University of Exeter | Centre for Energy and the Environment

South Hams District Council's Organisational Carbon Footprint 2023/24

Centre for Energy and the Environment

Internal Document 1075

February 2025

South Hams District Council

University of Exeter | Centre for Energy and the Environment

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Report number: Internal Document 1075

Publication date: 10th March 2025

Revision Number: 1

Version history:

Version number	Initials	Date	Description
1.0	DL, EF	18/02/2025	First Version
2.0	DL, EF	07/03/2025	Changes to commuting and leased assets.

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Management summary

The Centre for Energy and the Environment at the University of Exeter was commissioned by South Hams District Council (SHDC) through the South West Energy and Environment Group (SWEEG) to develop and produce their annual carbon footprint for 2023/24. The footprint produced was based on BS EN ISO 14064-1 and the Greenhouse Gas Protocol. The inventory was produced for both traditional Scope 1-3 categories, and for a set of alternative categories.

Total net emissions for the 2023/24 period were 8,258 tCO_2e. At 6,124 tCO_2e (74%), most emissions are Scope 3, a 1% increase from the 2022/23 inventory. Scope 1 and 2 emissions total an estimated 1,955 tCO_2e (24%) and 180 tCO_2e (2%), respectively. Scope 1 emissions rose by 48% from last year, primarily due to refuse collection being taken back in-house. Meanwhile, Scope 2 emissions saw a 7% reduction from 2022/23, primarily due to continued grid decarbonisation. Net emissions in 2023/24 are 9% higher than in the previous year. This is predominantly driven by an increase in emissions associated with procurement. Emissions from the alternative categories are broken down as follows:

- Buildings 2,287 tCO_2e / 28% gross emissions: 55% of these emissions are from the leisure centres with a further 14% from the corporate estate. The remaining 31% is attributed to leased out assets (25%) and homeworking (6%). Emissions from this category have reduced by around 100 tCO_2e compared to the previous year largely due to grid decarbonisation.
- Transport 2,784 tCO_2e / 34% gross emissions: 66% of these emissions arise from SHDC's refuse fleet, with 18% from SHDC's managed fleet and 2% from SHDC's grey fleet. 14% of transport emissions are due to employee commuting. Emissions from this category have not significantly changed compared to the previous year (< 1%).
- Procurement 3,186 tCO_2e / 39% gross emissions: Procurement represents a significant proportion of the footprint. Estimation of emissions from procurement is inaccurate as it is based purely on spend data and coarse emission factors. Focussing on large areas of spend and looking to quantify GHG emissions using specific activity data would improve the quality of the calculations. Emissions from this category increased by 828 tCO_2e compared to the previous year, primarily due to increased spend on service activities, including real estate services (425 tCO_2e), tipping fees (362 tCO_2e) and vehicle repairs (280 tCO_2e).
- Offsets 0 tCO_2e / 0% gross emissions: SHDC do not offset any of their organisational emissions.

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1 Introduction

South Hams District Council (SHDC) commissioned the Centre for Energy and the Environment (CEE) at the University of Exeter through the South West Energy and Environment Group (SWEEG) to quantify their 2023/24 greenhouse gas (GHG) emissions – their carbon footprint. Owing to an expanded approach, this is the first footprint the CEE have produced for SHDC since the initial 2018/19 estimate, having been conducted internally since.

There are two main standards in use that provide methods for quantifying organisational GHG emissions. The first of these is BS EN ISO 14064-1 [1] (referred to from here as ISO 14064) and the accompanying ISO/TR 14069 [2] which provides specific guidance on applying ISO 14064. The second is the Greenhouse Gas Protocol [3] (referred to from here as the GHG Protocol) which was revised in 2015 and has accompanying documents which provide more detail on quantifying emissions from supply chains [4,5]. In addition, there is the UK's Environmental Reporting Guidelines (ERG) [6] (specifically Chapter 3), which is broadly based on ISO 14064 and the GHG Protocol but is a lot less detailed. Finally, PAS 2060 [7] enables organisations to demonstrate carbon neutrality. Within PAS 2060 (Annex C Table C.1) it lists ISO 14064, the GHG Protocol, and the ERG as the three standards that can be used by organisations to provide methods to quantify GHG emissions. In general, there is significant overlap between ISO 14064 and the GHG Protocol. It can be said that in meeting the ISO 14064 criteria, the GHG Protocol criteria and ERG will also be met.

2 General Approach

2.1 Definition of "Carbon Footprint"

A "carbon footprint" is taken here to be the net emissions of carbon dioxide equivalent by an organisation over a year – an annual GHG inventory, with the full boundaries of the organisation discussed in the sections below. The net emissions are established by calculating emissions from all sources (processes that release GHGs into the atmosphere), sinks (processes that remove GHGs from the atmosphere) and reservoirs (components other than the atmosphere that have the capacity to accumulate GHGs).

GHGs that contribute to anthropogenic climate change include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). These each have a different contributory impact to climate change for the same fixed mass. The total impact of all GHGs resulting from the activities of an organisation is measured by multiplying the mass of each gas emitted by its Global Warming Potential (GWP) to an equivalent mass of carbon dioxide termed "carbon dioxide equivalent" (measured in tCO_2e, where "t" represents metric tonnes) Typically, GHG emission factors will already be based on carbon dioxide equivalents and so no additional calculations will be necessary. Section 5.2.2 of ISO 14064 states that direct emissions should be quantified separately for each GHG. However, it is recommended here that the carbon footprint is reported in only carbon dioxide equivalent (tCO_2e) with no disaggregation into the separate GHGs.

2.2 Guiding Principles

As per Section 4 of ISO 14064 the footprint should be developed with the following principles:

- Relevance: GHG sources (and sinks and reservoirs) and methodologies should be appropriate
- Completeness: All relevant GHG emissions and removals should be included
- Consistency: Meaningful comparison in GHG-related information should be enabled
- Accuracy: Bias and uncertainty should be reduced as much as is practicable
- Transparency: Information should be sufficiently disclosed.

2.3 Organisational Boundaries

Confirming the organisational boundary is an important step at the outset of the production of the footprint. This is covered in Section 5.1 and Annex A of ISO 14064 and in more detail and with examples in Chapter 3 of the GHG Protocol. The two standards align in their approach. It is stated that organisations can comprise one or more facilities, and that at each of these GHG emissions may be produced from one or more sources or sinks. A facility is defined as a single installation, set of installations or production processes (stationary or mobile), which can be defined within a single geographical boundary, organisational unit or production process.

Facility-level emissions should then be consolidated by one of the following approaches:

- Control: The organisation accounts for all emissions over which it has either financial or operational control.
- Equity: The organisation accounts for its proportion of GHG emissions from respective facilities. This is more likely to be relevant for joint ventures (JVs)

The control approach is likely to be the most relevant here. Under the control approach 100% of GHG emissions are accounted for operations over which it has control. Emissions from operations where the organisation owns an interest but has no control are not included. Control is defined in one of two ways, and a choice must be made between them:

- Financial control: An organisation has financial control over the operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. For example, financial control usually exists if the company has the right to the majority of benefits of the operation, however these rights are conveyed. Similarly, a company is considered to financially control an operation if it retains the majority risks and rewards of ownership of the operation's assets.
- Operational control: An organisation has operational control over an operation if it, or one of its subsidiaries, has the full authority to introduce and implement its operating policies at the operational level.

It is stated in the GHG Protocol that in most cases, whether an operation is controlled by the company or not does not vary based on whether the financial control or operational control criterion is used (though the oil and gas sector is a notable exception). In practice here, using either approach is likely to result in the same total emissions within the inventory. There may

however be some differences in categorisation. For example, Annex F of the GHG Protocol outlines in detail how to account for emissions from leased assets. For each scenario emissions will fall within the footprint, though whether they are Scope 1/2 or Scope 3 (scopes will be discussed in the next section) will depend on the type of lease. There are two types of leases which are:

- Finance or Capital lease: This type of lease enables the lessee to operate an asset and also gives the lessee all the risks and rewards of owning the asset. Assets leased under a capital or finance lease are considered wholly owned assets in financial accounting and are recorded as such on the balance sheet. Under this lease the lessee is considered to have ownership and both financial and operational control of the leased asset. Conversely, the lessor does not have ownership or financial or operational control of these assets.
- Operating lease: This type of lease enables the lessee to operate an asset, like a building or vehicle, but does not give the lessee any of the risks or rewards of owning the asset. Any lease that is not a finance or capital lease is an operating lease. Under this lease the lessee is considered not to have ownership or financial control but to have operational control of the leased asset. Conversely, the lessor has ownership and financial control of these assets but not operational control.

The allocation of emissions depending on the lease type and whether the asset is being leased or let out using the Financial Control approach is shown in Table 1. If an Operational Control approach is used instead, then the values for the Operating lease column are swapped (i.e., Scope 1/2 becomes Scope 3 and vice-versa).

Table 1: Allocating emission from leased assets under using an organisation's Financial Control boundary for lessee and lessor scenarios (adapted from Annex F GHG Protocol)

Perspective	Finance/Capital Lease	Operating Lease
SHDC are the lessee e.g., tenant	Lessee does have ownership and financial control, therefore emissions associated with fuel combustion are Scope 1 and with use of purchased electricity are Scope 2.	Lessee does not have ownership or financial control, therefore emissions associated with fuel combustion are Scope 3 and with use of purchased electricity are Scope 3.
SHDC are the lessor e.g., landlord	Lessor does not have ownership or financial control, therefore emissions associated with fuel combustion are Scope 3 and with use of purchased electricity are Scope 3.	Lessor does have ownership and financial control, therefore emissions associated with fuel combustion are Scope 1 and with use of purchased electricity are Scope 2.

It is recommended that the footprints should be produced based on a Financial Control organisational boundary.

2.4 Reporting Boundaries

Organisations should establish reporting boundaries and sources and sinks of GHG emissions within each. These are separated into direct and indirect emissions with sub-categories as

discussed in the next section. This results in Scopes 1, 2 and 3 emissions as follows and shown in Figure 1:

- Scope 1 (direct emissions): Activities owned or controlled by the organisation that release emissions straight into the atmosphere, e.g., combustion in owned boilers or vehicles.
- Scope 2 (energy indirect): Emissions released into the atmosphere associated with the consumption of purchased electricity, heat, steam, and cooling.
- Scope 3 (other indirect): Emissions that are a consequence of the organisation's actions, which occur at sources which are not in ownership or control of the organisation, e.g., business travel by means other than company vehicles, waste disposal, or purchased materials.

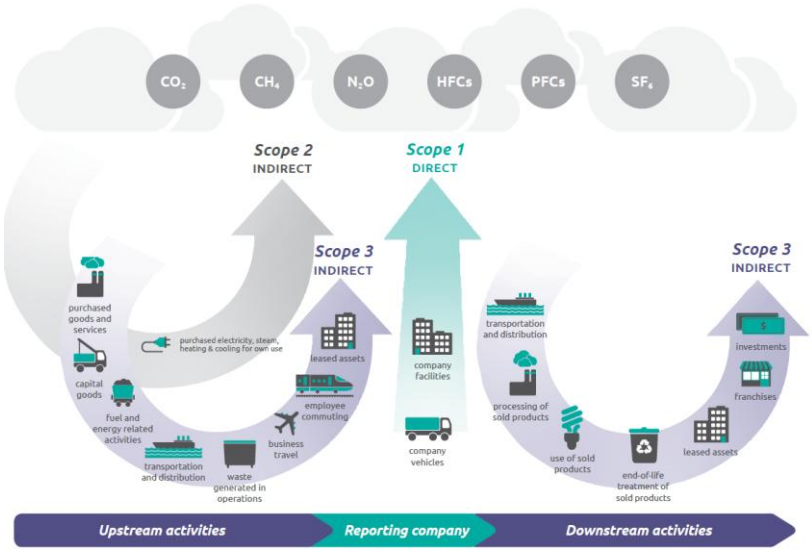


Figure 1: The relationship of direct and indirect emissions [Source: GHG Protocol]

Scope 3 emissions can occur upstream, downstream, or be designated as out of stream. This is helpful to avoid double-counting between organisations. The inclusion of indirect emissions (Scope 3) with discussion of this in Annex H of ISO 14064. Here it is stated that these criteria should be based on those stated in Section 2.2 of this report and that significance should be based on magnitude, level of influence, business risk or opportunity, sector-specific guidance, outsourcing and employee engagement. These should be assessed for significance with the help of external experts, sector-specific guidance, literature reviews or third-party databases. Often, a significance test will be clear but where it is not (for example where data is qualitative) then a "deeper analysis of the criteria may be helpful". An example is given where it is estimated that a source is estimated to be approximately 10% of an organisation's total indirect emissions but that relevant data would be very expensive to obtain, and the resulting accuracy would be poor. In all cases where sources of emissions are not included this should be stated in a transparent manner. The next section discusses categories in more detail.

2.5 Inventory Categories

Categories within each of the three scopes are provided by ISO 14064 and the GHG Protocol and their secondary documents respectively. These two standards were cross-referenced and

in general they align, with some minor differences. These include slight category name differences, ISO 14064 having a "Client and Visitor" category and the GHG Protocol having a "Processing of Sold Products" category exclusively of one another. ISO 14064 does however have a catch-all "Other Indirect Emissions" category so in that sense is more comprehensive and has been chosen as the basis for selection of sub-categories here. A list of categories and whether they have been scoped in and out for the footprints based on initial assessments and discussions is shown in Table 2. Specific explanation of what is included within each of these together with data collection and calculation approaches is provided in Section 3.

Table 2: Inventory categories and their recommended inclusion or not within the footprint

Scope	Upstream/ Downstream	No.	Category ISO 14064-1	Include/ Exclude
Scope 1: Direct GHG emissions and removals				
1	Direct	1	Direct emissions from stationary combustion	Include
		2	Direct emissions from mobile combustion	Include
		3	Direct process related emissions	Exclude
		4	Direct fugitive emissions	Include
		5	Direct emissions and removals from Land Use, Land Use Change and Forestry (LULUCF)	Exclude
Scope 2: Energy GHG indirect emissions				
2	Upstream	6	Indirect emissions from imported electricity consumed	Include
		7	Indirect emissions from consumed energy imported through a physical network	Exclude
Scope 3: Other indirect GHG emissions				
3	Upstream	8	Energy-related activities not included in direct emissions and energy indirect emissions	Include
		9	Purchased goods and services*	Include
		10	Capital equipment	Exclude
		11	Waste generated from organisational activities	Exclude
		12	Upstream transport and distribution	Exclude
		13	Business travel	Include
		14	Upstream leased assets	Exclude
		15	Investments	Exclude
	Downstream	16	Client and visitor transport	Exclude
		17	Downstream transport and distribution	Exclude
		18	Use stage of the product	Exclude
		19	End of life of the product	Exclude
		20	Downstream franchises	Exclude
		21	Downstream leased assets	Include
		22	Employee commuting	Include
	Varies	23	Other indirect emissions not included in the other 22 categories	Exclude

* This category is called "Purchased products" in ISO 14064 but the equivalent GHG Protocol category "Purchased goods and services" is deemed more appropriate.

In addition to the above categories, there is value in reporting against categories that better align with the internal organisation of SHDC. For example, emissions from buildings may arise from stationary combustion (category 1 in Table 2), imported electricity (6), energy related activities (8) and upstream leased assets (14) i.e., buildings that SHDC tenants are in. Reporting emissions under a "buildings" category with additional sub-categories as required, may be more informative. A secondary reporting category list can be produced by mapping all the categories (including splitting categories where necessary) into the new list. Following discussions with SHDC, a secondary category list has produced as follows:

1. Buildings (exc. housing)
    - 1.1. Corporate Estate
    - 1.2. Leisure Centres
    - 1.3. Leased Out Buildings
    - 1.4. Staff Working at Home
2. Transport
    - 2.1. Managed Fleet
    - 2.2. Refuse Fleet
    - 2.3. Grey Fleet
    - 2.4. Business Travel
    - 2.5. Commuting
3. Procurement
    - 3.1. Procurement
4. Offsets
    - 4.1. Purchased Offsets
    - 4.2. Land Management

2.6 Reporting Periods

The carbon footprint should be undertaken for a period covering one year and should be updated on an annual basis[*]. Here, the footprint will be aligned to the financial year April 2023 to March 2024.

The underlying data and emission factors used in the calculations should be based on the chosen reporting period. Where there is no data available covering the full reporting period, the following hierarchical approach should be taken:

1. If data is available for part of the period, then it should be used to provide an average value for that period of time and then multiplied up to estimate the total for a year. For example, if consumption data is only available for half of the year, then it should be doubled to estimate consumption for a full year. In the case of data that is sensitive to the time of year (for example gas consumption in buildings), then efforts should be made to normalise the consumption for the time of year (for example degree day data can be used in this case).

[*] Due to COVID-19, no footprint was completed for 2019/20.

2. If partial data is not available, then data from the previous year's footprint should be used.
3. If no data from previous years are available, then estimates should be made using secondary sources of data e.g., benchmark data in the case of building energy consumption.

In all cases, if data is not available for a full year, then measures should be put in place to enable the data to be available for the next year's footprint. In addition, it should be clearly stated where estimates have been made in the absence of data being available.

2.7 Quantifying Emissions and Removals

Calculation methodologies should be selected to minimise uncertainty and yield accurate, consistent, and reproducible results. This should consider technical feasibility and cost of data gathering. Within each category, sources and sinks should be identified. Annex C of ISO 14064 provides detailed supplementary guidance on selecting data and developing models and methods for quantifying emissions and removals [1]. It is stated that data that is typically uses includes:

- Activity data e.g., mass, volume or energy
- Calorific values
- Emission factors, usually expressed as tCO_2e/quantity of activity data
- Composition data, usually expressed as carbon content, often used for higher accuracy and primary and site-specific emission factor calculations
- Oxidisation factors
- Conversion factors
- Emissions, usually on a mass basis per a reference period (e.g., hourly)
- Monetary values, usually amounts spent on certain products, materials or services

Some of the above are likely to be more relevant than others here. In general, calculating emissions from an activity will depend on the data available from the organisation. As it is not practicable to directly measure the actual mass of GHGs emitted from an activity, the calculation will take the form of multiplying some input activity data with an emission factor.

The choice of activity data will depend on what is available, but in principle a data hierarchy approach should be taken that priorities primary data (i.e., that collected by the organisation) and site-specific data over secondary data and other estimates. For example, for emissions from vehicles, it would be preferable to use the actual amount of fuel used to the amount spent on fuel, which in turn would be more accurate than knowing the distance travelled. Where a mix of data is available within a category then the hierarchy approach should still be followed. For example, if fuel consumption data exists for some vehicles and mileage data exists for all vehicles, then the fuel consumption data should be used for those vehicles, and the mileage data for the remainder. In addition, steps should be put in place to capture fuel consumption data for all vehicles for the following year's inventory. Specific guidance on the expected hierarchy for each category identified in Section 2.5 is provided in Section 3.

Emission factors may come from a range of sources, however the most extensively used will be the UK GHG Conversion Factors for Company Reporting [8] (referred to from here as the "Government EFs"). These provide consistent emission factors to be used for a range of activities and are updated annually.

In all cases, as a minimum an aggregate value should be quantified for each category. However, there will be benefits to maintaining as fine a level of granularity as the source data enables within the calculations and reporting. For example, for buildings this would include calculating emissions on a per-building basis if metered data is available for each building, rather than just as the sum-total of all buildings within the estate. For reporting it may be preferable to only separate out the most significant sources within the category to avoid long unmanageable lists e.g., for large buildings, with smaller buildings or sites aggregated together. The full detail should however be retained within calculation tools or spreadsheets to enable onward analysis.

Any emissions offset using carbon credits should be separately reported and the guidance in Section 9 and Annex C of PAS 2060 should be used to ensure the integrity of those offsets [7].

It is stated in ISO 14064 that uncertainty in the outputs should be quantified and documented, and guidance for doing so is given in ISO/TR 14069 [1,2]. However, this approach relies on knowing in quantified terms the uncertainty associated with each part of the calculation (activity data and emission factors), and as this will not be known it is recommended that at this time, quantifying of uncertainty will not be possible and should not be pursued.

2.8 Intensity Ratios

The headline inventory should be reported in absolute terms as tCO_2e. In addition, normalising the emissions (either totals, sub-totals, or for individual categories) by some common variable to produce "intensity-based" emissions enables the result to be contextualised, and some comparison between different organisations to be made. This has not been done here.

3 Data Collection and Analytical Approach by Category

3.1 Scope 1: Direct Emissions

3.1.1 Direct emissions from stationary combustion

Description

Direct emissions arising from the combustion of fuels (for example, natural gas or oil) on-site in plant (for example boilers or generators) within the organisational boundaries of the reporting organisation. In practice, this is likely to be predominantly gas boilers in owned buildings.

Data Hierarchy and Calculation Approach

The aim should be to establish emissions at a building level of granularity. The following hierarchy should be followed for data collection (best to worst):

1. Quantity of Fuel: Amount of fuel obtained from metered or measured data e.g., kWh natural gas or litres of fuel.
2. Spend on Fuel: Amount spent per fuel which can then be converted to quantity of fuel using the gas and electricity prices in the non-domestic sector dataset [9] that is produced annually (for oil, the local price should be used).
3. Floor Area: The gross internal floor area of each building together with the building type (e.g., office). If this is not available, then CIBSE TM46 [10] which provides average benchmark energy consumption values for different building types can be used to establish fuel consumption.

For the first two of these, if data is only available for part of the year, then to extrapolate for a full year, degree day analysis as described in CIBSE TM41 [11] should be used so that the annual estimate is not biased by the period for which data is available.

In all the above, once the quantity of fuel used has been established in kWh, then this can be converted to GHG emissions using the Government EFs.

Allocations of emissions from boilers etc. has the potential to be allocated either here (direct emissions) or under "Upstream leased assets" (Section 3.3.7) depending on the type of lease as described in Section 2.3, though the data gathering and calculation method is the same.

Approach Taken for Footprint

SHDC are financially responsible for two non-domestic buildings with stationary combustion, Follaton House and the Harbour Workshops in Salcombe. Metered data was available for both sites. The annual consumptions were then combined with the Government EFs to calculate GHG emissions.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Buildings > Corporate Estate > *By Site*

3.1.2 Direct emissions from mobile combustion

Description

Direct emissions arising from fuel burnt in transport equipment within the organisational boundaries of the reporting organisation. In practice, this will be emissions from owned vehicles. Emissions from other transport will be accounted for within Scope 3 categories.

Data Hierarchy and Calculation Approach

The aim should be to establish emissions for each vehicle within the fleet, with reporting aggregated to sensible summary headings e.g., vehicle types, or departments. Where individual vehicle data is not available (e.g., a department only knows total fuel consumption for that department) then this would provide the same overall result but would offer less opportunity to identify potential improvements. The following hierarchy should be followed for data collection (best to worst):

1. Quantity of Fuel: Amount of each fuel (e.g., litres of diesel) obtained from recorded data. This can then be multiplied by the fuel emission factors ($kgCO_2e$/litre) from the Government EFs.
2. Spend on Fuel: Amount spent per fuel which can then be converted to quantity of fuel using the weekly road fuel prices dataset [12] that is produced annually. This can then be multiplied by the fuel emission factors ($kgCO_2e$/litre) from the Government EFs.
3. Distance and vehicle emission factor: The annual distance travelled by each vehicle should be multiplied by the vehicle specific emission factor ($kgCO_2e$/km) provided by the vehicle manufacturer. This is likely to under-estimate emissions, as these emission factors are typically more optimistic than those observed under real world conditions.
4. Distance and Mode: Where the above information is not available, then the annual distance travelled by each vehicle should be multiplied by the emission factors from the Government EFs which are available for a range of different vehicle types inkgCO2e/km.
5. Where none of the above are available, then estimates of distance should be made and steps taken to better capture activity data (ideally quantity of fuel) for the forthcoming year of reporting.

Approach Taken for Footprint

Total litres of diesel issued at each of the three land-based refuelling stations for SHDC vehicles was provided, with two of these, Ivybridge and Torr Quarry, for refuse collection vehicles. Additionally, data on the consumption of four different fuel types for SHDC's marine transport was provided. The corresponding Government EFs were used to calculate GHG emissions.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Transport > Managed Fleet > *By Service*

3.1.3 Direct process related emissions

This category has been taken to be out of scope as it is not relevant.

3.1.4 Direct fugitive emissions

Description

These are direct uncontrolled emissions of GHG, with any process that directly utilises GHG being a potential source of emissions. In practice, this will mean emissions of refrigerants for space conditioning systems in buildings (e.g., cooling or heat pumps) and potentially vehicles owned by the organisation.

Data Hierarchy and Calculation Approach

The aim should be to calculate emissions at a building resolution. Emissions from vehicle cooling systems are likely to be very small. The following hierarchy should be followed for data collection (best to worst):

1. Amount and type of refrigerant: The mass (kg) of refrigerant (by type) available from each system within a building. It is noted that systems above 12 kW are required under the Energy Performance of Buildings Directive to undertake regular air conditioning inspections. This can then be multiplied by the emission factor for the relevant GHG ($kgCO_2e/kg$) from the Government EFs.
2. Equipment list: Where the above is not available, then an asset list should be produced outlining each relevant unit within a building including the refrigerant type and charge mass (kg). Annex C of the ERG provides a method for converting this to total mass leakage during installation, operation, and disposal years which can then be multiplied by the emission factor for the relevant GHG ($kgCO_2e/kg$) from the Government EFs [6].
3. Where neither of the above is available then this category should be excluded, and steps taken to capture the relevant data for the forthcoming year.

Approach Taken for Footprint

No data was available and so this was left excluded this year.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Buildings > Corporate Estate > *By Site*

3.1.5 Direct emissions and removals from Land Use, Land Use Change and Forestry (LULUCF)

This category has been taken to be out of scope.

3.2 Scope 2: Energy Indirect Emissions

3.2.1 Indirect emissions from imported electricity consumed

Description

These are indirect emissions associated with the import of electricity by the organisation. It excludes upstream emissions associated with the production of fuels feeding power stations, embodied emission associated with the production of generation plant, and the transmission and distribution network (these are captured within Scope 3). In practice, this will be the electricity consumption from buildings, and, increasingly, vehicles.

Data Hierarchy and Calculation Approach

The aim should be to establish emissions at the same level of resolution as direct emissions of buildings and vehicles described earlier. As such, the same data hierarchy and calculation methods described in Sections 3.1.1 and • should be followed for buildings and vehicles respectively regarding activity data and emission factors when using a “location-based” approach to imported electricity as discussed in Annex E of ISO 14064 [1]. This approach uses grid-averaged emission factors and are available within the Government EFs. If time-specific emission factors are available and can be used in conjunction with corresponding electricity consumption data, then this may be used instead of average grid emission factors.

An alternative approach regarding emission factors is to use a "market-based" approach. This allows the organisation to use an emission factor provided by the electricity supplier provided that the energy contract (e.g., a Power Purchase Agreement [PPA] or Renewable Energy Guarantee of Origin [REGO]):

- Conveys the information associated with the unit of electricity delivered together with the characteristics of the generator
- Is ensured with a unique claim
- Is tracked and redeemed, retired, or cancelled by or on behalf of the reporting entity
- Is as close as possible to the period to which the contractual instrument is applied and comprises a corresponding timespan

The ERG recommended that if the market-based approach is used, then in addition that these results are presented alongside the location-based approach.

Where the organisation generates renewable energy (for example from photovoltaic panels on the roof of a building), then of the generated electricity a portion will be self-consumed (and so will be reflected in a reduced demand for imported electricity), and the remainder will be exported. Annex G of the ERG states that this component can be used to reduce the net tCO_2e figure, yet the total offset arising from exported generated electricity must not be greater than gross Scope 2 emissions [6]. In this case, to account for the offset within the inventory metered data from an export meter would be required. The ERG also state that organisations can also report on the amount of consumed generated renewable energy, though this is not a requirement.

To summarise, it is proposed that:

- Scope 2 emissions arising from imported electricity for buildings and vehicles should be calculated using the aforementioned activity data and location-based emission factors e.g., from the Government EFs
- If the organisation generates renewable electricity and there is metered export kWh data available, then this should me multiplied by the location-based grid average Scope 2 "electricity generation" emission factor from the Government EFs, and this value reported as an offset (negative value) at the end of the inventory in Section 3.4. This offset can be used to demonstrate an overall reduction in emissions from the gross total to result in a net total and cannot be greater than the total gross Scope 2 emissions.
- Where the organisation has a contract with a supplier to provide low carbon electricity e.g., via a PPA, then the emission factor from that supplier can be used to calculate the equivalent offset compared to the location-based approach and reported as an offset to enable a net emissions to be calculated as described above. It is important that any renewable energy used within the supply contract can be demonstrated to be additional.
- There is no need to establish or report emissions that are avoided via the self-consumption of renewable electricity.

- Upstream emissions arising from electricity consumption are captured within Scope 3 of the footprint.

Approach Taken for Footprint

For buildings, the same process as described in Section 3.1.1 was followed for metered sites, partial data (10 months) was provided for one of the sites so this was adjusted to account for the whole year. Electricity consumption from some unmetered sites (e.g., car park lighting) provided for the 2018/19 footprint has been carried forward for the 2023/24 footprint.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Buildings > Corporate Estate > *By Site*

3.2.2 Indirect emissions from consumed energy imported through a physical network

This category has been taken to be out of scope as it is not relevant.

3.3 Scope 3: Other Indirect Emissions

3.3.1 Energy-related activities not included in direct emissions and energy indirect emissions

Description

These are indirect emissions associated upstream activities associated with fuel and electricity consumption by the reporting organisation. Examples include the extraction, production, transport, and distribution of fuel and energy. In practice, this will be an additional well to tank (WTT) uplift on all fuel use from stationary and mobile construction (Sections 3.1.1 and •), imported electricity (Section 3.2.1), business travel (Section 3.3.6), upstream leased assets (Section 3.3.7) and employee commuting (Section 3.3.15).

Data Hierarchy and Calculation Approach

The data collection will be exactly the same as for emissions from direct combustion from stationary and mobile equipment and imported electricity, but rather than using the emission factor in those sections, the emission factor for WTT as stated in the Government EFs should be used instead. In practice, this will uplift the total emissions arising from a building or vehicle. For fuel combustion (e.g. natural gas or oil), there is a single WTT factor associated with that fuel. For electricity, the upstream emissions include WTT emissions associated with combustion at the generation plant (e.g., remote power stations), the transmission and distribution (T&D) network, and then WTT emissions on the T&D network. It would be reasonable to sum these three emission factors to get a single additional "WTT" emission factor for imported electricity consumption. This electricity total WTT emission factor should be applied only to any imported electricity, not to onsite generated and exported electricity.

Approach Taken for Footprint

These were calculated automatically in the spreadsheet created for the analysis by establishing these emissions in parallel to the main emission source, as described above.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Buildings > Corporate Estate > *By Site*
- Buildings > Leisure Centres > *By Site*
- Buildings > Leased Out Buildings > *Aggregated by usage*
- Transport > Managed Fleet > *By Service*
- Transport > Refuse Fleet > *Aggregate Total*
- Transport > Grey Fleet > *By Mode*
- Transport > Business Travel > *By Mode*
- Transport > Commuting > *Aggregate Total*

3.3.2 Purchased products and services

Description

These are emissions associated with the consumption of goods and services by the reporting organisation that are not otherwise included elsewhere in the inventory. For example, electricity consumption or business travel are examples of goods and services that are consumed, but they are already accounted for within specific sub-categories in the inventory that have been created within the standards to improve transparency and consistency. The scope of these emissions are “cradle to gate” i.e., all emissions that occur up to the point of sale by a producer e.g., raw material extraction, transport to a manufacturing facility, processing etc., but not including onward transport to the customer (the reporting organisation here), which would be in “upstream transport and distribution”, section 3.3.7. In practice, this category will rely heavily on engagement with both procurement departments, and supply chain partners.

Data Hierarchy and Calculation Approach

The ultimate goal to aim for would be to have specific quantified emissions for each good or service purchased by the organisation. In practice, this will not at this moment be achievable, and there will need to be a balance found between having sufficient granularity and accuracy of outputs against the time and effort required to calculate emissions from supply chains. Reporting may be by supplier and/or sector.

An initial scoping exercise based on the “spend-based” calculation method (see point 4 in the list below) should be adopted to establish significance within the procurement activities of the organisation. The GHG Protocol contains examples were capturing 80% of spend using more detailed calculation approaches and then extrapolating for the remaining 20% may be appropriate.

The GHG Protocol supply chain guidance documents discuss four calculation methods, of which only first and last are likely to be practicable here. The following hierarchy should be followed for data collection (best to worst):

1. Supplier-specific method: This involves obtaining product level data directly from the supplier, and three methods ranked best to worst are described here:

a. The emissions from the product will have been calculated by the supplier ideally following the BS EN ISO 14067 standard [13] of Environmental Product Declarations (EPDs) [14]. The product emission factors used should be "cradle to gate" and not full lifecycle. These standards would provide the assurance that a fair and recognised approach has been adopted.
b. If a supplier has undertaken product calculations but has not followed these standards then it may still be possible to use their data though this should be done with caution and in discussion with the supplier to understand the calculations.
c. If this is not available, then the supplier may have produced their own emissions intensity value (e.g., $kgCO_2e$/£ spent) based on their own specific data, which could then be used with the value of the contract to estimate emissions.

2. Hybrid method: This approach effectively relies on gathering all the relevant data from a supplier (for example Scope 1 and 2 emissions, plus data such as mass of upstream materials) to enable the reporting organisation to then calculate the emissions. This option is discounted here as likely to be too resource-intensive to be applicable in most/all cases.
3. Average-data method: This method involves gathering quantified activity data (other than cost) such as mass of product, number of hours spent etc. which can then be used with secondary data e.g., published databases, government statistics, literature studies, and industry associations. The GHG Protocol provides examples of databases, some of which are commercial[*]. Adopting this method would rely on both capturing activity data using quantities other than contract value and collectively deciding on the appropriate database for each product and applying it. As the former is not routinely undertaken and certainly not holistically across all categories of procurement, this option is discounted at this moment.
4. Spend-based method: This method involves assigning a sector (e.g., using the Standard Industry Classification [SIC] codes) to each item of spend, and then multiplying the value with a sector-specific emission factor. It may be more time-efficient to aggregate spend items by supplier and then rank suppliers by total spend. It is likely that a pareto principle will apply meaning that manual allocation of sector can be applied to the highest spend suppliers and then for the "tail" an average can be applied based on the top suppliers. This is the approach outlined in the ERG and Annex E, though the emission factors there are very out-dated [6]. The most recent and applicable emission factors to be used are from the UK's 2021 carbon footprint dataset [15] in the "SIC multipliers" sheet. Whilst this method is effective at being able to relatively quickly calculate emissions arising from anywhere in the economy, it is important to recognise it is not likely to be accurate and cannot distinguish emissions between spend within a category or between suppliers, and is only really useful as an initial rough "snapshot" rather than as a tool that can identify specific opportunities or track changes over time (as the only two factors in the calculation are amount spent and the emission factor).

[*] https://ghgprotocol.org/life-cycle-databases

In all cases, it is important to avoid the potential for double counting by excluding calculation of emissions that are already accounted for elsewhere. For example, in the case of adopting a spend-based analysis, the amount spent on suppliers of energy and business travel should not be included here as they will be included elsewhere in the inventory.

Approach Taken for Footprint

Spend data broken down into detailed account codes was provided. Any relevant account codes were split into goods or services and assigned a SIC code from the UK's carbon footprint dataset. Any spend tied to an activity accounted using a more specific method (e.g. energy use), or that was outside of the scope of the footprint, was excluded from the calculations. The spend in each sector was multiplied by the corresponding 2021 emission factor scaled down to account for inflation [16]. This methodology was applied retroactively to the corresponding spend data for 2021/22 and 2022/23 footprints too. It should be noted that in these footprints, emissions derived from costs to SHDC's external waste contractor were being erroneously included, given that fuel data from the refuse collection trucks was already included elsewhere in section 3.3.14.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Procurement > Procurement > *Aggregated by Type*

3.3.3 Capital equipment

Description

These are emissions associated with the purchase of capital goods. There is the potential for overlap in the categorisation of either purchased goods/products, and capital goods and so it is important that they are only accounted for in one place. The GHG Protocol states that *"Capital goods are final products that have an extended life and are used by the company to manufacture a product; provide a service; or sell, store, and deliver merchandise. In financial accounting, capital goods are treated as fixed assets or as plant, property, and equipment (PP&E). Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles"*. Whilst purchased products are sometimes referred to as "consumables" and are used over a short period of time (e.g., days or usually less than a year), capital goods are used for much longer periods (e.g., 5 to 50 years). Whether a good is classified as a "purchased product" or "capital good", the reporting should make clear which category it is being accounted for in.

In practice this is likely to include:

- The construction of new buildings: Emissions should be reported on a per building basis.
- Major refurbishment of existing buildings, including replacement of major plant: Emissions should be reported on a per building basis for refurbishment, whilst major plant can be aggregated.

- New vehicles: Emissions can be reported as aggregated values with descriptions e.g., 20 new cars for Division X etc.

Data Hierarchy and Calculation Approach

Emissions can be calculated in the same way as for purchased products and services (section 3.3.2). For the "supplier-specific method", for buildings and general plant there is guidance and standards available from LETI [17] and CIBSE [18] respectively that can help with quantifying cradle-to-gate emissions from projects. As with the purchased products and services section, the "supplier-specific method" and "spend-based method" are likely to be the only two relevant calculation methods.

There is some disagreement between ISO 14064 and the GHG Protocol on handling amortisation of emissions. This is where emissions can be divided by the time period of the capital good, for example if a vehicle is expected to be amortised over 10 years in the organisation's accounts, then the cradle-to-gate emissions can be divided by 10 and added in each of the next 10 years of the inventory. Whilst ISO 14064 states that this is an allowable approach, the more recent guidance from the GHG Protocol states that in accounting for emissions from capital goods *"…companies should not depreciate, discount, or amortize the emissions from the production of capital goods over time. Instead, companies should account for the total cradle-to-gate emissions of purchased capital goods in the year of acquisition, the same way the company accounts for emissions from other purchased products in category 1. If major capital purchases occur only once every few years, scope 3 emissions from capital goods may fluctuate significantly from year to year. Companies should provide appropriate context in the public report (e.g., by highlighting exceptional or nonrecurring capital investments)"*. This guidance should be followed here.

Approach Taken for Footprint

The procurement spends from Section 3.3.2 was used to capture capital spend i.e. no distinction was made in the source data between capital and revenue spend. All emissions were reported within Section 3.3.2.

Alternative Categorisation and Mapping

See section 3.3.2.

3.3.4 Waste generated from organisational activities

This category has been taken to be out of scope as it was not meaningfully possible to establish these emissions.

3.3.5 Upstream transport and distribution

This category has been taken to be out of scope as it was not meaningfully possible to establish these emissions, for example associated with purchased goods.

3.3.6 Business travel

Description

This section includes emissions from business travel in vehicles owned or operated by third parties and also includes emissions associated with hotel stays on business trips. The aim should be to report emissions by mode of transport and for hotel stays as follows.

- Cars – hire cars
- Cars – "grey fleet" (employee-owned vehicles other than employee commuting)
- Taxis
- Air travel
- Rail travel
- Bus and coach travel
- Hotel stays

Emissions associated with travel in vehicles owned or leased by the organisation, or from commuting, are covered in other sections.

Data Hierarchy and Calculation Approach

The aim should be to establish emissions for each mode. The following hierarchy should be followed for data collection (best to worst):

1. Fuel-based method: Where fuel usage is known (e.g., from fuel cards used in hire cars or the grey fleet), these should be used with the Government EFs ("average car unknown fuel" emission factor, unless better records are available within the organisation) as described in Section •). In some cases, mileage claims will be available in which case the distance can be used directly, or converted from spend to distance using the claim rate (e.g. 45p/mile). The amount of fuel used will not be obtainable for other modes e.g., public transport.
2. Activity-based method: For vehicles, the distance and mode for each vehicle type can be multiplied by the applicable emission factor ($kgCO_2e$/passenger·km) from the Government EFs. For hotel stays, the number of nights can be multiplied by the $kgCO_2e$/room per night emission factor from the Government EFs.
3. Spend-based method: Where specific data is not known, then spend data can be multiplied by the applicable emission factor from the relevant SIC sector as described in section 3.3.2, "Purchased products and services".

Approach Taken for Footprint

Annual mileage data was available for SHDC's councillors and grey fleet. This was combined with the Government's EF for an 'average car with unknown fuel' to estimate emissions. The annual spend on rail travel and taxi fares was provided and converted to distance using inflation-adjusted government data [15,16]. This was then multiplied with the corresponding Government EFs to estimate emissions.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Transport > Grey Fleet > *Aggregate by Type*
- Transport > Business Travel > *Aggregate by Mode*

3.3.7 Upstream leased assets

This category has been taken to be out of scope as it is not relevant.

3.3.8 Investments

This category has been taken to be out of scope.

3.3.9 Client and visitor transport

This category has been taken to be out of scope as it is not relevant.

3.3.10 Downstream transport and distribution

This category has been taken to be out of scope as it is not relevant.

3.3.11 Use stage of the product

This category has been taken to be out of scope as it is not relevant.

3.3.12 End of life of the product

This category has been taken to be out of scope as it is not relevant.

3.3.13 Downstream franchises

This category has been taken to be out of scope as it is not relevant.

3.3.14 Downstream leased assets

Description

This section includes any remaining SHDC assets that are not accounted for in sections 3.1.1 and 3.2.1 and as under financial control reporting and an operating lease.

Data Hierarchy and Calculation Approach

The approach to data hierarchy and calculation is the same as for other building emissions categories.

Approach Taken for Footprint

SHDC lease out five leisure centres, a small collection of housing and a few other non-domestic sites. Metered data was provided for each leisure centre, which were then combined with the relevant Government EFs to estimate emissions. Metered data from social housing was not available. Social housing emissions were calculated based on estimated annual emissions from EPC ratings [19]. Data from SHDC indicated which homes were currently unoccupied, their emissions were omitted. For SHDC's non-domestic leased out sites, annual gas and electricity consumption was estimated based on the floor area and CIBSE TM46 benchmarks, which was then scaled by the properties EPC rating [10,19]. These were then combined with the

Government EFs to calculate GHG emissions. The results from this analysis were used to backdate for the previous footprints.

Refuse collection was taken back in-house by SHDC for this financial year. These emissions are no longer included here, instead they are combined with fuel card data in section 3.1.2.

Alternative Categorisation and Mapping

or the alternative categories, emissions from this category were allocated to:

- Buildings > Leisure Centres > *By Building*
- Buildings > Leased Out Buildings > *Aggregate Total*

3.3.15 Employee commuting

Description

This includes transport of employees between their homes and workplaces. This can cover a range of modes but in practice will be mainly driving (either single driver or car sharing) as well as potentially public transport modes and walking/cycling.

This section also includes 'home working' i.e., emissions arising from energy used to heat homes and operate work equipment whilst staff are working from home.

Data Hierarchy and Calculation Approach

There are different ways that the data can be reported, for example by site, mode, department etc. and there is potential for a standardised approach to be taken. In the first instance, the lack of specific data is likely to limit any usefulness of more granular categorisation. This is an issue that could be revisited as data quality improves.

The following hierarchy should be followed for data collection (best to worst):

1. Fuel-based method: Where fuel consumption from commuting it known it should be used in the calculations; however, this is expected to be generally not applicable.
2. Distance-based method: Organisation-specific data is gathered to establish total distance for each travel mode. This would need to be captured from an organisation travel survey that should be updated on an annual basis. It should establish for each employee the one-way distance from home to the place of work and the annual distance by number of days worked per year commuted by each mode, and assuming a two-way journey each day. This data can then be multiplied by the appropriate modal emission factor ($kgCO_2e$/passenger.km) from the Government EFs. For car sharing it should be assumed that the emission factor for a car ("average car with unknown fuel") is divided by two (assuming typically car-sharing involves two people sharing a journey) and for walking and cycling the emission factor will be zero. In the case of a travel survey 100% coverage of staff will not be possible, and so the results of the survey should be extrapolated to cover all staff.
3. Average-based method: This method can be used when organisation-specific data (i.e., from a staff commuting survey) is not available. Here, details on distance and mode can be estimated from the National Travel Survey [20], in particular NTS0412 (commuter

distance by employment status and main mode). This can be combined with staff numbers, number of days worked per year, and the Government EFs to calculate commuting emissions.

To calculate emissions from homeworking, the total number of hours worked at home need to be established e.g., from records or based on proportion of contracted hours worked at home. These can be multiplied by the "Homeworking (office equipment + heating)" emission factor ($kgCO_2e$ per FTE working hour) from the Government EFs. The results can be broken down into sub-categories (e.g., departments) if required, or otherwise aggregated as a single organisational total.

Approach Taken for Footprint

A staff headcount of full-time and part-time staff was provided and used to determine the number of full-time equivalent (FTE) staff, assuming one part-time employee equates to half a full-time employee. Data on commuting distance and mode from a recent staff travel survey was used to determine the average number of kilometres travelled per day per respondent commuting to and from work for each of the relevant modes of transport. In conversation with SHDC, it is assumed that staff travel to work two days a week on average. Thus, the total kilometres travelled per mode in a full year for all SHDC staff was estimated by combining this with the number of FTE staff and the average commuting distances by mode. These distances were then multiplied by the relevant Government EFs to determine emissions associated with employee commuting. Passenger travel uses the same Government EF as travelling by car but is halved to 'share' emissions between one driver and one passenger.

Assuming employees work from home three days a week on average and with information on SHDC's contracted daily working hours, the number of hours worked from home per year for all staff was estimated. This was then multiplied by the relevant Government EF to estimate annual homeworking emissions.

This analysis was backdated for the 2018/19, 2020/21 and 2021/22 inventories. However, it was assumed that employees commuted to work five days a week, with no homeworking, for the pre-Covid-19 2018/19 inventory.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Transport > Commuting > *By Mode*
- Buildings > Staff Working at Home > *Aggregate Total*

3.3.16 Other indirect emissions not included elsewhere

No other sources of emissions have been identified.

3.4 Offset Carbon

Description

This includes any GHG offsets, for example purchased voluntary offsets, or exported renewable energy.

Data Hierarchy and Calculation Approach

Offset emissions from purchased voluntary offsets will be available directly from the purchase of those credits. Offsets from exported generated electricity can be established as described in Section 3.2.1.

Approach Taken for Footprint

There were no purchased offset carbon credits in this year. Offsetting associated with export of renewable energy and purchase of REGO backed electricity are discussed in Section 3.2.1.

Alternative Categorisation and Mapping

For the alternative categories, emissions from this category should be allocated to:

- Offsetting > Purchased Offsets
- Offsetting > Land Management

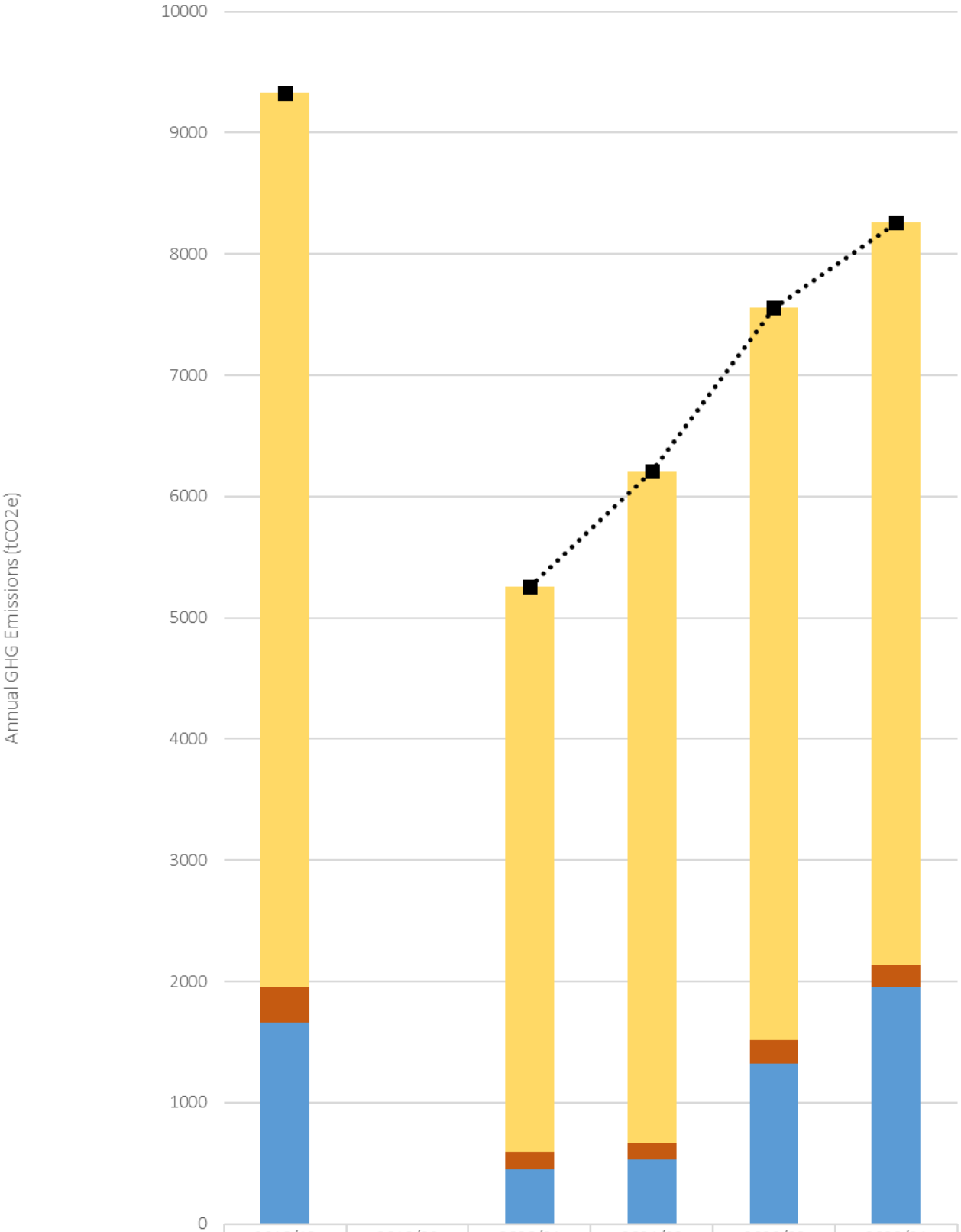
4 Results

The results of the calculations for the ISO 14064 categories are shown in Figure 2 and Figure 3. The results for the alternative categories are shown in Figure 4 and Figure 5. Total net emissions for the 2023/24 period were 8,258 tCO_2e. At 6,124 tCO_2e (74%), most emissions are Scope 3, a 1% increase from the 2022/23 inventory. Scope 1 and 2 emissions total an estimated 1,955 tCO_2e (24%) and 180 tCO_2e (2%), respectively. Scope 1 emissions rose by 48% from last year, primarily due to refuse collection being taken back in-house. Meanwhile, Scope 2 emissions saw a 7% reduction from 2022/23, primarily due to continued grid decarbonisation. Net emissions in 2023/24 are 9% higher than in the previous year. This is predominantly driven by an increase in emissions associated with procurement. Emissions from the alternative categories are broken down as follows:

- Buildings 2,287 tCO_2e / 28% gross emissions: 55% of these emissions are from the leisure centres with a further 14% from the corporate estate. The remaining 31% is attributed to leased out assets (25%) and homeworking (6%). Emissions from this category have reduced by around 100 tCO_2e compared to the previous year largely due to grid decarbonisation.
- Transport 2,784 tCO_2e / 34% gross emissions: 66% of these emissions arise from SHDC's refuse fleet, with 18% from SHDC's managed fleet and 2% from SHDC's grey fleet. 14% of transport emissions are due to employee commuting. Emissions from this category have not significantly changed compared to the previous year (< 1%).
- Procurement 3,186 tCO_2e / 39% gross emissions: Procurement represents a significant proportion of the footprint. Estimation of emissions from procurement is inaccurate as

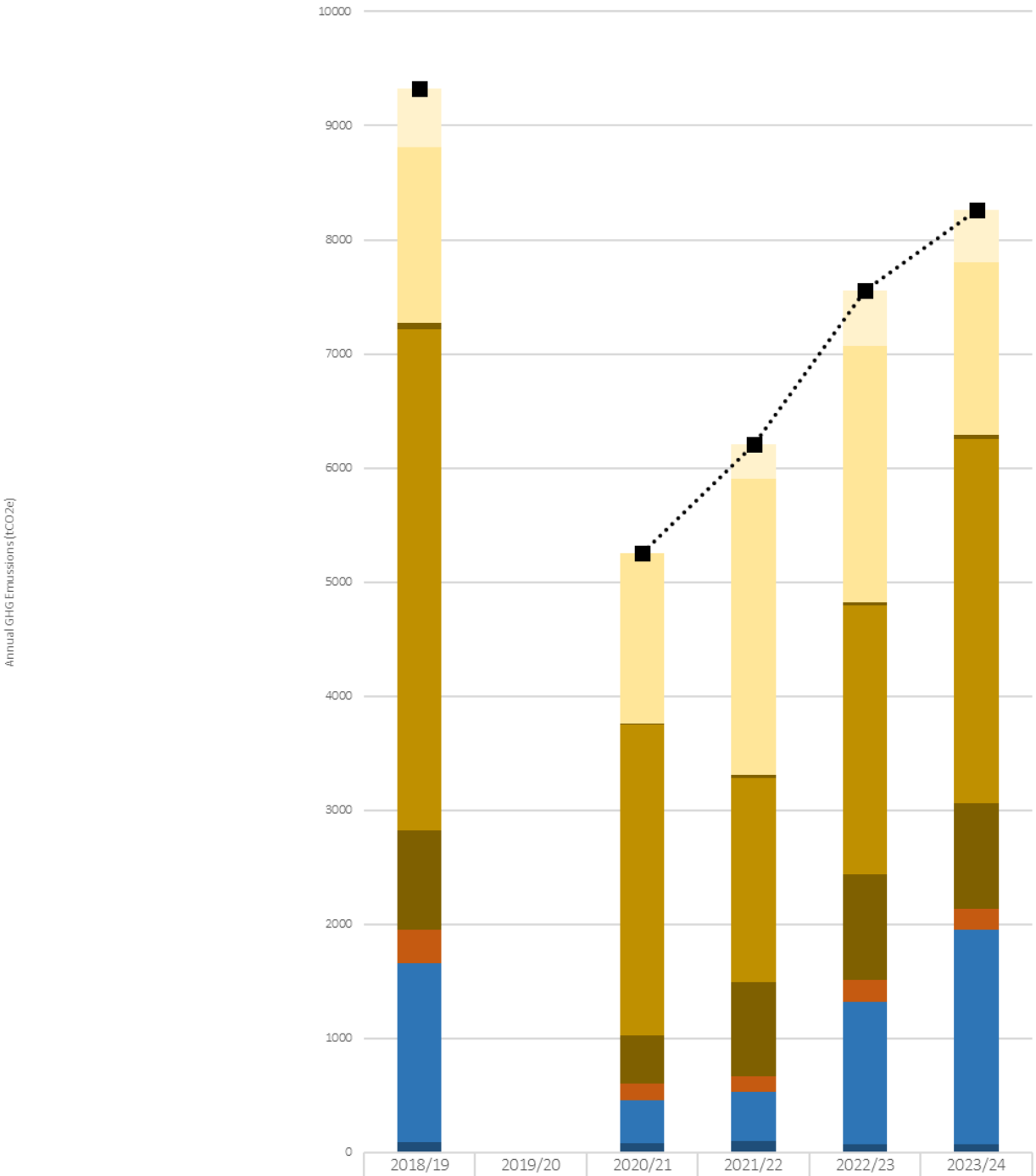
it is based purely on spend data and coarse emission factors. Focussing on large areas of spend and looking to quantify GHG emissions using specific activity data would improve the quality of the calculations. Emissions from this category increased by 828 tCO_2e compared to the previous year, primarily due to increased spend on service activities, including real estate services (425 tCO_2e), tipping fees (362 tCO_2e) and vehicle repairs (280 tCO_2e).

- Offsets 0 tCO_2e / 0% gross emissions: SHDC do not offset any of their organisational emissions.



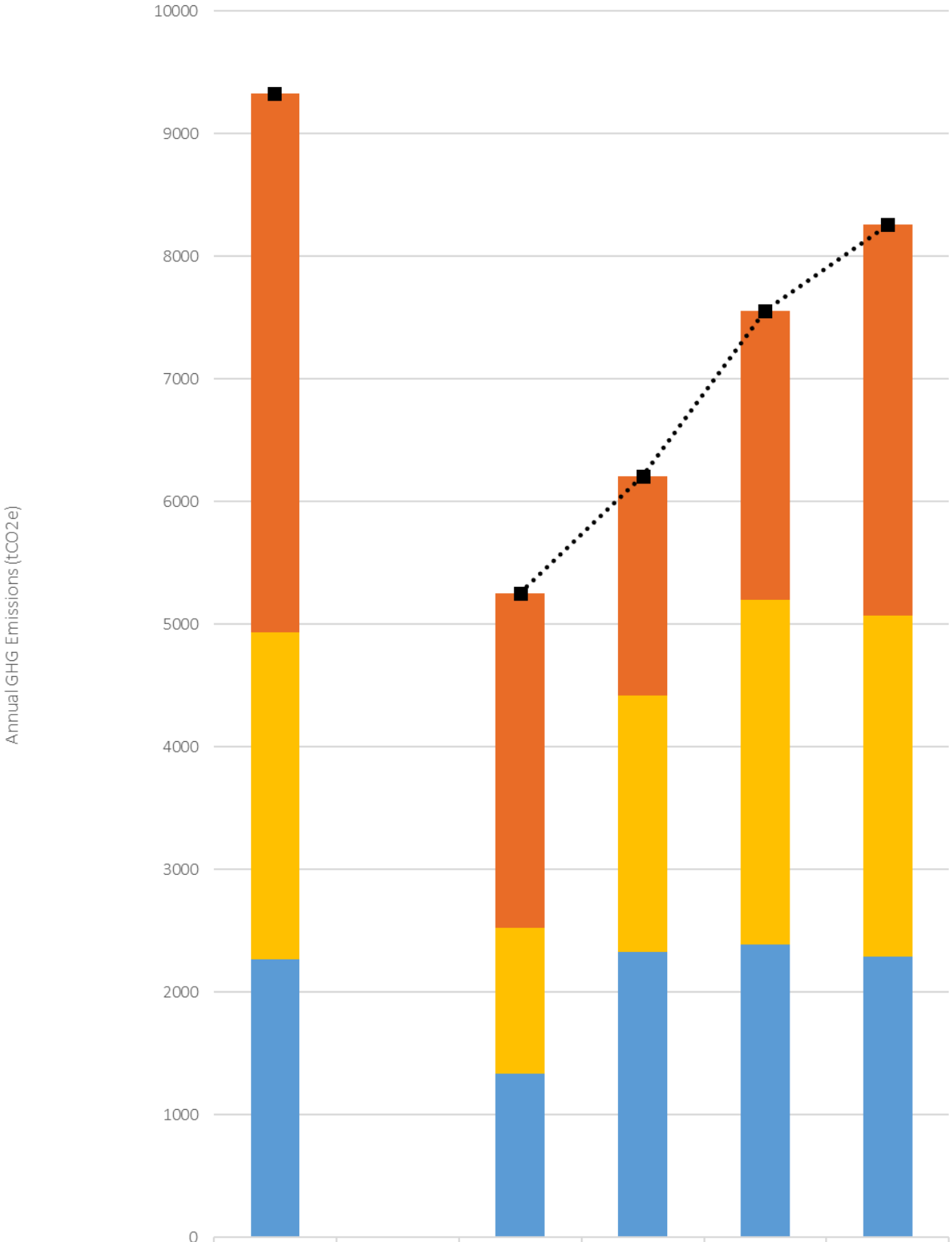
	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Offset Carbon	0.0		0.0	0.0	0.0	0.0
Scope 3	7375.3		4653.5	5540.4	6043.1	6123.8
Scope 2	290.9		147.2	135.5	193.9	179.5
Scope 1	1659.9		451.7	529.9	1319.3	1954.7
GRAND TOTAL (net)	9326.1		5252.4	6205.9	7556.3	8257.9

Figure 2: Breakdown of emissions by Scope 1, 2 and 3 from ISO 14064-1



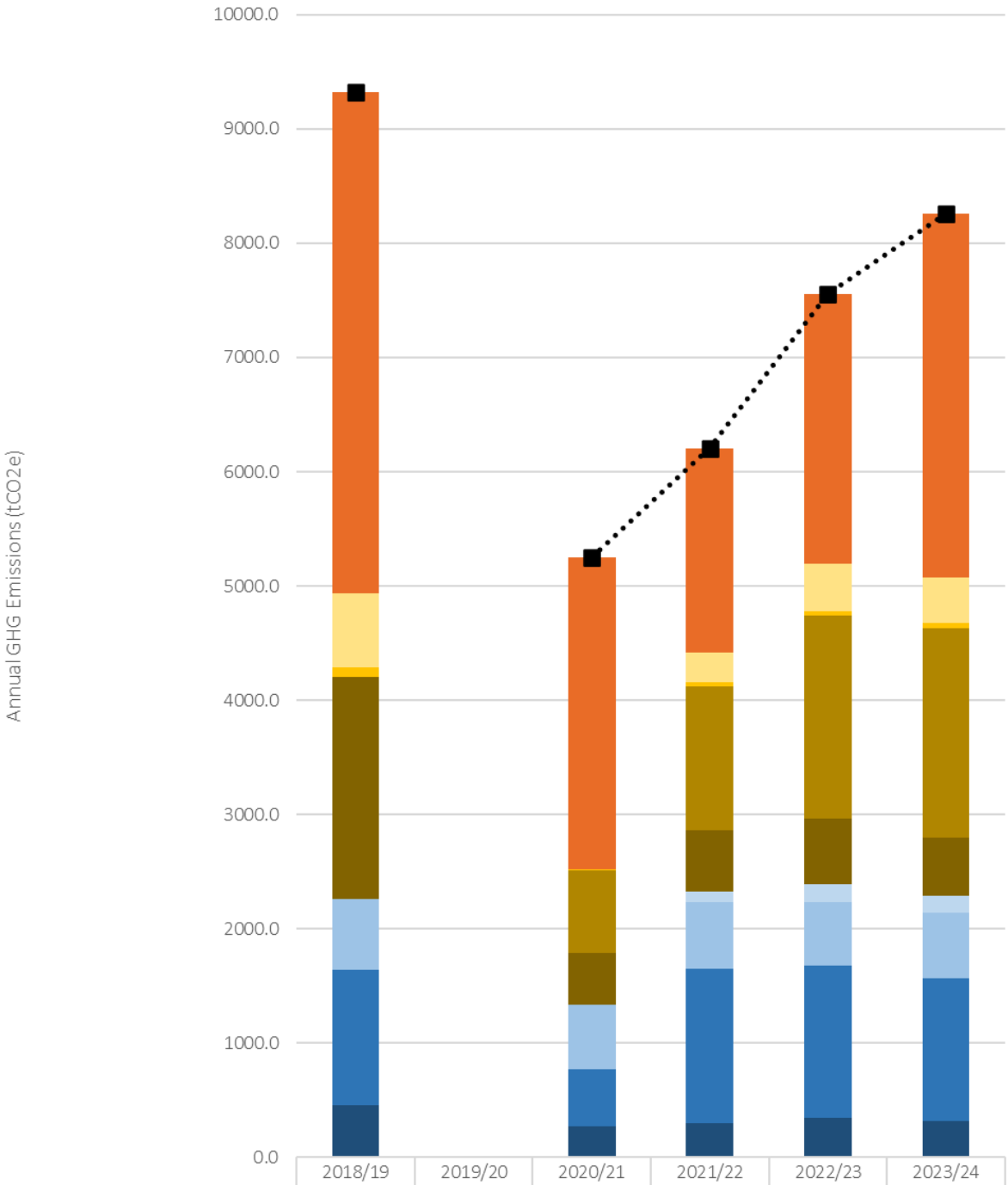
	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Employee commuting	517.8		0.0	303.6	487.4	454.3
Downstream leased assets	1533.8		1491.7	2593.8	2244.4	1511.7
Business travel	62.8		12.1	29.9	27.3	39.9
Purchased products	4390.3		2727.7	1785.0	2358.4	3186.4
Energy-related activities not included in direct emissions and energy indirect emissions	870.7		422.1	828.1	925.5	931.4
Indirect emissions from imported electricity consumed	290.9		147.2	135.5	193.9	179.5
Direct emissions from mobile combustion	1574.1		371.7	432.7	1246.9	1886.7
Direct emissions from stationary combustion	85.9		80.0	97.2	72.4	68.0
GRAND TOTAL (net)	9326.1		5252.4	6205.9	7556.3	8257.9

Figure 3: Breakdown of emissions by detailed sub-category from ISO 14064-1, categories with no estimated emissions are not shown



	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
4. Offsets	0.0		0.0	0.0	0.0	0.0
3. Procurement	4390.3		2727.7	1785.0	2358.4	3186.4
2. Transport	2670.6		1189.4	2095.1	2809.4	2784.1
1. Buildings	2265.3		1335.3	2325.7	2388.5	2287.4
GRAND TOTAL (net)	9326.1		5252.4	6205.9	7556.3	8257.9

Figure 4: Breakdown of emissions by headline alternative categories



	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
4.2 Land Management	0.0		0.0	0.0	0.0	0.0
4.1 Purchased Offsets	0.0		0.0	0.0	0.0	0.0
3.1 Procurement	4390.3		2727.7	1785.0	2358.4	3186.4
2.5 Commuting	648.6		0.0	263.6	422.8	392.5
2.4 Business Travel	2.4		0.0	0.0	0.1	0.0
2.3 Grey Fleet	76.1		15.1	37.7	34.4	50.3
2.2 Refuse Fleet	0.0		715.8	1259.4	1771.7	1827.9
2.1 Managed Fleet	1943.4		458.5	534.4	580.4	513.4
1.4 Staff Working at Home	0.0		0.0	95.7	154.7	143.8
1.3 Leased Out Buildings	620.5		564.9	577.3	552.4	572.8
1.2 Leisure Centres	1184.4		498.1	1353.0	1334.4	1253.3
1.1 Corporate Estate	460.3		272.4	299.8	347.1	317.5
GRAND TOTAL (net)	9326.1		5252.4	6205.9	7556.3	8257.9

Figure 5: Breakdown of emissions by detailed alternative categories

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