Annual Carbon Management Report 2024-25

March 2026

Northumbria University NEWCASTLE

Northumbria University's Carbon Commitments

Northumbria University continues to recognise the need for urgent action on climate change and is committed to quantifying and reducing its own climate impacts, measured in the form of greenhouse gas (GHG) emissions. This report compares progress against Northumbria University's carbon reduction targets for the 2024-25 financial year.

In its Carbon Management Strategy 2020 - 2030, Northumbria University committed to achieve Net Zero Carbon by no later than 2040. To set the University on a trajectory to meet this commitment, an interim target of 5000 tCO_2e by 2030 was identified, representing an 80% GHG emissions reduction against the 2014-15 baseline.

Northumbria University reports on Scope 1, Scope 2 and selected Scope 3 emissions against this baseline, including energy, fuel, business travel, water and waste management.

Achieving these commitments for Scope 1 & 2 GHG emissions will require the energy efficient retrofit of buildings and plant, increased renewable energy generation and a transition away from fossil fuels, towards decarbonised electricity. University policies and behaviour change in relation to travel, waste management and purchasing decisions will help to address the indirect Scope 3 footprint, assisted by the decarbonisation of good and services purchased by the University.

This report summarises the key energy, water and carbon data prepared for submission to the Higher Education Statistics Agency (HESA) Estates Management Record. Northumbria University continues to align its Scope 3 reporting with the Standardised Carbon Emissions Framework (SCEF), introduced for the higher education sector in 2023. Additional emissions categories, including Procurement and Staff/Student Commuting, were included in last year's report for the first time and an update for 2024-25 is included in this annual report.

Summary of GHG emissions performance against reduction targets in 2024-25:

- Scope 1 & 2 emissions were 7328 tCO_2e in 2024-25, representing a 12.5% reduction on the previous year and an 63.6% reduction on the 2014-15 baseline;
- Scope 3 emissions were 2226 tCO_2e in 2024-25, representing a 25% reduction on the previous year and a 65% reduction against the 2014-15 baseline[1];
- Total GHG emissions (Scope 1, 2 & selected Scope 3 emissions) in 2024-25 were 9555 tCO_2e, representing a 63.9% reduction in carbon emissions since the 2014/15 baseline year;
- A combined 15.8% reduction in Scope 1, 2 & 3 emissions compared to the previous year is the highest annual reduction achieved since the start of the 2020-2030 Carbon Management Strategy;
- Total emissions remain 1287 tCO_2e (16%) above the University's trajectory to meet the 2030 target of 5000 tCO_2e, set out in the 2020-2030 Carbon Management Strategy, due to previous yearly increases or below-target annual reductions since 2020.

[1] Selected Scope 3 emissions included within the 2014-15 baseline and 2020-2030 Carbon Management Strategy targets include Business Travel, Water Supply & Sewerage, Electricity Transmission & Distribution and Waste Management. The figures quoted here provide a like-for-like comparison, although the number of Scope 3 sources we monitor and report continues to expand in-line with the Standardised Carbon Emissions Framework (SCEF).

Scope 1 & 2 GHG emissions inventory 2024-25

Scope 1 emissions occur directly from sources owned or controlled by the University, including emissions from gas boiler flues and internal combustion vehicle exhausts.

Scope 2 emissions occur indirectly from the generation of heat or electrical energy by others, which is then purchased and used by the University. This includes electricity used in buildings and electric vehicles. Heat generated by a third-party and used for heating at Trinity Square student accommodation is also included in this category.

Scope 1 & 2 emissions are managed in similar ways and are therefore grouped together in this report. The activities which give rise to these emissions are under the direct control of the University, whether the resulting GHG emissions occur directly or indirectly.

These emissions mostly arise from facilities and estates related operations and are therefore being tackled via a range of technical and management actions to improve the energy efficiency of buildings, with a focus on reducing fossil fuel use. Planned maintenance, energy efficiency retrofits and refurbishments, ensuring the provision of heating, lighting, cooling and ventilation matches requirements for occupants without energy waste all contribute to efficient operation of the estate.

The activity data collected to compile the 2024-25 Scope 1 & 2 GHG emissions inventory is summarised in Table 1 below, including energy used on-campus, refrigerants used to maintain cooling systems and volumes of fuel used in University vehicles.

Table 1: University activities associated with Scope 1 & 2 GHG emissions

	Activity causing GHG emissions			
Activity	24-25	23-24	% change	Units
Mains gas use	17.42	20.1	-13.33%	GWh
Grid electricity use	20.33	19.87	+2.32%	GWh
Purchased heat (Trinity Square)	2.88	2.88	0%	GWh
Refrigerants (recharging refrigeration systems)	4	36	-89%	kg
Fuel use - internal fleet	6862	5934	+15.64%	litres

The above sources of activity data were converted into their carbon dioxide equivalents using appropriate intensity factors published in UK Government GHG Conversion Factors for Company Reporting (2025). The Scope 1 & 2 GHG emissions inventory is shown in Table 2 below:

Table 2: Scope 1 & 2 GHG emissions inventory

	GHG emissions arising from activity (tCO_{2e})				
Activity	24-25	23-24	abs change	% change	Units
Mains gas use	3187	3695	-508	-13.75%	tCO_{2e}
Grid electricity use	3599	4114	-515	-12.52%	tCO_{2e}
Purchased heat (Trinity Square)	518	518	0	0%	tCO_{2e}
Refrigerants (recharging refrigeration systems)	7.7	32	-24.3	-76.15%	tCO_{2e}
Fuel use - internal fleet	17	14	+3	+21%	tCO_{2e}
Totals	**7328**	**8374**	**-1046**	**-12.5%**	**tCO_{2e}**

Scope 1 & 2 GHG emissions breakdown by end-use: City Campus, Coach Lane Campus, Student Accommodation

The chart in Figure 1 below summarises the proportional contribution of Northumbria University's Student Accommodation (including externally managed accommodation) and Operational Buildings towards overall Scope 1 & 2 GHG emissions, categorised by campus. This demonstrates that 18.5% of GHG emissions relate to student accommodation, with the proportion of emissions from operational buildings at Coach Lane and City Campus being 11.16% and 70% respectively.

Fleet and refrigerant emissions are shown for completeness, but are negligible (<1%) in comparison to energy related Scope 1 & 2 emissions.

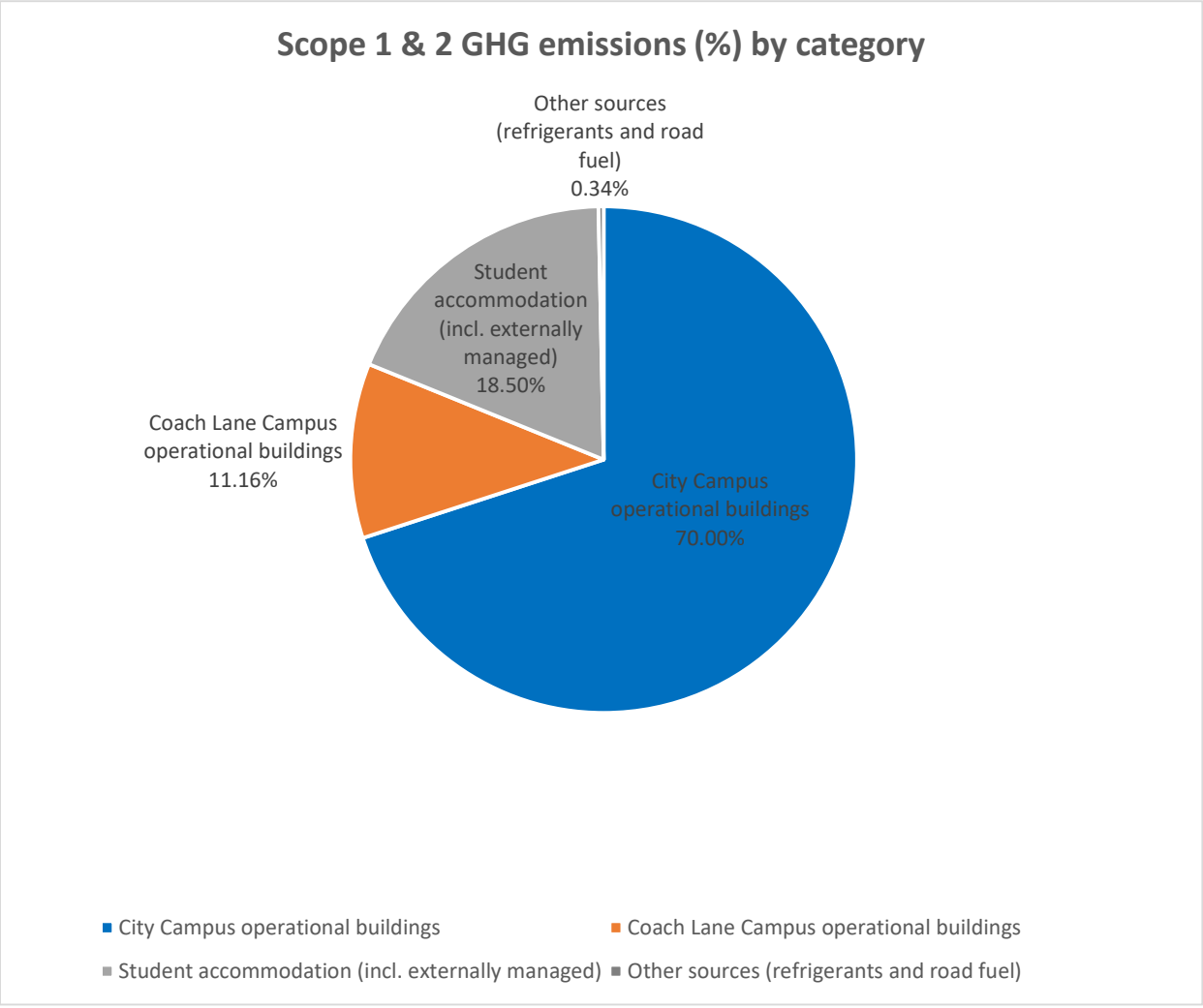

Figure 1: Proportions of Scope 1 & 2 emissions sources relating to Student Accommodation (incl. externally managed) and Operational Buildings categories

Key actions taken to reduce Scope 1 & 2 GHG emissions during 24-25

Over the past year Northumbria University has implemented the following measures to reduce Scope 1 & 2 GHG emissions, including:

- During 2024-25, all of the university's electricity was purchased through 'green' energy tariffs, although we continue to report carbon emissions using published grid averages due to the non-specific origin of the renewable electricity generation;
- Average grid electricity decarbonised by around 15% compared to the previous year and Scope 2 emissions reduced by 515 tCO2e, despite a small increase in electricity consumption this year;
- Claude Gibb student accommodation building was decommissioned in preparation for demolition, reducing annual carbon emissions by around 260 tCO_2e;
- Lipman Building was decommissioned in preparation for demolition, reducing annual carbon emissions by 290 tCO_2e;
- The air source heat pump (ASHP) systems at Coach Lane East (including the Sports Centre) have allowed the campus to operate without any fossil fuel use since October 2024 and the Public Sector Decarbonisation Scheme (Phase 3b) funded project will reduce direct carbon emissions by 300 tCO_2e per annum;
- Sabien M2G boiler optimisation controls were installed at Drill Hall, Northumberland Building, Pandon Building and Trinity Building as a pilot project to improve the operating efficiency of remaining gas boilers by reducing boilers firing when there is low heating system demand;
- Real-time water compliance monitoring is being trialled at Sport Central to reduce water use, as well as the thermal energy used for domestic hot water generation;
- Electricity metering has been improved at Coach Lane East and Ellison Buildings to help identify and address areas of poor energy efficiency.

Identifying energy waste and opportunities for improved efficiency

Initiatives to identify energy waste via improved data analysis and energy audits supports Northumbria University's carbon reduction and cost reduction aims. Improved monitoring and targeting helps to identify and address areas of inefficiency and waste, often highlighting opportunities for savings which can be implemented at low or no cost.

In conjunction with utilities suppliers, work to add or reinstate automatic meter reading (AMR) equipment has progressed significantly during 2024-25. This is improving the accuracy of energy reporting, including the facility to import high frequency data into our energy database to identify and reduce higher than expected out-of-hours usage, for example.

A number of buildings share common energy supplies and many larger buildings include significant energy uses which would benefit from individual monitoring. Existing monitoring systems are increasingly obsolete, unreliable and unserviceable. Improved energy metering systems are therefore being progressed across the estate as a priority project to improve the accuracy and availability of data to help identify energy waste, carbon and cost savings.

Scope 3 GHG emissions inventory 2024-25

In addition to the Scope 1 & 2 emissions sources discussed above, the University also aims to reduce its wider carbon impacts and improve the reporting of indirect Scope 3 GHG

emissions in alignment with the GHG Protocol and the sector-specific Standardised Carbon Emissions Framework (SCEF). Scope 3 emissions occur in the value chain as an indirect result of the University's operations and therefore form part of its wider footprint.

Whereas Scope 1 & 2 emissions are mostly related to estates operations and can be measured and influenced directly, the majority of Scope 3 emissions are organisation-wide and need to be influenced indirectly through a different approach, involving a combination of organisational policy, awareness-raising and behaviour change. Reported emissions are also influenced by external changes in the estimated carbon intensity across the value chain, where published carbon conversion factors can vary significantly between reporting years.

In common with most industry sectors, gathering complete, reliable and accurate data for many sources of Scope 3 GHG emissions remains challenging and often lacks consistency between reporting periods. While quantifying this area of emissions reporting is likely to remain an area of continuous development, the University continues its work to reduce these indirect environmental impacts.

The 2020-2030 Carbon Management Strategy identified selected sources of Scope 3 emissions to be included in the baseline, reduction targets and subsequent performance reporting. The Scope 3 inventory was selected based on data availability and accuracy, as well as the university's ability to influence emissions. The selected Scope 3 GHG emissions are shown in Table 3 below:

Table 3: University activities associated with Scope 3 GHG emissions

	Activity causing GHG emissions			
Activity	**24-25**	**23-24**	**% change**	**Units**
Business travel – Air	11925123	11925110	<1%	Passenger km
Business travel – Rail	1074995	1746027	-38.43%	Passenger km
Business travel - Coach Hire	131836	121026	+8.93%	km
Business travel - Car Hire	181854	215941	-15.79%	km
Business travel - Grey Fleet	118356	172314	-31.31%	km
No. 1 Bus Service - City Campus to Coach Lane Campus	520580	473645	+9.91%	Passenger km
Water use (incl. supply and sewerage)	174507	180857	-3.51%	m^3
Transmission and Distribution (grid electricity)	20.33	19.87	+2.32%	GWh
Waste management	828	982	-15.68%	tonnes

The above sources of activity data were converted into their carbon dioxide equivalents using either supplier data or standard factors in UK Government GHG Conversion Factors for Company Reporting (2025) where appropriate.

The quantified selected Scope 3 GHG emissions inventory is shown in Table 4 below:

Table 4: Scope 3 GHG emissions inventory

	GHG emissions arising from activity				
Activity	**24-25**	**23-24**	**abs change**	**% change**	**Units**
Business travel – Air	1552	2279	-727	-31.90%	tCO_{2e}
Business travel – Rail	38.1	61.9	-23.8	-38.45%	tCO_{2e}
Business travel - Coach Hire	72.59	65.9	+6.69	+10.15%	tCO_{2e}
Business travel - Car Hire	31.47	36.1	-4.63	-12.83%	tCO_{2e}
Business travel - Grey Fleet	20.5	28.8	-8.30	-28.82%	tCO_{2e}
No. 1 Bus Service - City Campus to Coach Lane Campus	54.1	51.4	+2.70	+5.25%	tCO_{2e}
Water use (inc. supply and sewerage)	63.2	61.28	+1.92	+3.13%	tCO_{2e}
Transmission and Distribution (grid electricity)	376.8	363.6	+13.20	+3.63%	tCO_{2e}
Waste management	17.6	20.9	-3.30	-15.79%	tCO_{2e}
Totals	**2226.36**	**2968.88**	**-742.52**	**-25.01%**	**tCO_{2e}**

Scope 3 GHG emissions breakdown by source

The chart in Figure 2 below summarises the main sources of Northumbria University's Scope 3 GHG emissions included in the scope of the original baseline and targets.

Although reported emissions from air travel have reduced by more than 30% this year, they are still responsible for 70% of the University's target-aligned Scope 3 emissions.

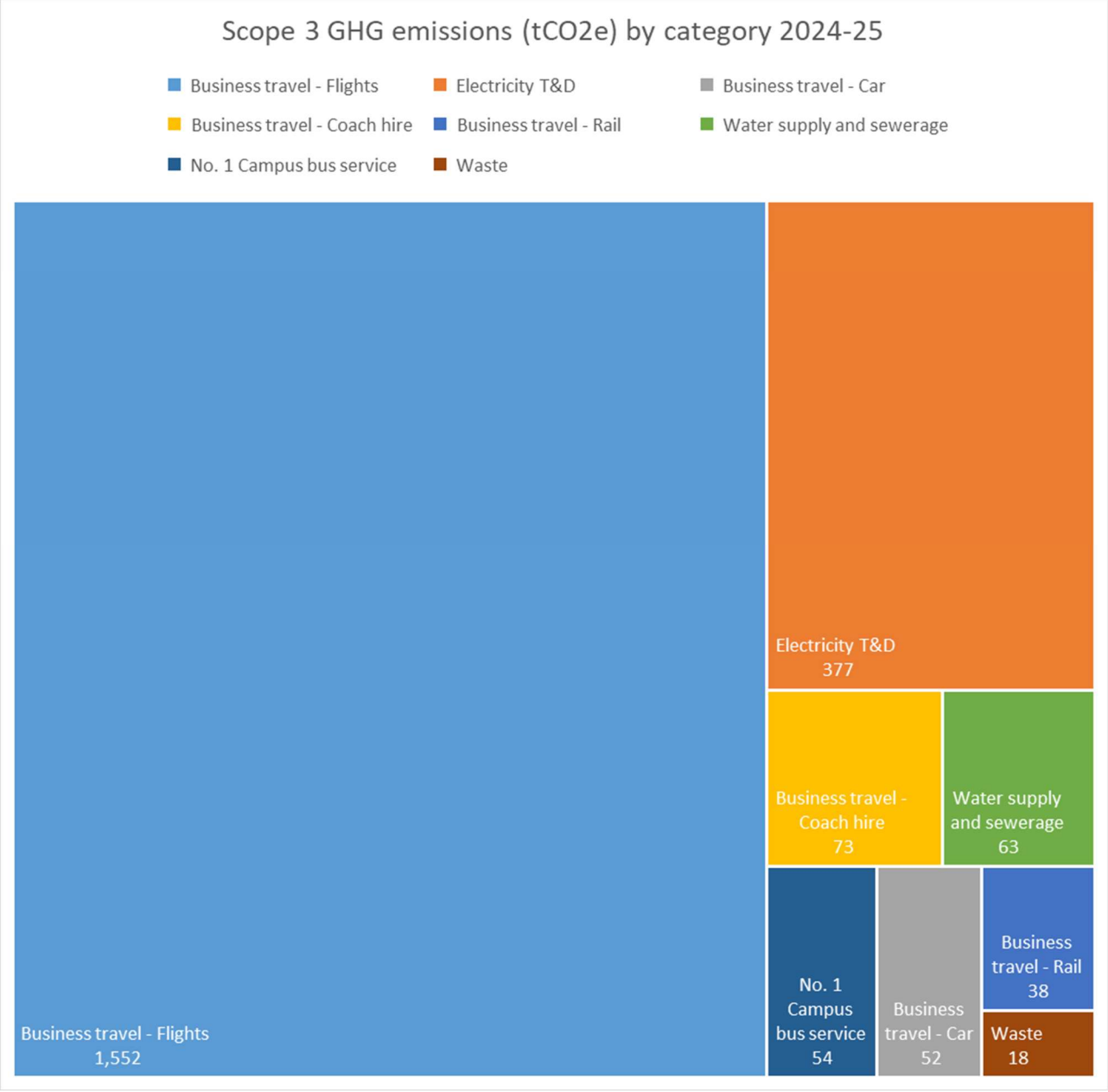

Figure 2: Scope 3 GHG emissions breakdown

Scope 3 procurement emissions 2024-25

Procurement related emissions are acknowledged as a major component of the University's wider Scope 3 carbon footprint and were included in the 23-24 annual report for the first time in alignment with the Simplified Carbon Emissions Framework (SCEF) guidance. Procurement emissions sources were originally excluded from the scope of the 2020-2030 Carbon Management Strategy on the grounds of data availability, accuracy and consistency between reporting periods. Despite these persistent issues with this area of emissions reporting, the strategy contained an aim to begin quantifying and reporting annually on procurement emissions from 2025 onwards. A summary of GHG emissions, estimated by procurement category is therefore included in Table 5 below.

These figures are prepared annually for reporting to the Higher Education Statistics Agency (HESA) by UKUPC, based on Northumbria University's non-pay expenditure, mapped to the relevant categories, and converted to their carbon equivalents by applying nationally published carbon intensity factors. The UK Government and other related organisations continuously review and refine these carbon intensity factors, some of which change significantly between reporting periods, so comparisons to previous years may be inconsistent.

Quantifying procurement emissions with accuracy presents a challenge for most industry sectors and, acknowledging the potential shortcomings of spend-based methodologies, the HESCET methodology appears to be the most appropriate source of data for quantifying procurement related GHG emissions for Northumbria University at the current time.

Indirect emissions associated with capital goods (including building and refurbishment) and transportation of goods to the institutions are within the scope of SCEF and these are included within the figures for purchased goods and services below.

Table 5: Scope 3 procurement emissions by HESA category (source: UKUPC HESCET analysis for Northumbria University)

HESA Procurement Category	GHG emissions 24-25	Units
E3SCICT – ICT	15498.69	tCO_{2e}
E3SCBS - Business services	14376.40	tCO_{2e}
E3SCMPI - Medical and precision instruments	3403.10	tCO_{2e}
E3SCFC - Food and catering	4606.51	tCO_{2e}
E3SCMP - Other manufactured products	5849.44	tCO_{2e}
E3SCCON – Construction	998.14	tCO_{2e}
E3SCOTH - Other procurement	1570.28	tCO_{2e}
E3SCPP - Paper products	738.49	tCO_{2e}
E3SCWW - Waste and water	210.20	tCO_{2e}
E3SCMFCG - Manufactured fuels, chemicals, and gases	170.26	tCO_{2e}
E3SCUNC - Unclassified	37.01	tCO_{2e}
Procurement Scope 3 GHG emissions total	**47458.52**	**tCO_{2e}**

At a total of 47,459 tCO_2e, indirect Scope 3 GHG emissions from procurement activities would represent around 80% of Northumbria University's carbon footprint if included within target scope. Last year, procurement emissions were included in the annual report for the first time, when total Scope 3 GHG emissions from procurement were 44,366 tCO_2e. although there

have been significant changes to some of the published GHG conversion factors in specific categories, so direct comparisons are inconclusive. The results of the spend-based GHG analysis each year will be included in future annual reports along with actions taken to reduce procurement and supply-chain related impacts.

Scope 3 staff and student commuting emissions 2024-25

Scope 3 carbon emissions arising from commuting by staff and students were included in the 2023-24 annual report for the first time as part of Northumbria University's aims to align with the Simplified Carbon Emissions Framework (SCEF) and an update for 2024-25 is included here.

Although these emissions sources were excluded from the scope of the carbon targets within the Carbon Management Strategy 2020-2030 due to concerns around data availability and accuracy, Northumbria University reviews and analyses the travel and transport preferences for commuting to campus by its staff and students on a biennial basis in accordance with the development of the Travel Plan Strategy. An external specialist consultancy was appointed to conduct and analyse the most recent staff and student travel surveys. These were conducted between August 2024 and March 2025. The report included estimates of carbon emissions arising from staff and student commuting through the application of standard assumptions and conversion factors to the survey results. The Scope 3 GHG emissions estimates for staff and student commuting are summarised in Table 6 below.

Table 6: Scope 3 emissions from staff and student commuting (source: Northumbria University Staff & Student Travel Survey Report – May 2025)

Mode	Staff	Students	Total	Units
Car/Van (alone)	833	3253	4086	tCO_{2e}
Car share (driver or passenger)	71	327	398	tCO_{2e}
Bus	281	2111	2392	tCO_{2e}
Train	118	524	642	tCO_{2e}
Metro/Tube	76	216	292	tCO_{2e}
Motorcycle/Scooter	11	18	29	tCO_{2e}
Taxi	6	43	49	tCO_{2e}
Total	**1396**	**6492**	**7888**	**tCO_{2e}**

Although staff and student commuting was not included within the scope of the Carbon Management Strategy 2020-2030, these sources of emissions were targeted within Northumbria University's Sustainability Policy with an aim to reduce average tCO_2e per head by 30% by 2030, against a 2018 baseline of 0.336 tCO_2e/head. In 2023-24, emissions from staff and student commuting were 0.278 tCO_2e/head, indicating a 17% reduction to-date. As this exercise is biennial, the same findings are applied to this year's reporting.

Key actions taken to reduce Scope 3 GHG emissions during 2024-25

Over the past year Northumbria University has implemented the following measures to support the reduction of Scope 3 GHG emissions, including:

- The estimated carbon intensity of air travel has reduced by around 30% in the most recent published GHG conversion factors to reflect decarbonisation of the aviation

sector in recent years. Despite total staff air travel remaining similar to the previous year, reported flight related carbon emissions have reduced by 31.9% compared to the previous year;

- Our Sustainable Travel Plan focuses on supporting active travel and embedding sustainable travel behaviours, such as greater use of sustainable travel modes to minimise car traffic to University sites;
- Water usage has reduced by 3.5% compared to the previous year. A number of major water leaks were detected rapidly by the real-time water monitoring system to minimise waste, but benchmarking indicates further remedial work is required to rectify longer-term issues, especially within the externally managed accommodation sites. Rectification work and further specialist surveys are ongoing to reduce excessive water use;
- A workplace EV/Hybrid car lease scheme has been launched to encourage the adoption of low emissions vehicles by staff and help to reduce emissions associated with commuting and grey fleet business travel.

Annual GHG Emissions vs. Reduction Targets – Scope 1 & 2

The University reports annually on Scope 1, Scope 2 GHG emissions against a 2014-15 baseline to determine progress against its carbon commitments. Sources included in the Scope 1 & 2 target include electricity, gas, petrol, diesel, refrigerants and purchased heat.

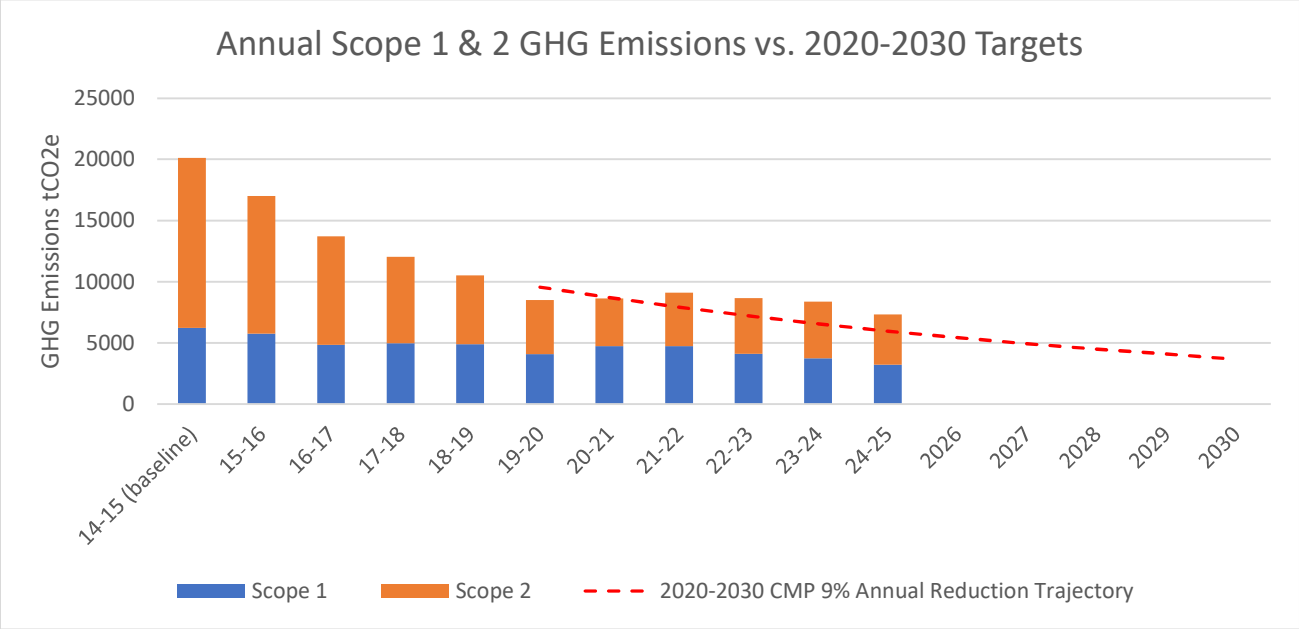

Figure 3: Annual Scope 1 & 2 emissions vs. target reduction trajectory to 2030

Annual progress since the 2014-15 baseline is summarised in Figure 3 above.

Scope 1&2 emissions were 7328 tCO2e in 2024-25, representing a 12.5% reduction on the previous year and a 63.6% reduction on the 2014-15 baseline.

As of 2024-25, Scope 1 & 2 emissions exceeded this year's target by 1358 tCO2e (22.7%) indicating Northumbria University is not currently on track to meet its 2030 GHG reduction

target. However, the gap has narrowed significantly, as the annual reduction target of 9.1% has been exceeded considerably this year.

Annual GHG Emissions vs. Reduction Targets – Scope 3

The University also reports annually on selected Scope 3 GHG emissions against a 2014-15 baseline to determine progress against its carbon commitments. Sources included in the Scope 3 baseline and target include business travel, waste, water and electricity transmission and distribution (T&D) losses.

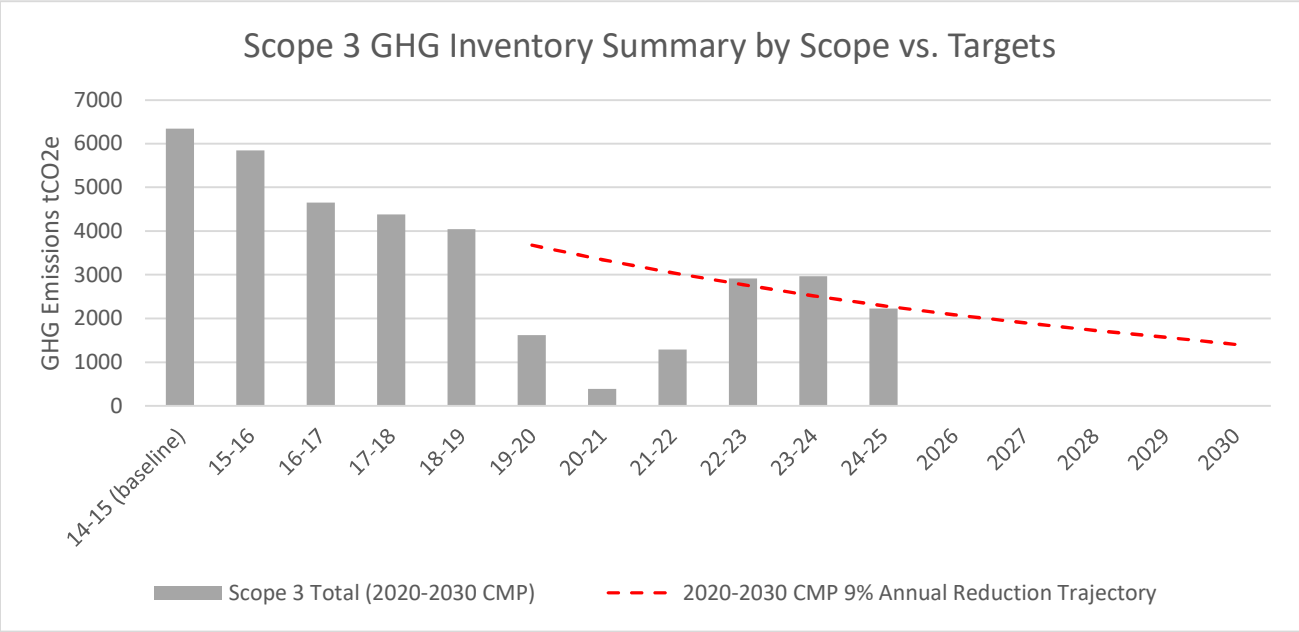

Figure 4: Annual Scope 3 emissions vs. target reduction trajectory to 2030

Annual progress since the 2014-15 baseline is summarised in Figure 4 above.

Scope 3 emissions were 2226 tCO2e in 2024-25, representing a 25 % reduction on the previous year and a 65% reduction against the 2014-15 baseline.

As of 2024-25, Scope 3 emissions were within this year's target by 70 tCO2e, mainly as a result of the published aviation carbon emissions factors reducing this year.

Annual GHG Emissions vs. Reduction Targets – Combined Scope 1, 2 & 3

The 2030 GHG reduction target was aligned with the Tyndall Centre 'Science Based Target' for the Newcastle upon Tyne Local Authority area, which indicated that GHG emissions would need to reduce by around 80% compared to the 2014-15 baseline. The science-based trajectory is indicated on the chart, alongside the annual reduction target trajectory from the 2020-2030 Carbon Management Strategy, equivalent to a 9.1% reduction per year from 2020 to 2030. Both targets therefore converge at approximately 5000 tCO_2e for Scope 1 & 2 and Scope 3 emissions by 2030.

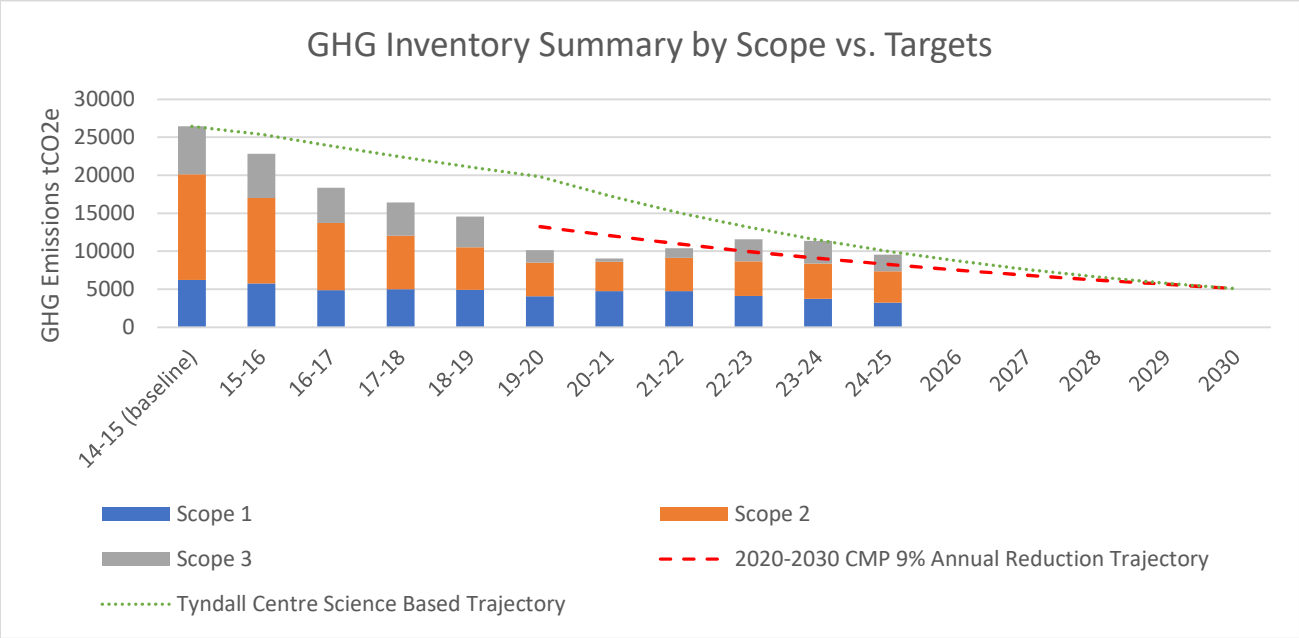

Figure 5: Combined Scope 1 & 2 and Scope 3 annual GHG emissions vs. target reduction trajectory to 2030

Combined Scope 1 & 2 and 3 GHG emissions for each year since the 2014/15 baseline are shown in Figure 5 below, along with the target trajectory set in the 2020-2030 Carbon Management Strategy.

Combined Scope 1, 2 and 3 emissions were 9555 tCO2e in 2024-25, representing a 15.8% reduction on the previous year and a 63.9% reduction on the 2014-15 baseline.

Scope 1,2 & 3 emissions exceeded the 24-25 target by 1287 tCO2e (16%) indicating Northumbria is not currently on track to meet its 2030 GHG reduction targets. However, the gap has narrowed significantly, as the annual reduction target of 9.1% has been exceeded considerably this year.

Northumbria University has made significant overall reductions against the 2014-15 baseline, having reduced GHG emissions by 63.9%. Despite this substantial early progress, GHG emissions remain 1287 tCO_2e (16%) above the 2020-2030 target reduction trajectory at the end of 2024-25.

Compared to the science-based reduction trajectory from 2015 to 2030, Northumbria University GHG emissions were 468 tCO_2e (4.7%) below the science-based target in 2024-25.

Annual GHG Emissions Summary to 2024-25

Reported carbon emissions for each of the key GHG emissions sources since the start of the 2020-2030 Carbon Management Strategy are summarised in Table 7 below, including the 2014-15 baseline year.

Table 7: Annual GHG emissions from 2019-20 to 2024-25 (inc. 2014-15 baseline year)

		GHG emissions (tCO2e)						
	Category	**2014/15 (baseline year)**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Scope 1	Gaseous fuels (stationary sources)	6,059	4,029	4,712	4,663	4,087	3,695	3,187
	Vehicle fleet	65	19	19	28	11	14	17.04
	Refrigerant gases	107	19	13	47	10	32	7.7
	Scope 1 total	**6,231**	**4,067**	**4,744**	**4,738**	**4,108**	**3,741**	**3,212**
Scope 2	Purchased electricity (Grid)	13,189	3,943	3,396	3,878	4,020	4,114	3,599
	Heat purchased	686	498	492	492	518	518	517.8
	Scope 2 total	**13,875**	**4,441**	**3,888**	**4,370**	**4,538**	**4,632**	**4,117**
Scope 3	Business Travel	5014	1,134	15	840	2,483	2,523	1,769
	Water	213	126	56	70	60	61	63.2
	Waste	26	23	15	21	24	21	17.6
	Elec T&D	1,087	339	300	355	352	364	376.8
	Scope 3 total	**6,340**	**1,622**	**386**	**1,286**	**2,919**	**2,969**	**2,226**
Scope 1 &2 totals		**20,106**	**8,508**	**8,632**	**9,108**	**8,646**	**8,373**	**7,329**
Scope 3 totals (target scope only)		**6,340**	**1,622**	**386**	**1,286**	**2,919**	**2,969**	**2,226**
Combined Scope 1 & 2 and Scope 3 totals		**26,446**	**10,130**	**9,018**	**10,394**	**11,565**	**11,342**	**9,555**

Looking ahead

Planned projects for 2025-26 and beyond include:

- Major upgrades to the City Campus ageing HV electrical infrastructure continue onto Phase 2 of the project, due to complete Summer 2026. The project involves a significant increase in the electrical supply capacity to the key buildings on City Campus, which will allow for future heat and transport decarbonisation;
- Additional electricity metering is being installed alongside the electrical infrastructure works to minimise disruption to operational buildings and provide more accurate usage data for monitoring and targeting potential energy reduction opportunities;

- A campus-wide heat metering strategy to provide a greater understanding of gas use and heat energy is being developed, which is expected to improve reporting accuracy and help identify areas of focus for energy efficiency improvements;
- The Durant Hall refurbishment project is due to complete in Summer 2026. A heat pump system, funded by the Public Sector Decarbonisation Scheme, is replacing the old, inefficient gas boiler plant. Combined with the application of passive design principles for ventilation and cooling, the refurbishment project will decarbonise and futureproof a listed historical building;
- The North East Space Skills and Technology Centre (NESST), built on the former site of the Wynne Jones building on City Campus, is being constructed to a high standard of energy efficiency and all heating and hot water demand will be met by decarbonised electricity, some of which will be generated by on-site photovoltaic panels;
- Energy efficiency and carbon reduction principles are being embedded into refurbishment and new-build projects which are currently in the development phase, which will help reduce reliance of fossil fuels for heating and hot water generation;
- A pilot project is being developed for City Campus East to install environmental sensors in all occupied spaces to provide more accurate real-time monitoring of temperature, CO_2 levels and occupancy. Digital radiator valves will be used to control individual heat emitters in response to the sensors, providing more accurate control of the heating across the building. Amongst other operational benefits, this closer control will reduce energy waste associated with localised overheating. The entire system is connected via a wireless LoRaWAN, which will also allow for future expansion. Following a successful pilot, this approach is likely to be implemented more widely across the estate;
- The potential for connecting campus buildings to a city-wide low-carbon heat network is being explored with Newcastle City Council and other partners during the development of the scheme. Depending on technical and economic feasibility, this is being considered as an alternative to decentralised heat pumps for the decarbonisaiton of multiple existing buildings on City Campus;
- A programme of backlog maintenance/lifecycle projects are due to be implemented which will also deliver energy, carbon and cost savings. These include LED lighting replacement schemes, upgrades of fans and pumps and planned upgrades and updates to the BMS across the campus;
- Ongoing review of space utilisation and rationalising opening hours in order to minimise running costs will also help to reduce energy use and carbon emissions;
- Water efficiency benchmarking identified that three student accommodation sites (Trinity Square, Winn Studios and New Bridge Street) required specialist investigation due to unexplained water use which was not correlated with occupancy. Overall water use reduced compared to the previous year, but work is ongoing and we are targeting much greater reductions as the remedial work is completed by the university's outsourced facilities management provider for the accommodation sites;
- Following successful engagement last year, Northumbria University will be partnering with North East Combined Authority (NECA) and Mobilityways on a project aimed at measuring and reducing the environmental impacts of commuting in the region;

- Northumbria University attained cycle friendly employer silver status in Jan 2025 from Cycling UK. The scheme supports our sustainable travel plan and demonstrates our commitment to active travel and providing alternative transport solutions.

Conclusion

Total GHG emissions (Scope 1, 2 & selected Scope 3 emissions) in 2024-25 were 9555 tCO_2e, representing a 63.9% reduction in carbon emissions since the 2014/15 baseline year and a combined 15.8% reduction in Scope 1, 2 & 3 emissions compared to the previous year. This the highest annual reduction achieved since the start of the 2020-2030 Carbon Management Strategy and exceeds the annual 9.1% annual reduction target for the first time since 2020. A combination of below-target reductions and some increases in previous years, results in combined Scope 1, 2 & 3 emissions remain 1287 tCO_2e (16%) above the University's trajectory to meet the 2030 target of 5000 tCO_2e set out in the 2020-2030 Carbon Management Strategy. This would indicate that Northumbria University is not currently on track to meet the 2030 target. However, the gap between actual emissions and target emissions has narrowed considerably this year due to the extent of reductions in 24-25.

Planned decommissioning of surplus buildings has contributed significantly to the reduction in Sope 1 & 2 emissions this year, as has the continued decarbonisation of grid electricity. Although increases in energy use through recent acquisitions and committed new-build projects are anticipated, the net improvement in carbon emissions will still be achieved through low-carbon design, and especially the selection of heat sources which rely on decarbonised electricity instead of gas.

Although future scenario planning to 2030 and beyond indicates that continued decarbonisation of grid electricity will provide substantial support towards the University achieving its carbon targets, the same scenario planning also indicates that achieving the net-zero target by 2040 will not be possible without a large-scale transition away from gas boilers and towards heat pumps using decarbonised electricity across the campus. The majority of existing buildings are expected to be in-use in 2040 and most significant heat decarbonisation retrofit projects implemented by Northumbria University since 2020 have been made economically feasible by multiple phases of Public Sector Decarbonisation scheme, which is no longer available.

Connections to a future city-wide heat network could be an opportunity to decarbonise a number of existing buildings on City Campus as an alternative to decentralised heat decarbonisation using heat pumps. Northumbria University expects to be supporting the local authority's development of a funding bid and initial feasibility stages as a potential heat offtaker, subject to technical and economic feasibility.

Planned lifecycle replacement of plant and equipment in buildings are supporting the University's carbon reduction aims through improved energy efficiency. Significant investments in key University buildings over the next four years will integrate carbon reduction into capital maintenance and major refurbishments; this approach is likely to be the primary strategy for reducing Scope 1 & 2 GHG emissions towards the 2030 target for Scope 1 & 2 emissions.

Meaningful energy data is key to reducing Scope 1 & 2 GHG emissions. Improving the accuracy and resolution of energy data will help to identify and address energy waste, increase the accuracy of carbon reporting, aid decision-making in relation to investment priorities and help to monitor the outcomes of technical and management interventions.

Measuring and addressing Scope 3 GHG emissions continues to be challenging and Northumbria University is taking action to reduce an increasingly wide range of Scope 3 GHG impacts, with the number of Scope 3 GHG sources quantified and reported continuing to expand in-line with sector best-practice such as SCEF.

Business travel emissions have reduced by around 65% since the original 2014/15 baseline year. However, decarbonisation of the aviation sector has been the most significant factor in reductions this year, as total distance travelled by air has not reduced. Air travel is not considered possible to reduce further without restricting core academic activity. There are also a number of additional Scope 3 GHG sources which were not included within the scope of the 2020-2030 Carbon Management Strategy, but are being targeted by the university's sustainability improvement planning.

The University is in the process of reviewing its approach to the monitoring and targeting of Scope 3 emissions to reflect emerging best-practice, with an increasing number of Scope 3 GHG emissions sources being reported since the original 2020-2030 Carbon Management Strategy was developed.