Carbon Footprint 24-25

REPORT

PREPARED FOR

whg

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Name	Aidan Richardson
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Glossary

Carbon footprint	A measure of the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organisation, or community.
Greenhouse gas (GHG)	Gases in Earth's atmosphere that can trap heat. The primary GHGs in the Earth's atmosphere include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O).
Streamlined Energy and Carbon Reporting (SECR)	UK government legislation that requires certain companies to report on its GHG emissions, energy consumption, and energy efficiency measures annually in their directors' report.
Carbon dioxide equivalent (CO_2e)	A metric measure used to compare the emissions from various GHGs on the basis of their global-warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.
Global-warming potential (GWP)	A metric used to compare the potency of different GHGs in causing global warming over a specified time horizon, typically 100 years, relative to that of CO_2.
Greenhouse Gas Protocol	Provides standards, guidance, tools and training for business and government to measure and manage climate-warming emissions.
Scope	Refers to a categorisation of GHG emissions sources based on their origin and relationship to the reporting organisation.
Scope 1 emissions	Direct emissions from sources that are owned or controlled by the reporting entity, such as emissions from fuel combustion, onsite equipment, and vehicles.
Scope 2 emissions	Indirect emissions from the generation of purchased electricity, heat, or steam consumed by the reporting entity.
Scope 3 emissions	Indirect emissions that occur as a result of the activities of the reporting entity but are not owned or controlled by it. This includes emissions from the supply chain, employee commuting, business travel, and product use; your Scope 3 emissions are other people's Scope 1 and 2 emissions
Value chain	The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production.
Net Zero	The state where emissions of carbon dioxide due to human activities and removals of these gases are in balance over a given period.
Decarbonisation	The process of reducing or eliminating the carbon dioxide (CO_2) emissions associated with human activities, particularly those related to energy production, transportation, industry, and other sectors.
Transmission and distribution	Refers to the processes involved in delivering electricity from power plants to end-users such as homes, businesses, and industries.
Well-to-tank	Refers the production and transportation of fuels, from extraction or cultivation (e.g., oil drilling, coal mining, biofuel cultivation) to the point of distribution at fuelling stations.
Upstream emissions	These refer to the emissions associated with activities that occur before the final product is delivered.
Downstream emissions	These refer to the emissions released during the consumption or utilisation of a product.

Executive Summary

This document presents an analysis of the greenhouse gas emissions associated with whg's operations for its 24/25 financial year (FY24/25).

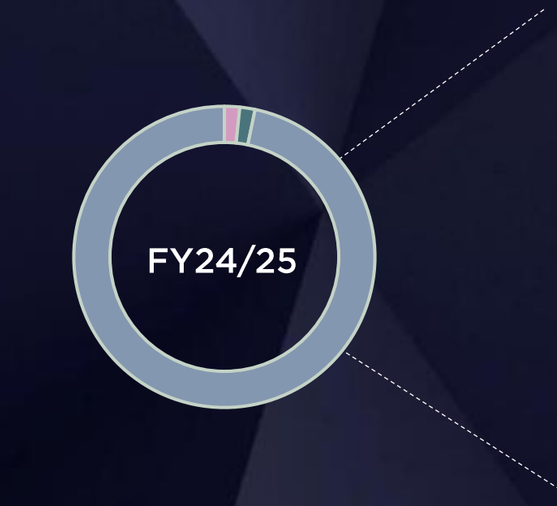
It builds upon the SECR reporting that Savills has already undertaken that focused primarily on Scope 1 and 2 emissions (as well as Scope 3 business travel) by including whg's wider Scope 3 emissions;

- Scope 1: Direct emissions (from fuel consumed directly)
- Scope 2: Indirect emissions (from fuel consumed indirectly)
- Scope 3: Value chain emissions (from downstream activities)

whg's emissions are 92,285 tCO_2e (location-based) for FY24/25 when residential emissions are included and 33,244 tCO_2e when excluded. This is a decrease of 6% from FY23/24. This is primarily attributed to a decrease in scope 3.2 emissions, driven by a significant decrease in capital expenditure from around £103m in the previous reporting year to £76m in this year, with most of the decrease in spending allocated to development scheme costs. Elsewhere in the footprint, scope 2 emissions saw a decrease of 13%. Commuting emissions also decreased by a similar magnitude. Business travel emissions increased slightly by 4% whereas waste emissions fell by 69%. Scope 1 emissions increase in FY24/25 driven by a 41% rise in gas emissions.

FY24/25 emissions: **92,285 tCO_2e**

Scope 1 Scope 2 Scope 3



Gas and electricity*
1,342 tCO_2e

Company vehicles
671 tCO_2e

OpEx and CapEx
30,080 tCO_2e

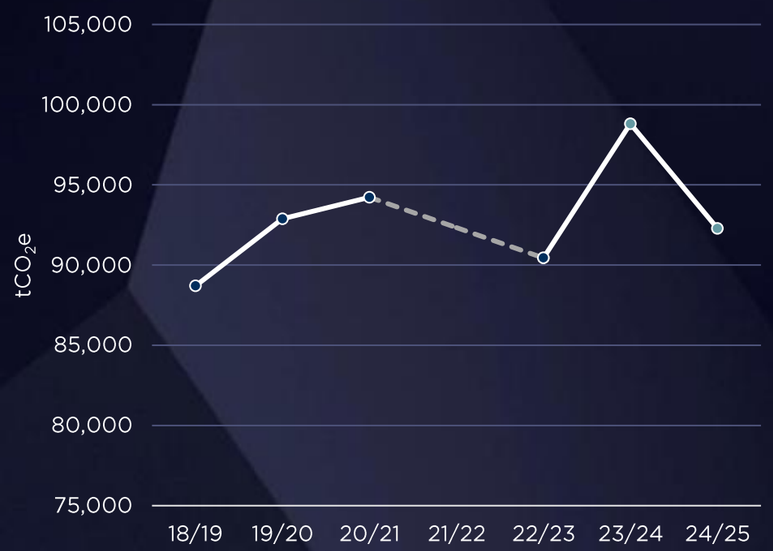
T&D and WTT
513 tCO_2e

Waste
29 tCO_2e

Business travel
73 tCO_2e

Commuting
536 tCO_2e

Assets
59,041 tCO_2e



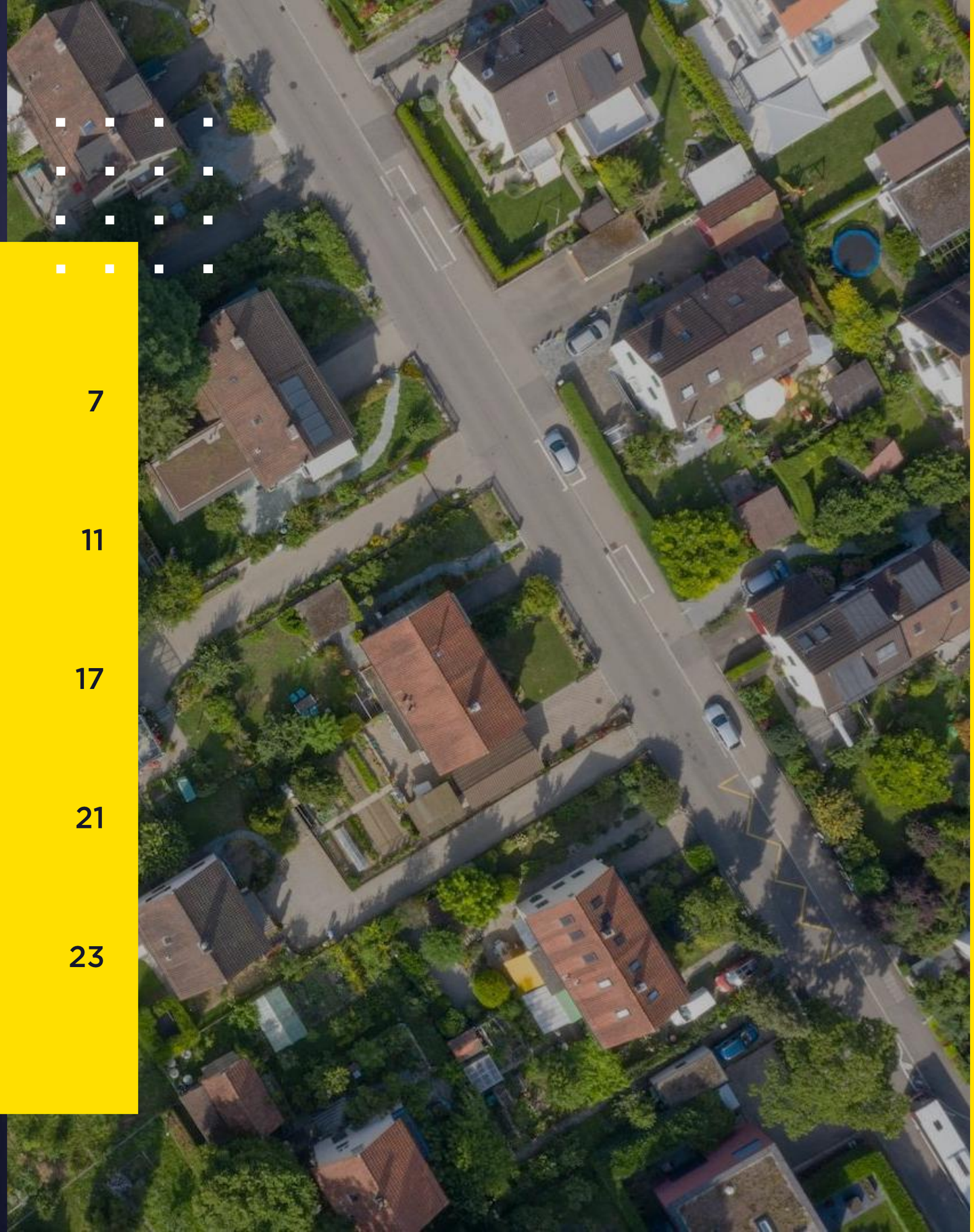
Intensity ratios	FY24/25
Turnover (tCO_2e/£m)	14.26
Full time employees (tCO_2e/FTE)	2.72
Total floor area (tCO_2e/m^2)	0.51
Business travel (tCO_2e/FTE)	0.10
Employee commuting (tCO_2e/FTE)	0.70
Residential properties (tCO_2e/home)	2.78

* location-based and includes emissions from bioenergy

Total emissions

Scope	FY24/25 (tCO_2e)	% of total
Scope 1		
Property fuel (natural gas) (location-based)	672	1%
Property fuel (natural gas) (market-based)	0	Reference only
Bioenergy	3	0%
Refrigerant gases	0	0%
Fuel for company vehicles	671	1%
Total scope 1	**1,346**	**1%**
Scope 2		
Electricity consumption (location-based)	667	1%
Electricity consumption (market-based)	0	Reference only
Total scope 2	**667**	**1%**
Scope 3		
Purchased goods and services (including water)	10,540	11%
Capital goods	19,541	21%
Fuel and energy related activities	513	1%
Disposal and treatment of waste	29	0%
Business travel	73	0%
Employee commuting	536	1%
Downstream leased assets	59,041	64%
Total scope 3	**90,272**	**98%**
Total GHG emissions (location-based)	**92,285**	**100%**
Total GHG emissions (market-based)	**90,943**	**Reference only**

Contents



Introduction

Background context

The UK Government has committed to achieving Net Zero GHG emissions by 2050 and this will require intervention across all sectors of the UK economy.

According to the Climate Change Committee, emissions arising from buildings are now the second largest contributor to the UK's emissions and progress within this sector has historically been slower than in other sectors.

Like all other businesses, whg have a role to play in this transition. While there will obviously be challenges associated with decarbonisation, done correctly the re-evaluation of business processes also presents an opportunity to make efficiency gains and achieve better outcomes for tenants, partners and the people that you work with. By its nature, decarbonisation is a collaborative exercise, and an effective approach will require that whg work closely with stakeholders across value chain, including suppliers, employees and customers.

What is a carbon footprint?

A carbon footprint is a measure of the total GHG emissions generated both directly and indirectly by an organisation through its day-to-day operations and business processes.

A comprehensive carbon footprint is made up of three levels of emissions sources known as 'scopes':

- **Scope 1:** Direct emissions from sources that are owned or controlled by the reporting entity, such as emissions from fuel combustion, onsite equipment, and vehicles;
- **Scope 2:** Indirect emissions from the generation of purchased electricity, heat, or steam consumed by the reporting entity; and
- **Scope 3:** Indirect emissions associated with activity in your value chain; whg's Scope 3 emissions are other people's Scope 1 and 2 emissions.

Why is undertaking a carbon footprint important?

While every kilogram of GHG emitted contributes to global warming, it is also typically associated with consumption and, therefore, business costs. As such, there are both ethical and pragmatic reasons for organisations to take proactive steps in managing its GHG emissions. However, for emissions to be managed effectively, they must first be measured and monitored. Undertaking a carbon footprint assessment provides a structured approach to evaluating baseline emissions and a framework for considering how an organisation might mitigate them.

How is a carbon footprint calculated?

A carbon footprint is derived by considering each of the elements or 'categories' of emissions in turn. In the broadest sense, carbon footprints are calculated by gathering energy and procurement data related to day-to-day activities and then multiplying them against 'emissions factors' or coefficients that ascribe a GHG value to that activity.

For scopes 1 and 2 , the Department for Energy Security and Net Zero's (DESNZ; formerly BEIS) GHG emissions factors for company reporting are generally used. For scope 3, a mix of factors are used which includes DESNZ' as well as others that are derived from models of economic activity and spend data. This is explained in more detail in the methodology section later in this document.

This report

whg commissioned Savills to provide an analysis of its GHG emissions for FY24/25. This builds on the existing footprint work that Savills has already completed for whg for 4 of the past five years. This report:

- Sets out the methodology for calculating a full carbon footprint under GHG Protocol reporting standards;
- Discloses the carbon baseline for whg's corporate operations and housing stock;
- Identifies ratios which can be used as key performance indicators to measure progress; and
- Provides commentary on the completeness of the carbon footprint in terms of data quality.

Scope of the carbon footprint

The specific categories that were included in the GHG assessment were agreed with in conjunction with whg and are detailed in the table on the right. The category names align to those that are set out in the GHG Protocol[1] and whg's baseline has been prepared and reported in accordance with this standard.

The emission categories listed as out of scope have been excluded from the assessment because they are generally applicable to manufacturers or fast-moving consumer goods companies, where product disposal is a significant part of their impact (as is the case for Scopes 3.9–3.12).

The methodology used to calculate the emissions associated with Scopes 3.1 and 3.2 (discussed in detail later in this report) captures emissions throughout the supply chain. As such, any logistics services purchased by whg will be accounted for there.

Scope	Description	In Scope?
Scope 1		
1.0: Direct emissions associated with corporate facilities and vehicles.	Consumption of gas & other fuels burned onsite.	In scope
	Fugitive emissions from refrigerants.	In scope
	Mobile combustion emissions from vehicles.	In scope
Scope 2		
2.0: Emissions from purchased energy.	Emissions from purchased electricity consumed on site.	In scope
Scope 3		
3.1: Purchased goods and services	Emissions associated with purchased consumer goods and services.	In scope
3.2: Capital goods	Emissions associated with purchased capital goods.	In scope
3.3: Fuel and energy related activities	Emissions associated with extraction, transport and distribution of energy.	In scope
3.4: Upstream transport and distribution	Emissions associated with inbound logistics between a company's tier 1 suppliers and its own operations.	Out of scope
3.5: Disposal and treatment of waste	Emissions associated with waste treatment and disposal.	In scope
3.6: Business travel	Emissions associated with business related travel activities	In scope
3.7: Employee commuting	Emissions associated with employee commuting and employees working remotely	In scope
3.8: Upstream leased assets	Emissions associated with the operation of any asset that you lease.	Out of scope
3.9: Outbound logistics	Emissions associated with downstream transportation and distribution of sold products and services	Out of scope
3.10: Processing of sold products	Emissions associated with processing of intermediate products.	Out of scope
3.11: Use of sold products	Emissions associated with end use of goods and services.	Out of scope
3.12: End of life treatment of sold products	Emissions associate with waste disposal and treatment of products sold at the end of their life.	Out of scope
3.13: Downstream leased assets	Emissions associated with the assets that you manage.	In scope
3.14: Franchises	Emissions associated with the operation of franchises.	Out of scope
3.15: Investments	Emissions associated with the operation of investments.	Out of scope

[1] https://ghgprotocol.org/companies-and-organisations

Results

Total emissions

Scope	FY24/25 (tCO_2e)	% of total
Scope 1		
Property fuel (natural gas) (location-based)	672	1%
Property fuel (natural gas) (market-based)	0	Reference only
Bioenergy	3	<1%
Refrigerant gases	0	0%
Fuel for company vehicles	671	1%
Total scope 1	**1,346**	**1%**
Scope 2		
Electricity consumption (location-based)	667	1%
Electricity consumption (market-based)	0	Reference only
Total scope 2	**667**	**1%**
Scope 3		
Purchased goods and services (including water)	10,540	11%
Capital goods	19,541	21%
Fuel and energy related activities	513	1%
Disposal and treatment of waste	29	<1%
Business travel	73	<1%
Employee commuting	536	1%
Downstream leased assets	59,041	64%
Total scope 3	**90,272**	**98%**
Total GHG emissions (location-based)	**92,285**	**100%**
Total GHG emissions (market-based)	**90,943**	**Reference only**

Year-on-year change

Scope	FY23/24 (tCO_2e)	FY24/25 (tCO_2e)	% change
Scope 1			
Property fuel (natural gas) (location-based)	475	672	41%
Property fuel (natural gas) (market-based)	0	0	0%
Bioenergy	12	3	-76%
Refrigerant gases	0	0	0%
Fuel for company vehicles	668	671	<1%
Total scope 1	**1,155**	**1,346**	**17%**
Scope 2			
Electricity consumption (location-based)	765	667	-13%
Electricity consumption (market-based)	0	0	0%
Total scope 2	**765**	**667**	**-13%**
Scope 3			
Purchased goods and services (including water)	9,641	10,540	9%
Capital goods	26,489	19,541	-26%
Fuel and energy related activities	549	513	-7%
Disposal and treatment of waste	92	29	-69%
Business travel	70	73	4%
Employee commuting	588	536	-9%
Downstream leased assets	58,897	59,041	<1%
Total scope 3	**96,327**	**90,272**	**-6%**
Total GHG emissions (location-based)	**98,246**	**92,285**	**-6%**
Total GHG emissions (market-based)	**97,006**	**90,943**	**-6%**

Summary of results

The year-on-year change shows an 6% decrease in emissions between FY23/24 and FY24/25 which equates to approximately 6,000 tCO2e. This is primarily attributed to a decrease in scope 3.2 emissions, driven by a significant decrease in capital expenditure from around £103m in the previous reporting year to £76m in this year, with most of the decrease in spending allocated to development scheme costs.

Elsewhere in the footprint, scope 2 emissions saw a decrease of 13%. Commuting emissions also decreased by a similar magnitude. Business travel emissions increased slightly by 4% whereas waste emissions fell by 69%. Scope 1 emissions increase in FY24/25 driven by a 41% rise in gas emissions.

Intensity ratios

SECR guidelines encourage the use of intensity ratios to support environmental impact disclosures (whether tonnes of waste or emissions). These ratios can be expressed in terms of activities (e.g., units produced, Full Time Equivalent staff) or financial performance (£million turnover). The resulting normalised data are called the intensity ratios.

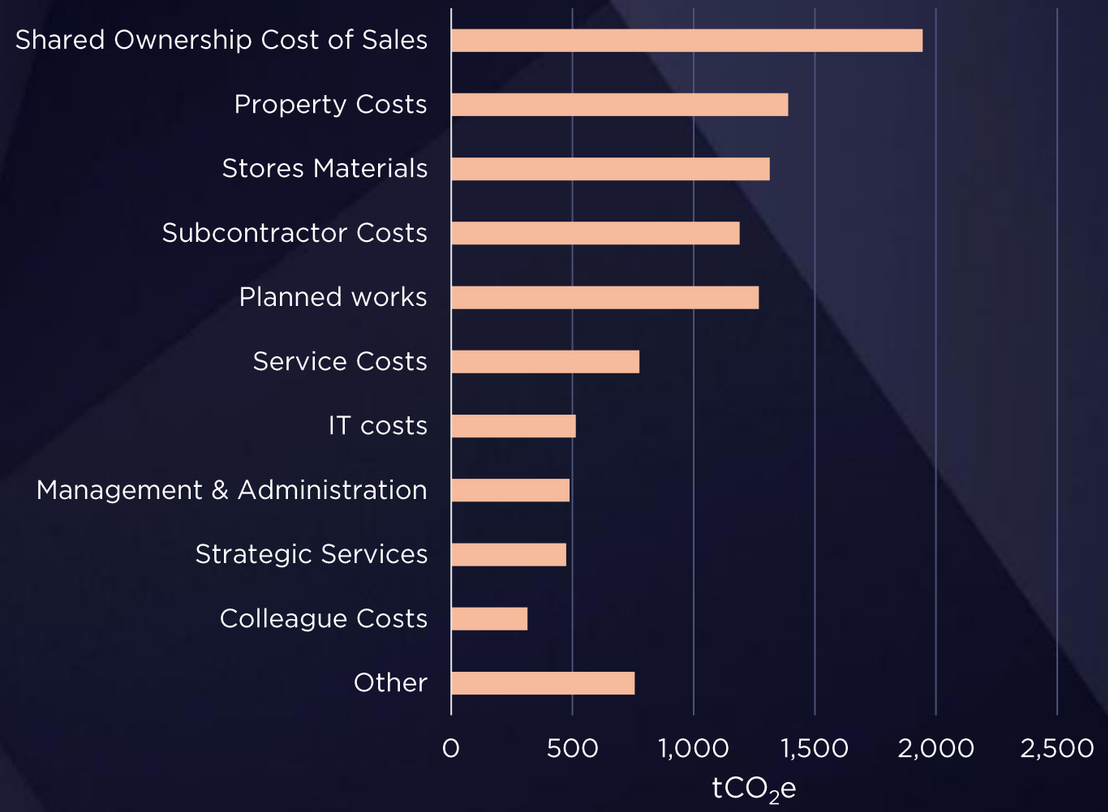
In the SECR report, ratios have been expressed in terms of SECR mandatory components (gas, fuel, electricity and business travel) to aid comparability with other organisations (whilst required under SECR, caution should be taken when comparing intensity ratios as organisational structures may vary significantly). The SECR emissions also more closely reflect the emissions whg have most control over (as opposed to their value chain activities where scope for influence is more limited). The emissions associated with these categories amounted to 2,083 tCO_2e in FY24/25 (see SECR report for full breakdown). Additional metrics focused on specific scope 3 categories are also included.

Metric	Based on	FY22/23	FY23/24	FY24/25
Turnover (tCO_2e/£m)	SECR emissions	16.45	14.57	14.26
Full time employees (tCO_2e/FTE)	SECR emissions	2.58	2.66	2.72
Total floor area (tCO_2e/m^2)	SECR emissions	0.49	0.49	0.51
Business travel (tCO_2e/FTE)	S3.6 emissions	0.09	0.09	0.10
Employee commuting (tCO_2e/FTE)	S3.7 emissions	0.73	0.79	0.70
Residential properties (tCO_2e/home)	S3.13 emissions	2.78	2.78	2.78

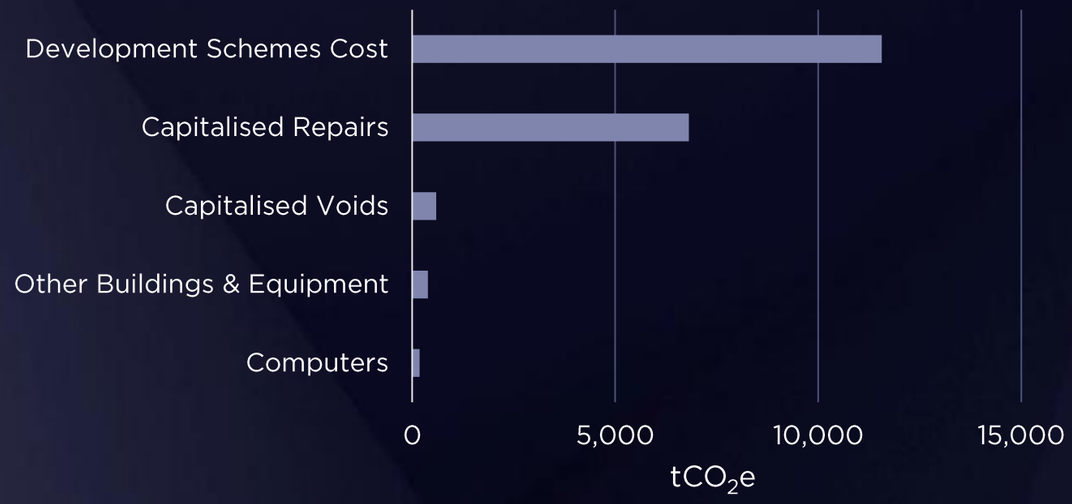
The table combines SECR and broader footprint data to calculate intensity ratios, enabling whg to monitor impacts across various areas. Year-on-year comparisons show minimal changes in intensity ratios over the past three reporting periods.

Scope 3 procurement

S3.1 Internal categorisation	tCO_2e	Breakdown
Shared Ownership Cost of Sales	1,945	18.5%
Property Costs	1,390	13.2%
Stores Materials	1,336	12.7%
Subcontractor Costs	1,276	12.1%
Planned Works	1,269	12.0%
Service Costs	776	7.4%
IT Costs	514	4.9%
Management & Administration	488	4.6%
Strategic Services	474	4.5%
Colleague Costs	315	3.0%
Other	757	7.2
Total	**10,540**	**100%**



S3.2 Internal categorisation	tCO_2e	Breakdown
Development Schemes Cost	11,561	59.2%
Capitalised Repairs	6,816	34.9%
Capitalised Voids	594	3.0%
Other Buildings & Equipment	385	2.0%
Computers	185	0.9%
Total	**19,541**	**100%**



Scope 3.3 Fuel and energy

Source	tCO_2e	Breakdown
Company fuel well-to-tank	163	31.2%
Electricity well-to-tank	161	30.8%
Natural gas well-to-tank	111	21.3%
Electricity transmission & distribution	59	11.3%
Business travel well-to-tank	19	3.7%
Bioenergy well-to-tank	9	1.7%
Total	**522**	**100%**

Scope 3.5 Waste

Source	tCO_2e	Breakdown
Neighbourhood Services	21	71.7%
Stores	7	24.1%
Tenancy Services	0.4	1.4%
Facilities	0.4	1.4%
Asbestos Services	0.4	1.4%
WHG - Wellbeing	0.01	0.03%
Total	**29**	**100%**

Scope 3.6 Business travel

Source	tCO_2e	Breakdown
Petrol car	37	50.0%
Diesel car	33	44.8%
Other cars	3.7	5.0%
Public transport	0.2	0.3%
Total	**73**	**100%**

Scope 3.7 Employee commuting

Source	tCO_2e	Breakdown
Petrol (unleaded)	283	52.8%
Diesel	193	36.0%
Hybrid	20	3.7%
Battery electric vehicle	14	2.6%
Bus	13	2.5%
Plug-in hybrid electric vehicle	7	1.3%
Taxi	2	0.5%
Rail	2	0.4%
Motorbike	0.5	0.1%
E-scooter / E-bike	0.1	0.03%
Unknown	0.1	0.01%
Total	**588**	**100%**

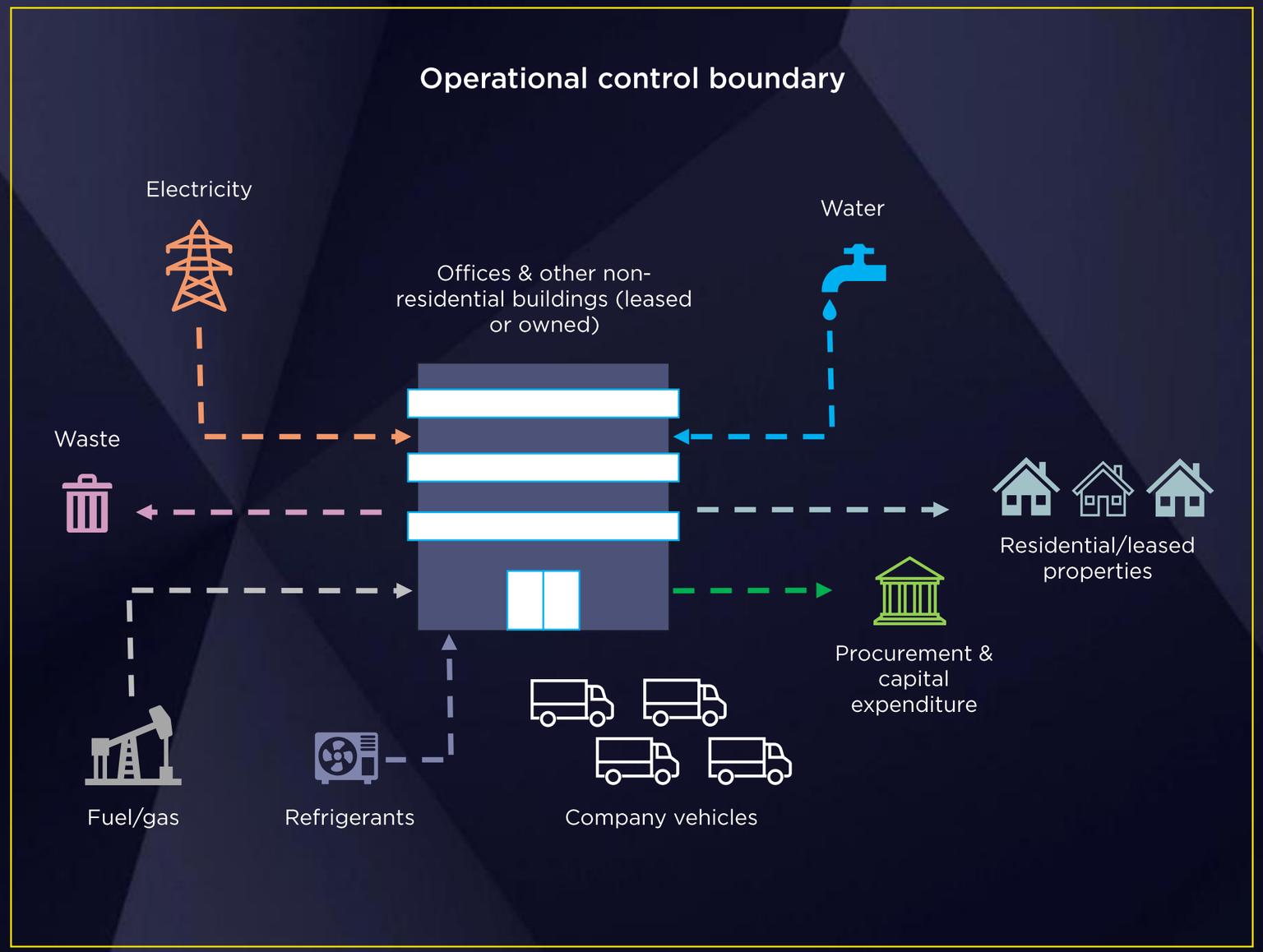
Methodology

Boundaries of the carbon footprint

The footprint has been calculated using an 'operational control' approach. Here, operational control is defined as the responsibility for reporting on 100% of any area where whg have the authority to introduce and implement operating policies, meaning whg have the final say on how energy is procured, how waste is disposed of, etc.

This means that the organisation accounts for 100% of the emissions from activities over which it has operational control or influence, regardless of whether or not it owns them directly (e.g. a leased office).

Adopting an operational control boundary is a commonly used approach, especially for companies that lease all or parts of their property estate. The alternative approach would be to calculate emissions based upon ownership, but this can make it harder to link emissions to targeted interventions.



The schematic above shows what this looks like in practice. It reflects the business activities, and the relevant GHG Protocol emissions category.

Calculation method

The carbon footprint appraisal has been derived using a combination of public and private (i.e. whg's) data together with carbon calculations undertaken by Savills. Savills uses data that can reasonably be collated by the client, with reasonable assumptions or estimates used where necessary.

Direct emissions associated with fuel consumption, energy consumption and some Scope 3 value chain emissions have been derived using the standard emissions factors sourced from the UK Government GHG Conversion Factors for Company Reporting[2].

The schematic below provides an overview of this calculation process. A more detailed explanation of the methodology can be found over the next few pages.

Dual reporting

The GHG Protocol Corporate Standard recommends dual reporting of energy emissions. This approach has been taken in this report:

- Market-based approach: This calculates the emissions associated with the energy sources or tariffs that the consumer has specifically chosen.
- Location-based approach: This reflects the average emissions arising from energy that is coming from the national grid energy supply.

Both approaches are reasonable and have their pros and cons; while buying green tariffs helps to drive and support grid decarbonisation, the way the grid operates means that location-based emissions can provide a better measure of marginal impact than market-based factors. All referenced figures in this report are location-based unless otherwise stated.

Scope 1 Property fuel (natural gas)

Gas consumption data from the properties whg manage was combined with UK Government conversion factors to calculate the associated emissions. This included offices and communal areas in residential buildings.

Scope 1 Refrigerants

Maintenance reports were provided which indicated no leakages of refrigerants from air conditioning units. As such, there are no associated emissions for the reporting year.

Scope 1.3 Fuel

Mileage data for the company fleet was provided, split by vehicle type. A miles per gallon figure was provided by whg that was used to calculate the associated fuel consumption. Consumption was combined with UK Government conversion factor to calculate the associated emissions.

Scope 2.0 Electricity

Electricity consumption data from the properties whg manage were combined with UK Government conversion factors to calculate the associated emissions. This included offices and communal areas in residential buildings.

Scope 3.1 and 3.2 Procurement

To estimate supply chain emissions from purchased goods and services and capital expenditure, Savills used the EXIOBASE environmentally extended input-output (EEIO) dataset.

EEIO combines economic information about the trade between industrial sectors with environmental information about the emissions arising directly from those sectors.

Each transaction is assigned a sector such as 'Construction works' or 'Real estate services' to derive the associated emissions. The model requires spending data to be inputted with VAT excluded so figures provided by whg were adjusted accordingly using UK Government rates. Additionally, since the model operates in Euros, the input data needed to be converted. The average exchange rate for FY24/25, provided by the European Central Bank, was used for this purpose.

Furthermore, the dataset underpinning the model is periodically updated. The most recent update was in 2022, meaning that spending data for this financial year needed to be adjusted for inflation. Using data from the Bank of England, an inflation adjustment factor was derived and applied to the data provided by whg. Further details of EXIOBASE can be found in the appendix.

Any expenditure on utilities (except water), vehicle fuel, and waste disposal was excluded from this part of the footprint to prevent double counting with other emissions categories. Raw data was utilised in those categories instead.

[2] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024

Scope 3.3 Fuel and energy related emissions

Total energy and fuel consumption, along with business travel, were combined with UK Government conversion factors to calculate the associated transmission and distribution and well-to-tank emissions. The input data matches that of those other emissions categories.

Scope 3.5 Waste

FY24/25 reported data was provided via carbon and consumption reports issued by whg's waste contractor.

Scope 3.6 Business travel

whg provided staff mileage claims (split by fuel type) and travel expense data (split by mode of transport). The mileage was converted into an emissions figure using appropriate conversion factors for each transport mode.

An average price factor for each travel mode per mile was used to calculate overall distance which was then converted into an emissions figure using the appropriate conversion factor.

Scope 3.7 Employee Commuting

A commuting survey was issued to all whg staff to inquire about their commuting habits for the reporting year. The survey included questions on the number of days spent commuting each week and the total journey distance. Employees were then asked to provide a breakdown of their commute, indicating what percentage of their journey can be attributed to a particular mode of transportation.

Once the survey results were received, the data was cleaned to remove invalid responses and scaled up to calculate the total annual distance travelled by each mode of transportation.

These figures were then combined with the UK Government conversion factors to calculate the associated emissions. To account for gaps, an emissions-per-employee factor was used to scale up across the organisation.

Scope 3.13 Downstream leased assets

Energy profiling data was provided that calculated an emissions figure for most of the homes in whg's housing stock. These figures were aggregated to provide the overall emissions for this category. For properties when an emissions figure was not provided, an average factor derived from available data was used.

Your data

Overview of scope-specific data

Scope	Data provided	Quality	Recommendation
Scope 1			
1.1 Property fuel (natural gas)	Total gas consumption by property.	High	ENGIE breakdown clearly shows kWh per property, so we recommend continuing to use them as your broker.
1.2 Refrigerant gases	Maintenance reports for air conditioning units.	High	We recommend implementing an online system/logbook which tracks results from maintenance reports.
1.3 Fuel for company vehicles	Fuel card spend by fuel type.	Medium	Unlike previous years, fuel type and quantity was not provided. whg should look to revert to its old data collection process.
Scope 2			
2.0 Purchased electricity	Total electricity consumption by property.	High	ENGIE breakdown clearly shows kWh per property, so we recommend continuing to use them as your broker.
Scope 3			
3.1 Purchased goods and services	All expenditure on business services for agreed financial year and total water consumption.	High	The excel export should be tidied and put in a consistent format which shows a clear breakdown of expenditure to make analysis easier. Provide figures exclusive of VAT where possible.
3.2 Capital goods	All expenditure on fixed assets for agreed financial year.	High	Produce a breakdown of the major costs, in particular the £83m spent on development schemes. Provide figures exclusive of VAT where possible.
3.3 Fuel and energy related activities	Calculated using scopes 1 and 2 data.	High	See comments for scope 1 property and company fuel, scope 2 purchased electricity and scope 3 business travel.
3.5 Disposal and treatment of waste	Waste report provided by waste contractor.	High	Request a detailed breakdown of calculations provided by waste contractor. Ask for disposal methods.
3.6 Business travel	Mileage claims and expenditure on public transport for business related travel.	High	Mileage claim data is detailed and requires all the necessary information so this should be maintained. For more accurate calculations, try to record total distance travelled via public transport in addition to expense.
3.7 Employee commuting	Output from commuting survey.	High	To increase the accuracy of calculating emissions in this area, you should encourage all employees to respond to the survey. One incentive could be to enter all employees who respond to the survey into a prize draw.
3.13 Downstream leased assets	Housing stock report	High	Continue to complete and record RdSAP assessments.

Appendix

Methodology of environmentally extended input-output analysis

The input-output analysis is a top-down model able to take in account transactions between activities measured in monetary units and extend them at the environmental level in terms of GHG emissions (environmental extended input-output analysis, EEIO). It has long been recognised as a useful and consistent technique to estimate carbon footprint at different level of analysis. So, monetary flows are converted into GHG emissions thus considering the associated emissions embodied in trade. Indeed, some input-output based studies have revealed that substantial GHG emissions can be embodied in goods and services that are traded and, therefore, not typically included in the IPCC based accounting.

On the basis of the data availability the input-output analysis can be used at each level of scale. The use of input-output analysis in GHG accounting is increasing and numerous improvements have been achieved in recent years.

For the assessment of the impact of the capital expenditure and procurement the EEIO model EXIOBASE7 was used. EXIOBASE is a global, detailed Multi-Regional Environmentally Extended Supply-Use Table (MR-SUT) and Input-Output Table (MR-IOT). It was developed by harmonising and detailing supply-use tables for a large number of countries, estimating emissions and resource extractions by industry. Subsequently the country supply-use tables were linked via trade creating an MR-SUT and producing a MR-IOTs from this. The MR-IOT can then be used for the analysis of the environmental impacts associated with the final consumption of product groups. The specific version used is Exiobase 3.8.2 IOT 2022 PxP[3].

Applications of EEIO analysis continue to grow in popularity. By enabling the rapid assessment of the upstream drivers of environmental impacts, as well as the impacts embodied in trade between nations, this approach is enabling a new generation of analyses that take a consumption-focused, rather than a production-focused, perspective on the causes of global environmental degradation and resource use.

This approach will be particularly critical for efforts to track the flow of resources and pollutants through an increasingly globalised economy and for finding ways to reduce the impacts of ever-growing human consumption demands.

[3] EXIOBASE3 is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. It is attributed to the EXIOBASE Consortium and can be found at www.exiobase.eu.

Contact us

Tom Hill

Head of Impact Advisory

tom.hill@savills.com

Aidan Richardson

Associate, Impact Advisory

aidan.richardson@savills.com

savills.com