



CARBON TRANSITION

PAPER

REVISED SEPTEMBER 2024

ENVIRONMENTAL SUSTAINABILITY
DIVISION OF OPERATIONS AND COMMERCIAL

REPORT AUTHORS

- Veolia Energy Solutions
- Environmental Sustainability, Division of Operations and Commercial

CONTRIBUTORS

- Infrastructure Strategy and Planning, Division of Operations and Commercial
- Campus Operations, Division of Operations and Commercial
- Procurement Services, Division of Finance

CARBON TRANSITION PAPER

SUMMARY

2021 Western Sydney University committed to the UN-led 'Race to Zero for Colleges and Universities' with targets of Carbon Neutral 2023 and Climate Positive 2029.

Working towards the first of these targets, Western sought carbon neutrality certification for its operations using Climate Active's Carbon Neutral Standard for Organisations, underpinned by the global Greenhouse Gas Protocol. Carbon Neutral certification under Climate Active was achieved in April 2023.

For Western to move towards Climate Positive in 2029, the development of a more comprehensive strategic plan was required examining improvements across all the GHG protocols of:

- ➔ Scope 1 – Direct emissions.
- ➔ Scope 2 – Indirect emissions.
- ➔ Scope 3 – Corporate Value Chain.
- ➔ Scope 4 – Avoided emissions.

This report was prepared by Veolia Energy in conjunction with Western's stakeholders and uses carbon engineering principles to outline a clear methodology of carbon transition strategies that will lead to Climate Positive.

DEFINITIONS

- ➔ **Climate Positive** – activities of an organisation resulting in net removal or reduction of CO₂ from the atmosphere.
- ➔ **Scope 1** - Direct Emissions - The release of greenhouse gases into the atmosphere as a direct result of activities occurring within a responsible entity's control (or geographic boundary). Examples of these include natural gas and fuel used in vehicles.
- ➔ **Scope 2** - Indirect emissions - The release of greenhouse gases into the atmosphere from the consumption of electricity, heating, cooling, or steam that is generated outside of a responsible entity's control (or geographic boundary).
- ➔ **Scope 3** - Corporate Value Chain - Greenhouse gases emitted because of a responsible entity's activities but emitted outside the responsible entity's control (or geographic boundary). Examples of these include air travel and general supply chain.
- ➔ **Scope 4** - Avoided emissions - the emission reductions that occur outside of a value chain or the life cycle of a product – which are also commonly referred to as avoided emissions.

BACKGROUND

Following Western's commitment to the UN-led 'Race to Zero for Colleges and Universities' with targets of Carbon Neutral 2023 and Climate Positive 2029, planning towards these began. With the assistance of consultants and the NSW Sustainability Advantage program (State Government initiative), work was undertaken in 2022 to apply the federal Climate Active methodology resulting in certification for 2022 business operations in April 2023.

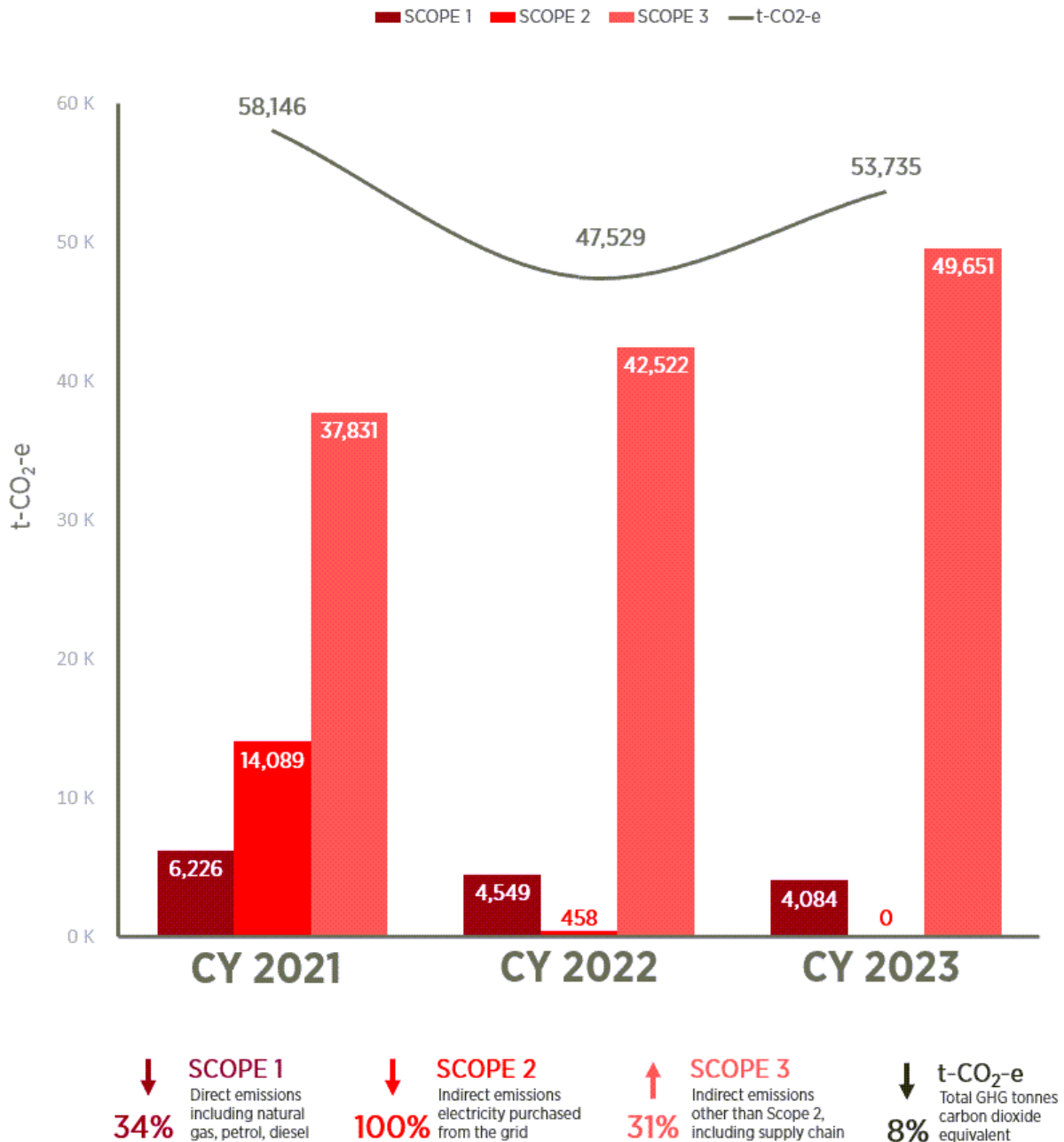
The methodology used to estimate the University's carbon footprint builds upon the international GHG (Greenhouse Gas) protocols in terms of:

- ➔ Scope 1 – Direct Emissions,
- ➔ Scope 2 – Indirect Emissions, and
- ➔ Scope 3 – Corporate Value Chain

This provides a robust framework for planning decarbonisation pathways towards becoming Climate Positive, along with reducing the need for carbon offsets. Recertification was achieved for 2023 utilising the following data which reflected a total carbon footprint of 53,735 tonnes CO₂-e (8% Scope 1, 0% Scope 2, and 92% Scope 3).

GREENHOUSE GAS EMISSIONS 3-yr TREND

tonnes carbon dioxide equivalent (t-CO₂-e)



The Environmental Sustainability team was tasked with engaging an appropriately experienced technical consultant to develop a high-level plan and program. Following conversations with Veolia Energy Solutions and Campus Operations, Veolia Energy Solutions were engaged, and have prepared a Five-Year Carbon Transition Plan.

KEY STRATEGIES

Scope 1 – Direct Emissions

	INITIATIVE	ACTIONS	IMPLEMENTATION
1	Electrification of natural gas	Replace gas domestic hot water systems with heat pumps supplemented with Solar collectors	2023-2026
		Replace space heating boilers with heat pumps	2024-2026
		Replace gas boilers with electrical resistive boilers for resilience and security for extreme weather	2024-2026
2	Electrification of petrol/diesel/LPG	Replace all fossil-fuelled plant and machinery with battery operated types	2024-2028
3	Remove high emission generating refrigerants in HVAC upgrades	Replace with low emission generating HVAC systems	2024-2027

Scope 2 – Indirect Emissions

	INITIATIVE	ACTIONS	IMPLEMENTATION
1	Continue renewable electricity in supply contracts	Ensure renewable electricity supply to all campuses and buildings is sourced during contract renewals.	ongoing

Scope 3 – Corporate Value Chain Emissions

	INITIATIVE	ACTIONS	IMPLEMENTATION
1	Electrification fleet and buses (lease)	Replace petrol/diesel fuelled University leased vehicles with Electric	2023-2026
2	Process re-engineering procurement	Procurement management processes are to be reviewed and refocused on carbon neutral or better suppliers	2023-2026
3	Water efficiency upgrade	Review and replace water wasting devices with water efficient ones	2024-2028
4	Recycle green/ organic waste	Improve collection and sorting of organic waste for composting for use as fertiliser or renewable gas	2024-2028
5	Reuse commercial & industrial waste	Improve collection and sorting of recycled materials, particularly in construction and refurbishment of buildings.	2023-2029
		Minimise the use of plastic, improve collection and sorting of recycled materials.	2023-2029

Scope 4 – Avoided Emissions

	INITIATIVE	ACTIONS	IMPLEMENTATION
1	Energy efficiency upgrade HVAC and lighting	Upgrade old and inefficient HVAC systems with more efficient lower emitting equipment.	2024-2027
		Upgrade lighting systems to energy efficient models	2024-2026
2	Reduce grid supply with on-site renewables	Installation of renewable energy production and storage on site	2024-2026
3	Green Star Capital build	Continue GBCA Star rating for new builds	Ongoing
		Trial Green Star Performance for refurbishment	2025-2028

NEXT STEPS

Detailed engineering and feasibility studies will be conducted in 2025. This will include detail analysis to compare the feasibility of replacing plant and equipment with residual life along with the return on investment to be achieved in reducing our reliance on purchasing carbon offsets.

Governance processes, and incorporation in forecast capital planning and infrastructure renewal strategies will be critical, along with integration with developing ethical and social procurement processes. Both agile and critical approaches will be needed to achieve Western's bold targets set, and the reputational expectations of our ranking successes.

The initiatives identified will create efficiencies for the University, which can be achieved to assist in reducing the amount of carbon offsets that need to be purchased in future years for our business operations to remain Carbon Neutral. All these initiatives will take place within the current Five Year Capital Plan.