statistics/uks-carbon-footprint (Accessed: 15/05/2024).

as those contributing to reserve management, may not be well represented in the emissions factors included by Defra. We therefore have to select the most appropriate categories and associated emissions factors, which may result in some inaccuracies. We consider the current method an appropriate compromise at this point in our accounting journey to estimate emissions from different areas of our procurement activities, whilst not investing heavily to access paid-for datasets. However, we endeavor to improve the accuracy of emissions estimates for purchased goods and services in future.

**Table 7. Exclusions from The Wildlife Trusts' GHG Inventory FY2023-24.**

| Scope 3 category | Comment |
|---|---|
| **Downstream scope 3 emissions** | |
| **9: Downstream transport and distribution** emissions associated with the distribution of publications and retail products from retailer to consumer | Unlikely to be material to our GHG inventory. |
| **10: Processing, use and end-of-life treatment of sold products** e.g., emissions associated with the assumed post-sale third-party processing of publications and retail products sold by The Wildlife Trusts or a Wildlife Trust | Unlikely to be material to our GHG inventory. |
| **11: Use of sold products** | Unlikely to be material to Wildlife Trusts GHG inventory. |
| **12: End-of-life treatment of sold products** | Unlikely to be material to our GHG inventory. |
| **13: Downstream leased assets** | Activity either at federation or individual Trust level is not considered to be of scale for this to be sufficiently relevant. |
| **14: Franchises** | Not applicable, though subsidiary companies of Wildlife Trusts are included within the inventory boundary. |
| **15: Investments** emissions associated with the business activities of the companies in which The Wildlife Trusts or the relevant Wildlife Trust has invested. | We do not actively manage own investments. |

## 3. Biogenic emissions and removals from habitats and livestock

### Livestock

We will continue to measure and report annually emissions generated from livestock grazed on land we own or manage to deliver nature conservation benefits. Prior to FY2022-23, these were grouped within our operational emissions reporting, but from FY2022-23, livestock emissions have been reported separately alongside, rather than nested within, our operational GHG inventory.

The data collected from each Wildlife Trust in FY2023-24 concerning the grazing animals used in their conservation grazing operations was as follows:

- Species of animal (cattle, sheep, goats, horses and ponies, pigs, deer, water buffalo, bison).
- Lactation state (dairy/non-dairy) for cattle.
- Breed size (small, medium, large) for cattle, sheep and for horses and ponies.
- Animal age (calves and lambs under one year, or older animals) for cattle and sheep.
- Number of animal days spent on pasture or range (for each animal category).
- Number of animal days spent off pasture or range (for each animal category).
- Waste management approach used for each animal category while off-pasture (farmyard manure, outdoor yard or indoor solid floor, indoor slatted floor, deep bedding).

Data format and collection was tied as closely as possible to established grazing management record keeping and reporting for other purposes.

Emissions of methane and nitrous oxide were estimated using emission factors taken from the UK Greenhouse Gas Inventory report, 1990 to 2021 (Brown *et al*, 2023)[5].

Livestock Unit equivalence values were used to adjust emissions factors to suit different species and breed sizes not included within the UK Greenhouse Gas Inventory methods, using Countryside Stewardship Higher Tier guidance for 2022 (Rural Payments Agency, 2022) as the primary source of Livestock Unit equivalences[6].

Calculation of estimated emissions was undertaken using a bespoke conservation grazing GHG emissions calculator, based on the principles that:

- The primary purpose of grazing animals employed in conservation grazing is to remove vegetation by eating it and the scale and effectiveness of their contribution to conservation land management efforts can be largely measured in those terms.
- A Livestock Unit of grazing pressure is typified by a 650 kg productive dairy cow requiring 13 kg of dry matter intake per day to maintain its weight and condition, and

[5] Brown, P., Cardenas, L., Del Vento, S., Karagianni, E., MacCarthy, J., Mullen, P., Passant, N., Richmond B., Thistlethwaite, G., Thomson A., Wakeling D. & Willis, D. (2023). UK Greenhouse Gas Inventory, 1990 to 2021: Annual Report for submission under the Framework Convention on Climate Change. Available at: https://naei.beis.gov.uk/reports/reports?report_id=1108

[6] Rural Payments Agency UK (2022). Countryside Stewardship: Higher Tier Manual for agreements starting on 1 January 2022. Annex 8C - Convert livestock numbers into Livestock Units. Available at: https://www.gov.uk/government/publications/countryside-stewardship-higher-tier-manual-for-agreements-starting-on-1-january-2022

it is possible to use this relationship to equate grazing impact, feed intake and GHG emissions between different species, breeds and types of grazing animal.

- Ruminants emit more GHG than non-ruminants for a given amount of food intake (because their digestion depends more on the action of methanogenic microbes).
- There are differences in the way different species digest vegetation and the consequences of this for GHG emissions, but other than the difference between ruminants and non-ruminants, these are fairly minor.
- The quality and quantity of feed intake both have a significant impact on GHG emissions.
- Larger animals eat more than smaller animals.
- Younger (faster growing) animals eat relatively more than older (slower growing) animals.
- Lactating animals eat relatively more than non-lactating animals.
- Animals that eat more produce more waste (leading to more waste-related emissions).
- The way in which animal waste is managed can have a significant impact on the emissions generated from it.
- Feed quality in conservation grazing situations is largely determined by the habitat type(s) within the grazing range, so cannot normally be manipulated expressly to reduce GHG emissions without consequences for conservation of the habitat.
- In the absence of specific data concerning the nutrient value and fiber content of different food plants and the effect of fine-grained feeding behaviour of conservation grazing animals on their food intake, these cannot be taken into account as a variable in the calculator.

Data collected for FY2020-21 and FY2021-22 were converted (as accurately as possible) into the format required for the calculator first used in 2023 and used again in 2024. Revised GHG emission estimates were generated for 2020-21 and 2021-22, to provide consistent estimates over the four-year period.

We will continue to refine our monitoring approach and to pursue options to reduce emissions where it is possible to do so. In particular:

- The site-based case studies being prepared with us by *Wild Business* were completed in October 2024 and will be published in 2025.
- The Wildlife Trusts' bespoke emissions calculator will be peer reviewed and refined further (including exploring further the use of the GWP* methodology for estimating the impacts of changing rates of livestock-related methane emissions).
- Versions of the bespoke calculator for future years will attempt to generate a clearer picture of how grazing-related emissions are allocated between animals owned by Wildlife Trusts and those owned by independent grazing partners.
- We will further explore the potential for modelling and testing alternative strategies for delivering conservation land management goals with fewer GHG emissions, including:
    - Reducing total numbers of cattle and sheep.
    - Increasing the use of hardier (typically smaller) cattle breeds.
    - Increasing the use of mixed grazing herds, including more ponies.
    - Using technology such as Nofence collars to increase the impact of grazing animals on vegetation and their related 'habitat management efficiency'.
    - Exploring the practical options for pasture-fed animals to receive methane-reducing feed supplements while still out on pasture; and (in some situations)

    - Moving to a greater reliance on grazing by wild and/or semi-wild grazing animals, such as deer.
- We will consider how conservation grazing approaches intended to limit associated GHG emissions might also bring benefits in terms of increased biological abundance and/or biodiversity.

**Habitats**

The Wildlife Trusts are working with the Greenhouse Gas Protocol in their development of international guidance on accounting for land-based emissions and removals, which are due for final publication in Quarter 4 of 2025.

In 2022, The Wildlife Trusts calculated a baseline estimate of the entire federation's annual land-based biogenic emissions and removals from habitats we own or manage. This has not yet been published externally due to large uncertainties in the estimates particularly for emissions from peatlands. Our current focus is narrowing the large uncertainty range of this estimate. We intend to re-run this estimate of the federation's annual land-based biogenic emissions and removals in 2025-26. Any calculation and reporting, at the federation or individual Wildlife Trust level, will remain separate to those of our operational GHG emissions.