



Pūrongo Toitū te Taiao  
2023 UC Sustainability Report  
manaaki tangata, manaaki whenua

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## Hei Whakaupoko i ngā Kōrero | Executive Summary

2023 saw the University of Canterbury celebrate its 150<sup>th</sup> anniversary. This significant milestone was marked with a range of events based around key themes, one of which was sustainability. Throughout the year, more people attended sustainability-led events than ever before.

Perhaps the most significant sustainability achievement was the conclusion of the coal boiler conversion. This allows for biomass (wood chip) to be burned instead of coal, and we are in the final stages of planning the biomass supply for 2025. As a result, the University’s carbon footprint will be slashed in half: it is a very important step forward.

Humbler, but no less important initiatives included the development of new cycle and waterways plans, and a new climate adaptation assessment, with an extensive list of recommendations.

In the partnerships space, the UC-led Community Feast brought 300 people together from diverse backgrounds to mark the University’s commitment to community food resilience. This focus was underscored later in the year when both the University and the University of Canterbury Students’ Association signed the Edible Canterbury Charter. This signals that the University will contribute to wider regional food resilience efforts, in collaboration with a wide range of players, including Christchurch City Council, Te Whatu Ora, third sector (community-led, not-for-profit organisations) and businesses.

Cover photo: Matua Grenville Pitama giving instructions to Seamus Moran for hāngi preparation for the Community Feast

## Ngā mihi | Acknowledgements

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### Disclaimer

*This Sustainability Report (Report) summarises current information regarding UC's approach to sustainability issues and contains forward-looking statements and statements of opinion. Any such statements are made only as at the date of this Report and are not guarantees of future performance. Readers are cautioned not to place undue reliance the Report, and no representation or warranty is made regarding the accuracy, completeness or reliability of its information. All such information is, by its nature, subject to significant uncertainties outside of the control of UC, and actual performance or developments may differ materially from those expressed or implied in this Report. UC does not undertake to publicly update or review any forward-looking statements, whether as a result of new information or future events and to the maximum extent permitted at law, any liability for any loss arising from the use of the information contained in this Report is excluded.*

## Message from the Tumu Whakarae | Vice-Chancellor Cheryl de la Rey

Tēna koutou,

Welcome to the 2023 UC Sustainability Report.

2023 was a milestone year for the University of Canterbury, as we celebrated our 150th anniversary. Through a series of events and activities the University community reflected on our history, and our ongoing role into the future. In this sense, sustainability was a key theme throughout the year. The many events held during 2023 gave me a unique opportunity to connect with a wide cross-section of our wider community and to understand more about the responsibilities we have as an institution to both support and guide our region.

As an example, the Community Feast brought together over three hundred people to enjoy a hāngi and other food grown and prepared locally. The collaboration of thirteen primary organisations that partnered to create this event focused on the idea of providing mana-enhancing, healthy and sustainably produced kai and making the event accessible to all people in our community. As such, the event highlighted practical ways in which many of the Sustainable Development Goals intertwine. Subsequently, the University signed the Canterbury Food Resilience Charter to affirm our commitment to this important kaupapa.

Also noteworthy is that University achieved a historic high in student enrolments exceeding a total of 24 000 and I am pleased to highlight that enrolments in new degree programmes focused on sustainability have been strong, while our researchers continued to directly contribute to building capacity around critical, multi-faceted sustainability challenges such as the climate crisis.

From an energy perspective, it is exciting to note that works continued on the conversion of the coal boiler system to allow it to accommodate burning wood. For many years coal has accounted for approximately fifty per cent of the University's carbon footprint. Extensive works over a number of years and considerable investment have resulted in a carbon neutral heating solution, which in time will see a massive drop in our greenhouse gas emissions.

I hope you enjoy this report on progress against our Sustainability Plan.

Ngā mihi

Professor Cheryl de la Rey



## Message from Te Amorangi Toitū | Pro-Vice-Chancellor, Sustainability

Since I was appointed to be New Zealand's first Pro-Vice-Chancellor Sustainability in October 2021, our programme of work to support our sustainability strategy has expanded considerably and the many achievements are reflected in this 2023 report.

Our sustainability work focuses on the areas of teaching and learning, research, building networks and campus operations. In 2023 we published a searchable list of our taught courses that includes topics related to one or more of the United Nations Sustainable Development Goals (SDGs). This will assist prospective students to understand which ones include these as a topic or principle. In late 2023 we awarded fifteen new PhD scholarships for research focussing on one or more of the SDGs.

The Ilam boilers have been fully converted to run on biomass, and test drilling has been completed outside the Science precinct to enable heating of several nearby buildings by ground source heat pumps. Our carbon footprint continues to decrease, and the cessation of coal burning will accelerate our progress in this important area.

In October 2023 it was my very great pleasure to meet alumni on campus as part of our 150<sup>th</sup> celebrations and to host a presentation of many of our sustainability initiatives. I should like to acknowledge everyone who helped bring this event to fruition.

In 2023 the University was a finalist in the Australasian Green Gown Awards for our work on using virtual environments in laboratory teaching.

Globally, many universities are increasingly concerned with reducing their own carbon footprint and contributing solutions to climate change. Canterbury is leading the way with many of our initiatives we present in this report.

Ngā mihi  
Professor Jan Evans-Freeman  
Pro-Vice-Chancellor, Sustainability





1

**Whakamahuki o te  
Mahere Toitū te Taiao  
| UC Sustainability  
Planning Overview**



## 1 Whakamahuki o te Mahere Toitū te Taiao | UC Sustainability Planning Overview

### 1.1 Context and Drivers

It is widely acknowledged that we are living through a period of extreme challenge. Present modes of human living and habitat exploitation are driving multiple, interlocked crises, including the collapse of ecosystems, the rise of global pandemics, open hostilities related to energy security and the breakdown of the earth's climate systems. The United Nations Sustainable Development Goals (SDGs) have been developed to meet these and other challenges.

These 'wicked problems' require new and bold thinking, and for this reason universities are considered by the United Nations to 'have a critical role in helping society achieve the Sustainable Development Goals'. The 'SDGs require deep and radical transformations in each country. Incremental approaches will not be enough to tackle the urgent and complex challenges outlined by Agenda 2030. In order to play a leading role in these transformations, universities will also need to evolve.'<sup>1</sup>

In addition, we know that our students and staff expect us to take action on sustainability issues.

### 1.2 Sustainability Policy

The UC Sustainability Policy frames the values and principles guiding the University's work towards creating a sustainable community and campus, while contributing towards solving global sustainability challenges.

UC Sustainability Planning Overview



<sup>1</sup> Sustainable Development Solutions Network, 'Accelerating Education for the SDGs in Universities', <https://www.unsdsn.org/dialogue-series-on-the-sdsn-report-accelerating-education-for-the-sdgs-in-universities-the-institutional-transformation>

### 1.3 Sustainability Plan 2020-2030

The Sustainability Plan (which expands on the UC Strategic Vision 2020-2030) outlines the projects that will be undertaken to enact the principles outlined in the Sustainability Policy. These priority areas and projects were identified through an extensive engagement with the UC staff and student community throughout 2020 in what was essentially a materiality assessment.

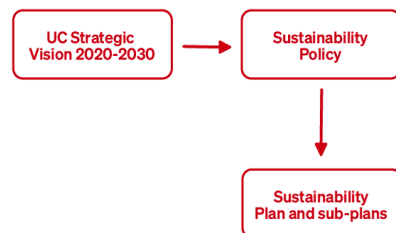
This 2023 Sustainability Report provides an update on each of these projects.

### 1.4 Sustainability Governance

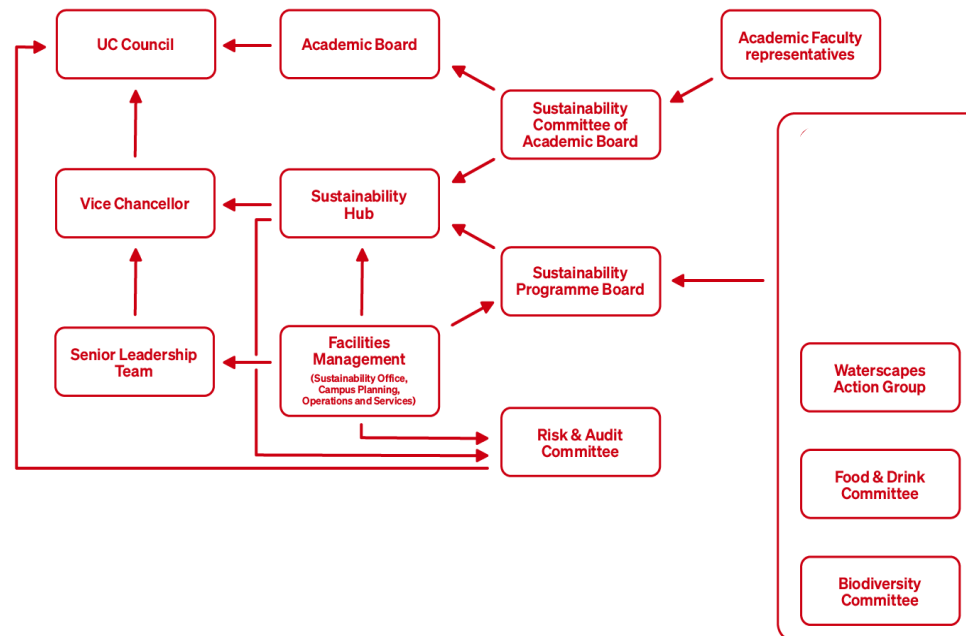
Implementation of the Sustainability Plan is overseen by a Sustainability Programme Board. Governance of the Sustainability Programme sits across multiple bodies within the University structure, and these are mapped out here.

The Vice-Chancellor reports regularly on progress on the Sustainability Programme to the University Council. These reports can be viewed [here](#).

#### Guiding documents



#### Sustainability Governance





## 2 Teaching & Learning

*Weave opportunities for students to learn and contribute to resolving the Sustainable Development Goals through UC teaching.*

## 2. Contribute to resolving the SDGs (curriculum)

### 2.1 Explore new cross-disciplinary qualifications

Teaching Tools - Teaching tools including practical setup to work with and assess CN tech.

A cross-campus group of academic and technical staff worked to identify courses and areas where virtual learning tools or learning units offered sustainability gains together with equivalent or improved learning outcomes. Some of the tools and learning units completed and put into service at UC include a VR CNC friction welding unit (saving welding plates), a Virtual Reality (VR) robot arm health & safety induction, a VR steam engine model which can be tested to destruction, instructions and quizzes packaging pre-existing digital assets on Unit Cells, a series of virtual geology labs built around a virtual microscope with a huge digital library of samples, and a virtual videofluoroscopy lab for assessing swallowing disorders. The project which produced these initiatives was a finalist in the Australasian Green Gown Awards.

### 2.2 Identify Sustainability Initiatives

#### Heat Pump Scheme Case Study

The Ground Source Heat Pump is being used as a UC learning opportunity with site tours taking place. In October 2023, small groups of Masters students from Civil and Natural Resources Engineering toured the site.

Representatives from the designer, main contractor, and artesian bore drilling contractor were all present to report on their respective responsibilities for the individual project arms.

Initiatives for Field Work - Support current and new initiatives for field work (field stations, in the city, on campus)

New initiatives for field work included two virtual field trips, which have resulted in improved learning outcomes and a smaller carbon footprint by reducing the need to travel. The first is an interactive virtual walk-through of a design space for a new hospital ward and the actual ward (the real-world versions of which are respectively decommissioned and unavailable to students for safety and privacy reasons) for MBA students and undergraduates within UC Business School. The second is a virtual field trip to Iceland and around New Zealand examining volcanoes, structured as either two standalone massive open online courses, or to be used in flipped



classroom teaching within UC geology courses. These initiatives have also produced a number of peer-reviewed papers and won a major international MOOC award.

### 2.3 Course Mapping to the 17 SDGs

#### Develop system to identify and record SDG related courses

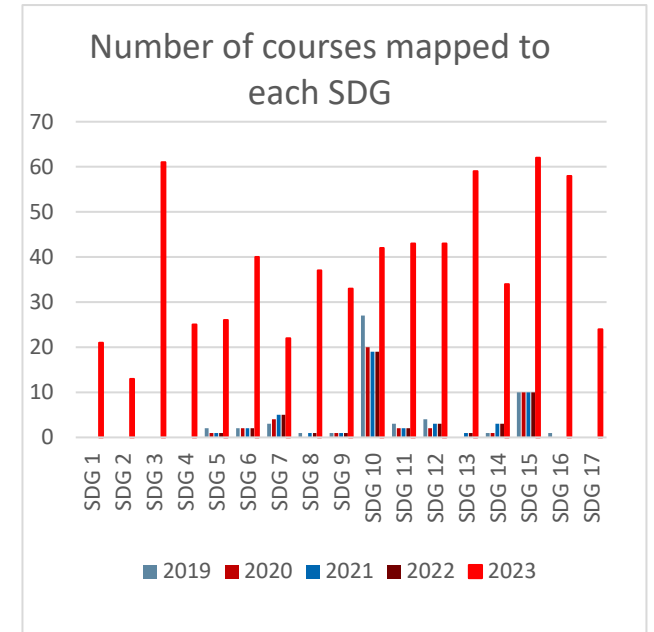
In previous years, to map courses to the SDGs, course descriptions were searched for sustainability-related keywords. Due to a propensity for false positives, data was previously presented for courses mentioning at least five different keywords for an SDG, but this in turn led to false negatives, and it was noted that an improved method was required. Therefore, in 2023 a ground-truthing project was initiated, engaging with Course Coordinators to determine which courses have how much SDG-related content and how that content relates to course learning outcomes and assessment.

It found both more even coverage of courses across the full range SDGs and substantially more SDG-aligned courses than the previous method suggested. To date, the project has covered approximately a quarter of UC courses, with 121 Course Coordinators identifying 212 courses with a total of 640 SDG mappings, and is on-going. These results demonstrate not only the breadth and depth of SDG-related teaching currently underway at UC, but also the value of utilising this kind of information-gathering approach.

In 2023, UC delivered over 15,890 student-courses<sup>2</sup> aligned substantially with one or more SDGs.

#### Website update

The UC website (Sustainability Hub) has been updated to show the mappings completed so far, with a ‘Study Sustainability courses according to Sustainable Development Goals’ page outlining the SDGs and 17 sub-pages showing the courses available by SDG.



<sup>2</sup> For this report, the term ‘student-courses’ equates to course completions.



## **3 Research Programme**

*Ensure that UC research contributes to resolving global sustainability challenges.*

The University of Canterbury's Strategic Vision 2020-2030 identifies three areas of work in its sustainability research stream:

- 3.1. Reducing gross carbon emissions
- 3.2. Investing in key areas of research that might assist UC to solve global sustainability challenges
- 3.3. Establishing a research student sustainability incubator.

UC's second SDG Report provides a snapshot of some of the research projects underway at UC that contribute to the SDGs. This report can be found [here](#). A selection of media stories about research projects at the University related to sustainability can be seen [here](#).

3.1 Reducing gross carbon emissions through research  
No update

3.2 Investing in key areas of research that might assist UC to solve global sustainability challenges

### **Sustainability Research Leader honoured**

Associate Professor Elizabeth Macpherson, from the Faculty of Law, won UC's Advancing Sustainability Research Award for her contribution to environmental and natural resources law, and her focus on addressing global environmental challenges. Associate Professor Macpherson says it's a "real honour" to receive the award. "I have spent more than 20 years advocating for legal and policy frameworks that better manage global environmental challenges surrounding the protection of freshwater and marine ecosystems, while upholding the rights and authority of Indigenous peoples. This is not just a recognition of my research but of Indigenous peoples who are leading legal innovations on issues of sustainability both internationally and locally, and who have inspired and supported me along the way."

In 2024, Associate Professor Macpherson will begin a five-year, NZ\$800,000, Rutherford Discovery Fellowship to investigate legal frameworks supporting blue carbon futures in Aotearoa New Zealand. The research will be in partnership with Ngāi Tahu. Her goal is to combine her research programme on freshwater and marine law and policy to drive global impact around the critical roles coastal wetlands and related communities can play in response to climate change.

As Principal Investigator for the Sustainable Seas National Science Challenge, Associate Professor Macpherson also recently won the New Zealand Legal Research Foundation Sir Ian Barker Published Article Award for 2022 for her article



in the *Journal of the Royal Society*; “Can Western water law become more ‘relational’? A survey of comparative laws affecting water across Australasia and the Americas”. She is also an assistant investigator on a successful bid for the equivalent of NZ\$850,000 from the Chilean National Research Agency for a project on collaborative water governance being led out of the Pontificia Universidad Católica de Chile.

### 3.3 Establishing a research student sustainability incubator.

#### Student Research Scholarships awarded

Fifteen PhD scholarships were awarded to students in 2023 for research relevant to the United Nations’ Sustainable Development Goals. The scholarship titles are listed in the table below.

|  |
|--|
| Muslim women’s travel and mobility in non-Muslim majority countries: A New Zealand journey of gender empowerment and discrimination reduction?                     |
| Resilient and equitable emergency response for employed women: Lessons from New Zealand’s Natural Disasters  |
| Why are paikea   Polynesian humpback whales still endangered?  |
| Development of economical cross-laminated timber solution for multifamily dwellings using palm wood in Southeast Asia  |
| Exploring the valorisation of vegetable and fruit waste into functional and high value ingredients for personal care, food and health care applications            |
| Using soil microbiome technical data to decolonize biological knowledge for sustainable soils  |
| Co-creating Sustainability and Wellbeing in the Circular Food Economy. A Transformative Study of Generation Z’s Food Consumption Practices in Aotearoa New Zealand |
| A Comprehensive Zero-Carbon Strategy for South America: Advancing Energy Equity and Green Hydrogen Export Potential  |
| Adaptive decision-making tool for multi-source water and energy infrastructure optimisation  |
| Sea ice thickness in the Southern Ocean: A critical knowledge gap in climate science   |
| Seasonal thermochemical storage of solar energy for low-temperature space heating  |
| Mathematical Modelling and Life Cycle Analysis of CO2 capture by CaO-based Sorbent from Biomass Gasification Syngas  |
| Production of Critical Metals for Zero Carbon Energy by Green All-Oxide Electroreduction   |
| Assessing Spatial and Temporal Variations in Transport Poverty and Accessibility with Energy and Emissions Considerations  |
| Enabling Sustainable Fabrication to Support Iterative Prototyping  |





## UC sustainability rankings

UC ranked 95<sup>th</sup> in the new Sustainability indicator for the Quacquarelli Symonds' (QS) World University Ranking. This result follows the Times Higher Education (THE) Impact Rankings which saw UC placed in the Top 80 for global impact.

Sustainability is a new measurement included in the methodology used by QS when assessing global universities. The score is taken from the standalone QS Sustainability Ranking, evaluating the social and environmental impact of universities as centres of education and research.

Deputy Vice-Chancellor Research Professor Ian Wright believes the result acknowledges UC's continued commitment to impactful research and education. "We are pleased to be recognised for our commitment to sustainability and employment outcomes in these new categories, particularly at a time when students expect an all-encompassing educational experience that reflects our responsibility to the world around us," says Professor Wright.

## Case Study: Reimagining plastics waste as energy solutions

Researchers from UC have contributed to an important Perspective on plastic waste management. The discussion is detailed in their article in *npj Materials Sustainability*, 'Reimagining plastics waste as energy solutions: challenges and opportunities'.

'Recent statistics portray a stark reality, particularly highlighting the inadequate recycling measures and the consequent environmental threats, most notably in developing nations... We emphasize the significance of Waste-to-Energy (W2E) and Waste-to-Fuel (W2F) technologies, e.g., pyrolysis and gasification, for converting difficult-to-recycle plastic waste into a dense-energy source. However, we identify a critical gap in current research: the emission of CO<sub>2</sub> during these processes. This perspective spotlights emergent CO<sub>2</sub> capture and utilization technologies, underscoring their role as a robust turnkey solution in making W2E and W2F methods more sustainable and unleashing the huge potential of using waste plastics as a dense-energy source... This approach promotes circular resource utilization and realizes the socio-economic and environmental advantages of plastic waste utilization technologies, advocating their implementation in economically disadvantaged regions.'<sup>3</sup>

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<sup>3</sup> Tan, A.F.J., Yu, S., Wang, C. *et al.* Reimagining plastics waste as energy solutions: challenges and opportunities. *npj Mater. Sustain.* **2**, 2 (2024). <https://doi.org/10.1038/s44296-024-00007-x>

A photograph of an industrial facility. On the left is a large grey cylindrical tank with a metal staircase. In the center is a tall, multi-story green structure with a yellow railing on top and a large funnel-shaped opening on its side. To the right is a tall yellow chimney. The sky is blue with some clouds. In the foreground, there is a metal fence and a red scissor lift.

# 4 Becoming Carbon Net Neutral

*Establish an Initiative that will ensure that UC will significantly reduce its carbon emissions by 2030.*



#### 4. Becoming carbon net neutral

Establish an initiative to ensure that UC will significantly reduce its carbon emissions over the next several years.

UC's approach to carbon reduction and climate change initiatives, although broad-ranging and multi-faceted, can be summarised as being made up of two distinct lines of work:

1. Carbon reduction
2. Climate change resilience and adaptation

During 2023, work progressed in all three of these areas.

##### 4.1 Carbon reduction

The first area, reducing our carbon footprint as much as we believe is possible at this time, will see UC significantly reducing its carbon emissions by 2030. Doing this involves the following projects:

##### 4.1.1 Low carbon energy strategy programme (removing coal, and using ground source heat pumps)

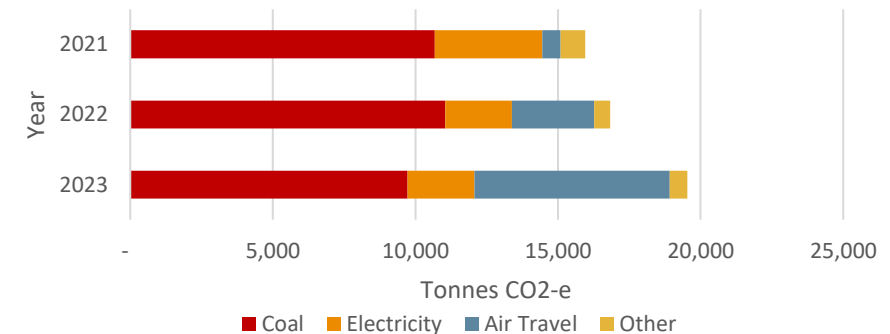
By the end of 2023 most of the works on the Ilam Boiler Conversion, the conversion of existing boilers from coal to waste wood fuel, were nearly complete. Planning for biomass supply for 2025 is in the final stages. Work on upgrading existing Group 4 buildings to operate on an expanded Ground Source Heat Pump (GSHP) system progressed well. All artesian bore works were completed, and the works within the tunnels/Group 4 Plantrooms were well underway and the main civils/infrastructure works to the new Plantroom in the central campus were completed.

##### 4.1.2 Reducing air travel

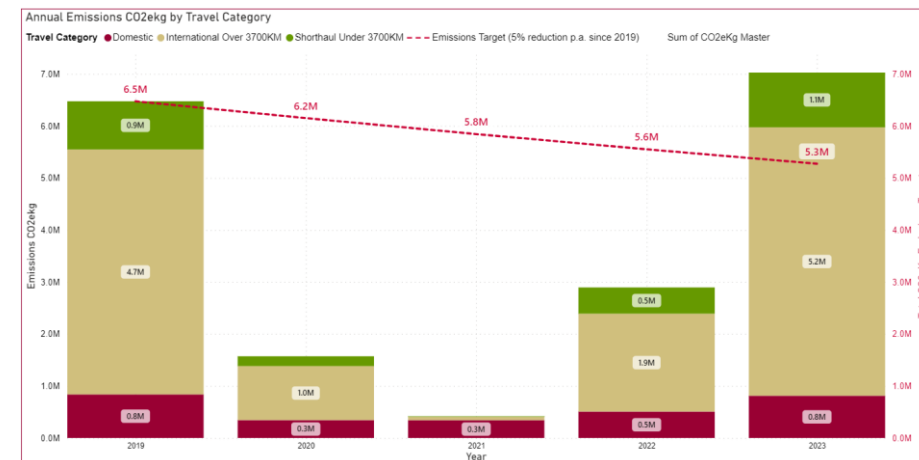
Despite low levels of travel during the COVID19 pandemic, and 2022, air travel increased significantly above 2019 levels in 2023, and was higher than forecast.

In considering this issue, the Pro-Vice-Chancellor Sustainability gave a series of all-staff hui and spoke directly with Heads of Departments.

#### UC Audited Emissions Inventory



UC Emissions Inventory – Major Sources. This chart shows the known 2023 GHG emissions at the time of the annual UC audit.



#### *4.1.3 Reducing UC fleet vehicle emissions*

Our journey with electric vehicles (EV) commenced in May 2022. At the end of 2023, the UC fleet comprised a total of 11 fully electric vehicles and 13 hybrid vehicles, contributing to an aggregate fleet size of 73. 33% of the fleet is now therefore EV or hybrid. Five of these EVs were added in 2023. Simultaneously, our focus extends to the domain of CO2 emissions. We are formulating an all-encompassing CO2 emissions report, slated for regular monthly updates. This spreadsheet will enable us to contrast the CO2 levels between UC fossil fuel vehicles and electric vehicles.

#### *4.1.4 Reducing technology carbon footprint*

The first step towards realising this goal is to accurately capture the digital assets currently deployed on campus. This was progressed in 2023 by initiating the Digital Asset Lifecycle Management Project.

#### *4.1.5 Reducing building electricity intensity*

The proof of concept for campus capable A.I. (Artificial Intelligence) Building Performance Analytics Controls to optimise building HVAC plant successfully identified several areas of potential savings with the building HVAC system and we have now begun the staged roll out to the remainder of campus.

#### *4.1.6 Expansion of EV charging network*

No further work was undertaken on this project during 2023.

### **4.2 Ensure Climate Resilience**

While the University is making progress in reducing its carbon emissions, we also need to prepare for the inevitable impact of climate change. For this reason, as previously reported, Facilities Management developed a Climate Change Risk Register and commenced work on mitigating the top-rated risks within its particular mandate. These were primarily risks to physical assets (both natural and built). Facilities Management engaged AECOM to prioritise these assets and establish a framework for identifying the most significant risks to them, using data modelled from the Intergovernmental Panel on Climate Change. At the same time, the approach was aligned with Ngāi Tahu's He Rautaki Mō Te Huringa o te Āhuranhgi.

This work, carried out during 2022 and 2023, led to the development of an extensive list of recommendations, which identified numerous areas for improvement. Facilities Management is determining how to tackle these improvement suggestions.



| Low Carbon Energy Use   |   |
|---|---|
|   |   |
| 2022  | 2023                                      |
| <b>ELECTRICITY</b>  | <b>ELECTRICITY</b>                        |
| <b>Total energy consumption (GJ)</b>  | <b>Total energy consumption (GJ)</b>      |
| <b>94,400</b>   | <b>96,125</b>                             |
| <b>Low carbon energy consumption</b>  | <b>Low carbon energy consumption</b>      |
| <b>94,400</b>   | <b>96,125</b>                             |
| <b>COAL</b>   | <b>COAL</b>                               |
| <b>Total energy consumption (GJ)</b>  | <b>Total energy consumption (GJ)</b>      |
| <b>112,613</b>  | <b>97,720</b>                             |
| <b>Low carbon energy consumption</b>  | <b>Low carbon energy consumption</b>      |
| <b>n/a</b>  |   |
| <b>GRAND TOTAL</b>  | <b>GRAND TOTAL</b>                        |
| <b>Total energy consumption (GJ)</b>  | <b>Total energy consumption (GJ)</b>      |
| <b>207,013</b>  | <b>193,845</b>                            |
| <b>Low carbon energy consumption (GJ)</b>   | <b>Low carbon energy consumption (GJ)</b> |
| <b>94,400</b>   | <b>96,125</b>                             |
|   |   |
| <b>Electricity</b>  |   |
| <b>The University increased electricity usage by 1.8% over the previous year. During this period University EFTS had increased by 6.6%. All of the UC electricity usage is renewable and zero carbon, with Renewable Energy Certificates (RECs) issued by our electricity provider, Meridian.</b> |   |
|   |   |
| <b>Coal</b>   |   |
| <b>The University decreased coal usage by 13.2% over the previous year.</b>   |   |





## 5 Environmental Sustainability

*Measurably and substantially improve the environmental sustainability of UC*

## 5.1 Transport Planning

### 5.1.1 Cycle Planning

The UC Cycle Plan (2022-2030) was published in early 2023, which indicates an eight-year programme of works to meet the cycling needs and expectations of students, staff, and visitors to UC. Using data from the 2020 Travel Survey, this Plan addresses key areas of interest to our community, including major drivers and barriers to choosing to cycle:

- Cycle parking – types and provision
- Cycle routes – current and planned
- End of trip facilities (showers, lockers and other requirements)
- Cycle safety and security
- On-campus maintenance hubs and other facilities
- Education and engagement programmes
- Staff, student, and visitor wellbeing
- Cycling advocacy and action
- How cycling can complement other types of transport infrastructure at UC

Several achievements against the new plan have been made, including the provision of secure e-bike charging with the install of UC's first Locky Dock. The full plan can be viewed [here](#).

Other cycling wins in 2023 include:

- 207 bikes fixed by Dr Bike, a new record!
- 16 staff and students received free cycle with confidence training, thanks to ongoing skill workshops in partnership with Christchurch City Council
- 200 staff and students attended the popular Bike Breakfast event as part of Biketober, Ōtautahi Christchurch's annual festival of cycling
- UC placed second in Ōtautahi Christchurch in the Aotearoa Bike Challenge, with 309 staff cycling almost 62,000kms during the month of February alone. This represents 13% total staff participation – up from 11% in 2022.





- The annual count of bicycles and utilization of stands on campus showed an increase in the number of bikes parked on campus. Stand utilisation across Ilam and Dovedale increased from 31% in 2022 to 40% in 2023.
- Overall, almost 550 staff and students participated in events with a cycling or sustainable transport focus in 2023.

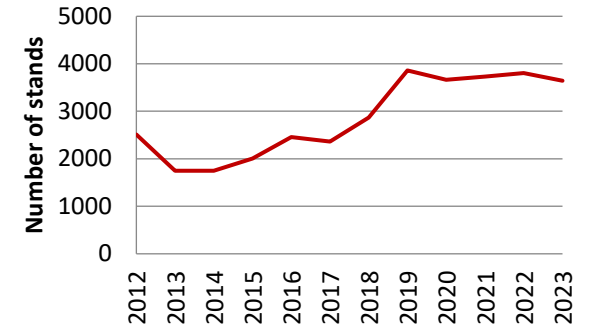
The UC Sustainability Plan was updated in 2023 to include new organisation-wide targets for sustainable commuting – beyond just cycling. These targets reflect the University’s desire to increase the uptake of all active, shared, public and alternative commuting modes (compared with single occupancy vehicle use). As such, a new UC Sustainable Transport Plan (2024 – 2030) is currently being developed to support these targets.

The next UC Travel Survey is planned for July 2024.

### 5.1.2 Electric Vehicles

See section 4.3 above.

## Cycle Stand Count



## 5.2 Biodiversity

### 5.2.1 Biodiversity Plan

The adoption of the revised Biodiversity Plan, and its key targets, sets the framework for biodiversity reporting, as set out in the table below.

| Target  | Action  | Progress  |
|---|---|---|
| Reduce impact of predators on campus birdlife, insects and reptiles (targets to be identified).   | Investigate, recommend and implement methods for protecting nests from predators as resources permit.                       | Predator program was expanded, resulting in increased possum catch numbers to 17 in total this year to date . 25 students in 4 teams lead weekly trap line sections. 130 traps in total in 3 different lines. |
|   | Monitor nests to gain an understanding of survival rates.   | Continuing.   |
| Showcase and expand the University's biodiversity research.   | Organise a single campus-wide event to promote  | 30 individuals participated in a biodiversity campus tour and exploration event at Ilam Gardens. A presentation on Kārearea by Dr Sara Kross was attended by 35 people.                                       |
| The University's canopy cover target facilitates improvements to biodiversity and other ecosystem services, namely cooling effects and flood mitigation/water quality improvements) | Research a potential canopy cover target for Ilam campus with relevant University staff.                                    | Agreed on no-net loss of trees on Campus. Determined an aspirational target of 30% canopy cover on Campus over time.  |
|   | Plant and manage a large number of tree species that can be used as a teaching resource as required and as resources allow. | 2 x Aracauria aracana – Monkey puzzle<br><br>Additional trees for teaching resources on Arts Road.  |

|  |   |  |
|--|---|--|
| Increase numbers of native birds overall by 100% within 5 years, with a particular focus on at least a 50% nest survival rate. | Increase plantings of native fruiting trees attractive to kereru, eg. miro, kahikatea, totara, matai by including these in the tree replacement | 34 Podocarpus totara<br><br>200 native assorted plants Haereoa – Avon riverbank, Clyde road  |
|  | Increase plantings of bellbird attracting species, eg. native tree fuchsia, rewarewa, harakeke, kowhai; exotic Eucalyptus, Banksia.             | 25 Sophora microphylla – Kōwhai in Arts Carpark  |
| Protect and enhance the campuses role as a hono in Ki uta ki tai   | Map potential ‘plantable areas’ on campus that could enhance the university’s role in Ki uta ki tai   | Underway, Haere Roa has been mapped and planning is in progress.   |
|  | Seek out opportunities to strengthen Ki uta ki tai on campus and in the north-west part of the city   | A planting on the lower reach of Haere Roa has taken place to enhance the existing waterway planting.  |
|  | Actions taken to raise profile of taonga species, for example through habitat enhancement, events, art integration or interpretation.           | Larger logs from tree maintenance have been left in situ. Biodiversity tour highlighted the role our waterways play in Ki uta ki tai.  |
| Identify target for increased insect biodiversity.   | Coordinate insect survey and reporting.   | Invertebrate monitoring has been conducted four times in 2023. In addition, EnviroSOC members Julia Palmer and Matthew Edmonds led invertebrate surveying carried out at Ilam gardens, which was attended by 15 students. Then later there was also a bio blitz during the evening, where 15 people participated. Furthermore, 20 people attended a bio blitz on campus to support City Nature Challenge on iNaturalist. |

|  |   |  |
|--|---|--|
|  | <p>Create opportunities to increase biodiversity in undisturbed areas of the University’s campus, Ilam Gardens, and the edges of Ilam Fields, working closely with Grounds staff.</p>                                     | <p>Wild Flower Meadow cultivated and sown. Areas of lawn with low value or use have been left to grow undisturbed. Bark mulch has been used to mitigate weed growth in garden borders to reduce agricultural use. Larger woody material from tree maintenance has been left in garden borders to provide habitats for invertebrates and other cryptic organisms.</p> |
|  | <p>Plan for areas to showcase insects of interest (eg giant stick insects, tree weta).</p>  | <p>Planning for the Geo Space Garden that may incorporate a butterfly garden for the copper butterfly species has recommenced.</p>   |
| <p>Shift MCI rating of campus streams from ‘moderately polluted’ to ‘mildly polluted’ by 2035.</p> | <p>Continue to monitor UC’s waterways systematically according to the Waterways Monitoring Framework (WMF)</p>  | <p>Ongoing and complete to date.</p>   |
|  | <p>UC owned infrastructure (eg downpipes and carpark filters) is assessed for contamination sources (eg heavy metals, hydrocarbons and sediment). Improvements are flagged for inclusion in the Asset Management Plan</p> | <p>Copper downpipes on buildings identified. Digital monitoring of the waterways was piloted, with the intention to link key indicators to the Building Management System to raise alarms if thresholds are exceeded.</p>  |
|  | <p>Worst discharge points are identified, and plans confirmed for correcting these.</p>   | <p>Stormwater treatment units were installed on several copper downpipes, dramatically reducing waterways contamination.</p>   |
|  | <p>Proceed with planned daylighting of boxed drain on Ilam Fields</p>   | <p>CCC have confirmed funding is allocated to support this work 50/50 share of the box drain removal and restoration.</p>  |



## 5.2.2 Waterways Monitoring

### Introduction

Monitoring waterways is essential to identify and quantify the factors that affect ecological, cultural, and human health, so they can be improved in the future. The Waterways Monitoring Framework (WMF) was established in 2018 to create a standardised monitoring program for Waiutuutu/Okeover and Ōtākaro/Avon streams. The UC Waterways Plan aims to increase base flow, reduce contamination, and improve habitat for aquatic species. To assess these goals, water quality and quantity measurements are collected quarterly, and ecological monitoring is conducted annually. This is compared to previous studies conducted on campus since 1979, to evaluate long-term change.

### Stream flow

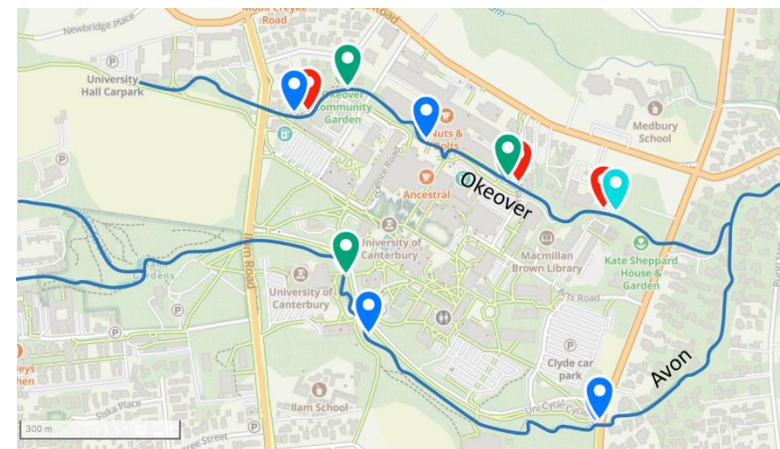
Stream flow measures the volume of water moving through a waterway per second, therefore it is an important component of water quality as it impacts turbidity, dissolved oxygen, and in-stream animals. In 2023, flow in the Okeover stream ranged between 0.03 m<sup>3</sup>/s below Ilam Road to 0.14 m<sup>3</sup>/s downstream near the greenhouses. Stream flow in the Okeover is elevated by air conditioning discharges and stormwater inputs increase flow downstream. Flow in the Avon is higher, ranging from 0.29 to 0.67 m<sup>3</sup>/s.

### Temperature

Temperature affects water chemistry such as dissolved oxygen and is a key driver of biological activity. Average temperatures are quite low for urban streams, suitable for aquatic plants and animals and continue to lower since records taken in 2000. Temperatures in the Okeover and Avon ranged between 15 to 11°C. It is worth noting temperatures are taken in the morning and may increase into the day or be lower at night.

### Water Clarity and Turbidity

Water clarity reduces when sediment or other particles are suspended in the water column. Lower clarity decreases the growth of aquatic plants, the feeding of aquatic animals, and the waterway's visual aesthetic. As part of this monitoring, both total suspended solids and turbidity are measured. Turbidity in the Avon had decreased from 1.5-2.4 NTU in 2002 to 0.2-1.3 NTU in 2023 and 0.01-1.1 NTU in the Okeover. Total suspended solids were low and never exceeded 1.3 mg/L. This reflects the clear spring-fed water feeding Okeover and Avon streams.



*Waterways monitoring sites along the Okeover and Avon streams. Blue pins show the location of water chemistry sampling sites, green indicates ecology (macroinvertebrates), and teal is both water chemistry and ecology. Red shows the locations of the stormwater samplers. Basemap Gaia GPS.*

### Dissolved oxygen

Oxygen is essential for fish, eels, and aquatic insects to breathe and survive. Dissolved oxygen is commonly measured by the saturation of oxygen in the water. The Okeover and Avon had dissolved oxygen levels between 81.7-88 % and 82.6-87 % respectively across the course of the year. These values are within the bounds of healthy streams which typically have around 80% saturation. All measurements were above 8 mg/L. Note oxygen levels are lower during the day, when the stream was sampled, as oxygen is taken up by photosynthesising plants and algae.

### Heavy metals

Urban streams are often polluted with heavy metals that runoff from surrounding soils, roofs, roads, and other impermeable surfaces. In high concentrations, heavy metals can become toxic to aquatic species and pose human health risks. Previous sampling in 2009 revealed copper exceeded the guideline value while lead and zinc were below this value. We test directly for heavy metals and proxies for chemical pollution including conductivity and pH. Conductivity and pH in the Avon ranged between 188.9-196.5(S/m) and 6.14-7.28, respectively. Conductivity was consistently higher in the Avon than the Okeover throughout the year. Conductivity is high and pH is slightly acidic in both streams.

Direct heavy metal sampling indicates that some heavy metals are elevated, particularly during Spring, however, they do not seem to exceed guideline values required to protect freshwater biodiversity (Table 1; Point sample). It is worth noting that while dissolved heavy metals in the water column may be at acceptable levels sediments on the stream bed, which are frequently disturbed, are a significant source of contamination.

### Stormwater sampling

Stormwater samplers automatically collect water when the stream rises to a certain level, capturing water during the start of rain events. Surface runoff predominates these samples, however, re-suspended sediments likely also contribute. Stormwater samplers have been installed in the Okeover stream this year and are collected quarterly. The network of samplers will be extended to include the Avon next year. Most elevated levels of heavy metals were recorded in February. Possibly because high rain events occur less frequently during the summer months and therefore metals build up and are washed into the stream in greater amounts. Zinc is notably higher in stormwater flows compared to baseline flow (point samples), and significantly above threshold values (Table 1; Stormwater).

**Table 1:** Mean heavy metal concentrations for 2023 (ug/l). Point samples were taken during regular sampling in both Haere Roa/ Avon and Waiutuutu/Okeover streams. Stormwater only collected in Waiutuutu/Okeover. Guideline values indicate heavy metal concentration to protect 90% of species.

|               | Baseflow Point sample - dissolved | Rainfall event Stormwater - filtered | Guideline value (90% protection) |
|---------------|-----------------------------------|--------------------------------------|----------------------------------|
| <b>Copper</b> | 0.8                               | 4.98                                 | 1.8                              |
| <b>Lead</b>   | 0.036                             | 1.43                                 | 5.6                              |
| <b>Zinc</b>   | 10.87                             | 266.4                                | 15                               |

## Ecology

A diverse range of invertebrates live in freshwater. Identifying which ones are present can indicate longer-term water quality trends as some species are more sensitive to poor water quality than others. The sensitivity of invertebrate communities is summarised by the Macroinvertebrate Community Index (MCI). Scores range from <80 (Severe pollution), 80–99 (Moderate), 100-120 (Mild) to >120 (Excellent). This year, MCI scores indicate moderate pollution. Since 1979, MCI scores have fluctuated between severe and moderate pollution (Figure 2), and are yet to meet the biodiversity target set in the 2019-2024 UC Biodiversity Plan, of mild pollution or above. The average Okeover MCI score is 90.1 while the Avon is classified as severely polluted with a score of 64.

## Education

The streams flowing through campus provide a range of teaching and engagement opportunities for the university and local communities. The macroinvertebrate and stream flow data collected by the BIOL112 (biology) and GEOG201 (geography) provide a valuable addition to the monitoring provided as part of this project.

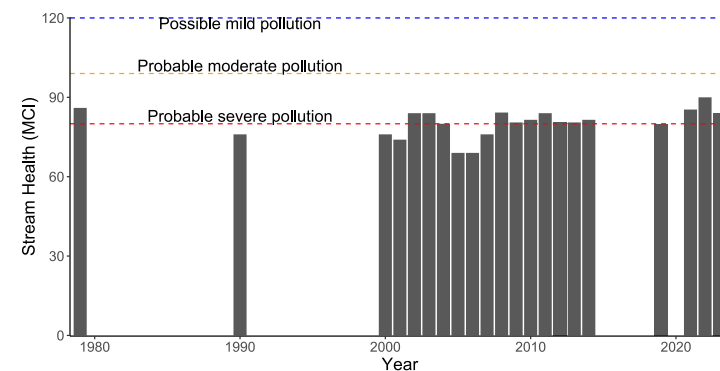
## Summary and next steps

While physical conditions such as temperature, dissolved oxygen, and water clarity indicate a healthy urban stream, aquatic life within the Okeover and Avon streams continues to be poor. Continual monitoring will provide a better indication of trends in water quality and indicate areas where improvements can be made. While current monitoring provides a good indication of physical and some ecological (macroinvertebrates) parameters we provide the following suggestions to further improve this program:

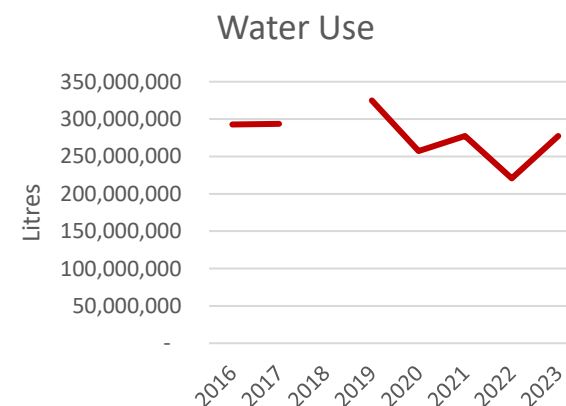
- Using eDNA (environmental DNA) to detect freshwater species in the Okeover. This method is an effective means of detecting valued native fish, even when few individuals are present.
- Extending the stormwater monitoring to include the Avon.
- Testing for *E. coli*, nitrogen, and phosphorus.

### 5.2.3 Water Use

Use of potable water increased again in 2023 after a drop in use the previous year. However, it was well below use in 2019, our baseline year. All water is supplied from the Christchurch City Council mains which in turn is sourced from aquifers beneath the city, fed by water from the Southern Alps.



Average MCI scores taken across three sites in Okeover Stream, University of Canterbury, from 1979 to 2023. The red, orange and blue dashed lines represent threshold values for pollution categories (<90 = severe pollution, ≥90 and <110 = moderate pollution, ≥110 and <130 = mild pollution, pristine conditions are ≥130) as outlined in the National Policy Statement for Freshwater Management (2020). Gaps between bars represent years where data was not available.



### 5.2.4 Birdlife

An annual count of birds on campus was once again undertaken by Professor Jim Briskie.

|   | 1990      | 2016       | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023       |
|---|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Native species</b>                                   |           |            |            |            |            |            |            |            |            |
| <i>Paradise shelduck</i>                                | 0         | 0          | 9          | 1          | 11         | 10         | 0          | 8          | 7          |
| <i>New Zealand pigeon (Hemiphaga novaeseelandiae)**</i> | 0         | 0          | 0          | 0          | 0          | 0          | 0          | 0          | 0          |
| <i>Silvereye (Zosterops lateralis)</i>                  | 24        | 151        | 28         | 71         | 70         | 28         | 181        | 165        | 142        |
| <i>Fantail (Rhipidura fuliginosa)</i>                   | 7         | 11         | 12         | 8          | 27         | 15         | 18         | 28         | 31         |
| <i>Grey warbler (Gerygone igata)</i>                    | 1         | 18         | 20         | 53         | 9          | 7          | 11         | 16         | 11         |
| <i>Bellbird (Anthornis melanura)</i>                    | 0         | 3          | 19         | 3          | 12         | 11         | 8          | 7          | 13         |
| <i>Welcome swallow (Hirundo tahitica)*</i>              | -         | 4          | 26         | 21         | 21         | 37         | 25         | 15         | 25         |
| <i>Black-backed gull</i>                                | 0         | 0          | 2          | 32         | 27         | 13         | 6          | 7          | 5          |
| <i>red-billed gull</i>                                  | 0         | 0          | 0          | 6          | 27         | 7          | 0          | 1          | 0          |
| <i>Spur-winged plover</i>                               | 0         | 0          | 0          | 4          | 0          | 0          | 1          | 2          | 3          |
| <i>NZ scaup***</i>                                      | 0         | 0          | 0          | 2          | 3          | 0          | 0          | 0          | 0          |
| <i>Black-billed gull</i>                                | 0         | 0          | 3          | 0          | 0          | 0          | 0          | 0          | 0          |
| <i>Little shag</i>                                      | 0         | 0          | 0          | 0          | 1          | 0          | 0          | 0          | 1          |
| <i>Australasian harrier</i>                             | 0         | 0          | 0          | 0          | 0          | 0          | 0          | 2          | 1          |
| <i>Sacred kingfisher</i>                                | 0         | 0          | 0          | 0          | 0          | 0          | 0          | 3          | 0          |
| <i>Shining cuckoo</i>                                   | 0         | 0          | 0          | 0          | 0          | 0          | 0          | 1          | 1          |
|   |           |            |            |            |            |            |            |            |            |
| <b>TOTAL NATIVE</b>                                     | <b>32</b> | <b>187</b> | <b>119</b> | <b>201</b> | <b>208</b> | <b>128</b> | <b>250</b> | <b>255</b> | <b>240</b> |
|   |           |            |            |            |            |            |            |            |            |
| <b>Introduced species</b>                               |           |            |            |            |            |            |            |            |            |
| <i>Redpoll (Carduelis flammea)</i>                      | 7         | 27         | 10         | 18         | 5          | 5          | 61         | 32         | 65         |
| <i>Chaffinch (Fringilla coelebs)</i>                    | 3         | 11         | 37         | 32         | 22         | 14         | 4          | 8          | 16         |



|   |     |     |     |     |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <i>European starling (Sturnus vulgaris)</i>                   | 12  | 12  | 7   | 57  | 50  | 31  | 44  | 54  | 82  |
| <i>Blackbird (Turdus merula)</i>                              | 104 | 192 | 161 | 333 | 352 | 224 | 169 | 175 | 148 |
| <i>Song thrush (Turdus philomelos)</i>                        | 37  | 34  | 19  | 61  | 61  | 19  | 25  | 25  | 27  |
| <i>Dunnock (Prunella modularis)</i>                           | 29  | 61  | 37  | 72  | 78  | 34  | 55  | 45  | 50  |
| <i>House Sparrow (Passer domesticus)</i>                      | 710 | 287 | 383 | 377 | 411 | 455 | 236 | 217 | 177 |
| <i>Greenfinch (Carduelis chloris)</i>                         | 23  | 18  | 55  | 50  | 36  | 24  | 48  | 39  | 48  |
| <i>Goldfinch (Carduelis carduelis)</i>                        | 57  | 141 | 31  | 18  | 37  | 8   | 41  | 45  | 88  |
| <i>Australian magpie (Gymnorhina tibicen)</i>                 | 3   | 0   | 2   | 0   | 0   | 1   | 2   | 3   | 0   |
| <i>Rock dove (Columba livia)</i>                              | 0   | 175 | 114 | 188 | 138 | 214 | 153 | 161 | 160 |
| <i>California quail (Callipepla californica)</i>              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   |
|   |     |     |     |     |     |     |     |     |     |
| <b>Hybrid species</b>   |     |     |     |     |     |     |     |     |     |
| <i>Grey duck/mallard (Anas superciliosa/A. platyrhynchos)</i> | 39  | 54  | 19  | 54  | 37  | 45  | 32  | 38  | 19  |
|   |     |     |     |     |     |     |     |     |     |

\* Dodunski (1990) did not count welcome swallows though she noted some were present

\*\* No native pigeons were observed during survey period, but at least 1 bird has been seen on several occasions from 2016-2019

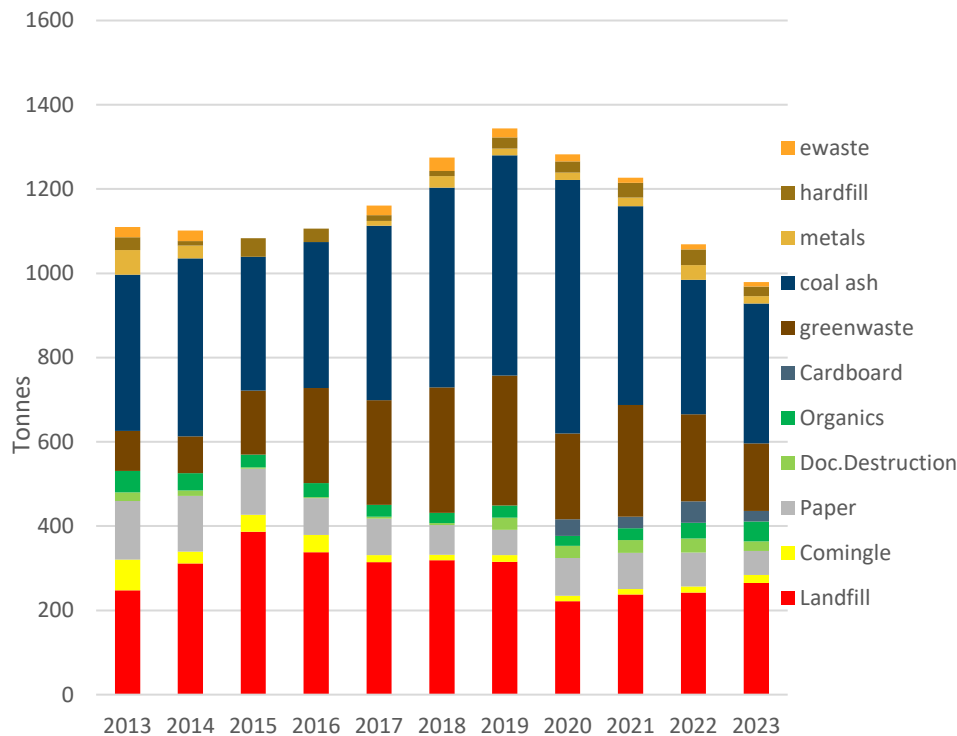
Other species: both a single little owl and a female New Zealand falcon was seen in Ilam Gardens; Neither detected during survey period.

\*\*\* 4 New Zealand Scaup (2 pairs) seen in 2020 but only in river in Ilam Gardens across the road and so did not fall into campus survey.

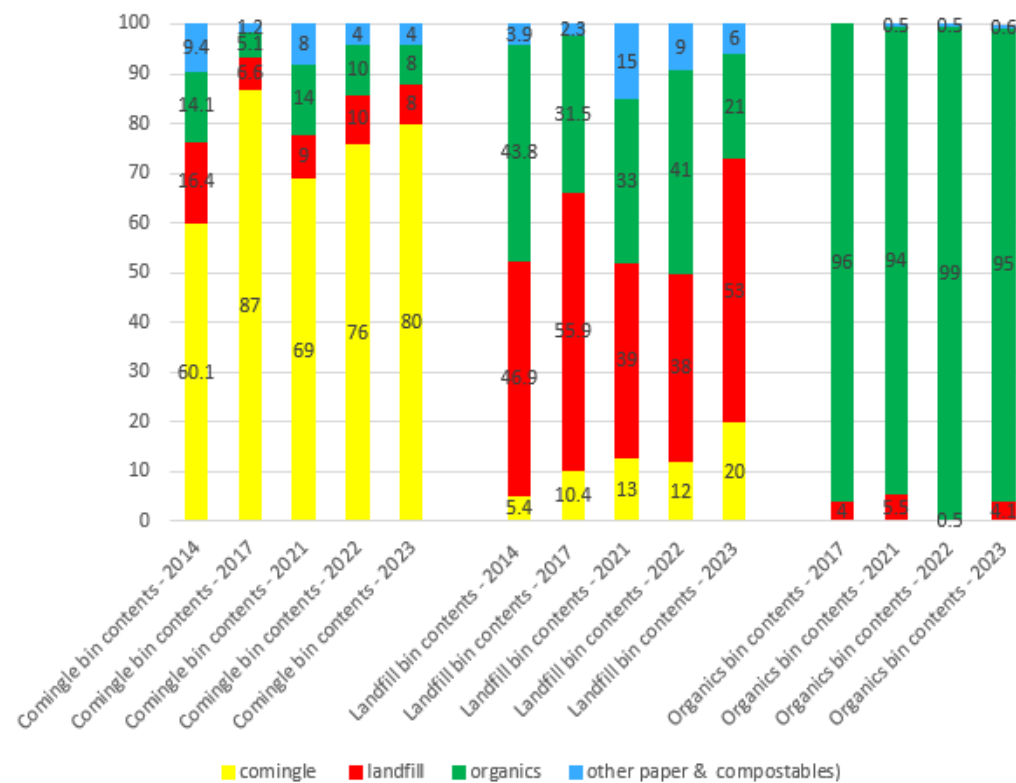


### 5.3 Waste Profile

UC Waste Profile 2013-2022



Contents of UC Bins, by stream, 2014-2023



#### 5.3.1 2023 Waste Policy and Profile

The University’s Sustainability Policy states that the University will “take measures to reduce the overall amount of waste sent to landfill, noting that waste minimisation efforts extend to any outsourced suppliers and the wider supply chain.” The Waste Plan outlines the steps the University is taking to reduce landfill.

Landfill increased slightly in 2023 as compared to 2022, but is still significantly less than it was pre-COVID19. Both comingled recycling and organics (food waste) increased slightly as well. These increases can collectively be ascribed to increased student numbers, although kilograms of landfill disposed of per staff and student did

increase again. The lower numbers for 2020 and 2021 probably entirely reflect the fact that many students were studying off-site during those years as a result of COVID19. However, the increase between 2022 and 2023 (and decrease in waste diversion) is concerning.

| Waste measure (metric ton)          | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------------------------------|------|------|------|------|------|------|
| Waste generated                     | 1325 | 1384 | 1313 | 1260 | 1113 | 1017 |
| Waste recycled                      | 1006 | 1069 | 1091 | 1022 | 870  | 752  |
| Waste sent to landfill              | 319  | 315  | 222  | 238  | 243  | 265  |
| <b>Proportion of waste recycled</b> | 76%  | 77%  | 83%  | 81%  | 78%  | 74%  |

Proportion of waste recycled (i.e. diverted from landfill), 2018-2023

### 5.3.2 2023 Waste Audit

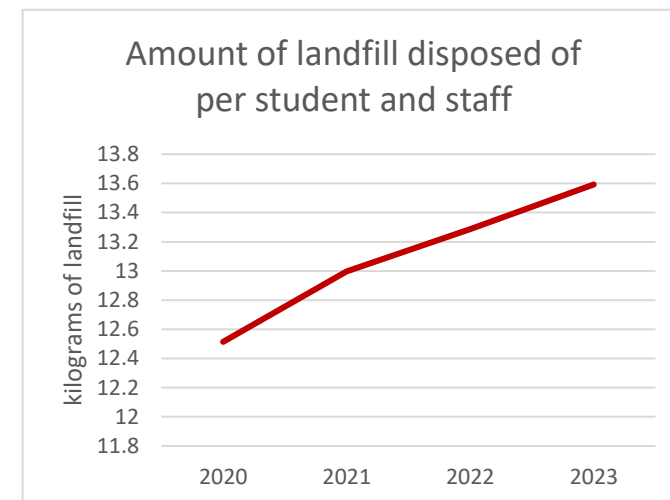
The 2023 Waste Audit was conducted by local company Sustainably for the first time, but their findings were in line with previous audits. Pleasingly, a larger proportion of landfill bin contents were correctly placed by users. In particular, far less food waste was disposed of in the landfill bins than in any previous audit. In the same vein, far more recycling was placed correctly in the recycling bins by users, and organics remained acceptable. On the other hand, far more recycling was also placed *incorrectly* in the landfill bins in 2023 compared to previous years. Given the size of our landfill weights compared to recycling, extrapolating this sample across the campus indicates that far more recyclable materials were placed in landfill bins (53 tonnes) than into recycling (just over 15 tonnes). Similarly, more organics (food waste) was disposed of into landfill (more than 55 tonnes) than into organics bins (44 tonnes).

### 5.3.3 Compostable Packaging

The various problems surrounding compostable packaging were discussed in our report last year. With no suitable solution on the horizon, the decision was made to remove the bins for compostable packaging at the end of 2023. This means that from 2024 onwards, compostable packaging will need to be disposed of to landfill.

### 5.3.4 Waste Plan Update

|  | 2023 Progress |
|--|---------------|
| <b>Target 1: Contamination of landfill stream to be no greater than 25% (measured by annual audit), by 2024.</b> |               |



|  |   |
|--|---|
| <b>2023 contamination rates of landfill were 47%, a significant improvement on the 62% contamination observed in 2022. To halve this again during 2024 will require a back-of-house sort of landfill, which has not been budgeted for.</b> |   |
| <ul style="list-style-type: none"> <li>• Work with café and food truck vendors to ensure they understand and comply with waste system</li> </ul>   | <ul style="list-style-type: none"> <li>• A Standard Operating Procedure has been drawn up, which will be tested with the UCSA in 2024.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Ban polystyrene cups and clamshells</li> </ul>  | <ul style="list-style-type: none"> <li>• This has been superseded by a Government ban coming into effect.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Increase number of compostable packaging bins around campus</li> </ul>  | <ul style="list-style-type: none"> <li>• This was not implemented due to concerns about future direction for compostable packaging</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Review café purchasing</li> </ul>   | <ul style="list-style-type: none"> <li>• Still to commence.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Signage and campaign around compostable packaging to be enhanced</li> </ul>   | <ul style="list-style-type: none"> <li>• This has been reversed due to issues with compostable packaging.</li> </ul>  |
| <b>Target 2: Contamination of comingle stream to be no greater than 25% (measured by annual audit), by 2024.</b>   |   |
| <b>Contamination of comingle stream in 2022 was 20% (an improvement on the 2022 audit)</b>   |   |
| <ul style="list-style-type: none"> <li>• Recycling signage upgraded</li> </ul>   | <ul style="list-style-type: none"> <li>• All bin signage was redesigned and printed in 2023, for role out in early 2024.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Implement communications plan, including video content</li> </ul>   | <ul style="list-style-type: none"> <li>• A series of waste-focussed communications was rolled out on social media and on internal staff/student channels. One popular video promoting reuse reached almost 3,000 on social media</li> </ul> |
| <b>Target 3: Retain or improve on 94% clean organics stream (measured by annual audit), by 2024.</b>   |   |
| <b>The organics stream was 95% clean in 2023, so within the acceptable range.</b>  |   |
| <ul style="list-style-type: none"> <li>• Work to upgrade this system as new options become available, including exploring and costing all logistical issues associated with any possible change.</li> </ul>                                | <ul style="list-style-type: none"> <li>• No changes to this system are proposed, except for an increased focus on getting organics out of the landfill stream.</li> </ul>   |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Continue education campaign around organics</li> </ul>  | <ul style="list-style-type: none"> <li>This continued throughout 2023, with the establishment of a student-led Compost Club, and a worm farm in a high profile area.</li> </ul>        |
| <b>Target 4: Clean landfill rate drops by 25% (measured against EFTS), by 2030 (assume 2021 is the baseline).</b>  |  |
| <b>The clean landfill rate again increased in 2023 (per EFT)</b>   |  |
| <ul style="list-style-type: none"> <li>Enhanced focus on waste education and promotions</li> </ul>   | <ul style="list-style-type: none"> <li>This continued in 2023, with Plastic Free July and Recycling Week campaigns reaching over 13,000 on social media</li> </ul>                     |
| <b>Target 5: Single use plastic bottle disposal drops by 20% (by 2025) and 50% (by 2030) (measured by annual audit against EFTS).</b>  |  |
| <b>Plastic bottles were measured extensively for the first time in the 2022 audit to provide a baseline for measuring. They made up 19% of the recycling waste stream by volume (including those incorrectly disposed of to landfill. Note this was calculated based on the number of wheelie bins the auditors filled with plastic bottles). In 2023, a different method was used, which provided weight and volume comparisons of plastic bottles with other single use bottles (cans and glass). By weight, this showed a small reduction in 2023 over 2022 of plastic bottle disposal as a proportion of single use bottles. This equates to a 3.6% reduction. If anything, the comparison reveals an increase in glass bottle disposal between the two years.</b> |  |
| <ul style="list-style-type: none"> <li>Look to promote cans over plastic bottles</li> </ul>  | <ul style="list-style-type: none"> <li>Promotions of alternative forms of packaging will be enhanced during 2024.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Scope ban on plastic bottles</li> </ul>   | <ul style="list-style-type: none"> <li>It seems unlikely that a plastic bottle ban will be supported commercially at UC, despite a significant call from students to do so.</li> </ul> |
| <ul style="list-style-type: none"> <li>Consider communications plan to help reduce plastics coming in from off site.</li> </ul>  | <ul style="list-style-type: none"> <li>This is pending, with intention to address this from 2024.</li> </ul>   |



### 5.3.5 Furniture disposal

An on-going relationship with UC’s Logistics and Space Management teams has seen furniture able to be rehomed to community groups. In late 2023, a collection of desks, chairs and bookshelves marked for disposal were rehomed to two organisations who deliver health and social services to the Pasifika community in Ōtautahi Christchurch.

### 5.6 Sustainable Food and Drink Planning

Late in 2022 the existing Sustainable Food and Drink Plan was reviewed and updated. The goal of this plan is to work with a range of partners to both improve the overall wellbeing of our campus community, but to also partner meaningfully with external organisations in order to enhance the University’s community impact in the important areas of food security, food sovereignty and food resilience. The revised Plan can be viewed [here](#).

During 2023, UC established a multi-stakeholder-led committee to oversee implementation of this Plan.

| Action  | By when  | Owner                  | 2023 Update  |
|---|----------|------------------------|--|
| Establish a Stakeholder Group to guide actions.   | End 2022 | Sustainability Manager | Completed  |
| Work with the Ngāi Tahu Centre to identify and implement mahinga kai offerings on campus. | End 2025 | Sustainability Manager | Awaiting advice.   |
| Assess opportunities for selecting mahinga kai options through procurement processes.     | End 2025 | UC Procurement         | The committee suggested changing this wording to ‘Assess opportunities for selecting culturally appropriate options for catering options through procurement processes’<br>OnCampus (UCSA) offer hāngi, available through Unimarket. Procurement is working with the Events team to promote this option. This was promoted at the UCSA catering event. |



Vice Chancellor Cheryl de la Rey (bottom right) and Pierce Crowley (UCSA President) signing the Food Resilience Charter



|   |                     |  |   |
|---|---------------------|--|---|
| Identify opportunities for new edible campus plantings and implement as resources allow   | End 2025            | Grounds Manager  | Edible garden at end of Puaka James Hight to be upgraded, and some other spots where espaliered apples and pears could go – to be discussed with Grounds. |
| Participate in national and international fair trade events   | Ongoing             | Sustainability Engagement Coordinator                    | No Fair Trade instant coffee is currently available, and campus accreditation is not currently offered. This remains a significant challenge.             |
| Ensure that all food vendors on campus are complying with the Sustainability Policy through annual audits.  | End 2022 and annual | Leasing Officer  | Trial audit with UCSA is planned for early 2024.  |
| Explore options for including more of these foods in options provided to staff and students: fish, healthy fats, eggs, nuts, seeds, white meats, wholegrains and root vegetables – alongside a variety of multi-coloured above the ground vegetables and fruits for their array of micronutrients – e.g. leafy greens, tomatoes, berries. | End 2024            | UCSA   | No update   |
| Provide information to food vendors on campus on best practice food and beverage packaging options as required.   | End 2022            | Sustainability Manager                                   | Discussion commenced regarding installation of commercial dishwashing facilities to enable durable service ware to be more widely used on campus.         |
| Work with the UCSA to develop a UC compost club or similar project.   | End 2022            | Sustainability Engagement Coordinator                    | Completed   |
| Actively promote the compostable bins that UC has installed.  | Throughout 2023     | UC Communications, Sustainability Engagement Coordinator | These bins will be discontinued at the end of the year, as they do not work and there are changes to compostable packaging regulation.                    |
| Establish a pilot worm farm in a high profile area on campus.   | End 2023            | Community Garden Coordinator                             | Completed   |
| Support the establishment of student-led composting trials or   | End 2023            | Community Garden Coordinator                             | Underway  |

|   |          |                          |   |
|---|----------|--------------------------|---|
| demonstration areas at other sites on campus as requested, and as resources allow.                        |          |                          |   |
| Research appropriate partnership opportunities.   | End 2023 | Sustainability Manager   | A draft MoU between the Food Resilience Network and UC has been drawn up.<br>UC Sustainability has joined Soil & Health Association of NZ. Matt Morris supported as national co-chair. Kaitlyn Lamb (also works for Sustainability Office) is also on National Council.   |
| Join relevant organisations as resources permit, in order to continuously inform and improve UC practice. | End 2023 | Sustainability Manager   | Inaugural Community Feast was held in May 2023, as part of the University's 150 <sup>th</sup> Anniversary celebrations. This event attracted 300 participants from a wide variety of organisations and backgrounds around the notion of food resilience.<br>UC and the UCSA signed the Edible Canterbury Charter. |
| Identify opportunities for further education about sustainable food solutions.                            | End 2023 | Sustainability Committee |   |
| Explore seed funding opportunities for related research activities.                                       | End 2023 | Sustainability Committee | Community Gardens Research Symposium held jointly with Lincoln University, and involving Manaaki Whenua, Canterbury Community Gardens Association and several individual community gardens and food resilience projects.  |



A man wearing a black beanie and a blue and white plaid shirt is clapping his hands. He is looking towards the left of the frame. In the background, there is a blurred crowd of people, suggesting a public event or conference. The overall atmosphere is one of engagement and participation.

## 6 Grow our Sustainability Networks

*Engage with local, national and global  
networks*

## 6. Grow our sustainability networks

### 6.1 The Community Feast

The UC Sustainability Office worked with a wide range of stakeholders to create the inaugural Community Feast. This initiative involved stakeholders from organisations such as Aotearoa Food Rescue Alliance, Biological Husbandry Unit (Lincoln University), Buy Pure NZ, Canterbury Community Gardens Association, Christchurch City Council, Christchurch City Mission, Eat New Zealand, Food Resilience Network, Housing First, Inner City Chaplain, Kairos Food Rescue, Kore Hiakai Zero Hunger Collective, Lincoln University, Smith Street Community Farm and Te Mana Ora. Ngāi Tūāhuriri assisted with the provision of a hāngi. The goal was to bring the attention to the multiple issues surrounding our food system, and especially to include in the conversation those amongst the most vulnerable: members of the kaewa (homeless or street) community. The event attracted 300 people and a full report, including lessons learned, can be found [here](#).



### 6.2 Community Gardens Research Symposium

Following on from the Community Feast (held in May), the University teamed up with staff from Lincoln University to co-host the inaugural Community Gardens Research Symposium. It is understood that community gardens are part of a jigsaw of initiatives that can help improve food resilience in our communities, along with many other benefits. The symposium sought to bring together researchers working in this area, along with community garden practitioners to share more about what is being researched, and to learn what research priorities could be. 15 people attended for a session that strengthened networks and made it easy for community based practitioners to access university-based research resources.

### 6.3 TEFMA Award

The Sustainability Office was honoured to receive the AECOM Innovation Award at the Tertiary Education Facilities Management Association conference in Sydney. This award recognised the innovative approach to digital waterways monitoring piloted by the University. Easily scalable, the pilot demonstrated not only the simplicity of digital monitoring for waterways, but also the practical applications of this technology for waterways management and, importantly for a university, for research and teaching as well.



### 6.4 Sustainable Development Goals Summit Series

The University continued to provide support to the national SDG Summit Series. The University Sustainability

Manager continued to lead the Universities New Zealand Expert Panel on the SDGs, to participate in the ongoing development of the Aotearoa SDG Alliance, and to co-chair the National Stakeholder Group for the SDG Summits.

### 6.5 Sustainability Events and Student Engagement

2023 saw a new record high for staff and student engagement, with a total 3700 staff and students engaging with Sustainability Office events on campus.

Biodiversity, composting, cycling and practical workshops in the community garden proved the most popular, showing our community’s continued enthusiasm for connecting, learning, and taking action for sustainability on campus.

A team of dedicated students (mostly studying environmental science) got hands on with the predator control programme, with weekly trapping recording an impressive 173 total catches. We even threw our first ‘possum night-club’ event with the help of some keen EnviroSoc students! Ongoing collaboration with Predator Free Riccarton saw new connections made with the Riccarton community including local primary and secondary school students and teachers. The ‘Tracking, Trapping and Triumphs’ hui at Haere-roa bought 60 keen trappers of all ages together to share their learnings on increasing biodiversity at school, at home and in their communities.

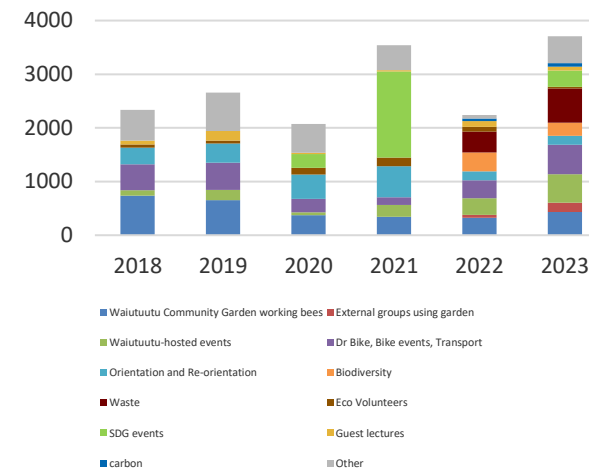
Other highlights this year included:

- Participating in International Compost Awareness Week, which included a mushroom growing workshop and the launch of the campus worm farm
- Beeswax wrap workshops and a staff clean-up day at Te Rauakaaka for Plastic Free July
- Calendula-balm workshop in Waiutuutu Community Garden, as part of Mental Health Awareness Week
- The Bike Breakfast
- And the return of the popular student-led Sustainability Mākete.

Our team of highly engaged student leads and Eco Volunteers were actively involved in the creation, promotion and support of these sustainability events and activities.

Online engagement remained strong, with a total reach of 125,000 across our social media channels.

UC Sustainability Events by Type, 2018-2023



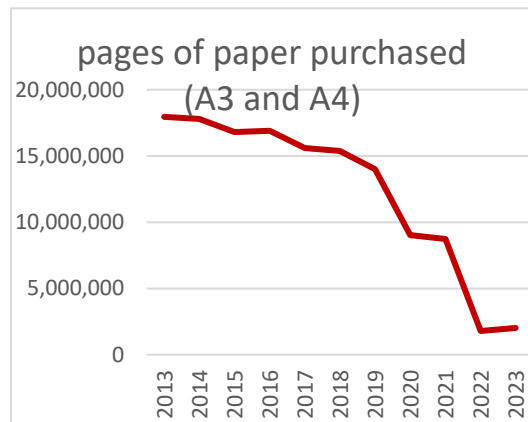
### 6.6 Te Ngaki o Waiutuutu – Waiutuutu Community Garden

Te Ngaki o Waiutuutu is the UC Community Garden. 530 people attended events hosted by Te Ngaki o Waiutuutu. A range of organisations (including clubs) held events in the garden: 172 people attended these non-Sustainability Office events. Events run in the garden by the Sustainability Office included: open day, film night in the garden, edible campus tour, mushroom workshop, worm farm launch, compost workshop, te reo rock painting matariki celebration, tote bag workshop, tree pruning workshop, calendula balm workshop, community gardens symposium.

434 people attended the weekly working bee. 206kgs of produce was harvested in the garden.

Gardeners launched a worm farm on central campus in May for Compost Awareness Week. Around the same time, the UC Compost Club was launched: a student club focused on educating students about the benefits of compost. Since May, the club has been collecting food scraps from the USCA kitchen. 19kgs of food waste were diverted to the worms; five additional worm farms will be installed in 2024.

From August to October 2023, 30 pre-service teachers from the UC Faculty of Education did 7 workshops in Te Ngaki o Waiutuutu. The workshops ranged from planting seeds, log inoculation with mushroom spores, edible weeds, and composting. In 4 of these workshops, the teachers were joined by 15 primary school students from Merrin School. This was a wonderful learning opportunity for the pre-service teachers to interact with the students in a hands-on garden environment. It is hoped that the teachers have learned valuable skills and knowledge on gardening that they can use in their career.



### 6.6 Sustainability Showcase

An event for Alumni framed around University research towards the SDGs was organised by the Sustainability Hub. This event brought together researchers from across the University and will likely lead to future research collaborations.

### 6.7 Paper purchasing

Paper use remained relatively low in 2023 at 2,021,500 sheets, but was slightly higher than it had been in 2022.





Sustainability Office Team: Patrick Daly, Seamus Moran, Imo McRae, Jess Lamb, Matt Morris, Jam Kelly, Chloe Sutton