

UNSW  
Estate Management  
June 2024

# Environmental Sustainability Report 2023



UNSW  
SYDNEY





# Acknowledgement of Country

UNSW acknowledges the Bidjigal, Gadigal, Ngunnawal and Ngambri, who are the Traditional Custodians of, and whose communities remain connected to, the unceded territories upon which the University's main campuses are located. We pay our respects to Aboriginal and Torres Strait Islander Elders past and present for their custodianship of Country, and celebrate the cultural knowledges, stories, songlines, ancestors and dreamings of Aboriginal and Torres Strait Islander people, the First Peoples of Australia.

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# A message from the Vice-Chancellor and President



I am pleased to introduce the Environmental Sustainability Report 2023, the second progress report of the Environmental Sustainability Plan 2022–2024, which continues to drive UNSW’s pursuit of an environmentally sustainable future for all.

UNSW has deep credentials in sustainability, renewables, clean energy and water, with world-leading experts committed to tackling climate change, reducing waste and protecting biodiversity – top priorities for our University.

UNSW’s Environmental Sustainability Plan 2022–2024 drives action in three areas: *Climate Action, Living Campuses and Resource Efficiency*. This Environment Sustainability Report highlights our actions and progress against the Plan in each of these areas.

In a demonstration of our strong credentials in this sphere, in 2023 UNSW Sydney placed equal 19th in the 2024 QS World University Rankings, moving up 26 places following the introduction of three new indicators including sustainability performance – UNSW’s strongest indicator. Our University ranked second in Australia and 10th globally for sustainability.

UNSW also performed well in the 2023 Times Higher Education Impact Rankings, which assess universities’ contributions to the United Nations Sustainable Development Goals (SDGs) via teaching, research and campus operations. UNSW jumped 37 places to equal 18th globally and placed second globally for SDG 13 – Climate Action, reflecting our switch to renewable electricity, and unwavering commitment to achieving net zero emissions.

In 2023, UNSW redoubled on our efforts to reduce operational emissions. The acceleration of our Electrification Program saw the completion of designs for electrification upgrades to the first 10 buildings, with upgrades due to commence at the Paddington campus and Kensington Colleges before the end of 2024.

A new Sustainable Procurement Framework and implementation roadmap 2023–2026 was developed to continue to align UNSW purchasing activity with our environmental and social goals.

UNSW expanded the Laboratory Efficiency Assessment Framework (LEAF) program, an internationally recognised green lab accreditation that aims to build a culture of sustainable practice in laboratories. Our University now has 52 teams participating, accounting for 24 per cent of UNSW lab space, and 42 receiving a LEAF Bronze, Silver or Gold accreditation. LEAF teams have achieved significant savings in

greenhouse gas emissions, waste, water, laboratory expenses and use of single-use plastics.

In support of our commitment to become nature positive, a campus nature value metric and supply chain nature impact and risk assessment were completed. This work will inform the creation of a multi-year roadmap to build capabilities and address nature risks and impacts.

Our efforts to eliminate single-use plastics continued, with six additional food and drink retailers achieving a Plastic Free Dining Gold award. Of UNSW’s 28 retailers, 27 have now received Bronze, Silver or Gold awards recognising their efforts towards becoming plastic free, with 12 retailers achieving Gold status.

There were also challenges in 2023. UNSW’s total greenhouse gas emissions increased by some 13 per cent, primarily due to increases in emissions from business travel and supply chain. These areas require additional focus so that UNSW can meet its emission reduction goals.

The notable accomplishments outlined in this report demonstrate the significant strides UNSW has continued to make in its quest to secure a more liveable world.

UNSW is fortunate to have a University community that is committed to reducing our impact on the environment, and to building on our achievements to improve our performance across all operations.

Thank you to everyone who has contributed to these achievements, for your genuine passion for the environment, and your commendable commitment to maximising environmental sustainability and, ultimately, improving lives.



**Professor Attila Brungs**  
Vice-Chancellor and President  
UNSW Sydney

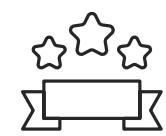
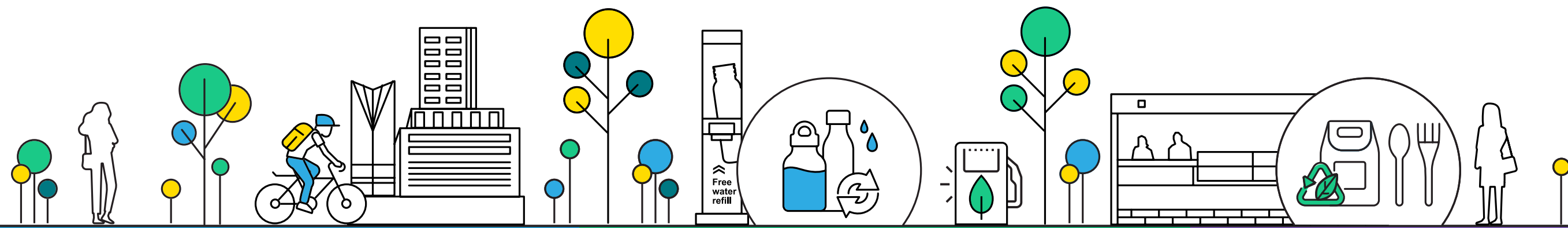


# 2023 highlights

## Climate action

## Living campuses

## Resource efficiency



> UNSW Sydney moved up 26 places to equal 19<sup>th</sup> in the 2024 QS World University Rankings. The QS Rankings now incorporate sustainability performance, which was UNSW's strongest indicator, where it ranks second in Australia and 10<sup>th</sup> globally.



> UNSW jumped 37 places to equal 18<sup>th</sup> globally in the 2023 Times Higher Education (THE) Impact Rankings, which assess universities contribution to the United Nations Sustainable Development Goals (SDGs) via teaching, research and campus operations. UNSW placed second globally for SDG 13 - Climate Action.



> Continued to implement the Electrification Program by completing concept designs for electrification upgrades to 10 buildings and commencing concept designs for a further 11 buildings.



> Developed a new Sustainable Procurement Framework and Roadmap, to align UNSW purchasing activity with its environmental and social goals.



> Third-party assurance of UNSW greenhouse gas emissions completed for the first time.



> Expanded the Laboratory Efficiency Framework (LEAF) program, with 42 teams now LEAF accredited University-wide including the first LEAF Gold award in Australasia.



> Completed a supply chain nature assessment and developed a multi-year roadmap to address impacts and risks in the UNSW supply chain and build internal capability.



> Developed a metric to track nature value at Kensington campus and enable nature to be embedded in campus planning.



> Five more food and drink retailers achieved a Plastic Free Dining Gold award, with 27 of 28 UNSW retailers having now achieved a Bronze, Silver or Gold award.



> Completed retro-commissioning Stage 1 for Science and Engineering (E8) and Hilmer buildings (E10) buildings, to optimise user comfort and energy efficiency.



> Furniture reuse program diverted 76 tonnes (85 per cent) of surplus UNSW furniture from landfill to beneficial reuse and recycling.





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# Environmental sustainability at UNSW

## UNSW and the global goals

The 2030 Agenda for Sustainable Development, adopted by all UN Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 SDGs, which aim to tackle the world's most pressing challenges by 2030 – including ending poverty, delivering more equitable prosperity and protecting the planet.

Universities have a critical role to play in the achievement of the SDGs. The Environmental Sustainability Plan supports UNSW's contribution to the following eight SDGs and their associated targets.



### Climate action

- > 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.
- > 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

UNSW Sydney is an education and research-intensive university, which delivers outstanding teaching alongside cutting-edge research. Established in 1949 and with campuses in Sydney and Canberra, UNSW is principally focused on the scientific, technological and professional disciplines. Environmental sustainability is a key element of our [updated 2025 Strategy](#).

Many of our students and staff are actively engaged in environmental and social issues. We recognise that we are uniquely positioned to contribute to solving global environmental challenges through teaching, research, thought leadership and demonstrating leading practices on our campuses.

UNSW's environmental sustainability program is led and coordinated by the Sustainability unit within Estate Management, in collaboration with students and staff across academic faculties and divisions.



### Living campuses

- > 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development.
- > 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- > 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
- > 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
- > 15.1 By 2030, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Our Environmental Sustainability Plan 2022-24 supports the 2025 Strategy, in particular:

**Theme 03 – Sustainable Development:**

**Objective 2** – Reduce our environmental footprint by using natural resources more efficiently, reducing waste and ensuring investments are consistent with the UN SDGs.

**Enabler 04 – Enhance our Campuses:**

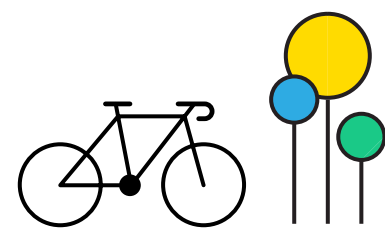
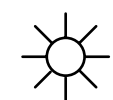
**Objective 2** – Position our campuses and the activities they support as leaders in sustainability practices. We can do this by minimising our environmental footprint and improving resource efficiency.

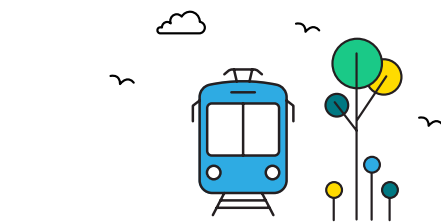


### Resource efficiency

- > 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- > 7.3 By 2030, double the global rate of improvement in energy efficiency.
- > 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
- > 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
- > 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
- > 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

UNSW's vision is to improve lives globally, through innovative research, transformative education, and commitment to a just society. Through the UNSW 2025 Strategy, UNSW aims to align its efforts with the United Nations Sustainable Development Goals.





# The Environmental Sustainability Plan 2022-24 at a glance

UNSW's Environmental Sustainability Policy is the foundation of our [Environmental Sustainability Plan](#). The three themes that support this foundation – *Climate action*, *Living campuses* and *Resource efficiency* – guide our strategic planning and contribution to the Sustainable Development Goals (SDGs). To deliver on these ambitious themes, we have identified seven focus areas, which are supported by targets and key initiatives.



## Climate action

Take urgent action to achieve net zero emissions across our operations and value chain.

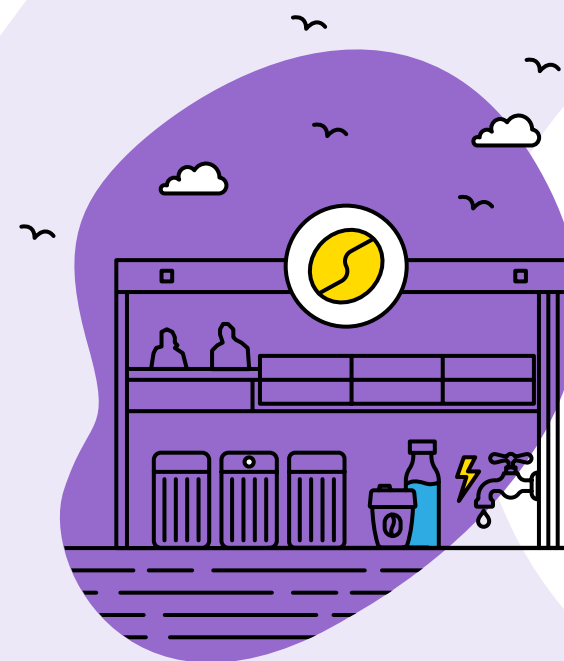
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## Living campuses

Create healthy, resilient places for learning and research where people and nature thrive.

[Page 14](#)



## Resource efficiency

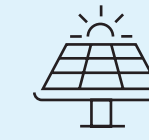
Conserve resources by reducing consumption, prioritising reuse and responsibly managing waste.

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### Focus area

### Targets<sup>1</sup>

### Key initiatives



#### Operational emissions

- Maintain net zero operational (scope 1 and 2) emissions
- Increase onsite solar PV capacity to 1.5MWp

- Implement Stage 1 of the Electrification Strategy
- Procure 100% renewable electricity



#### Partnering for net zero

- Reduce total (scope 1, 2 and 3) emissions by 30% by 2025, 50% by 2030 and to net zero by 2050<sup>2</sup>
- Divest investments in fossil fuel companies<sup>3</sup>

- Complete a climate risk assessment
- Complete and implement the Net Zero Strategy
- Maintain the Responsible Investment Framework
- Maintain the Sustainable Procurement Framework



#### Buildings and campuses

- Capital projects achieve our minimum sustainability requirements
- Kensington campus achieves a net gain in biodiversity value

- Establish a biodiversity value metric and baseline
- Establish Fowlers Gap Arid Zone Research Station as a dedicated conservation site
- Maintain the Capital Projects Sustainability Framework
- Maintain the Strategic Asset Management Plan



#### Engagement and integration

- Increase student and staff awareness of environmental sustainability issues

- Implement the Laboratory Efficiency Assessment Framework
- Maintain and promote the SDG Toolkit and Modules



#### Travel and transport

- At least 85% of students and staff travel to campus by sustainable travel modes

- Develop and implement an active travel masterplan



#### Energy and water

- Reduce energy intensity by 5%
- Reduce water intensity by 5%

- Maintain and implement the Energy and Water Action Plan



#### Waste and recycling

- Divert at least 85% of general waste<sup>4</sup> from landfill
- Reduce general waste by 20%
- At least 80% of retailers achieve Plastic Free Dining gold award status

- Maintain and implement the Waste Management Plan
- Maintain and implement Plastic Free Dining

<sup>1</sup> Target year is 2025 (i.e., will be measured based on full year 2024 performance) unless stated otherwise. Target scope and baseline details are shown in Appendix 1.  
<sup>2</sup> Emission reduction target will be periodically reviewed, and updates recommended so that it continues to align with best practice and reflects maximum effort towards limiting temperature increase to 1.5°C.  
<sup>3</sup> Includes direct ownership and commingled funds that include public equities and corporate bonds of companies who derive over 20% of their revenue from ownership and exploitation of fossil fuel reserves by 31 December 2025.  
<sup>4</sup> General waste includes waste from internal areas (burgundy, red, yellow and blue bins) and external areas (burgundy, white and red bins).



# How we measure progress

Our Environmental Sustainability Plan 2022-24<sup>1</sup> addresses our key operational activities and environmental issues. Our approach in each area is structured as follows:

- > Targets: specific, measurable outcomes that we measure our progress against.
- > Key initiatives: the main strategies that enable the realisation of our targets.

The Environmental Sustainability Plan 2022-24 contains 13 targets. Progress towards our targets is reported in its respective sections using the following categorisation:

Status	Symbol	Description	Count
On track		Targeted outcome is on track for achievement by the end of the reporting period	9
Not on track		Targeted outcome is not on track for achievement by the end of the reporting period	3
No data		Data enabling progress to be measured is not available	1

Our performance is reported in the sections that follow, and progress towards all targets is summarised on [p23](#).

Targets are reviewed at the end of each Environmental Sustainability Plan reporting period (currently a three-year cycle).

<sup>1</sup> [sustainability.unsw.edu.au/sites/default/files/documents/UNSW\\_Environmental\\_Sustainability-Plan-2022\\_v2.1.pdf](https://sustainability.unsw.edu.au/sites/default/files/documents/UNSW_Environmental_Sustainability-Plan-2022_v2.1.pdf)





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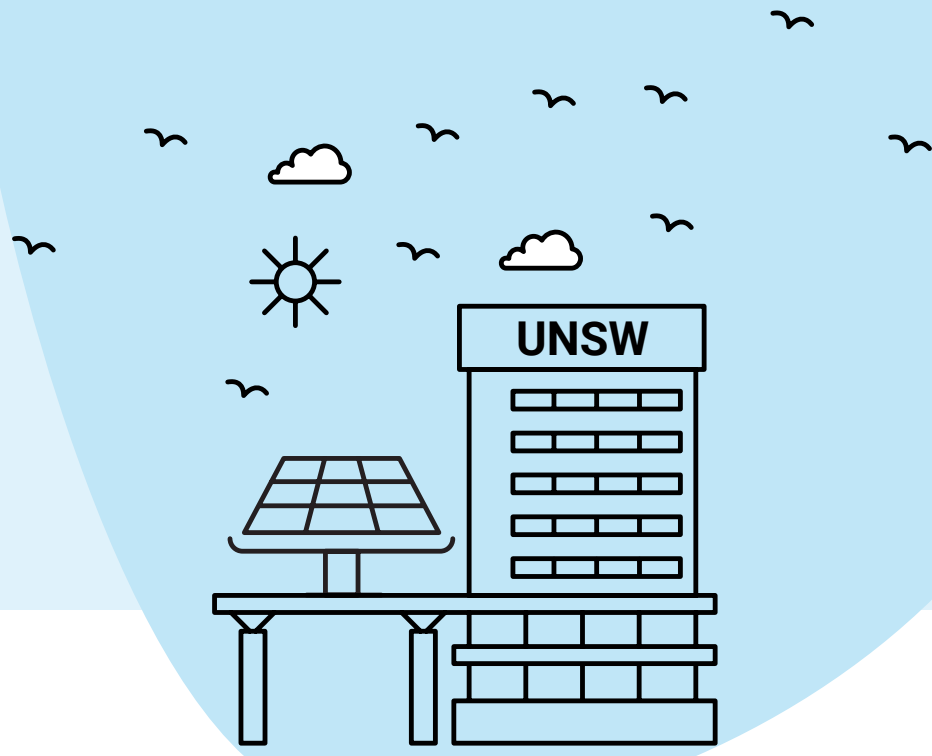
# Climate action







# Climate action



**Goal:** Take urgent action to achieve net zero emissions across our operations and value chain.



## Highlights

- > Accelerated the Electrification Program.
- > Developed a new Sustainable Procurement Framework and Roadmap.
- > Third-party assurance of UNSW GHG emissions completed for the first time.

## Sustainable Development Goal(s)

Our activities in this area contribute to the following SDGs: 7 and 13



And are especially focused on these targets under SDGs 7 and 13:

- > 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.
- > 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

## Why this matters

Climate change is an existential threat and tackling it is a top priority for our students, staff and communities, as well as a key UNSW research and teaching focus. Our Climate action theme includes measures to reduce operational (scope 1 and 2) emissions such as switching to renewable energy and electrifying our campuses, as well as tackling value chain (scope 3) emissions by engaging with our key suppliers and divesting from fossil fuel investment holdings.

## How we are responding

Our approach is underpinned by a comprehensive annual inventory of our greenhouse gas (GHG) emissions undertaken since 2018, and our target to reduce total (scope 1, 2 and 3) emissions in line with efforts to limit temperature increase to 1.5°C, the goal of the Paris Agreement. We will continue to monitor our performance and review our target to ensure it reflects best practice and maximum effort towards – or beyond a fair share of – the necessary 50 per cent global emission reduction by 2030 identified in the IPCC Special Report on Global Warming of 1.5°C<sup>2</sup>.

Value chain emissions result from activities such as construction, procurement, travel and investment activities, some of which organisations can influence but not directly control. Tracking and reducing these emissions is highly complex. We are actively engaging with UNSW suppliers and other stakeholders to reduce value chain emissions.

Energy sourcing and onsite solar energy projects are managed by Estate Management, while measuring and reducing our total GHG footprint involves staff in facilities management, construction, procurement, merchandising, travel and investment services, as well as suppliers and academic experts.

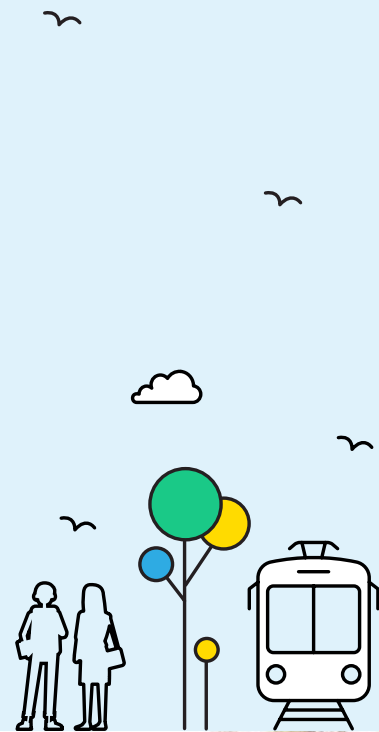
<sup>2</sup> [ipcc.ch/sr15/](https://www.ipcc.ch/sr15/)

Targets	Status	Comment
Maintain net zero operational (scope 1 and 2) emissions	On track	Target has been achieved since 2020, when UNSW switched to 100 per cent renewable electricity, in addition to onsite solar PV, efficiency initiatives and carbon offset purchases.
Expand onsite solar PV capacity to 1.5MWp	On track	1.37MW in solar PV capacity installed. An additional 130kW in capacity is required in 2024 to achieve the target.
Reduce total (scope 1, 2 and 3) emissions by 30 per cent by 2025, 50 per cent by 2030 and to net zero by 2050	On track	Although 2023 calendar year emissions increased by 13 per cent, emissions were 28 per cent lower than the baseline and we remain on track to meet the 2025 target of a 30 per cent reduction in total emissions.
Divest investments in fossil fuel companies	On track	UNSW remains on track to meet its commitment to divest listed equities and corporate debt of companies that generate 20 per cent or more of their revenue from the ownership and / or exploitation of fossil fuel reserves by 31 December 2025.



# Climate action

continued



## 2023 summary

An increase in travel and supply chain expenditure led to a significant increase in scope 3 emissions in 2023 (see case study). For the first time, UNSW total greenhouse gas emissions have been subject to an independent audit.

Significant progress was made with the Electrification Program, with design work for Stage 1 on track and construction due to commence in late 2024 (see case study).

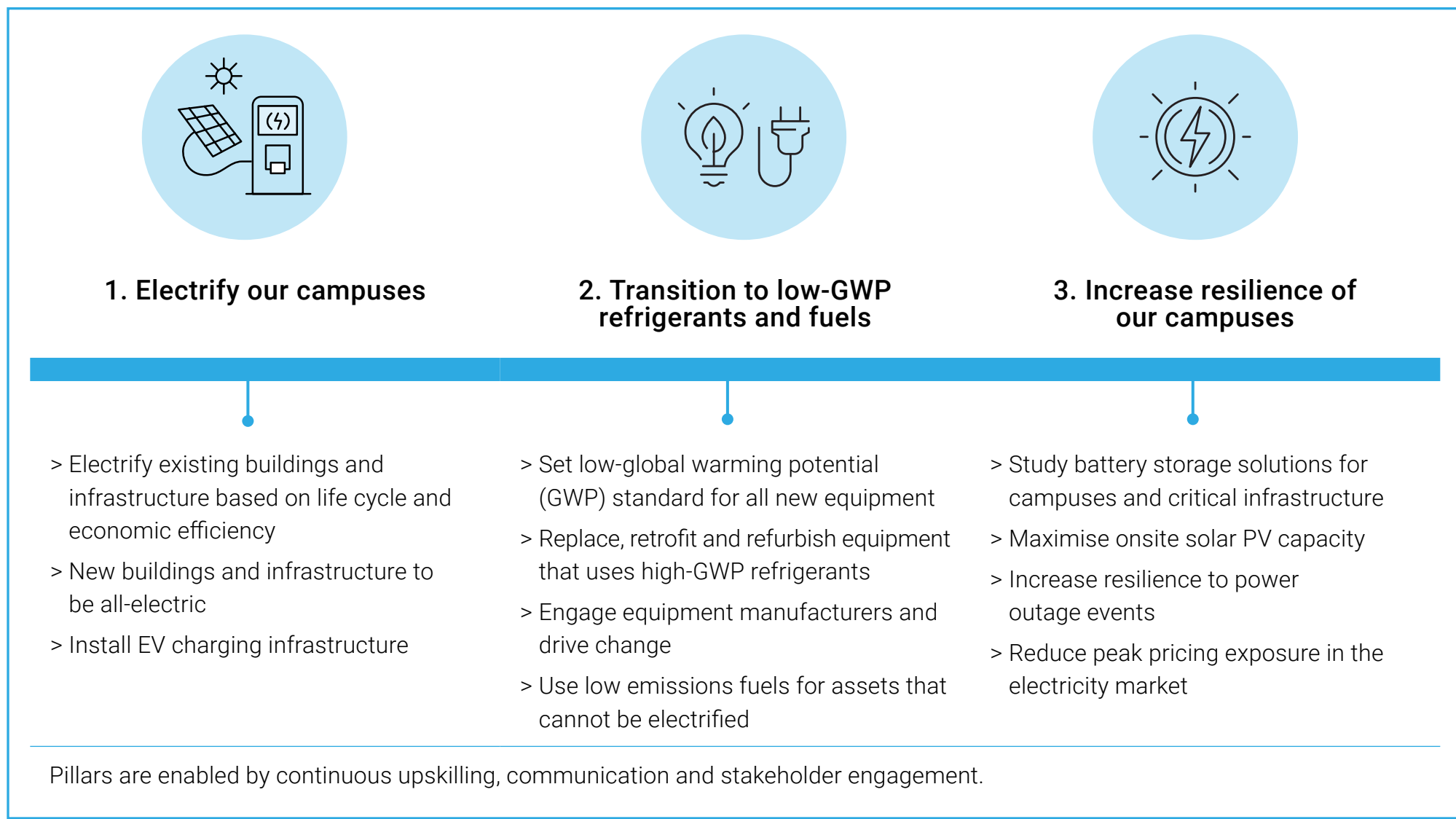
UNSW continues to operate using 100 per cent renewable electricity and remains on track to meet its four climate-related targets.



## Electrification Program accelerated

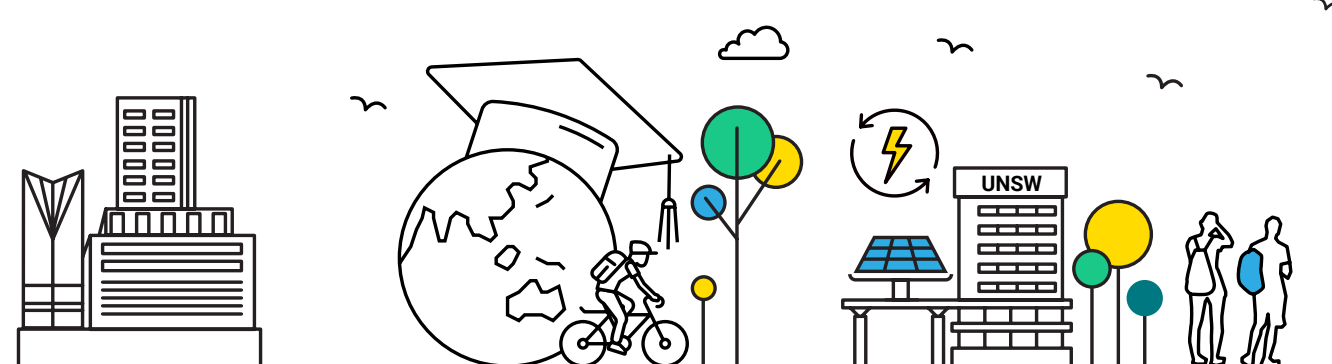
Clean electrification – the process of replacing assets that use fossil fuels such as natural gas with assets that use renewable electricity – is a key component of UNSW’s pathway to net zero emissions. UNSW campuses use fossil fuels for building heating, hot water, steam, vehicles and backup electricity generation. Estate Management developed an Electrification Strategy which was approved in 2022, with funding allocated for the delivery of Stage 1 (2022-25).

The Electrification Strategy is summarised below:



In 2023 the decision was taken to accelerate Stage 1 of the Electrification Program, with 19 buildings now targeted for electrification upgrades by end of 2025. This will result in an estimated 40 per cent reduction in scope 1 emissions, compared to the previous reduction of 20 per cent.

Concept design of the first eight buildings has been completed, and significant progress made on detailed designs for those buildings. Concept design for the next 11 buildings has also commenced, and the first electrification upgrades (Paddington campus and the Kensington colleges) are scheduled for the 2024 end-of-year shutdown.





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# Climate action

continued

## Embedding sustainability objectives in procurement activity

A new Sustainable Procurement Manager role was created and joined the Procurement team in May 2023 to drive sustainable procurement practices in line with UNSW's environmental sustainability, modern slavery and equity, diversity and inclusion (EDI) objectives.

In 2023, our Sustainable Procurement Framework and Roadmap were developed to frame UNSW's commitments towards delivering outstanding environmental, social and economic benefits for our community. Our Sustainable Procurement Framework and Roadmap are aligned across:

- > environmental sustainability
- > modern slavery and
- > social procurement (working with Indigenous suppliers, social enterprises and women-owned businesses).

Our environmental sustainability focus includes:

- > our commitment towards reducing UNSW's scope 3 emissions
- > refining our purchasing activity to support a circular economy and
- > understanding and reducing our supply chain impacts on nature (see case study on [p17](#)).

These three areas have been incorporated into a refreshed request for proposal (RFP) template and evaluation process to improve consistency in tender evaluations for sustainability.

A priority for 2023 was to gain a baseline understanding of supply chain environmental, social and governance (ESG) risks at a supplier level. An assessment was conducted in October 2023 covering 13 impact areas including GHG emissions, water use and pollution, deforestation and waste; as well as environmental dependencies.

Environmental impacts were assessed as being UNSW's highest impact area across all ESG pillars, with 56 per cent of suppliers having a medium-high inherent risk level. Greenhouse gas emissions was UNSW's overall highest supply chain risk environmental impact area. UNSW's highest risk suppliers will be engaged at a deeper level in 2024.

In 2024, the focus is on finalising and securing approval for the Sustainable Procurement Framework and Roadmap, developing action plans for priority areas including environmental sustainability, and embedding sustainability considerations in upcoming tenders including cleaning, office supplies and construction projects

## In depth: tracking our pathway to net zero

UNSW is committed to reduce total emissions in accordance with a 1.5°C science-based target, which translates to:

- > 30 per cent reduction by 2025
- > 50 per cent reduction by 2030
- > Net zero emissions by 2050

UNSW's carbon reduction target was developed using the Science Based Targets initiative (SBTi)<sup>3</sup> methodology (Absolute Contraction approach) and includes total absolute emissions across UNSW's operations (referred to as 'scope 1 and 2' emissions, mainly from energy use) and value chain (indirect or 'scope 3' emissions from purchased goods and services, construction, investments, travel, tenants, commuting and waste).

UNSW has publicly reported its scope 1, 2 and 3 emissions since 2019. For 2023, UNSW is voluntarily providing further detail about its GHG accounting methodology in response to the release of IFRS S2 Climate-related Disclosures by the IFRS Foundation<sup>4</sup>, which will inform future mandatory climate reporting regimes in Australia.

<sup>3</sup> [sciencebasedtargets.org](https://sciencebasedtargets.org)

<sup>4</sup> [ifrs.org/](https://ifrs.org/)

<sup>5</sup> [legislation.gov.au/F2008L02309/latest/versions](https://legislation.gov.au/F2008L02309/latest/versions)

<sup>6</sup> [ghgprotocol.org/corporate-standard](https://ghgprotocol.org/corporate-standard)

<sup>7</sup> [ghgprotocol.org/corporate-value-chain-scope-3-standard](https://ghgprotocol.org/corporate-value-chain-scope-3-standard)

<sup>8</sup> [aasb.gov.au/news/exposure-draft-ed-sr1-australian-sustainability-reporting-standards-disclosure-of-climate-related-financial-information/](https://aasb.gov.au/news/exposure-draft-ed-sr1-australian-sustainability-reporting-standards-disclosure-of-climate-related-financial-information/)

## Methodology

The carbon footprint calculated for UNSW covers the calendar year 1 January 2023 to 31 December 2023 (CY23) and includes the greenhouse gas emissions that resulted from activities occurring at sites directly operated and business conducted by UNSW in the reporting year.

Emissions have been assessed in line with the National Greenhouse and Energy Reporting (NGER) Scheme's Measurement Determination<sup>5</sup>, Greenhouse Gas Protocol Corporate Standard<sup>3</sup> and Corporate Value Chain (Scope 3) Standard<sup>7</sup> methodologies. The analysis used data based on consumption, spend and processes, and aligned them to life cycle assessment (LCA) databases and other most recently published emission factor sources (e.g. Australian National GHG Accounts Factors) to calculate UNSW's organisational GHG emissions. UNSW has chosen this measurement approach because it provides a complete picture of its material emissions sources and is aligned with global best practice and proposed Australian Accounting Standards Board (AASB) requirements<sup>8</sup>.

UNSW's GHG statement and target include the seven greenhouse gases covered by the Kyoto Protocol, expressed in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

The organisational boundary includes all UNSW faculties, divisions and Australia-based group entities. The operational control consolidation approach is taken, whereby UNSW accounts for the emissions from operations over which it or one of its subsidiaries has operational control. The operational boundary includes all material scope 1, 2 and 3 emissions. Some scope 3 emission sources (Categories 4, 9, 11 and 12 are excluded where they account for less than 1% of total emissions).

UNSW has incorporated emissions data sourced from a specialist third party provider in its reporting framework to improve the quality of monitoring and reporting on its responsible investment commitments including greenhouse gas emissions. This provides more consistent information across investment managers and asset classes and deeper insights into the drivers of performance and risk.

## Third-party assurance

Independent assurance was obtained from BDO Pty Ltd on UNSW's 2023 scope 1, 2 and 3 emissions. The limited assurance engagement was conducted in accordance with Assurance Engagements other than Audits or Reviews of Historical Financial Information and in accordance with ISAE 3410 Assurance Engagements on Greenhouse Gas Statements, issued by the International Auditing and Assurance Standards Board.

Refer to BDO Limited Assurance Statement ([Appendix 1](#)).





# Climate action

continued

## Results

The table to the right shows a detailed breakdown of UNSW's GHG footprint since the 2018 baseline year. UNSW's total 2023 emissions are estimated at 230,211 tonnes, an increase of 35,397 tonnes (13 per cent) compared to 2022.

The largest increase was from business travel (by 21,938 tonnes) due to an increase in international travel in particular. Purchased goods and services increased by 8,118 tonnes and capital goods increased by 3,145 tonnes, both reflecting an increase in supply chain expenditure. Expenditure increased by more than double the increase in emissions, indicating that overall spend had lower emission intensity. The absolute emissions of investments increased by 3,263 tonnes due to an increase in the value of investment holdings, while there was a small reduction in emission intensity compared to 2022.

The increases in supply chain and travel emissions result from University operations and expenditure levels continuing to build back to 2019 levels, following a substantial reduction in 2020 due to the COVID-19 pandemic.

Electricity emissions remained the same at 0 tonnes using the market-based calculation method due to renewable energy purchases but reduced by 1,248 tCO<sub>2</sub>e using the location-based method. UNSW's total emissions target and performance tracking uses the market-based method.

There were small reductions in emissions from tenants (407 tonnes), gas (554 tonnes), refrigerant gases (320 tonnes) and livestock (99 tonnes).

Overall, while total UNSW GHG emissions increased by 13 per cent in 2023, they were 27 per cent below the 2018 baseline and are on track to meet the 2025 target of a 30 per cent reduction. Nonetheless, further action is required to reduce emissions from supply chain and travel to tackle the increasing emissions trend if UNSW is to meet its 2025 target.

## Greenhouse gas emissions statement

Emissions scope / category	Emissions (tCO <sub>2</sub> e)					
	2018	2019	2020	2021	2022	2023
<b>Scope 1: direct emissions</b>	<b>8,151</b>	<b>8,965</b>	<b>8,194</b>	<b>7,571</b>	<b>8,638</b>	<b>7,680</b>
Natural gas and other fuels	7,162	8,000	7,195	6,729	7,777	7,238
Refrigerant and laboratory gases	631	608	642	467	580	260
Livestock emissions	357	357	357	374	281	182
<b>Scope 2: indirect (electricity) emissions</b>	<b>74,398</b>	<b>77,509</b>	<b>70,810</b>	<b>64,220</b>	<b>64,105</b>	<b>62,857</b>
Electricity (location-based method) <sup>9</sup>	74,398	77,509	70,810	64,220	64,105	62,857
<b>Scope 3: indirect (value chain) emissions</b>	<b>234,729</b>	<b>254,084</b>	<b>142,251</b>	<b>163,862</b>	<b>186,176</b>	<b>222,531</b>
Category 1: Purchased goods and services	82,599	118,724	61,609	70,861	85,176	93,295
Category 2: Capital goods	60,024	40,905	21,414	24,355	26,540	29,685
Category 3: Upstream energy-related emissions	9,292	9,753	8,926	6,779	6,570	6,542
Category 5: Waste generated in operations	899	2,348	910	707	951	1,052
Category 6: Business travel	32,387	34,295	1,672	596	15,002	36,940
Category 7: Employee commuting	11,275	9,861	5,712	4,399	4,929	5,153
Category 13: Tenant energy emissions	7,030	6,944	5,110	4,746	7,294	6,888
Category 15: Investments	31,223	31,253	36,898	51,418	39,714	42,977
<b>Sub-total (before surrenders)</b>	<b>317,278</b>	<b>340,557</b>	<b>221,255</b>	<b>235,652</b>	<b>258,920</b>	<b>293,069</b>
<b>Scope 1 voluntary surrenders (ACCU, VCU)</b>	-	0	8,194	7,571	8,638	7,680
<b>Net scope 1 emissions (including offsets)</b>	<b>8,151</b>	<b>8,965</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Scope 2 voluntary surrenders (LGC)<sup>10</sup></b>	-	-	70,810	64,220	64,105	62,857
<b>Net scope 2 emissions (market-based method)</b>	<b>74,398</b>	<b>77,509</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL EMISSIONS (excluding offsets)<sup>11</sup></b>	<b>317,278</b>	<b>340,557</b>	<b>150,445</b>	<b>171,432</b>	<b>194,814</b>	<b>230,211</b>
<b>Net emissions (including offsets)</b>	<b>317,278</b>	<b>340,557</b>	<b>142,251</b>	<b>163,862</b>	<b>186,176</b>	<b>222,532</b>

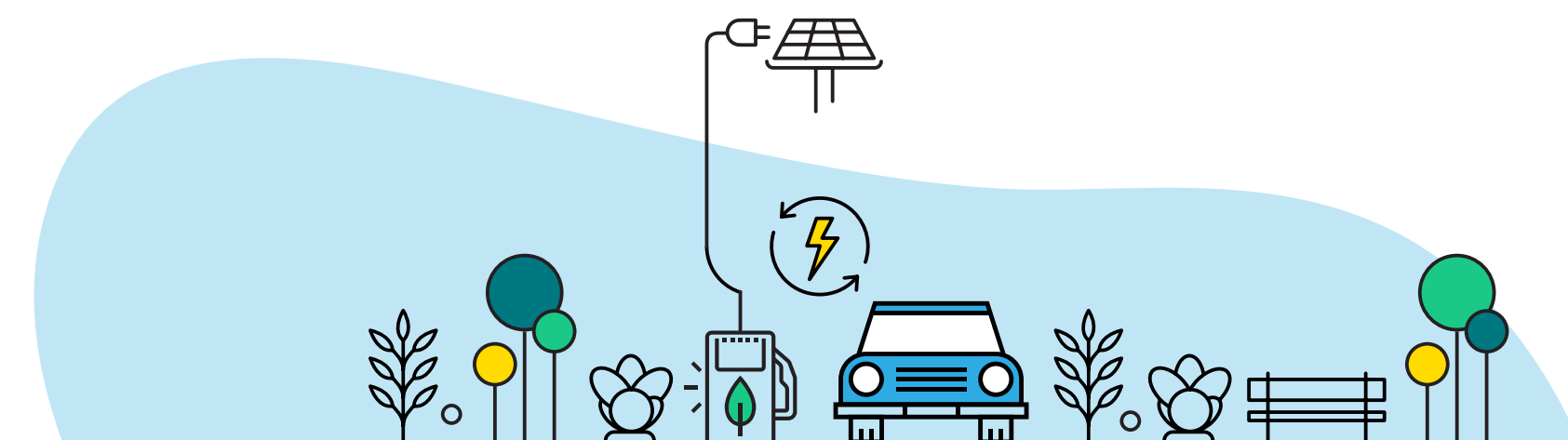
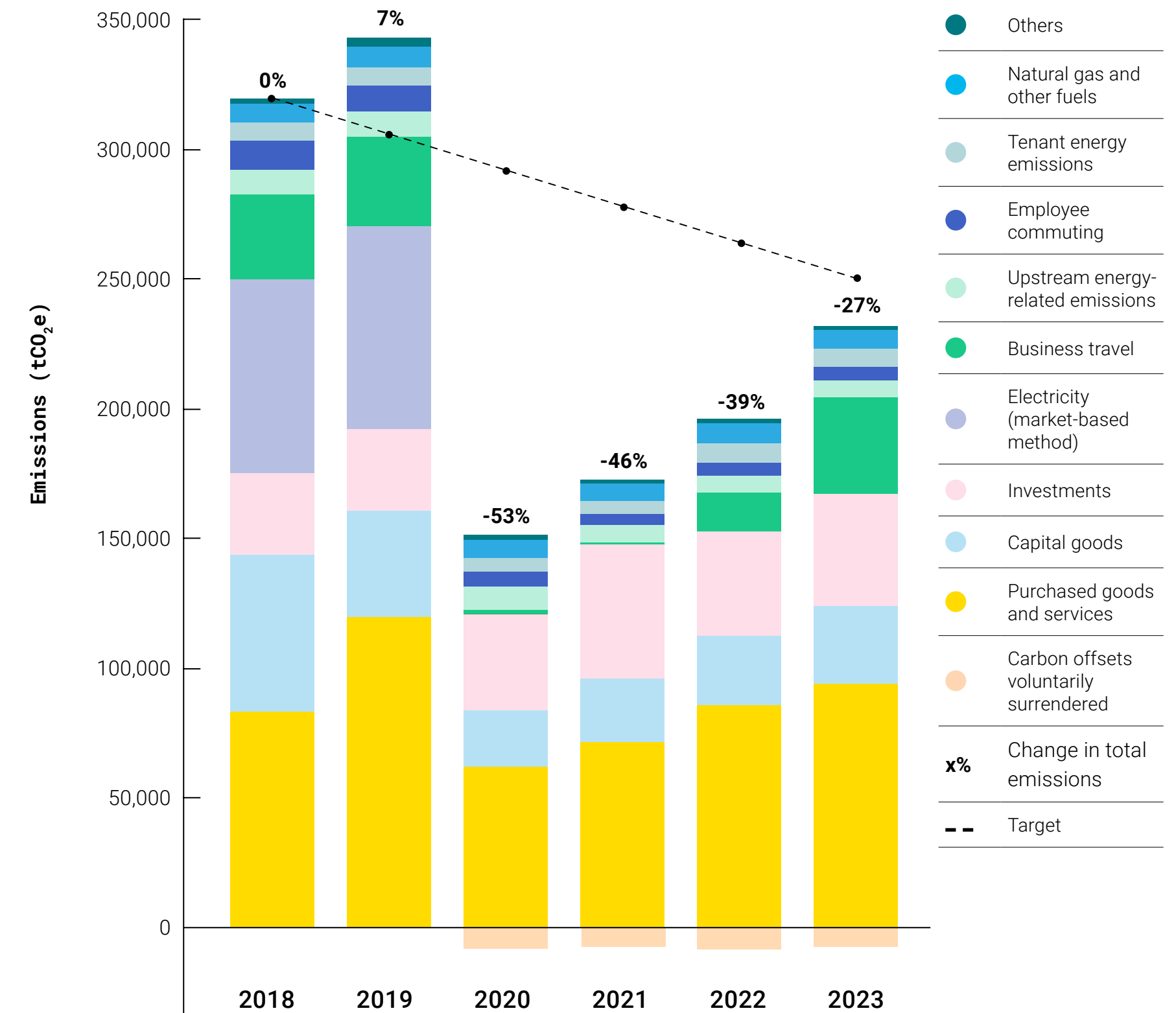
NOTE: The 2018-22 figures previously reported for scope 3 (business travel and employee commuting) emissions have been restated due to methodology updates to improve accuracy. Scope 1 (livestock) and scope 3 emissions (purchased goods and services and capital goods) have been restated to include additional activity data that was previously omitted.

<sup>9</sup> Calculated using the NSW grid average electricity emission factor (i.e. excluding renewable electricity purchases).

<sup>10</sup> 92,429 LGCs were surrendered, equivalent to 92,429 MWh of electricity and 62,857 tCO<sub>2</sub>e of emissions when calculated using the NSW grid average electricity emission factor. Offsetting with LGCs is permissible under the market-based method for accounting for emissions from purchased electricity.

<sup>11</sup> Measures performance against UNSW's target under the market-based method (includes scope 2 emission reduction from the surrender of LGCs, but not the surrender of carbon offsets).

## UNSW greenhouse gas emissions, 2018-2023





# Climate action

continued



## Supporting nature-based solutions to the climate crisis

UNSW voluntarily purchases carbon credits equivalent to its scope 1 emissions (7,680 tonnes in 2023) to contribute to meeting its net zero scope 1 and 2 emissions reduction target. Carbon credits do not contribute to UNSW meeting its total (scope 1, 2 and 3) emission reduction target.

For 2023 emissions, UNSW partnered with Greenfleet by purchasing offsets from Australian native reforestation offsets stapled with Verified Carbon Credits Units (VCUs) from international projects: essentially a 'double offset'. Greenfleet plants legally protected biodiverse native forests that address deforestation and biodiversity loss, protect our climate, reduce soil erosion and provide critical habitat for wildlife.

UNSW's partnership with Greenfleet is contributing to the River Bend project on Ngunawal Country, near Canberra, which will be planted in 2024 and restored to legally protected native forest. UNSW's contribution is expected to support the reforestation of approximately nine hectares of native forest on this site<sup>12</sup>. UNSW chose to staple the reforestation offsets with 7,680 VCUs from a grid connected wind power project in India and a rainforest protection project in Brazil. Both projects are verified under the Verified Carbon Standard (VCS).

<sup>12</sup> Greenfleet offsets fund future reforestation projects. The project mentioned will begin later in 2024. Greenfleet uses the Full Carbon Accounting Model (FullCAM) to measure the carbon uptake at each of their native revegetation projects. The carbon captured per hectare differs from site to site based on a range of factors including ecology, climate, and ecosystem types being restored.

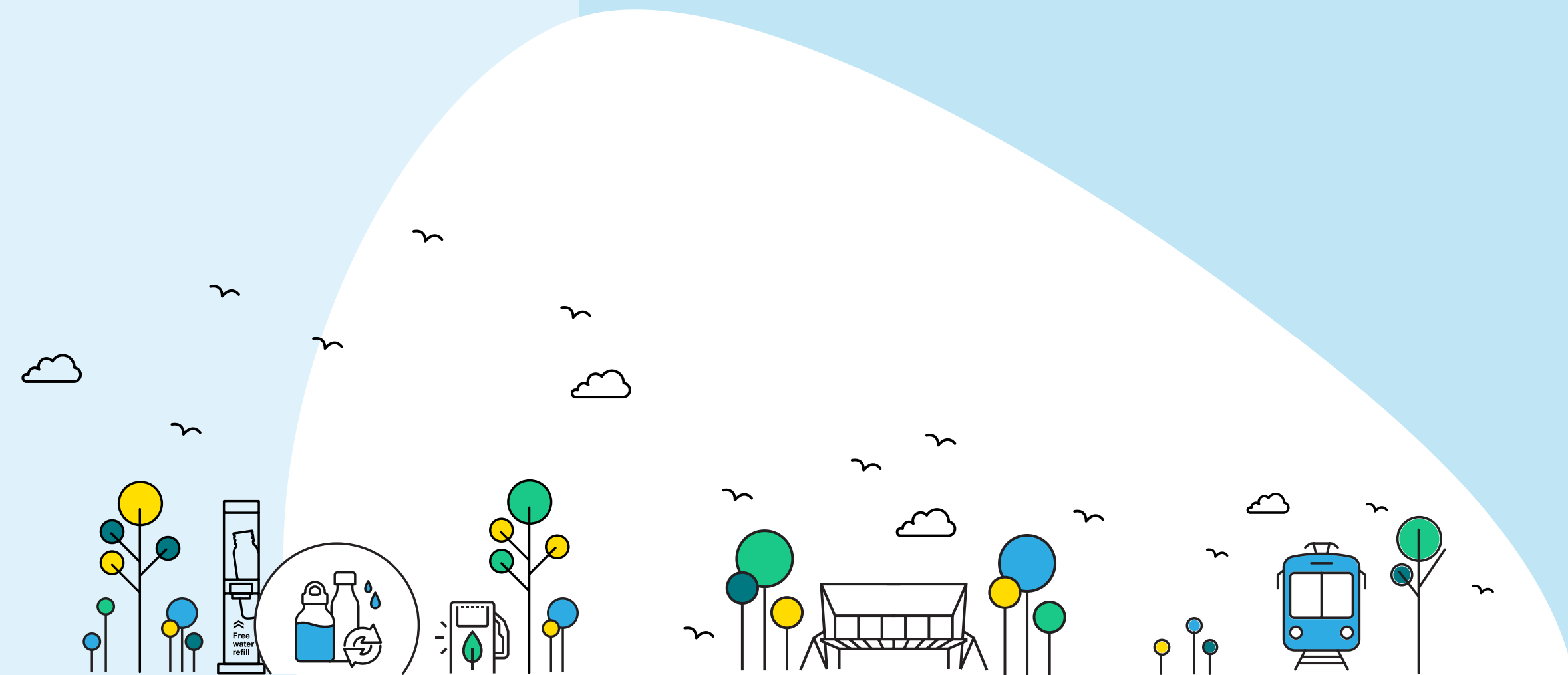
## Focus on resource efficiency in international equity investments

In 2023 UNSW invested more than 60 per cent (A\$62m) of its international equities allocation to the Osmosis Resource Efficient Core Equity (ex-Fossil Fuels) Fund, which targets excess returns through the identification of resource efficiency in listed companies. Osmosis defines resource efficiency as the carbon emitted, waste generated, and water consumed, relative to value creation.

The fund's strategic objectives are to:

- > protect investors from any value destruction that may occur as a consequence of owning fossil fuel assets
- > maximise exposure to resource efficiency, a proven source of sustainable, uncorrelated return
- > control additional risk from fossil fuel exclusion through managing region, country and industry exposures
- > deliver a significantly improved environmental footprint relative to the MSCI World Index (carbon, water, waste)
- > improve corporate sustainability disclosure through active engagement.

The balance of the international equities allocation is invested in other low emissions ex-fossil fuel strategies.



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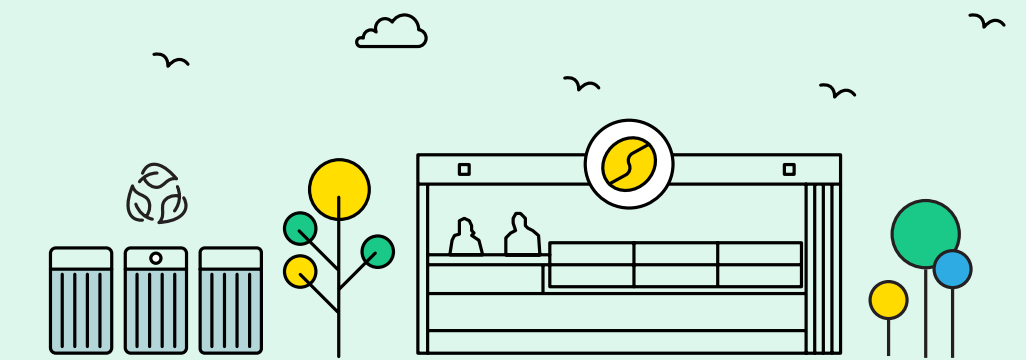


# Living campuses

# Living campuses



**Goal:** Create healthy, resilient places for learning and research where people and nature thrive.



## Highlights

- > Expanded the Laboratory Efficiency Framework (LEAF) program, with 42 laboratory teams now accredited University-wide.
- > Completed a supply chain nature assessment and implementation roadmap.
- > Developed a metric to track nature value at Kensington campus and enable nature to be embedded in campus planning.
- > Successfully established a native beehive on the Paddington campus.

## Sustainable Development Goal(s)

Our activities in this area contribute to the following SDGs: 4, 11, 12 and 15.



And are especially focused on these targets:

- > 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development.
- > 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- > 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
- > 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
- > 15.1 By 2030, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services – in particular forests, wetlands, mountains and drylands – in line with obligations under international agreements.

## Why this matters

Our campuses are part of the daily lives of our students and staff, and we aim to make them vibrant places where people can connect with each other and with nature. This connection not only benefits the people at our campuses and field stations, but also the wildlife and ecosystems that call them home. Many of our students and staff are already highly engaged in environmental sustainability issues and their time at UNSW can help prepare them to contribute to a better world.

## How we are responding

*Living campuses* includes how we design and construct buildings and infrastructure, manage green spaces, how our students and staff travel to our campuses, and how we engage students and staff in environmental sustainability issues.

The SDG Modules and SDG Toolkit resources support our educators to integrate sustainability thinking into their course content. Through the LEAF program we aim to engage laboratory users in sustainable practices to save energy, water and waste. Beyond our campuses, UNSW has committed to transforming the 39,000-hectare Fowlers Gap Arid Zone Research Station in western New South Wales from a sheep station into a dedicated site for conservation and ecological restoration.

Estate Management is focused on optimising the use of existing buildings and other assets throughout their life cycles. When new buildings and refurbishments are required, our minimum sustainability standards and Capital Projects Sustainability Framework apply.

The planning and management of our campuses is led by Estate Management in collaboration with UNSW faculties and divisions, consultants, contractors, government bodies and the wider community.

Targets	Status	Comment
Capital projects achieve our minimum sustainability requirements	On track	All UNSW projects are required to meet UNSW's minimum requirements and all projects for which data was available did. On track for 100 per cent compliance with evidence by 2024.
Kensington campus achieves a net gain in biodiversity value	No data	The nature value metric has been developed and performance against the 2022 baseline will be measured in 2025.
Increase student and staff awareness of environmental sustainability issues	On track	This metric is measured every three years and is scored 'on track' based on the most recent survey (2021).
At least 85 per cent of students and staff travel to campus by sustainable travel modes	Not on track	The most recent travel survey (2022) showed that the percentage of students and staff travelling by sustainable modes declined slightly to 84 per cent due to an increase in the number of staff driving to campus.



# Living campuses

continued

## 2023 summary

Several initiatives were implemented or progressed in 2023 in support of *Living campuses* targets.

The LEAF program was expanded further, with 42 labs now achieving a LEAF accreditation (see case study) and a library of guidance developed to support lab teams looking to embed sustainability principles in their operations.

Following their launch in 2020-2021, the SDG Toolkit and SDG Modules continued to be used and promoted, helping academics to become familiar with the SDGs, and consider ways that sustainability thinking can be included in their own teaching. The SDG Toolkit content was also shared with colleagues at the University of Sydney to enable them to develop their own version and help embed SDG thinking in their course content.

In 2022, UNSW Sydney took the Nature Positive Pledge (an initiative between the United Nations Environment Programme and the University of Oxford), committing to start a nature positive journey by reducing the impacts of its operations and supply chain. In 2023, UNSW developed a metric to measure nature value at Kensington campus (see case study) and completed a supply chain nature impact and risk assessment to inform a future nature positive roadmap (see case study).



## Laboratory sustainability program expanded

The expansion of the Laboratory Efficiency Assessment Framework (LEAF) program continued following a successful pilot in 2021. By the end of 2023, 42 UNSW labs had received LEAF accreditation, with 29 Bronze accredited teams, 12 Silver accredited and the first Gold Award in Australasia (up from 18 accredited labs as of 2022).

LEAF is an internationally recognised standard for sustainable laboratory operations developed by University College London. It requires laboratory teams to complete actions to save energy, water and waste, reduce their carbon emissions and improve research quality. Teams are supported with sustainability resources, guidance, and funding through the LEAF lab grants initiative. Depending on the actions implemented, lab groups can achieve UNSW Bronze, Silver or Gold LEAF awards following an internal audit process.

The Provost, Scientia Professor Vlado Perkovic congratulated the teams on their achievements at the LEAF Awards Ceremony in November. "Our LEAF accreditations demonstrate UNSW's commitment to leading in sustainability across the sector," Prof. Perkovic said.

"Each of us has the power to amplify our real-world impact. By becoming ambassadors of the program – by sharing our achievements, inspiring colleagues, encouraging other labs to join – together we can help shape a more sustainable future."

Life science labs alone are responsible for an estimated 2 per cent of global plastic waste and use 3-10 times more energy per square metre than a typical office. The LEAF program aims to reduce carbon emissions and other environmental impacts, while supporting research quality.

LEAF's online calculators allow lab teams to estimate the financial and environmental impacts of lab operations, helping them identify opportunities and make data-driven decisions to improve sustainability.

52 teams across UNSW Engineering, UNSW Medicine & Health, UNSW Science and UNSW Art, Design & Architecture as well as the Children's Cancer Institute and the RNA Institute are now participating in LEAF, accounting for approximately a quarter of lab spaces at UNSW.



## Gold Award

> **Ferrari Lab** – School of Biotechnology and Biomolecular Sciences



## Silver Awards

- > **Burns Lab** – School of Biotechnology and Biomolecular Sciences
- > **Children's Cancer Institute** – School of Clinical Sciences
- > **Decision Neuroscience Lab** – School of Psychology
- > **Lessio Lab** – School of Chemistry
- > **Microfluidics Lab Group** – School of Mechanical and Manufacturing Engineering
- > **Peeks Lab** – School of Chemistry
- > **Refrigeration & Energy Storage Lab** – School of Mechanical and Manufacturing Engineering
- > **Smart Materials and Surfaces** – School of Chemistry
- > **Solar Lab** – School of Mechanical and Manufacturing Engineering
- > **Synbiote** – School of Biotechnology and Biomolecular Sciences
- > **Synthetic Teaching Lab 262** – School of Chemistry
- > **Teaching Labs 11, 12 and prep space** – School of Biotechnology and Biomolecular Sciences



## Bronze Awards

- > **Advanced Characterisation Lab** – School of Photovoltaic and Renewable Energy Engineering
- > **Australian National Fabrication Facility** – School of Electrical Engineering and Telecommunications
- > **Baker Lab** – School of Biotechnology and Biomolecular Sciences
- > **Brown Lab** – School of Biotechnology and Biomolecular Sciences
- > **C25 Lowy Level 2** – School of Medical Sciences
- > **Cornsters Lab** – School of Biological, Earth and Environmental Sciences
- > **Field / Ball Lab** – School of Chemistry
- > **G005 Teaching Prep Area** – School of Biological, Earth and Environmental Sciences
- > **Ground floor Teaching Labs 1-4** – School of Biological, Earth and Environmental Sciences
- > **High Bay Lab** – School of Materials Science and Engineering
- > **Hunter Lab** – School of Chemistry
- > **Implementation 2 Impact** – School of Population Health
- > **Kirby Lab** – School of Medical Sciences
- > **Lan Lab** – School of Biotechnology and Biomolecular Sciences
- > **Lenardon Lab** – School of Biotechnology and Biomolecular Sciences
- > **Lowy LG Green** – School of Medical Sciences
- > **Nanoionics Lab** – School of Materials Science and Engineering
- > **Nanoporous Materials Laboratory** – School of Materials Science and Engineering
- > **Ooi Ecology Lab** – School of Biological, Earth and Environmental Sciences
- > **RNA Institute** – School of Chemistry
- > **Samuels Level 1 Lab** – School of Biological, Earth and Environmental Sciences
- > **Samuels LG Lab** – School of Biomedical Engineering
- > **SEACS** – School of Biological, Earth and Environmental Sciences
- > **SOVS - PC2 Microbiology Lab** – School of Optometry and Vision Science
- > **Teaching Lab 10 and prep space** – School of Biotechnology and Biomolecular Sciences
- > **Teaching Labs WW122 and WW123 and prep space** – School of Biotechnology and Biomolecular Sciences
- > **UNSW Stores** – Deans Unit (Science)
- > **Virology Research Laboratory** – School of Medical Sciences
- > **Wich Lab** – School of Chemical Engineering





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# Living campuses

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## Health Translation Hub targets outstanding sustainability benchmarks

NSW Premier Chris Minns joined UNSW and project partners on site on 18 September 2023 to mark the official start of major project work on the Health Translation Hub (HTH). One of the marquee developments within the Randwick Health and Innovation Precinct, the 35,600m<sup>2</sup> facility is a key outcome of the collaboration between the NSW Government and UNSW Sydney to strengthen the precinct and improve health outcomes for the community. It will bring together researchers, clinicians, educators, industry partners and public health officials to drive excellence and support the rapid translation of innovative research and education into improved patient care and better community health outcomes.

Targeting a 6 Star Green Star Buildings v1 rating, it will be the first building in NSW, and only the second in Australia, to achieve such a rating under new Green Building Council of Australia rating tool. The building incorporates a range of sustainable design features including 100 kW rooftop PV system, all-electric design featuring heat pumps, rainwater harvesting, post-tensioned slabs to reduce structural mass, façade hoods to reduce solar heat gain, and native and medicinal landscaping.

NSW Premier The Hon. Chris Minns joined UNSW and its partners to turn sod for the UNSW HTH. Photo Ken Leanfore.



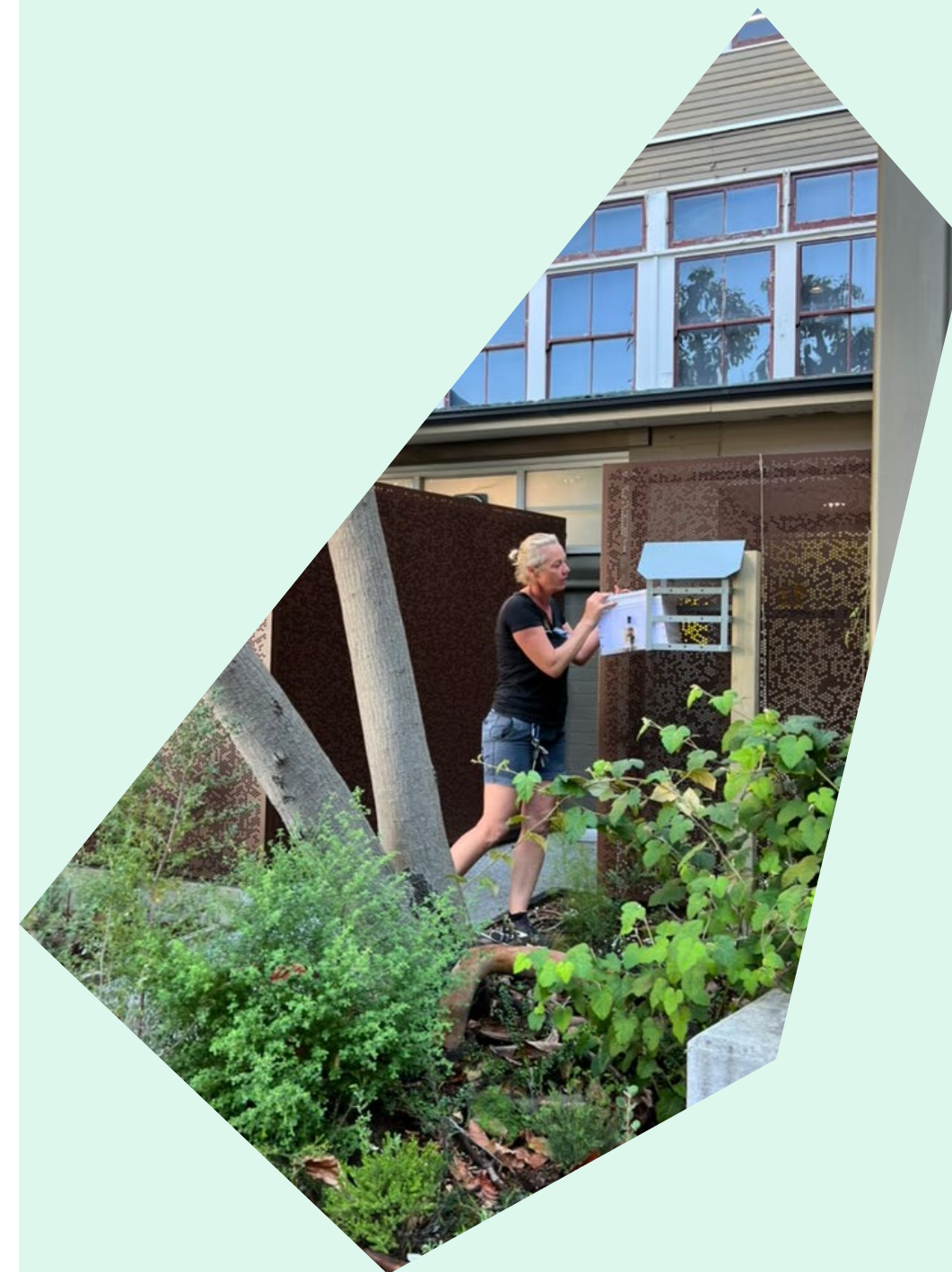
## Metric developed to track nature value at Kensington campus

Following initial research in 2022, a methodology has been developed to track nature value at Kensington campus. The project team has broadened its focus from biodiversity value to improving nature value on campus, acknowledging that considerations beyond quantifying diversity of species alone, such as accounting for living infrastructure, is equally relevant within our urban context. A metric comprised of five measures against which to track Nature Value at Kensington Campus has been defined, using a 2022 baseline for future reporting.

Description	Measure	Baseline data
Tree canopy cover	% of the total surface area that is covered by primary tree canopy	18%
Native trees	% of all trees that are native species (including locally indigenous and endemic trees)	80%
Integrated green-blue infrastructure	Total area (m <sup>2</sup> ) of green roofs, walls and facades, ponds, and water features	1,094 m <sup>2</sup>
Plants and garden beds	% of the total area of Kensington campus that has plants and garden beds (excludes lawns)	13%
Total green space	% of the total surface area of Kensington campus that is green space (plants and garden beds, and lawns)	25%

The metric measures performance against the Environmental Sustainability Plan 2022-24 'net gain' target and incentivises project teams to embed nature as a priority in campus master planning, project planning and grounds management activities. As such, potential improvements are being assessed for implementation in the short, medium and long term.

Performance against the 2022 baseline will be reported in future Environmental Sustainability Reports.



## Native bees make Paddington campus home

UNSW Paddington campus welcomed a hive of stingless native bees in October 2023. 5000 tetragonula carbonaria ('sugarbag') bees were installed during a workshop delivered by Sydney Stingless Bees. Student and staff volunteer group LFP Gardens has been planting locally native flowering gardens at Paddington campus for several years, providing abundant food for the new residents. The bees are reported to have settled into their new home well.

## In depth: assessing nature impacts and dependencies in the UNSW supply chain

### Overview

Global economic and social systems are depleting nature at unprecedented rates, threatening irreversible damage. Climate change and biodiversity loss are deeply linked to each other – carbon reductions and nature enhancement must be addressed simultaneously to drive a swift transition to a nature-positive, climate stable future.

The global focus on the integrity of nature and its value to economic and social systems is intensifying, and global institutions are responding.

- > The Global Biodiversity Framework<sup>13</sup>, set in 2022, calls for urgent action to halt and reverse biodiversity loss by conserving 30 per cent of terrestrial, inland water, coastal and marine areas by 2030 (known as the '30x30' target).
- > The release of the Taskforce for Nature-related Financial Disclosures<sup>14</sup> in 2023 established a reporting framework to encourage organisations to identify their nature-related impacts, dependencies and risks.
- > The Science Based Targets Network<sup>15</sup> released guidance in 2023 for organisations looking to set meaningful nature-based targets.

With a significant proportion of UNSW's greenhouse gas footprint attributed to its supply chain, it was assumed that a large proportion of UNSW's nature impacts would also sit within its supply chain. To better understand these impacts, UNSW, in collaboration with Sustainability Advantage (NSW Department of Climate Change, Energy, Environment and Water) and Edge Impact, set out to identify the specific nature-related impacts and dependencies in UNSW's supply chain.

The project involved quantitative analysis and stakeholder engagement to identify key risks and opportunities to reduce impacts on nature and exposure to dependencies on ecosystem services driven by procurement activity. This study presents one of the first such analyses that has been conducted for a university globally.

<sup>13</sup> [cbd.int/gbf](https://cbd.int/gbf)  
<sup>14</sup> [tnfd.global/](https://tnfd.global/)  
<sup>15</sup> [sciencebasedtargetsnetwork.org/how-it-works/the-first-science-based-targets-for-nature](https://sciencebasedtargetsnetwork.org/how-it-works/the-first-science-based-targets-for-nature)





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# Living campuses

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## Approach

The quantitative assessments analysed approximately \$1 billion or 75 per cent of UNSW's total 2022 spend, focusing on the spend categories where UNSW could have the greatest potential impact to affect change.

Supply chain nature impacts were quantified through a lifecycle assessment (LCA) methodology using the input-output database Exiobase<sup>16</sup> to calculate the impact per spend category and country of sourcing against two metrics: a Nature Impact Score and Species Loss.

The Nature Impact Score comprised five impact categories:

- > climate change
- > land use and land use change
- > water consumption
- > freshwater eutrophication
- > marine eutrophication.

These five impact categories were normalised using planetary boundaries<sup>17</sup> reference points and a combination of a distance to target and panel-based weighting.

Species Loss used the ReCiPe<sup>18</sup> method to model the endpoint impact on damage to ecosystems (number of species lost).

If UNSW suppliers had a sustainability credential (e.g. Climate Active Carbon Neutral certification), results were adjusted in the relevant impact categories based on the requirements of the credential to provide a more representative account of the impact in UNSW's supply chain.

Nature-related risk was explored through a quantified materiality assessment of ecosystem service dependencies for each of UNSW's spend categories leveraging the Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE) platform maintained by Global Canopy and the United Nations Environment Program.

Assessment results were considered alongside stakeholder input from UNSW's Procurement, Environmental Sustainability, and Facilities Management functions; Division of Operations senior leadership, UNSW academics, a key UNSW supplier; and Dr Joseph Bull from the University of Oxford, who conducted a similar study for the University of Oxford.

The evidence base informed a three-year roadmap to guide evidence-based purchasing decisions, building internal and external capability and piloting nature sensitive solutions in partnership with key UNSW suppliers to deliver a positive impact on nature.

<sup>16</sup> [exiobase.eu/](https://exiobase.eu/)  
<sup>17</sup> [stockholmresilience.org/research/planetary-boundaries.html](https://stockholmresilience.org/research/planetary-boundaries.html)  
<sup>18</sup> [pre-sustainability.com/articles/recipe/](https://pre-sustainability.com/articles/recipe/)  
<sup>19</sup> [encorenature.org/en](https://encorenature.org/en)

## Results

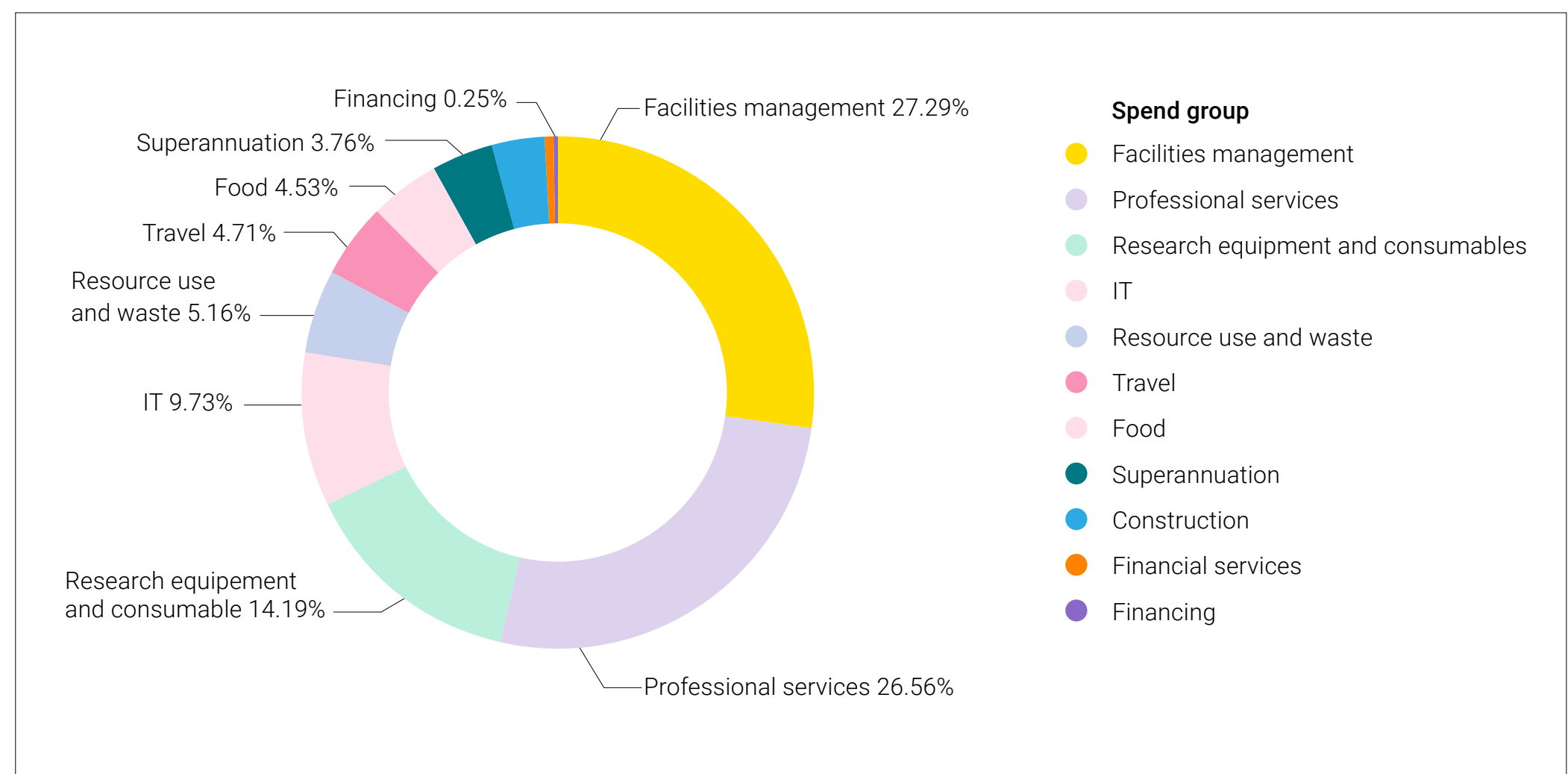
The Nature Impact Score identified that (on a per unit of spend basis) food, facilities management, resource use and waste, and travel, carry the highest impact on nature. When considered according to spend (2022 as the baseline year), the highest impact activities were facilities management, professional services, research equipment and consumables, IT, and resource use and waste.

The image to the right illustrates the percentage contribution of each portfolio. For most spend groups, climate change is the biggest driver of impact, followed by water consumption, and land use and land use change.

The Nature Impact Score and Species Loss both provided generally consistent results with regards to the highest impact spend groups. The analysis shows that on-campus activities such as facilities management services account for approximately 65 per cent of the impact.

Of note, construction spend was unusually low in 2022 compared with previous years. While construction has a relatively low per \$ impact compared to other spend groups, it may become a hotspot in UNSW's footprint should construction activity increase in the future. Travel, IT, research equipment and consumables, food, and facilities management are the spend groups with the greatest dependence on nature.

The table below illustrates the ecosystem services that each spend group depends on, and the level of dependence.



○ Nature dependency    ● Very Low    ● Low    ● Moderate    ● High    ● Very high

Ecosystem service	Bio-remediation materiality	Water flow maintenance materiality	Water quality materiality	Buffering & attenuation of mass flows materiality	Climate regulation materiality	Dilution by atmosphere & ecosystems materiality	Fibres & other materials materiality	Ground water materiality	Mass stabilisation & erosion control materiality	Mediation of sensory impacts materiality	Surface water materiality	Ventilation materiality	Soil quality materiality	Pest control materiality	Filtration materiality	Flood & storm protection materiality
Spend group																
Construction	Low								Moderate							
Facilities management		Moderate	Moderate	Moderate	Moderate	Moderate		High	Moderate	Moderate	High	Moderate	Moderate	Moderate	Moderate	High
Financial services	Low							High	Moderate	High	High				Low	Low
Financing									Moderate							
Food	Low				High			High	Moderate			Low				High
IT	Low				High	Moderate		High	Moderate		High					High
Professional services	Low								Moderate							
Research equipment and consumables						Moderate		High	Moderate		High					
Resource use and waste	Low				High			Low	Moderate		Low					High
Travel	Moderate	High	High		High		High	High	Moderate	High	High	Low	Moderate	Low	Moderate	High

Table 1: UNSW spend groups, the ecosystem services on which they depend, and the level of dependence

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## Learnings

The project deliverables included data dashboards enabling UNSW to understand nature impacts and dependencies for specific procurement categories and suppliers, a detailed evidence report, and a draft roadmap for minimising nature impacts.

Key learnings include:

- > Emissions and water consumption are the two biggest drivers of impacts on nature from UNSW's supply chain, while data availability prevented gaining a credible view of geographic impact hotspots.
- > Spend related to on-campus activities have high dependence on ecosystem services including IT, research expenses, food, and facilities maintenance.
- > UNSW's supply chain is dependent on an array of ecosystem services including:
  - surface and ground water
  - dilution by atmosphere and ecosystems
  - flood and storm protection
  - climate regulation and
  - mass stabilisation and erosion control.

Understanding and addressing the nature impacts and dependencies of supply chains is complex. It will require a significant uplift in capabilities, systems and processes to gather supplier specific data and guide evidence-based procurement decisions and strategies. This is because the location of supply chain activities (raw material extraction, cultivation, and manufacturing) greatly influences the supplier's interface with ecosystems, and production practices can vary widely, affecting the level of impact on nature. Currently it is not common to capture supplier data beyond direct suppliers and limited data points are covered – this was no different for UNSW.

## Next steps

The draft supply chain nature roadmap sets out actions to reduce nature impacts, manage nature-related risks, improve data quality, develop internal capacity, systems and processes, and create partnerships to drive meaningful results. The project team in direct collaboration with UNSW's procurement team will continue to build out the roadmap and begin implementation of priority actions in 2024.

Future work will define category specific data requirements and engage with key suppliers to capture relevant data, such as geospatial data, physical inputs and outputs, and production practices. Collaboration and piloting solutions with suppliers will inform feasibility and scalability and extend our influence on where impacts and risks occur along the supply chain. Capability building across internal teams and suppliers will be key to implementing these changes successfully.





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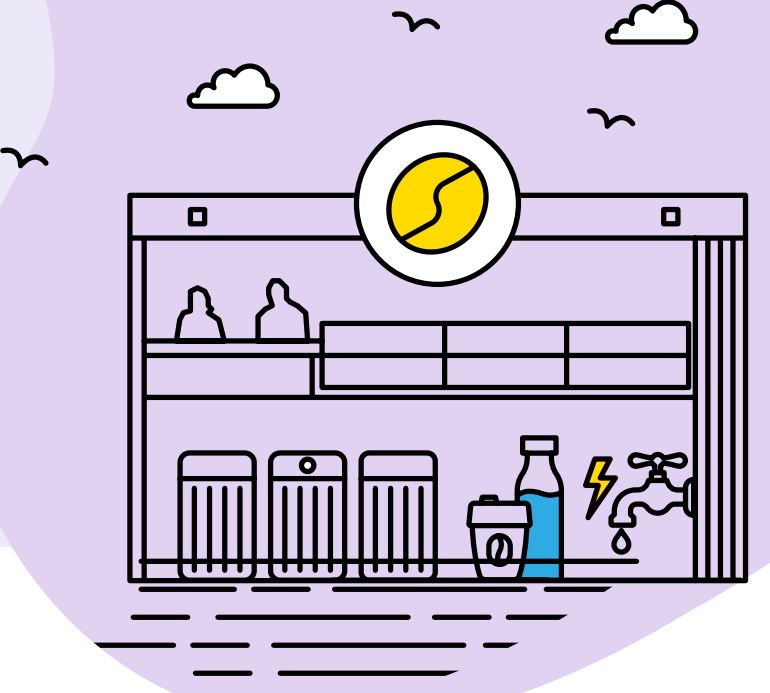


# Resource efficiency

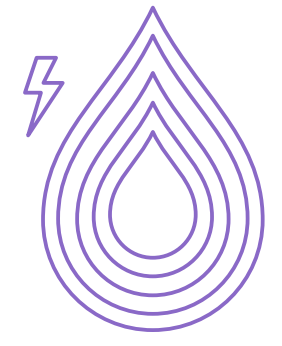


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# Resource efficiency



**Goal: Conserve resources by reducing consumption, prioritising reuse and responsibly managing waste.**



## Highlights

- > Five more food and drink retailers achieved a Plastic Free Dining Gold award, with 27 of 28 UNSW retailers having now achieved a Bronze, Silver or Gold award.
- > Completed retro-commissioning Stage 1 for Science and Engineering (E8) and Hilmer buildings (E10) buildings to optimise user comfort and energy efficiency.
- > Furniture reuse program diverted 76 tonnes (85 per cent) of surplus UNSW furniture from landfill to beneficial reuse and recycling.

## Sustainable Development Goal(s)

Our activities in this area contribute to the following SDGs: 6,7 and 12



We are especially focused on these targets:

- > 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- > 7.3 By 2030, double the global rate of improvement in energy efficiency.
- > 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
- > 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
- > 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
- > 12.7 By 2030, promote public procurement practices that are sustainable, in accordance with national policies and priorities.

## Why this matters

University campuses and activities are significant consumers of energy, water and other natural resources, and generators of waste. Our *Resource Efficiency* theme includes programs to optimise the energy and water efficiency of buildings, promote reuse over single-use and improve our recycling systems. By minimising waste and improving waste systems and behaviours, we aim to conserve natural resources, minimise contamination, reduce costs and support sustainable waste management practices amongst our students and staff.

## How we are responding

Energy and water efficiency initiatives and waste management systems are managed by Estate Management in collaboration with contractors and the wider student and staff community. We aim to promote reuse and eliminate single-use plastics from campus through initiatives such as Plastic Free Dining and associated communication activities.

The Waste Management Plan guides improvements to our recycling systems, reuse initiatives such as the furniture reuse program, and efforts to optimise waste segregation.



Targets	Status	Comment
Reduce energy intensity by 5 per cent	Not on track	Energy intensity increased compared to 2022 due to an increase in electricity use and is above the targeted level.
Reduce water intensity by 5 per cent	On track	Water intensity decreased compared to 2022 due a reduction in bore water use and is well below the targeted level.
Divert at least 85 per cent of general waste from landfill	Not on track	81 per cent of general waste was diverted from landfill in 2022, slightly short of the target. Performance has been affected by compostable packaging being sent to landfill as required by NSW EPA.
Reduce general waste by 20 per cent	On track	General waste volumes increased slightly but are well ahead of the 20 per cent reduction target.
At least 80 per cent of retailers achieve Plastic Free Dining Gold Award status	On track	12 out of 28 retailers (43 per cent) have now achieved Gold award status, while a further 15 (54 per cent) achieved a Silver or Bronze award. In total, 96 per cent of food and drink retailers have achieved a Plastic Free Dining Award.





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# Resource efficiency

continued

## 2023 summary

Progress was made with several initiatives in support of energy, water and waste targets during 2023.

Heating, ventilation and air conditioning (HVAC) system audits were completed for UNSW Kensington's E8 (Hilmer) and E10 (Science and Engineering) buildings. Stage 2 (retro-commissioning to improve efficiency and user comfort) has commenced for the same buildings, with a schedule of works to be completed by March 2025. The electrification program will also deliver reductions in energy use, as UNSW moves from gas boilers to more efficient heat pump systems.

Water audits of additional buildings and systems were undertaken to identify additional opportunities to optimise water efficiency. Several water saving measures were implemented across our campuses, including additional irrigation water meters, cooling tower metering and benchmarking, rectification works in student accommodation, and toilet flushing controls.

Campus retailers continued their plastic free journey, with six more achieving a Plastic Free Dining Gold award (see case study).

In waste management, recent challenges have impacted on landfill diversion rates. Newly clarified Environment Protection Authority (EPA) regulations state that compostable packaging items cannot be accepted in commercial composting facilities due to concerns about perfluoroalkyl and polyfluoroalkyl substances (PFAS) contamination. Therefore, Estate Management has been required to send the food and compostable packaging waste stream to landfill in order to comply with EPA requirements. UNSW is engaging with the regulator to undertake testing, conducting a review of its waste streams and processes, and developing an action plan to optimise waste management practices while ensuring regulatory compliance.



## More UNSW retailers go plastic-free

In early 2022, Estate Management introduced the Plastic Free Dining Awards to recognise and celebrate UNSW retailers for going plastic-free. Retailers can achieve a Gold, Silver or Bronze award to highlight their progress in switching to compostable packaging and supporting reuse. The awards also help students and staff to identify where they can eat plastic-free.

During 2023, an additional five retailers received a Gold Award, bringing the total to 12. A further 15 retailers have received a Silver or Bronze Award. Further information about Plastic Free Dining, the scoring criteria and the award status of each retailer can be found on the UNSW Environmental Sustainability website<sup>20</sup>.

<sup>20</sup> [sustainability.unsw.edu.au](https://sustainability.unsw.edu.au)

## Reuse program gives UNSW furniture another life

As learning and teaching requirements change each year, so do the University's furniture requirements. UNSW established a furniture reuse program in 2019 in collaboration with contractor Egans Asset Management, to encourage reuse and divert unwanted furniture from landfill. Used furniture is assessed and rated based on its condition:

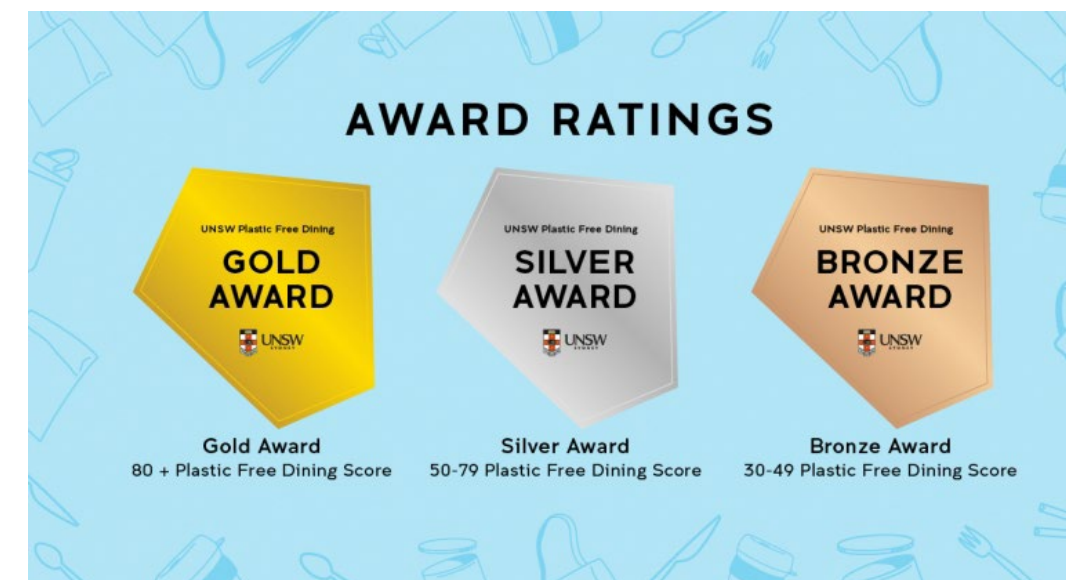
- > 'Gold' rated furniture is stored for reuse within the University
- > 'Silver' rated furniture is deemed unsuitable for campus but still functional so is rehomed via charity groups or sale to students and staff to purchase at a nominal price,
- > 'Bronze' rated furniture is deemed unsuitable for reuse or rehoming so is recycled where possible or disposed of to landfill.

In 2023, 4,451 surplus furniture items were assessed. Of these:

- > 1,327 items (30 per cent) were reused on site, sold or donated to charity
- > 1,416 items (32 per cent) were stored for future use
- > 1,701 items (38.2 percent) were disposed of with the majority being recycled, and 298 items being sent to landfill.

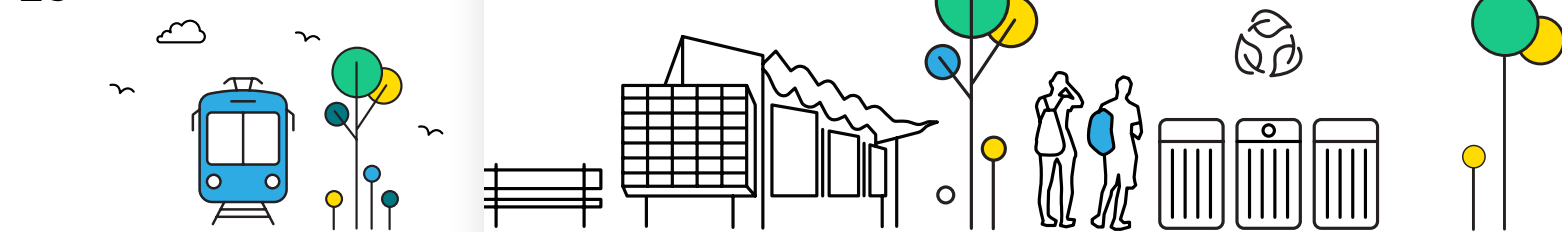
A sale of surplus used furniture was held in July to make low cost used furniture available to UNSW students and staff. 179 furniture items including chairs, tables and storage solutions were sold to the UNSW community, giving them a new life and preventing furniture being sent to landfill.

Overall, it is estimated that the furniture reuse program saved 76 tonnes (83 per cent) of surplus furniture from going to landfill in 2023.



# Target status summary

Focus Area	Target	Unit	Performance					Status	
			2018	2019	2020	2021	2022		2023
Climate action	Maintain net zero operational (scope 1 and 2) emissions	Tonnes of carbon dioxide equivalent (tCO <sub>2</sub> e)	82,548	86,474	0	0	0	0	On track
	Expand onsite solar PV capacity to 1.5MWp	Megawatts potential (MWp)	0.79	1.16	1.16	1.23	1.37	1.37	On track
	Reduce total (scope 1, 2 and 3) emissions by 30% by 2025, 50% by 2030 and to net zero by 2050	Tonnes of carbon dioxide equivalent (tCO <sub>2</sub> e)	317,278	340,557	150,445	171,432	194,814	230,211	On track
	Divest investments in fossil companies	% of eligible investments in fossil fuel companies	-	-	-	-	-	-	On track
Living campuses	New build and refurbishment projects achieve our minimum sustainability requirements	All relevant projects meeting all requirements Y/N	-	-	-	-	-	-	On track
	Kensington campus achieves a net gain in biodiversity value	Biodiversity value rating	-	-	-	-	-	-	No data
	Increase student and staff knowledge and awareness of environmental sustainability issues	Average rating from 1 (low) to 5 (high)	3.03	-	-	3.10	-	-	On track
	At least 85% of students and staff travel to campus by sustainable travel modes	Travel by modes other than private car (%)	-	85%	-	-	84%	-	Not on track
Resource efficiency	Reduce energy intensity by 5%	Kilowatt hours per square metre GFA per year (kWh/m <sup>2</sup> /year)	195	210	189	179	196	201	Not on track
	Reduce water intensity by 5%	Kilolitres per square metre GFA per year (kl/m <sup>2</sup> /year)	0.93	0.97	0.62	0.54	0.78	0.75	On track
	At least 85% of general waste is diverted from landfill	% of general waste by weight diverted from landfill	94%	49%	65%	83%	82%	80%	Not on track
	Reduce general waste by 20%	Tonnes (t) of general waste per year	2,852	2,838	1,409	1,609	1,992	2,264	On track
	At least 80% of retailers achieve Plastic Free Dining (PFD) Gold award status	% of food and drink retailers receiving PFD Gold award	0%	-	-	-	26%	54%	On track



# Environmental data

## Energy and water efficiency

(Kensington, Paddington and Randwick campuses)

Energy	Unit	2018	2019	2020	2021	2022	2023
Consumed electricity		84,954,523	92,588,228	85,280,032	81,085,776	85,736,828	90,446,128
Electricity from onsite solar	Kilowatt hour (kWh)	996,974	1,152,340	1,079,664	1,057,563	1,065,861	1,227,595
Gas		33,841,626	37,653,273	34,102,707	33,434,650	37,876,184	34,839,205

Water	Unit	2018	2019	2020	2021	2022	2023
Potable water		289,103	285,834	153,380	138,593	210,094	227,547
Bore water	Kilolitre (kl)	272,247	310,899	231,851	201,756	278,539	236,237
Total water		561,350	596,733	385,230	340,349	488,633	463,784
Bore water as a % of total	%	48%	52%	60%	59%	57%	51%

## Waste and recycling

(Kensington, Paddington and Randwick campuses)

General waste	Unit	2018	2019	2020	2021	2022	2023
Paper/cardboard	Tonne	1,114	658	380	538	719	755
Mixed metals	Tonne	120	29	36	75	95	179
Drink containers	Tonne	84	122	188	151	88	0
Mixed plastics	Tonne	0	0	24	41	56	60
Food and organics	Tonne	278	80	0	0	0	0
Food waste	Tonne	228	257	51	59	48	57
Residual	Tonne	1,017	1,692	730	745	986	1,213
<b>Total</b>		<b>2,841</b>	<b>2,838</b>	<b>1,409</b>	<b>1,609</b>	<b>1,992</b>	<b>2,264</b>

Destination							
Recycling	Tonne	1,824	1,146	679	864	1,006	994
Processed engineered fuel (energy recovery)	Tonne	858	244	241	477	633	820
Landfill	Tonne	159	1,447	490	268	353	450
General waste recycling rate	%	64%	40%	48%	54%	50%	44%
General waste landfill diversion rate	%	94%	40%	65%	83%	82%	80%

**Paper and cardboard:** Segregated paper, confidential paper and paper recovered from general waste at Material Recovery Facility (MRF).

**Mixed metals:** Reported as recovered from general waste at MRF.

**Drink containers:** Collected through Return and Earn reverse vending machine on Kensington campus.

**Mixed plastics:** Reported as recovered from general waste at MRF.

**Food and organics:** Reported as recovered from general waste at MRF.

**Food waste:** Segregated food waste collected from retailers and colleges.

**Residual waste:** Contaminated paper, plastic, food packaging and other non-recyclable waste destined for energy recovery and landfill.





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### INDEPENDENT ASSURANCE REPORT

To the University Council of University of New South Wales ('UNSW')

#### Conclusion

We have undertaken a limited assurance engagement on the accompanying Greenhouse Gas ('GHG') Statement of the UNSW for the year ended 31 December 2023, comprising the Emissions Inventory and Explanatory Notes on pages 11 and 12, the ('GHG Statement').

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that UNSW's GHG Statement for the year ended 31 December 2023 is not prepared, in all material respects, in accordance with the GHG Protocol Standard and GHG Scope 3 Standard methodology.

#### Basis for conclusion

We conducted our engagement in accordance with Standard on Assurance Engagements ASAE 3410 *Assurance Engagements on Greenhouse Gas Statements* issued by the Auditing and Assurance Standards Board. This standard requires that we plan and perform this engagement to obtain limited assurance about whether the GHG Statement is free from material misstatement.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

#### The University Council's responsibilities

The University Council of UNSW are responsible for the preparation of the GHG Statement in accordance with the GHG Protocol Standard and GHG Scope 3 Standard methodology. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation of a GHG Statement that is free from material misstatement, whether due to fraud or error.

#### Our independence and quality management

We have complied with the independence and relevant ethical requirements of APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)*, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies Auditing Standard ASQM 1 *Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information, or Other Assurance or Related Services Engagements* which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

#### Assurance practitioner's responsibilities

Our responsibility is to express a limited assurance conclusion on UNSW's GHG statement based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with Standard on Assurance Engagements ASAE 3410, *Assurance Engagements on Greenhouse Gas Statements* ('ASAE 3410'), issued by the Auditing and Assurance Standard Board. That standard requires that we plan and perform this engagement to obtain limited assurance about whether the GHG statement is free from material misstatement.

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A limited assurance engagement undertaken in accordance with ASAE 3410 involves assessing the suitability in the circumstances of UNSW's use of the GHG Protocol Standard and GHG Scope 3 Standard methodology as the basis for the preparation of the GHG statement, assessing the risks of material misstatement of the GHG statement whether due to fraud or error, responding to the assessed risks as necessary in the circumstances, and evaluating the overall presentation of the GHG statement. A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

The procedures we performed were based on our professional judgement and included enquiries, observation of processes performed, inspection of documents, analytical procedures, evaluating the appropriateness of quantification methods and reporting policies, and agreeing or reconciling with underlying records.

The procedures we performed were based on our professional judgement and included:

- Undertaking enquiries with management regarding the process and controls for capturing, collating, quantification and reporting the Emissions Inventory and Explanatory Notes;
- Reconciling the GHG statement with UNSW's underlying records;
- Agreeing the underlying records back to supporting third party documentation on a sample basis applying materiality and professional judgement;
- Undertaking analytical review procedures over data and obtaining explanations from management regarding unusual or unexpected amounts;
- Assessing the reasonableness of measurement methods, estimates and assumptions made in preparing the GHG statement; and
- Reviewing UNSW's quantification methodology to ensure that it is appropriate for assurance and for assessing the preparation, collation and quantification of the GHG statement, in all material respects, in accordance with the GHG Protocol Standard and GHG Scope 3 Standard methodology for the year ended 31 December 2023.


The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion about whether UNSW's GHG statement has been prepared, in all material respects, in accordance with the GHG Protocol Standard and GHG Scope 3 Standard methodology for the year ended 31 December 2023.

#### Inherent limitations

Because of the inherent limitations of an assurance engagement, together with the internal control structure it is possible that fraud, error, or non-compliance with compliance requirements may occur and not be detected.

#### Restricted use

This report has been prepared for use by the University Council of UNSW for the purpose of providing assurance of the GHG statement for the year ended 31 December 2023. We disclaim any assumption of responsibility for any reliance on this report to any person other than the University Council of UNSW, or for any other purpose other than that for which it was prepared.

 BDO  
G Rooney BDO Audit Pty Ltd  
Geoff Rooney  
Director, Sydney, 14 May 2024

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# Associations

