In July 2019, the University declared a Climate Emergency. Shortly after, in September 2020, the University Executive Board approved a new Sustainability Strategy 2020-2030, which reviewed the University’s carbon journey since a 2008/09 baseline year and set out the University’s aim to achieve net zero emissions by 2030 against a new baseline year of 2018/19. The University's total emissions during this new baseline year were 21,931 tCO2e.

As set out in the Strategy, the University aims to reduce its direct and indirect carbon emissions by 50%. It will offset the remaining emissions in credible sector-specific offsetting and carbon sequestration schemes. The following report discusses the University’s performance against our overarching carbon emissions targets with year-on-year comparisons.

**Direct Emissions (Scopes 1&2)**

The University’s direct carbon footprint includes both Scope 1 and Scope 2 emissions. Scope 1 emissions include emissions from:

* Gas burned in university boilers
* Fuel used in university fleet vehicles
* Fugitive emissions from any leaks in university air conditioning and refrigeration units
* Any other fuels burned on-site

Scope 2 emissions include emissions from:

* Purchased electricity

Of these emissions categories, emissions from gas and electricity are the most material and are therefore prioritised for measuring, monitoring, and reporting.

The University measures and reports on its direct carbon footprint in three ways:

1. **Absolute carbon emissions**

The University’s direct carbon footprint decreased by 7% between 2022/23 and 2023/24, with a decrease of 31% from the 2018/19 baseline year.

|  |  |  |
| --- | --- | --- |
| **2018/19** | **2022/23** | **2023/24** |
| 3,230 tCO2e | 2,409 tCO2e | 2,241 tCO2e |

Table to show direct carbon emissions across FYs 2018/19, 2022/23, and 2023/24

As seen in the chart below, emissions from gas comprised 53% of the University’s direct carbon footprint across 2023/24, with emissions from electricity accounting for 41%.

As set out in the Energy and Water Management Strategy, to achieve net zero by 2030, combined emissions from gas and electricity consumption must be reduced by an average of 8.4%. In terms of emissions from gas (baseline figure of 1,782 tCO2e), this translates to an average reduction of 150 tCO2e pa. In terms of emissions from electricity (baseline figure of 1,398 tCO2e), this translates to an average reduction of 117 tCO2e pa.

Between 2022/23 and 2023/24, the University reduced emissions from gas by 265 tCO2e. This is mainly due to the improved implementation of the University’s Heating and Comfort Policy, which broadly requires that space heating be kept to 19C (+-1C) across the estate.

Whilst the University has exceeded the 8.4% reduction target for emissions from gas between 2022/23 and 2023/24, the University has not achieved the required overall reduction of 42% from the baseline year. Actual emissions from gas are compared with targeted emissions in the chart below:

Whilst less progress has been made towards achieving emissions from gas reduction targets, emissions from electricity have reduced considerably since the 2018/19 baseline. The University exceeded its emissions from electricity reduction targets across 2019/20, 2020/21 and 2021/22, achieving an average 12% reduction pa. However, across 2022/23, this progress slowed, and this year, the University has not attained its emissions reduction target for electricity for the first time since the target was set. Performance is shown in the chart below:

As seen in the chart, emissions from electricity have remained steady since 2020/21, indicating that unless significant action is taken to reduce emissions from electricity, the University is likely to miss future emissions reduction targets.

Carbon emission conversion factors for electricity vary considerably yearly due to ongoing work to decarbonise the national grid. For example, 1kWh of electricity was equivalent to 0.49 kgCO2e in 2014 and 0.21 kgCO2e in 2024. This makes it difficult to set meaningful decarbonisation targets for electricity consumption, as carbon emissions from electricity will reduce over time independent of any steps the University takes to decarbonise its electricity supplies. This report, therefore, recommends shifting away from an emissions reduction target for electricity and instead opting to set targets for kWh consumption and on-site generation. By setting these targets, the University will also be better placed to account for the significant increase in electricity consumption that the University expects to see with the electrification of heat.

As well as emissions from gas and electricity, the University’s direct carbon footprint also includes emissions from fuel burned in fleet vehicles, fugitive emissions from refrigerant leaks, and any other fuels burned on-site. In line with the emissions reduction targets for gas and electricity, the University has set a target to reduce its overall direct carbon emissions by 8.4% annually from a 2018/19 baseline. Progress against this target can be seen in the chart below:

1. **In relation to the number of students and staff at the University**

In 2018/19, the University had 9,304 FTE staff and students combined. Since then, this figure has fluctuated. In 2023/24, the number of FTE staff and students was 9,915, a slight increase on the baseline total.

In 2018/19, direct carbon emissions per FTE staff and student was 0.35 tCO2e/FTE. In 2023/24, this figure had dropped to 0.23 tCO2e/FTE – a 35% reduction in carbon emissions per FTE.

1. **In relation to the University’s estate**

The size of the University’s estate has increased considerably since the 2018/19 baseline year, from 81,772 m2 in 2018/19 to 87,405 m2 in 2023/24. At the same time, several energy efficiency projects have been delivered, including the expansion of the University’s Building Management System (BMS), the replacement of inefficient lighting with LED alternatives, and the expansion of the University’s solar photovoltaic (PV) and solar thermal estate.

In 2018/19, the estate's direct carbon emissions per m2 was 0.040 tCO2e. This figure dropped to 0.026 tCO2e/m2 in 2023/24, representing a 35% decrease in space carbon intensity and evidencing the effectiveness of the various energy efficiency projects that have taken place during this period.

**Indirect Emissions (Scope 3)**

The University’s indirect carbon footprint consists of Scope 3 emissions. Scope 3 emissions include emissions from a wide range of activities, with the most material being:

* Purchased goods and services (procurement)
* Student travel (term-time and out of term-time), and
* Employee commuting

The University’s indirect carbon footprint is so-called because these are emissions categories that the University can influence but cannot directly control.

The University does not have a blanket Scope 3 emissions reduction pathway to 2030. However, several Scope 3 activities have individual interim targets. This report assumes a Scope 3 emissions reduction target of 5% pa (from 2018/19).

As seen in the table below, the University’s indirect carbon footprint experienced a slight decrease of 4% between 2022/23 and 2023/24. However, there has been a considerable increase of 52% from the 2018/19 baseline year.

|  |  |  |
| --- | --- | --- |
| **2018/19** | **2022/23** | **2023/24** |
| 18,701 tCO2e | 29,673 tCO2e | 28,479 tCO2e |

Table to show indirect carbon emissions across FYs 2018/19, 2022/23, and 2023/24

In 2018/19, the University’s Scope 3 emissions totalled 18,701 tCO2e. Between 2018/19 and 2020/21, the University exceeded its Scope 3 emissions reduction targets, achieving an average reduction of 13% pa across this period. This trend was reversed in 2021/22 due to a significant jump in emissions from procurement driven by major capital projects, namely the redevelopment of the Elizabeth Garrett Anderson building.

In 2022/23, the University oversaw another significant increase in Scope 3 emissions of 11,136 tCO2e (from 18,537 tCO2e in 2021/22 to 29,673 tCO2e in 2022/23). This increase was due to the expansion of the University’s indirect carbon footprint, which included student travel to/from students’ home addresses and downstream leased assets. The decision to include these activities in the University’s indirect carbon footprint came after the publication of the Standardised Carbon Emissions Reporting Framework for Further and Higher Education (SEF) in 2023. This framework aims to standardise reporting on carbon emissions across the further and higher education sectors.

The slight decrease in emissions between 2022/23 – and 2023/24 is due to a significant 38% reduction in emissions associated with procurement (from 15,540 tCO2e in 2022/23 to 9,617 tCO2e in 2023/24). However, whilst considerable progress to reduce emissions from procurement was made, emissions from travel (staff and student) increased significantly, with a 31% increase in emissions from student travel (12,903 tCO2e in 2022/23 to 16,948 tCO2e in 2023/24) and a 70% increase in emissions from staff commutes (from 777 tCO2e in 2022/23 to 1,317 tCO2e in 2023/24).

There are several critical contextual factors to consider when considering the changes in these emission categories. For example, whilst the reduction in emissions from procurement should be celebrated, it should also be noted that 2023/24 represented an atypical year for purchasing activities at the University. Therefore, this reduction in emissions is not necessarily part of a sustained trend. Regarding emissions from travel, this increase is due to increased student numbers (particularly international students).

The University’s progress against the target of a 5% pa reduction of indirect carbon emissions from 2018/19 to 2030/31 can be seen in the chart below:

Considering the above, this report recommends that the University review its indirect emissions targets to accommodate for the expansion of the reporting scope discussed above and to account for more recent trends across different emissions categories. Coinciding with a review of targets, this report also recommends refreshing the University’s decarbonisation plan and developing a credible offsetting strategy for difficult-to-decarbonise emissions.

**Data Tables**

The tables in this section show year-on-year progress against carbon reduction targets across all Scopes using an RAG rating system. To monitor progress in organisational change, the University also calculates carbon emissions per full-time equivalent staff and student numbers (FTE) and the gross internal area of the estate (GIA).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** |
| FTE | **9304** | 8,863 | 8,466 | 8,705 | 9,147 | **9,915** |
| GIA (m2) | **81,172** | 81,172 | 81,904 | 87,698 | 87,698 | **87,405** |

Emissions performance against set targets is then assessed using the following RAG rating system:

|  |  |
| --- | --- |
| **Progress** | **RAG Rating** |
| Target exceeded | **GREEN+** |
| Target met | **GREEN** |
| Monitoring required | **AMBER** |
| Target not met | **RED** |

All RAG ratings are determined to the baseline year of 2018/19 to ensure anomalous year-on-year changes are eliminated from the analysis.

**Direct Emissions (Scopes 1&2)**

**Scopes 1&2 combined emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **3,230** | 2,817 | 3,154 | 2,754 | 2,409 | **2,241** | Decreased by 7% from 2022-23; reduction of 30% against baseline, with an average 6% reduction pa | **RED** |
| Per FTE | **0.35** | 0.32 | 0.37 | 0.32 | 0.26 | **0.23** | Reduction from baseline of 34%, with an average 7% reduction pa | **NA** |
| Per GIA | **0.040** | 0.035 | 0.039 | 0.031 | 0.027 | **0.026** | Reduction from baseline of 35%, with an average 7% reduction pa | **NA** |

**Gas emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **1,782** | 1,719 | 2,183 | 1,813 | 1,449 | **1,184** | It decreased by 18% from 2022-23; it reduced 34% against the baseline, with an average 7% reduction pa. | **RED** |
| Per FTE | **0.19** | 0.19 | 0.26 | 0.21 | 0.16 | **0.12** | Reduction from baseline of 37%, with an average 7% reduction pa | **NA** |
| Per GIA | **0.022** | 0.021 | 0.027 | 0.021 | 0.017 | **0.014** | Reduction from baseline of 36%, with an average 7% reduction pa | **NA** |

**Purchased electricity emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **1,398** | 1,059 | 947 | 895 | 927 | **923** | It decreased by 0.43% from 2022-23; it reduced 34% against the baseline, with an average 7% reduction pa. | **RED** |
| Per FTE | **0.15** | 0.12 | 0.11 | 0.10 | 0.10 | **0.09** | Reduction from baseline of 40%, with an average 8% reduction pa | **NA** |
| Per GIA | **0.017** | 0.013 | 0.012 | 0.010 | 0.011 | **0.011** | Reduction from baseline of 36%, with an average 7% reduction pa | **NA** |

**Fleet emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **42** | 30 | 12 | 22 | 24 | **27** | Increased by 13% from 2022-23; reduction of 36% against baseline, with an average 7% reduction pa | **RED** |

**F Gas emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **0** | 1 | 3 | 12 | 3 | **93** | Increased by 3000% compared with 2022-23 (significant F-gas leak reported in 2023-24); higher than baseline figure | **RED** |

**Indirect Emissions (Scope 3) (2021/22 data)**

**Scope 3 combined emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **18,701** | 15,322 | 13,781 | 18,537 | 29,673 | **28,479** | Decreased by 0.04% from 2022-23; increase of 52% against baseline | **RED** |
| Per FTE | **2.01** | 1.73 | 1.63 | 2.13 | 3.24 | **2.87** | Increase from baseline of 43%, with an average 9% increase pa | **NA** |

**Electricity transmission and distribution emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **119** | 91 | 84 | 82 | 80 | **82** | Increased by 2.4% from 2022-23; reduction of 31% against the baseline, with an average 6% reduction pa | **RED** |
| Per FTE | **0.013** | 0.010 | 0.010 | 0.009 | 0.009 | **0.008** | Reduction from baseline of 23%, with a 5% reduction pa | **NA** |

**Purchased water emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **22.6** | 21 | 6 | 7 | 11 | **11** | Decreased by 4% from 2022-23; reduction of 52% against the baseline, with an average 10.4% reduction pa | **GREEN** |
| Per FTE | **0.0024** | 0.0023 | 0.0007 | 0.0008 | 0.0012 | **0.0011** | Reduction from baseline of 54%, with an average 10.8% reduction pa | **NA** |

**Wastewater emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **46** | 43 | 11 | 13 | 12 | **13** | Increased by 9% from 2022-23; reduction of 72% against the baseline, with an average 14% reduction pa | **GREEN** |
| Per FTE | **0.005** | 0.005 | 0.001 | 0.002 | 0.001 | **0.001** | Reduction from baseline of 74%, with an average 15% reduction pa | **NA** |

**Waste and recycling emissions (excluding construction waste) (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **9.12** | 6.36 | 6.00 | 6.44 | 7.44 | 6.30 | Decreased by 15% from 2022-23; reduction of 31% against baseline, with an average 6% reduction pa | **GREEN** |
| Per FTE | **0.001** | 0.0007 | 0.0007 | 0.0007 | 0.0008 | 0.0006 |  | **NA** |

**Business travel emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **530** | 264 | 28 | 83 | 232 | **302** | Increased by 30% from 2023-23; reduction of 43% against the baseline, with an average 8.6% reduction pa | **AMBER** |
| Per FTE | **0.06** | 0.03 | 0.00 | 0.01 | 0.03 | **0.03** | Reduction from baseline of 47%, with an average 9% reduction pa | **NA** |

**Commuter travel emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **8,190** | 4,552 | 5,519 | 4,384 | 4,296 | **7,993** | Increased by 86% from 2022-23; reduction of 2.4% against the baseline, with an average 0.5% reduction pa | **RED** |
| Per FTE | **0.88** | 0.51 | 0.65 | 0.5 | 0.47 | **0.81** | Reduction from baseline of 8%, with an average 1.6% reduction pa | **NA** |

**Student travel (out of term time) (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual |  |  |  |  | 9,457 | **10,420** | No set target/baseline | **NA** |
| Per FTE |  |  |  |  | 1 | **1** | No set target/baseline | **NA** |

**Downstream leased assets (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual |  |  |  |  | 38 | **35** | No set target/baseline | **NA** |
| Per FTE |  |  |  |  | 0.004 | **0.004** | No set target/baseline | **NA** |

**Procurement emissions (tCO2e)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Baseline**  **2018-19** | 2019-20 | 2020-21 | 2021-22 | 2022-23 | **2023-24** | **Commentary** | **Key** |
| Annual | **9,784** | 10,355 | 8,127 | 13,962 | 15,540 | **9,617** | Decreased by 38% from 2022-23; a decrease of 2% against the baseline, with an average 0.4% reduction pa | **RED** |
| Per FTE | **1.05** | 1.17 | 0.96 | 1.60 | 1.70 | **0.97** | Reduction from baseline of 8%, with an average 1.6% reduction pa | **NA** |