

DRAFT Te Taumata Tukuwaro-kore

Foreword

*"Manaaki whenua, manaaki tangata, haere whakamua
Care for the land, care for the people, go forward"*

We are very pleased to present to you Te Taumata Tukuwaro-kore, the Net Zero Carbon Strategy for Waipapa Taumata Rau, the University of Auckland, developed in conjunction with Te Rautaki Aronga Toitū our Sustainability Strategy.

Te Taumata Tukuwaro-kore formally acknowledges the work already completed in our journey to reduce the University's emissions and climate impacts, the important milestone achieved in establishing an independently verified baseline inventory of emissions and the connected conversations, reasoning, decision-making, commitments, and actions that will drive our pathway to being a Net Zero University.

This Strategy brings together contributions from across the University and is also informed by internal and external expertise on international best practice. It builds upon the direction provided from both Taumata Teitei and Te Rautaki Aronga Toitū | Sustainability Strategy and is cognisant of its strong connection to Te Rautaki Tūāpapa.

Thank you to the many people who contributed to the formation of this inaugural Net Zero Carbon Strategy, your participation and commitment has supported the University's pathway across an important juncture towards a more sustainable world focused on reducing our environmental impacts, on our people and on our place in the world.

Draft for Consultation

"Te Taumata Tukuwaro-kore – Net Zero Carbon Strategy"

Toitū te marae a Tāne, toitū te marae a Tangaroa, toitū te whenua
Care for the domains of Tāne (forests) and Tangaroa (seas), and the lands will
sustain you

Te Taumata Tukuwaro-kore is a te reo Māori representation of Net Zero Carbon Strategy. Taumata, as in Waipapa Taumata Rau, is the place we aspire to in order to achieve this goal. It is integrally connected with Waipapa ki Uta, The Landing Place: the place of arrival and connection, connecting the land and the sea, the domains of Tangaroa and Tāne. This is the space where people connect the far and the near, converging with a commitment to leave a lasting legacy for future generations.

Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy, is enriched by Te Ao Māori principles:

- Kaitiakitanga: integral and all-encompassing guardianship of taonga for our current and future generations
- Manaakitanga: caring, nurturing and supporting our tangata comes with the responsibility to both take action and promote action
- Whanaungatanga: connected by a common bond and working together and sharing this journey and its responsibilities

Introduction

Welcome to Te Taumata Tukuwaro-kore, the University of Auckland Net Zero Carbon Strategy which sets out our commitment to a net zero carbon future, where global warming is limited to 1.5°C.

This Strategy has been developed in conjunction with Te Rautaki Aronga Toitū, the University's Sustainability Strategy, responds to Taumata Teitei and its related enabling Strategies across the University and has an eight year horizon. Taumata Teitei, the University of Auckland's Vision 2030 and Strategic Plan 2025 presents our vision to 2030 as being internationally recognised for our unique contribution to fair, ethical, and sustainable societies. Within the context of this vision, our purpose is to create globally transformative impacts through our distinctive strengths in world-leading research, scholarship, teaching, and collaborative partnerships, inspired by our unique position in Aotearoa New Zealand and the Asia-Pacific.

Fifty years of in-depth research, modelling, forecasting and international activity have shown that increasing concentrations of greenhouse gas (GHG) emissions caused by human activities threaten the life-supporting systems we need to survive and thrive into the future.

Anthropogenic climate change, if unchecked, will result in severe social, ecological, economic, and cultural impacts at local, regional, and global levels. It is the antithesis of fair, ethical, and sustainable societies and, the impacts are already manifested as an existential threat to our Pacific neighbours. In Aotearoa New Zealand, climate disruption presents a threat to our primary production and tourism sectors, our largely coastal urban and industrial areas and populations, our productive interface between land and sea, and our unique ecosystems and fragile native fauna and flora.

However, it is also clear that there are viable opportunities for reducing emissions, both from our own University activities and in supporting our wider community to reduce theirs, which we must embrace with urgency and responsibility.

Our underlying principles of kaitiakitanga, manaakitanga and whanaungatanga together with our values of respect and integrity, and excellence and service will guide and support us to achieve our taumata (vision) and fulfil our purpose, to embrace, achieve and model a net zero future. Our unique role and position within Aotearoa New Zealand and the Asia-Pacific will be reflected in the work and approach we take, the kōrero we share, and the partnerships and engagement we undertake.

Simon Neale

Manutaki Ratonga Whare Rawa | Director Property Services

Our Mission

To make an impactful and relevant contribution to addressing the challenges of climate change and lead by example in the transition to a net zero Aotearoa New Zealand.

Our Goals

1. To foster a climate and carbon conscious pīkautanga/ethos within our university community amplifying the positive transformation needed for all our futures
2. To achieve and sustain a net zero carbon trajectory for our university by 2030 that is consistent with limiting global warming to 1.5°C above pre-industrial levels

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1. Executive Summary

Te Taumata Tukuwaro-kore, the University of Auckland Net Zero Carbon Strategy 2022 has been developed from the foundation provided by Taumata Teitei, The University of Auckland Vision 2030 and Strategic Plan 2025, and supports the delivery of the University's Sustainability and Estate Strategies.

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2. The Role of Net Zero Carbon in addressing Climate Change

The need to reduce global greenhouse gas emissions, and to do so rapidly, is widely accepted and supported by strong evidence-based research. The science is clear and shows that global climate change has resulted from increased Green House Gas Emissions (GHGs) being released into the atmosphere from human activities, primarily within the last 40 years. The Intergovernmental Panel on Climate Change (IPCC) identifies the period of 2010-2019 as having the highest levels of GHG emissions in human history. The Panel calls for urgent and steep decarbonisation to retain a chance of limiting temperature rise below 1.5°C. The IPCC's advice led to reputable, evidence-based initiatives such as the *Science Based Targets initiative* (SBTi) developing pathways to guide organisations by requiring a 90-95% reduction in absolute emissions by 2050 to limit the global temperature rise to 1.5°C.

The proposed trajectory indicates that we must halve emissions by 2030 and reach net zero before 2050. Net zero is a state of balance, where emissions caused by human activity are balanced by removals over a specified period. Net zero is also commonly referred to as carbon neutrality as GHG emissions are expressed using single carbon equivalent (CO₂e) values for simplification. However, the introduction of SBTi's, international voluntary standards for validating net zero targets announced in late 2021, introduced a distinction between these terms. Neutrality, is, in many cases, the simple act of counterbalancing emissions with offsets, without necessarily making any of the steep and rapid reductions needed to stay within the 1.5°C limit. The standard was developed to harness the benefits of collective action within the private sector, prioritise reduction and avoid misleading use of neutrality claims. This in turn has enabled the University to better assess its own emissions trajectory.

Within Aotearoa New Zealand the Climate Change Response (Zero Carbon) Amendment Act 2019 set a target to meet the 2050 goal and contribute to global efforts to limit global warming to 1.5°C. In 2021 New Zealand launched a Carbon Neutral Government Programme (CNGP) requiring government agencies to achieve carbon neutrality by 2025 through reduction and residual offsetting. In its latest technical guidance, the CNGP has also stated alignment with SBTi's methodology for setting reduction targets for a 1.5°C pathway. We have developed this strategy fully aware of the important role we play in contributing to New Zealand's reduction pathway.

Our activities drive our emissions, this includes our travel, the products we buy, the goods and services we produce, the food we eat, and what we discard and waste. Accumulation of these emissions in the atmosphere then impacts our climate, which has wide-ranging consequences for our environment, our commitment to kaitiakitanga and Te Tiriti partnership, our community, our Pacific neighbours and all our futures. The University journey of assessing our activities and how they contribute to GHG emissions is already well under way, but there is still much urgent work to do, especially on the commitments, the level of ambition and actions required to reduce our University's emissions whilst also supporting

our wider community to a climate resilient future.

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3. Strategic Alignment

Taumata Teitei, the University of Auckland Vision 2030 and Strategic Plan 2025, gives a clear mandate and commitment to achieve a net zero carbon status and to publish meaningful metrics of the University's progress towards overall sustainability. This commitment is now also reflected in the development of Waipapa Taumata Rau's Te Rautaki Aronga Toitū, Sustainability Strategy and this Net Zero Carbon Strategy, and is supported by Te Rautaki Tūāpapa, the University's Estate Strategy 2021 – 2030. These strategies have been developed from extensive collaboration with our students, staff, alumni, and partners and are the foundation for Te Taumata Tukuwaro-kore. The critical commitments and actions we take towards decarbonisation will be recognised and valued by our communities for the contributions we are making towards a more sustainable future for all.

Te Taumata Tukuwaro-kore carries a strong message of integration and collaboration for the University community where alignment of all strategies and policies that set direction for our activities are central to the success of our net zero carbon ambition.

4. Our Climate Journey

The University has been increasingly focused on how our activities impact our ecosystems and since 1979 has made progressive improvements, enhanced the recording, analysis, and understanding of our activities and their emissions, and achieved significant milestones. These carbon related initiatives have progressed in three distinct phases.

4.1. Energy Efficiency and Conservation 1979 - 2012

Active interventions began in 1979, to improve energy conservation and efficiency of the University's buildings, with electricity, gas, and steam as the three energy sources. Hundreds of energy meters were installed to gather data from all buildings that are now used to support ongoing energy savings. Continual improvements have seen buildings powered down after hours, more efficient building operating plant, lighting, and equipment; light and motion sensors minimising energy use in empty or naturally lit rooms; computers, screens and printing equipment upgraded to power down when not in use; targeted cooling systems in data centres; and energy efficiency incorporated in building design, fit-out and operation. As a result of these efforts, our buildings started the progressive journey towards becoming more energy efficient.

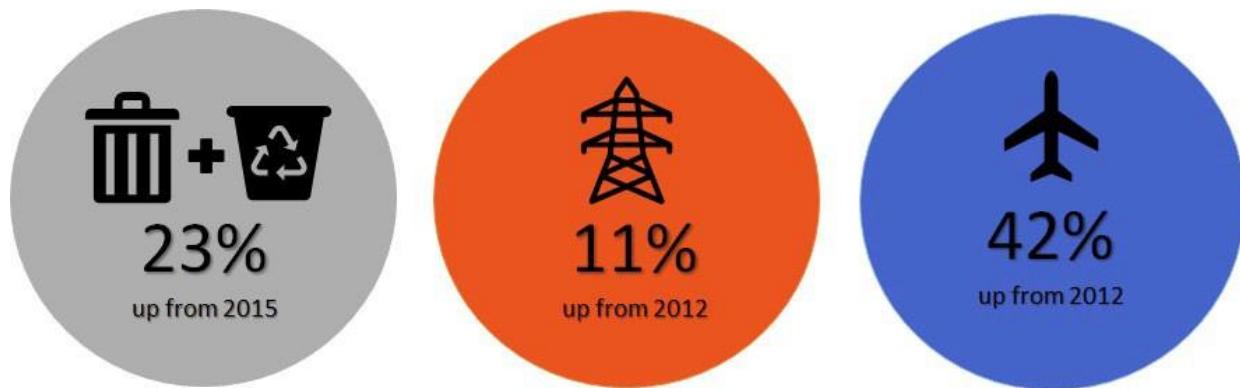
4.2. Initial Carbon Monitoring 2012 – 2019

From 2012 the University improved monitoring of energy and water utilisation and expanded the scope beyond a focus purely on buildings to include waste and recyclables, paper consumption and work-related air travel to build a more comprehensive and accurate picture of how our activities contributed to the University's overall carbon profile. This broader perspective acknowledged that direct energy consumption through our operations was not the only climate change driver from university activities, and that more attention was required to better understand other emissions sources and their relative GHG contributions.

The results of this enhanced monitoring programme demonstrated a progressive upward trend that, when assessed in absolute terms, strongly signalled that an urgent step change was required. This coincided with significant improvements in internationally recognised GHG monitoring and reporting methodologies, designed to provide a more holistic view of how organisations should assess their carbon contributions.

These results showed that between 2012 and 2019, the total waste (kg) increased by 23% whilst energy consumption (kWh) had increased by 11% and air travel (km) completed by the University had increased by 42%.

Image 1: Key Carbon Emission Trends 2012 - 2019



The 2012-2019 period included the University's largest capital works programme in its history, with an increase in the physical size of the university by 17% (gross floor area- GFA). Over the same period, student numbers increased by 5% (EFTS). The University's initial carbon monitoring initiatives limited the overall increases in energy consumption to 11%. However, the absolute increase in energy consumption in the context of the urgent need to address climate change highlighted the imperative for a step change in the university's approach.

4.3. Waipapa Taumata Rau Carbon Profile

In 2019 the University prepared its first GHG inventory in alignment with the latest international standard ISO 14064-1:2018 Greenhouse gases — (Part 1). This standard, launched in 2019, represented a step change in how organisations record and report their emissions. Previously, organisations seeking to understand and take action to reduce their carbon emissions were required to account only for their direct emissions (known as 'Scope' or 'Category' 1) or indirect emissions resulting from purchasing energy (known as 'Scope' or 'Category' 2). Best practice and international standards now require that carbon emissions be accounted for more comprehensively and include other indirect emissions (known as 'Scope 3' or 'Category' 3 to 6) which are related to products and services used by organisations as well as those from products and services the organisations provide to the community. To better understand the challenges and opportunities for organisations to reduce emissions, there is an expectation to take into consideration all categories when assessing activities and operations. Indirect emissions usually comprise most of the emissions for service sector organisations, including the public sector, mostly because of their transport related activities such as air travel and the use of goods and services in general.

In 2021 we completed internal and external audits, together with independent verification of the University's GHG Inventory Baseline 2019 to ISO14064-1:2018. This important milestone enabled us to direct our efforts and resources towards those activities and sources of GHG emissions that drive our carbon profile. The baseline learnings and analysis are a pre-requisite in the development of a set of well-informed commitments and an implementation pathway to achieve net zero status by 2030. This baseline establishes the emissions sources we can

immediately incorporate in our net zero carbon planning and identifies other sources that although significant, require data gathering improvements and the establishment of verified baselines to inform next steps. Rather than completely excluding the latter, Te Taumata Tukuwaro-kore takes a progressive approach by setting reduction targets as well as data gathering and monitoring as part of the pathway.

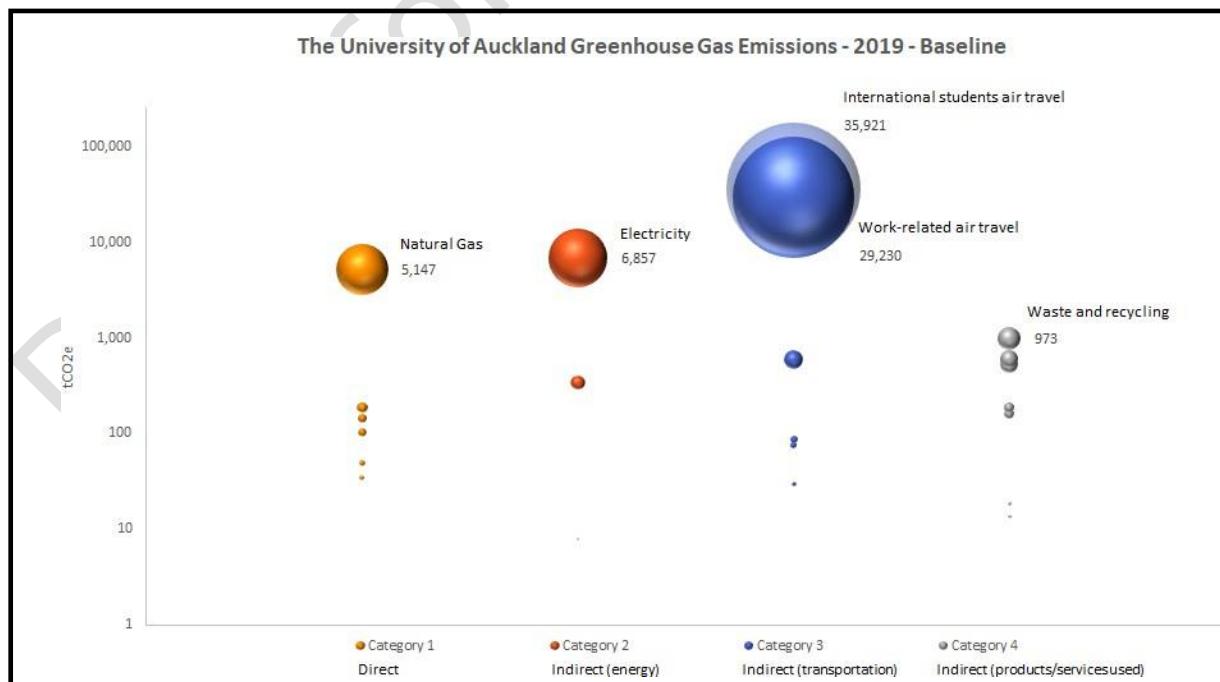
4.3.1. Greenhouse Gas Emissions Baseline 2019 – 2021

The University's 2019 verified carbon inventory (and therefore baseline) arising from activities under the University's operational control was 81,290 tCO₂e. Being under our operational control means that the University is directly able to introduce policies and procedures that will influence the quantity of resulting emissions from its operations and activities accounted for within the verified inventory.

The image below shows the relative contribution of the different emission sources by 'category' within our baseline inventory. The biggest contributing activity is air travel, with inbound international students and work-related air travel together producing over 80% of the University's GHGs. The next largest contributor is electricity producing 8% of GHGs, followed by natural gas at 6%. This was reflected in Te Rautaki Tūāpapa, the Estate Strategy 2021-2030, which recognised that 90% of the estate related emissions were due to our energy consumption in the form of electricity and natural gas.

As expected, the majority of the University's accounted emissions arise from indirect consumption, more specifically those related to transportation.

Image 2: University GHG Emissions 2019 Baseline Profile



The same data is shown in Table 1, with a further breakdown of these emission sources into specific activities within each category.

Table 1: University Emission Sources by Activity (2019 Baseline)

Source	Category	% of Total	tCo2e
Air travel (International Students inbound)	3	44.2	35,921
Air travel (work related staff and students)	3	36.0	29,230
Electricity	2	8.4	6,857
Natural Gas	1	6.3	5,147
Waste (landfill, recycling of 'bottles & cans' and 'paper')	4	1.2	973
Nat. Gas Transmission and Distribution (T&D) losses	4	0.7	603
Accommodation - domestic and international	3	0.7	592
Electricity distributed T&D losses	4	0.6	525
(purchased) Steam	2	0.4	341
Refrigerants and other gases	1	0.2	189
Wastewater	4	0.2	186
Paper use (reams)	4	0.2	163
Enteric Fermentation (livestock)	1	0.2	145
Diesel (mobile combustion)	1	0.1	103
Taxis	3	0.1	87
Rental Cars (diesel, hybrid, petrol)	3	0.1	75
Petrol (mobile combustion)	1	0.1	49
Diesel (stationary combustion)	1	0.0	35
Bus travel Tamaki intercampus service – discontinued	3	0.0	30
Composting (commercial kitchens food waste collection)	4	0.0	19
Water supply	4	0.0	14
Electricity Toitū carbonzero certified factor Ecotricity	2	0.0	8
Total		% of Total	81,290
Category 1 - Direct emissions		7%	5,667
Category 2 - Indirect emissions from imported energy		9%	7,206
Category 3 - Indirect emissions from transportation		81%	65,935
Category 4 - Indirect emissions from products/services used by the organisation		3%	2,482

*External Audit completed – Final Report and Assurance Certificate issued. We have a 2019 GHG inventory baseline and we are well placed among our university peer group.

4.4. Current Trends 2020-2021

Preliminary data for 2020 – 2021 shows a significant drop in emissions, which is almost entirely attributed to the disruption caused by the Covid-19 pandemic. During 2020, the University's emissions decreased approximately 78%, with work-related international and domestic air travel emissions down 90% and 58% respectively. These figures will be confirmed in Q4 2022 once auditing and verification of 2020and 2021 GHG inventories is completed.

Progress continues in reducing our reliance on 'fossil-fuel driven building plant' as we retire these assets from use. In addition, we retendered nearly half of the University's electricity supply contracts in 2021 and have secured at least 45% of our electricity with a status of certified 100% renewable for the next three years. This is an important step in signalling the University's commitment to achieving net zero carbon status and our support towards decarbonising the grid and the

phasing out of energy sources such as coal. We have also engaged with one of the few fully certified 'CarboNZero' providers in New Zealand to provide electricity sourced entirely from hydroelectric, solar and wind to our small sites. We expect to see the positive impacts of these changes reflected in reduced emissions for 2021 and beyond.

The formation of Te Rautaki Tūāpapa in 2021 provided significant commitments to sustainability and achieving a net zero carbon estate that will be a key component of our work ahead. These commitments included the undertaking of a review of space utilisation and allocation across the University, alongside campus masterplanning. Assessing how we use and share our spaces is critical in determining how large a physical footprint the University occupies, with flow on effects to our carbon profile and related climate change outcomes.

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5. Net Zero Carbon at Waipapa Taumata Rau

Actively responding to the strategic commitments of Taumata Teitei as well as United Nations Sustainable Development Goal 13's urgent call for 'Climate Action', the University of Auckland commits to achieve and sustain a net zero pathway and halve our emissions by the year 2030 to limit global temperature rise to 1.5 °C. We call this "Te Taumata Tukuwaro-kore – Net Zero Carbon Strategy", as *carbon* (technically carbon dioxide equivalent –CO₂e) is widely recognised to represent at least six categories of harmful greenhouse gases. Our pathway is aligned with IPCC's recommendations and internationally recognised SBTi trajectory as well as the reduction expectations of Aotearoa's Carbon Neutral Government Programme (2021). We prioritise emissions reduction and our efforts will actively recognise that University activities, directly or indirectly, produce GHG emissions that drive climate change.

Our duty to society also extends beyond actively reducing our emissions, internal carbon accounting, and publicly sharing our progress, to engaging with our community and our partners to support the development of a carbon and climate conscious society.

5.1. Principles for Our Net Zero Carbon Future

The University's pathway to net zero carbon is evidence based and follows key principles of transparency, accountability, and responsibility. We commit to ensuring that mana is enhanced by modelling efficient, effective, transparent, and climate-informed operations, services and practices, and that the built, non-built and digital environments transition to and support a net zero carbon University.

There are also four pillars upon which we build Waipapa Taumata Rau's net zero carbon future these are:

- Taumata Teitei | Vision 2030 and Strategic Plan 2025
- Waipapa Toitū | Our indigenous foundation and framework
- Te Rautaki Aronga Toitū | Sustainability Strategy
- Te Rautaki Tūāpapa | Estate Strategy 2021-2030

5.2. Our Commitments

To support the mission of Te Taumata Tukuwaro-kore and achieve its goals, the University will:

1. Take targeted, high-priority action to reduce major sources of carbon emissions identified in the GHG Inventory Baseline 2019 (work-related air travel, energy consumption and waste in all forms) and to progress work on the extended priorities and data improvement to ensure a comprehensive and impactful approach.
2. Develop and implement a system to account for carbon emissions across the University's activities and operations that includes the parameters, measures, and metrics of the verified GHG Inventory Baseline 2019.

3. Work alongside our iwi partners to develop and implement Te Taumata Tukuwaro-kore.
4. Work collectively across the five strategic portfolios identified in Taumata Teitei (Education and Student Experience, Research and Innovation, Partnerships and Engagement, Enabling our People and Culture, and Our Enabling Environment) to ensure carbon reduction plans are developed and implemented across all Faculties, Service Divisions, and Institutes by 2025.
5. Monitor and report progress to ISO14064-1:2018, complete external verification annually and publish the data.
6. Maintain integrity over time by ensuring all significant emission sources from the University's activities and operations are identified and included in the annual inventory.
7. Assess the University's potential contributions for carbon removal and storage and develop a well-informed, evidence-based carbon mitigation programme for -residual emissions and begin implementation in 2025.
8. Develop and implement a carbon literacy programme.
9. Engage with our University communities, alumni, and partners to build the positive traction needed to address climate change for all our futures.

5.3. Our Pathway to Net Zero Carbon

We will develop and implement a progressive pathway to net zero emissions. The targets we establish along this journey will take into consideration:

- The University's GHG Inventory Baseline 2019
- The emission sources that need to be incorporated in future monitoring
- The development of targets that will be impactful
- The alignment with international best practice and the emissions reduction expectations of the CNGP
- *Potential bullet: Sector specific guidance developments*

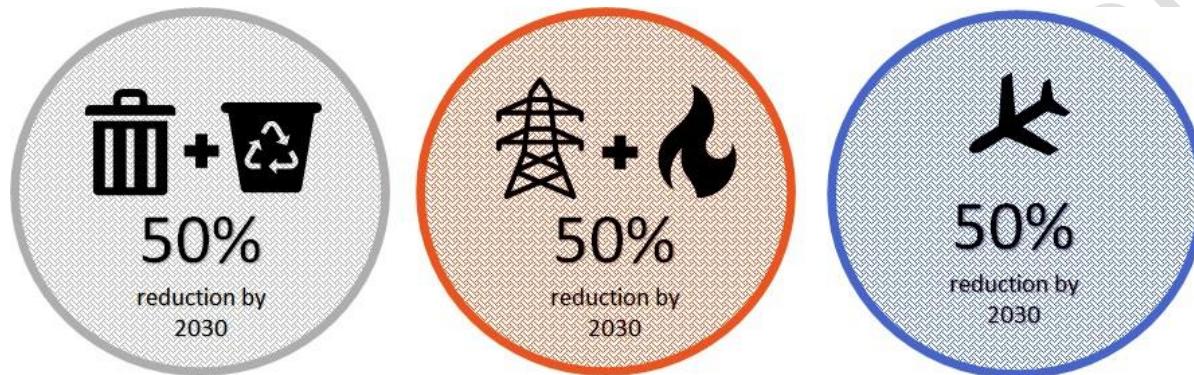
In accordance with international best practice our targets will be reviewed every 5-6 years, with the next review due in 2025 to ensure continuity of our progress and commitments.

5.4. Comprehensive approach to Net Zero Carbon

Waipapa Taumata Rau's contributions towards reducing emissions and addressing climate change will be impactful. We will construct our pathway starting with high standards of practice for measuring and reporting. We will develop a comprehensive and integrated approach to reducing our emissions that recognises the full significance of those emissions and acknowledges our positive contributions. In so doing, we will strengthen our relationships and partnerships to create new connections and instruments that enable tangible, visible, and positive effects in response to our collective net zero carbon efforts. We will show leadership and actively engage with our wider community through our carbon reduction programmes and the progress and learnings we share.

Our first priority will be to target the key emission sources identified in the 2019 GHG inventory baseline, these being: all forms of travel, the energy consumption and fossil fuels we need to keep our activities and operations thriving, and the waste arising from consumption at the University. These carry the highest and most urgent level of priority for our carbon reduction efforts. For these, we set a 50% reduction target by 2030 which will be operationalised by the development and activation of implementation plans during 2023.

Image 3: Priority Reduction Targets



Our second priority is to target those sources which extend our GHG inventory. Some of these are very prominent in our carbon profile, like air travel of our international students and waste from construction and demolition activity, and require data improvements to be confidently quantified in the inventory. These improvements are closely related to our internal and external partnerships and the instruments, processes, systems, and connections we collaborate in. For these sources initial work will commence in 2022.

The third priority is to target those activities for which no data has yet been gathered. Here, we actively recognise that key activities that shape the University's environment and community, such as the development of our physical estate, our information and communication technology and on campus food operations, result in significant amounts of GHG emissions which are unquantified to date. Our efforts towards addressing these activities will start in 2023 by establishing a system to understand their profile and assess the best approach for improvement. We will support and embrace the importance of 'place', the ability to connect socially and academically and, opportunities to engage and interact with others within our university community. This work will link with the planned campus masterplanning work and the Future of Space review which is currently underway reviewing space utilisation and allocation across the University.

Table 2 summarises our progressive pathway to net zero emissions including the approach to mitigation



Table 2: Progressive Pathway to Net Zero Emissions.

Ambition level	Source	2022	2023	2024	2025	2030
Net Zero boundary (GHG baseline 2019)	Travel (work related) Energy Waste (landfill and recycling)	Develop Implementation Plan	Launch implementation plan		25 % Reduction Target	50% Reduction Target
Extended Net Zero boundary (GHG baseline 2019 gaps)	Travel (international students inbound) Waste – construction and demolition Working from home Staff and student commuting Freight and couriers	Start/improve data gathering	Improve baseline Establish baseline	Set Targets Add to implementation plan		Achieve target set in 2024
Data improvement, monitoring (2025 target review cycle)	Embodied Carbon (from materials) Information and Communication Technology Food on campus		Start data gathering	Assess significance	Set targets / develop implementation plan	Achieve targets set in 2025
Mitigation programme for residual emissions	Mitigation boundary	Establish mitigation boundary	Develop a well-informed, evidence-based carbon mitigation programme		Begin mitigation programme	Achieve Net Zero Trajectory Status

6. Delivering on our Net Zero Carbon Commitments

Te Taumata Tukuwaro-kore establishes the University's emission and climate change position and affirms the strategic direction towards decarbonisation and the development of our net zero carbon pīkautanga. Supported by strong governance and close alignment with all related strategies, this strategy will see net zero carbon commitments factored within strategic priorities across Waipapa Taumata Rau. Together we will face the challenges presented to us.

6.1. Our Strategic Priorities and Measures of Success

Our journey to date informs Te Taumata Tukuwaro-kore, strategic enablers empower us to focus on our key challenges. Our net zero challenge will touch all aspects of university life, including teaching and learning, research, working on and off-campus, developing our estate, travelling for work and education, living on campus, hosting events, and looking after the health and well-being of our university communities.

We have identified a set of priority focus areas to address these challenges and fulfil our net zero carbon 2030 commitments. These are:

- **Strategic alignment:** how we work together to ensure Te Taumata Tukuwaro-kore is well aligned and implementation is coordinated across all University's strategic priorities and partnerships.
- **Investment and building capability:** how we plan and develop systems and allocate resources to support an ongoing decarbonisation programme and implement reporting mechanisms including those related to climate change risk and adaptation.
- **Travel:** how we plan for our needs for all travel and commuting.
- **Energy and fuels:** how we plan for, procure, conserve, and use all energy sources and fuels including electricity, gas, steam, fuels for plant and equipment, and fleet.
- **Waste prevention and the 'circular economy' approach:** how we plan for and procure what we consume, including our food on campus, what our suppliers and on-site partners provide, and how we plan to address any unused or unwanted resources and prevent waste.
- **Biodiversity, carbon removal and storage:** how we embrace and improve our biodiversity and how we harness opportunities for carbon removal and storage within our estate and communities.
- **Our physical space:** the development of our campuses will be shaped by the work we do through "The Future of Space" project and campus masterplanning to ensure that the campuses are efficient and rightsized for university activities.
- **Digital environment:** how we ensure the digital infrastructure supports the net zero carbon trajectory.
- **Communication and Engagement:** how we communicate and engage

with our university communities, tangata whenua and beyond and how we ensure our progress is accessible and transparent

The measures and metrics of ISO140641-2018 specified in section 4.3 above will guide the implementation of our Net Zero Carbon Strategy at all levels of the institution, including across leadership units, faculties, institutes, and service divisions. These carbon specific measures and metrics will in turn be part of a wider framework, Waipapa Taumata Rau's integrated standard for sustainability reporting. This standard will guide us through implementation efforts and help internalise overall sustainability considerations focusing on developing capacity by establishing relationships, systems, and mechanisms for accountability and reporting.

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GLOSSARY

Term	Definition
Carbon Pool	A reservoir. A system which has the capacity to accumulate or release carbon. Examples of carbon pools are forest biomass, wood products, soils, and atmosphere. See carbon storage.
Carbon Removal	Withdrawal of GHGs from the atmosphere as a result of deliberate human activities. These include enhancing biological sinks of CO ₂ and using chemical engineering to achieve long-term removal and storage
Carbon Storage	The process of storing carbon in a carbon pool.
CNGP	Carbon Neutral Government Programme, New Zealand
Direct Emissions	Direct GHG emissions from sources within organizational boundaries under its direct control or ownership. Sources can be stationary (e.g., heaters, electricity generators, industrial process) or mobile (e.g., vehicles)
GFA	Gross Floor Area
GHG Emissions	Emissions resulting from the release of GHGs
Greenhouse Gases (GHG)	Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic that cause a greenhouse effect.
GHG inventory	Quantification of GHG emissions covered under the Kyoto Protocol and monitored using ISO14064-1:2018 (carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), nitrogen trifluoride (NF ₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphurhexafluoride (SF ₆). These are calculated separately and converted to a single value expressed as CO ₂ e (carbon dioxide equivalent) using their global warming potential (GWP) for 100 years.
Indirect Emissions	Indirect GHG emissions are a consequence of an organisation's operations and activities but arise from GHG sources that are not owned or controlled by the organisation
IPCC	Intergovernmental Panel on Climate Change
ISO 14064-1:2018 Greenhouse Gases – (Part 1)	Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals
(emissions) mitigation	A technology or practice that reduces GHG emissions or enhances sinks.
SBTi	Science Based Targets initiative
SDG	United Nations Sustainable Development Goals
Taumata Teitei	The University of Auckland's Vision 2030 and Strategic Plan 2025
Te Rautaki Aronga Toitū	The University of Auckland's Sustainability Strategy
Te Rautaki Tūāpapa	The University of Auckland's Estate Strategy 2021-2030
Te Taumata Tukuwaro-kore	The University of Auckland's Sustainability Strategy
T&D (losses)	Transmission and Distribution losses. As electricity travels through power lines, a proportion of energy

	is lost as heat due to the resistance in the lines.
tCO ₂ e	Metric tonne of Carbon Dioxide Gas equivalent. See GHG Inventory
Waipapa Taumata Rau	The gifted name for the University of Auckland
Waipapa Toitū	Our indigenous foundation and framework
Net Zero	(Human caused) greenhouse gas emissions are balanced by(human driven) greenhouse removals over a specified period. Net-zero GHG emissions must be achieved at the global level to stabilize temperature increase and limit warming to 1.5 °C. This involves steep reduction trajectories. Organisations in the private sector can validate their net zero targets through the SBTi Net Zero Standard.
Carbon Neutral	(Human caused) CO ₂ emissions are balanced by (human driven) CO ₂ removals over a specified period. The term does not imply steep reduction trajectories and may only be used within the context of counterbalancing emissions with offsetting. The SBTi Standard does not validate carbon neutrality claims.

Source: IPCC, ISO14064-1:2018, OECD, MfE, SBTi, CNGP, EA