



ORGANISATION AUDIT REPORT

Toitū carbonreduce certification programmes Verification



Organisation:

Waipapa Taumata Rau | The University of Auckland

Lead Auditor	Neil Gilbert
Team members	Jasneet Johal, Laura Evans
Verification firm	Constantia Consulting
Contact details	neil@constantiaconsulting.net +64 21 997 994
Client Contact	Maria Baldoni
Contact details	maria.baldoni@auckland.ac.nz +64 9 923 1728
Report date	19 September 2023
Report reviewed by	Ana Tatana, Toitū Envirocare, 7 November 2023

AUDIT OBJECTIVES

The objective of the audit was to determine if the organisation's GHG measurement (emissions data and calculations), GHG emissions management and reductions and marketing meets the criteria for Programme certification.

RESPONSIBILITIES

The responsible party is responsible for the preparation and fair presentation of the GHG statement in accordance with the criteria.

The verifier is responsible for expressing an opinion on the GHG statement based on the verification activities undertaken.

AUDIT CRITERIA AND SCOPE

The audit criteria and scope are detailed in the following table:

Audit criteria	Programme Technical Requirements 3.1, Certification Mark Guide v 3.0, Technical requirements Audit v3.0, ISO 14064-1:2018, ISO 14064-3:2019
Audit date	08 and 09/05/2023
Reporting year	01/01/2022 to 31/12/2022
Base year	01/01/2019 to 31/12/2019
Consolidation methodology	Operational control
Materiality threshold	5%
GHG statement (certification claim)	Toitū carbonreduce organisation certified: The University of Auckland including Auckland Uniservices Limited, all campuses and operational emissions. Toitū carbonreduce certified means measuring emissions to ISO 14064-1:2018 and Toitū requirements; and managing and reducing against Toitū requirements.
Intended users	The inventory is intended for use by the members of the Sustainable Estate and Operations Working Group and Governance Group, and the wider community of Waipapa Taumata Rau.
Registered office address	The University of Auckland Private Bag 92019 Auckland 1142 New Zealand 22 Princes St, Auckland, New Zealand
Locations visited	None - remote audit
Audit Type	Verification only
Activities undertaken remotely	Where audit activities have been undertaken using remote/ICT based approaches, it is confirmed that the methods used allowed all relevant audit activities to be undertaken effectively.

CONCLUSION

The following total emissions have been verified:

Emissions summary by scopes	All verified emissions	Mandatory Programme Boundary	Additional emissions	Units
Category 1	5,485.52	5,485.52		tCO ₂ e
Category 2	5,432.63	5,432.63		tCO ₂ e
Category 3	35,181.44	9,963.88	25,217.56	tCO ₂ e
Category 4	1,276.34	1,002.63	273.71	tCO ₂ e
Total inventory:	47,375.94	21,884.66	25,491.27	tCO₂e
Emissions intensity:	34.01	15.71		tCO ₂ e/\$M ¹

An assessment of materiality was made against the defined threshold. From this analysis it is concluded that the stated emissions are free from material error.

This is the fourth year of reporting under the Toitū carbonreduce programme. An absolute reduction in Category 1 and 2 emissions of 2,896.23 tCO₂e has been achieved against base year. A reduction in emissions intensity (for Category 1, 2 and mandatory Category 3 and 4 emissions) of 14.92 tCO₂e/\$M has been achieved based upon a 4-year rolling average, adjusted for inflation.

SCOPE AND BOUNDARIES

The scope of the emissions inventory includes all activities within the operational boundaries of The University of Auckland, including but not limited to all business units. It is noted that there are a range of activities that have previously been shown to be *de minimis* or for which no data is currently available, therefore these are excluded from the scope of the inventory. These include but are not limited to:

- Staff and student commuting
- Construction and demolition work
- Products and services <\$99,000
- Reimbursement of staff accommodation costs
- Special wastes e.g. chemicals or batteries

VERIFICATION PROCEDURES

Verification evidence-gathering procedures for the stated emission sources are as follows:

Verification Level	Emissions sources
<p>Detailed review: Verification from reported emissions back to actual source data in accordance with the appropriate data sampling protocols (checking supplier or other source data, calculations, scope and boundaries of data, date ranges, emissions factors and key assumptions). The extent to which the verification was conducted varied depending on level of controls noted at the emission source level.</p>	<p>Natural Gas distributed commercial Electricity Air travel long haul (average) Air travel long haul (econ)</p>
<p>Limited review (Sense checks): Professional judgment that the reported emissions are of the correct order of magnitude; that all emissions factors are correct; that stated <i>de minimis</i> sources are appropriately justified. The</p>	<p>Accommodation All other Air travel Bus Travel All other Electricity</p>

¹ Not adjusted for inflation. Adjusted values available upon request.

Verification Level	Emissions sources
extent to which the verification was conducted varied depending on level of controls noted at the emission source level.	T&D losses Diesel, Petrol Diesel stationary combustion LPG stationary commercial Freight Rental car, Taxi Working from home Water supply, wastewater Waste disposal Waste Landfill Composting Incineration of clinical waste Decontamination of medical waste CH4, CO2, N2O, Dry ice, Acetylene Refrigerants Enteric Fermentation Dairy Cattle Enteric Fermentation Sheep Paper use

AUDIT SUMMARY

The audit was conducted in accordance with the Programme Verification Guidelines including ISO 14064-3:2019 and the Verification and Sampling Plan.

As part of the audit, the below criteria/documents were reviewed:

Criteria/documents	Status
Organisational boundaries	Meets scheme requirements.
Application of the accounting principles	Meets scheme requirements.
Emissions Inventory and Management report: part 1	Meets scheme requirements.
Emissions Inventory and Management report part 2	Meets scheme requirements.
Use of the Toitū carbonreduce programme logo	Meets scheme requirements.
The requirement to maintain a complaints procedure	Meets scheme requirements.
Purchase of renewable energy certificates meets programme criteria for target setting/offsetting	Yes.
Success of remote audit process (where relevant)	Where audit activities have been undertaken using remote/ICT based approaches, it is confirmed that the methods used allowed all relevant audit activities to be undertaken effectively.

A total of 4 minor non-conformances and 1 observation were raised during this visit. Full details of the findings are given in the findings log below.

Using our Data Quality Assessment tool for analysing data against completeness and assumed uncertainty an inventory “quality” can be classified as follows:

- High
- Good
- Fair
- Poor

From the analysis conducted your inventory is classified as: Good

Certification to Toitū carbonreduce programme “certified organisation” is recommended. This is not subject to any further client actions.

CONCLUSION

Please refer to the separate Audit Opinion document for further information. The certification claim, along with the assurance level and any qualifications raised summarises the result of the audit process.

Level of Assurance	Reasonable for Category 1, 2 and Category 3 work related air travel Limited for remaining category 3 and category 4
Qualifications	The opinion is unmodified.

FINDINGS LOG

Date issued:	9/05/2023
Verifier:	Neil Gilbert
Company issued to:	Waipapa Taumata Rau The University of Auckland

A finding marked NCR must be corrected before audit can be closed out, unless otherwise approved by the Programme
A finding marked mNCR is not required to be corrected for this verification, but may need to be addressed/checked for your next inventory, or it may become a NCR. You may voluntarily correct a mNCR for completeness
A finding marked Obs is an observation or recommendation from the verifier that may be helpful to you
--- corrective actions are expected to be closed out within 15 days of the date raised---

Ref #	Issue	Status	Type	Comments / Agreed Corrective Actions	Date closed	Evidence sighted to close out the issue where corrective action required.
mNCR1	IMR updates 1. Review your commentary in your inventory report relating to reduction movements and reference to inventory to ensure that commentary aligns with audited numbers. 2. Table 8. Actions marked with a 2019 completion date could be updated.	Closed	mNCR	IMR to be updated accordingly.	28/06/2023	IMR updated.
mNCR2	Electricity Incorrect inclusion of reactive energy (kVArh) for Meridian. Should include only active energy (kWh). Overstatement of 4.65tCO ₂ e resulting in a variance of - 0.01% of the total inventory.	Closed	mNCR	Optional to update eManage.	28/06/2023	Updated in Emanage.
mNCR3	Water Supply Missing Oct - Dec data from Whangarei district council. Estimation could be made	Closed	mNCR	Optional to update eManage.	28/06/2023	Updated in Emanage.

Ref #	Issue	Status	Type	Comments / Agreed Corrective Actions	Date closed	Evidence sighted to close out the issue where corrective action required.
	if unable to get source data. Likely a very small variance.					
mNCR4	<u>Electricity - Ecotricity data</u> Annual report from Ecotricity arrived during audit. Reviewed by client. It was noted that the electricity use for one building had not been included in the inventory. Not material.	Closed	mNCR	Optional to update eManage.	28/06/2023	Updated in Emanage.
OBS1	<u>Refrigerants & Gasses</u> To multiply value by the number of units to get total values if using the detailed BOC file as that is not included originally.	Open	Obs	For the client to consider		

NOTES

1. The detailed audit findings and calculations are given in the Verification Plan and Working Papers associated with this audit. These contain proprietary verification methodologies and remain confidential to Toitū Envirocare.
2. The audit is based upon sampling and as such nonconformities may exist that have not yet been identified.
3. We have reviewed the company's GHG emissions inventory for the period. The inventory is based on historical information which is stated in accordance with the requirements of ISO 14064-1:2018 and the scheme Technical Requirements.
4. The scope of the review was limited to personnel interview, analytical review procedures applied to GHG emissions data, and review of the input of data into the emissions inventory. Based on our review the inventory is compliant with the requirements of ISO 14064-1:2018.
5. A **non-conformance (NCR)** indicates that the auditor has found a non-conformance with scheme Technical Requirements (audit criteria) and requires you to take the appropriate corrective action and provide evidence of this correction within two weeks. This may require resubmission of an updated Emissions Inventory and Management report.
6. A **minor non-conformance (mNCR)** which the auditor has found which is not material to the outcome of the inventory, but to which a failure to address in the preparation of future inventories could lead to a major Non-Conformance (NCR).
7. **Observations** made by your auditor are strongly advised but the actions are not required for the organisation to be recommended for certification.
8. Neither Toitū Envirocare nor the auditor has any interest in the organisation, other than in our capacity as assurance providers. We have not carried out any work with this business prior to this review other than conducting the previous verification.
9. This report has been prepared solely for the use of the organisation and Toitū Envirocare as part of an application for Toitū carbonreduce certification. It may be relied on solely by the organisation and Toitū Envirocare for that purpose only. Toitū Envirocare does not accept or assume any responsibility to any person other than the organisation in relation to the statements or findings expressed or implied in this report.
10. Any correspondence regarding this audit report should be directed to your Lead Auditor.
11. A copy of this report has been provided to the nominated client contact.
12. A copy of this report may be made available to intended users upon request.



GREENHOUSE GAS EMISSIONS INVENTORY AND MANAGEMENT REPORT

Toitū carbonreduce programme

Prepared in accordance with ISO 14064-1:2018 and the Technical Requirements of the Programme



Waipapa Taumata Rau | The University of Auckland

Prepared by (lead author): María José Baldoni, Associate Director, Sustainable Estate and Operations

Dated: 19 October 2023

Verification status: Reasonable for Category 1, 2 and Category 3 work related air travel, Limited for remaining category 3 and category 4

Measurement period: 01 January 2022 to 31 December 2022

Base year period: 01 January 2019 to 31 December 2019

Approved for release by:

A purple ink signature of Simon Neale.

Simon Neale, Chief Property Officer



DISCLAIMER

The template has been provided by Enviro-Mark Solutions Limited (trading as Toitū Envirocare). While every effort has been made to ensure the template is consistent with the requirements of ISO 14064-1:2018, Toitū Envirocare does not accept any responsibility whether in contract, tort, equity or otherwise for any action taken, or reliance placed on it, or for any error or omission from this report. The template should not be altered (i.e. the black text); doing so may invalidate the organisation's claim that its inventory is compliant with the ISO 14064-1:2018 standard.

This work shall not be used for the purpose of obtaining emissions units, allowances, or carbon credits from two or more different sources in relation to the same emissions reductions, or for the purpose of offering for sale carbon credits which have been previously sold.

The consolidation approach chosen for the greenhouse gas inventory should not be used to make decisions related to the application of employment or taxation law.

This report shall not be used to make public greenhouse gas assertions without independent verification and issue of an assurance statement by Toitū Envirocare.

AVAILABILITY

This report is available to support the implementation of Te Taumata Tukuwaro-kore, the University's Net Zero Carbon Strategy 2022

REPORT STRUCTURE

The Inventory Summary contains a high-level summary of this year's results and from year 2 onwards a brief comparison to historical inventories.

Chapter 1, the Emissions Inventory Report, includes the inventory details and forms the measure step of the organisation's application for Programme certification. The inventory is a complete and accurate quantification of the amount of GHG emissions and removals that can be directly attributed to the organisation's operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with the requirements of the Programme¹, which is based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and ISO 14064-1:2018 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals². Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

Chapter 2, the reduction plan and progress report, forms the manage step part of the organisation's application for Programme certification.

See Appendix 1 and the related Spreadsheet for detailed emissions inventory results, including a breakdown of emissions by source and sink, emissions by greenhouse gas type, and non-biogenic and bio-genic emissions. Appendix 1 also contains detailed context on the inventory boundaries, inclusions and exclusions, calculation methodology, liabilities, and supplementary results.

This overall report provides emissions information that is of interest to most users but must be read in conjunction with the inventory workbook for covering all of the requirements of ISO 14064-1:2018.

¹ Programme refers to the Toitū carbonreduce, Toitū net carbonzero and the Toitū climate positive programmes.

² Throughout this document 'GHG Protocol' means the *GHG Protocol Corporate Accounting and Reporting Standard* and 'ISO 14064-1:2018' means the international standard *Specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

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EXECUTIVE SUMMARY

This is the annual greenhouse gas (GHG) emissions inventory and management report for Waipapa Taumata Rau | The University of Auckland covering the measurement period 01 January 2022 to 31 December 2022.³

This report is part of the overall Sustainable Estate and Operations work programme established in 2021, to oversee the development and implementation of Taumata Tukuwaro kore | Net Zero Carbon Strategy. Although 2022 is the first year since the baseline that results were not so severely skewed by the effects of 'Covid-19', it is anticipated that 2023 results will begin to show trends more accurately. The University's emissions in 2022 are 43% lower than in 2019 and still on track to be able to meet the 2025 and 2030 milestones set in the Net Zero progressive pathway. The success will depend upon efforts not to continue with the 2021 (Covid-19 results year) to 2022 upward trend observed, especially in work-related travel. In 2022, air travel accounted for most carbon emissions. Out of a total of 47,375.94 tCO₂e, 21% were as a result of work-related air travel and another 52% the result of international students air travel. Despite this anticipated upward trend, it is important to note that in 2022, work related air travel involved almost 60% less kilometres traveled and produced 66% less emissions than in 2019. The time lag between the border restrictions being lifted and a return to activities on campus and resulting international activity is understood to be the main reason for this reduction. Freight and 'Working From Home' (WFH) data have been added to the inventory and methodology for data collection and are in early stages of reporting maturity. In October 2022, the University increased the portion of certified carbon zero electricity supply to ~50% and continued to utilise Renewable Energy Certificates (RECs) for the remaining electricity. Overall, the emissions resulting from energy and fuel were 39% lower than the baseline. The University has continued to prioritise and monitor emission reduction projects that support the net zero carbon strategy. One project of note for 2022 was the B201 (Building 201, 10 Symonds Street) project that achieved a 6-star Green Star Design Rating. Once the building is in operation, it is expected to generate 70% less emissions from fossil fuel-use compared to a conventional building and 80% less refrigerants leakage. It will also consume 75% less water through efficient fixtures and rainwater harvesting.

Table 1: Inventory summary

Category (ISO 14064-1:2018)	Scopes (ISO 14064- 1:2006)	2019	2021	2022
Category 1: Direct emissions	Scope 1	5,667.38	5,426.74	5,485.52
Category 2: Indirect emissions from imported energy (location-based method*)	Scope 2	8,066.06	7,865.56	5,432.63
Category 3: Indirect emissions from transportation	Scope 3	65,935.12	1,906.21	35,181.44
Category 4: Indirect emissions from products used by organisation		2,799.14	1,461.75	1,276.34
Category 5: Indirect emissions associated with the use of products from the organisation		0.00	0.00	0.00
Category 6: Indirect emissions from other sources		0.00	0.00	0.00
Total direct emissions		5,667.38	5,426.74	5,485.52
Total indirect emissions*		76,800.31	11,233.52	41,890.42
Total gross emissions*		82,467.70	16,660.26	47,375.94
Category 1 direct removals		0.00	0.00	0.00
Purchased emission reductions		0.00	0.00	0.00
Total net emissions		82,467.70	16,660.26	47,375.94

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.

³ Throughout this document "emissions" means "GHG emissions".

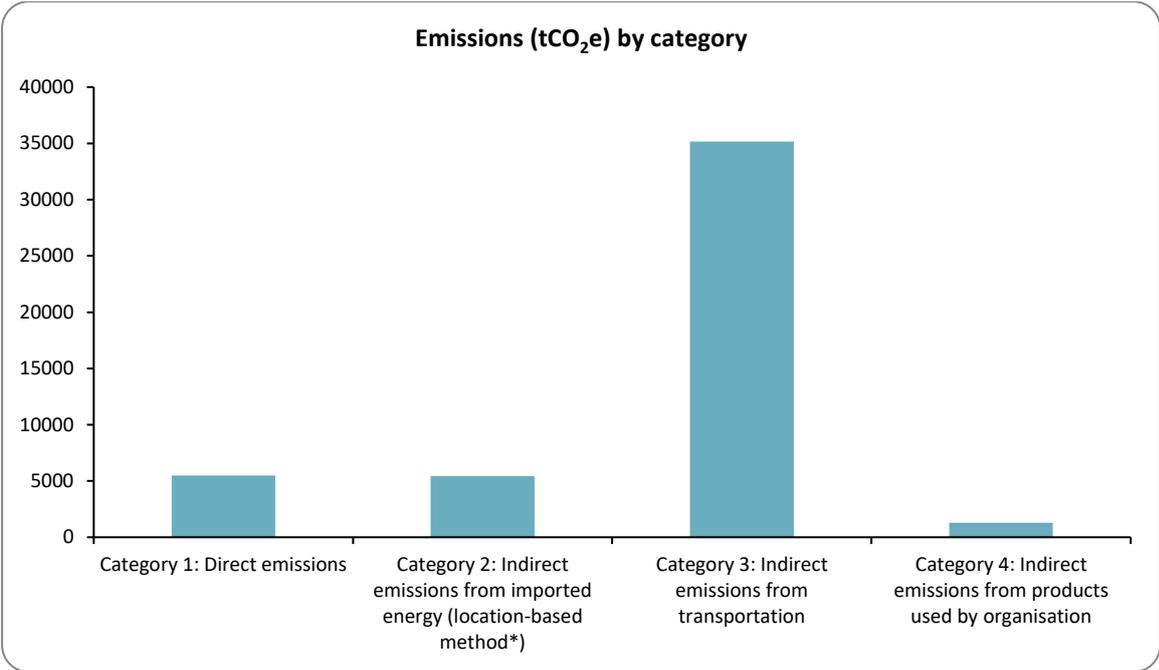


Figure 1: Emissions (tCO₂e) by Category for this measurement period

CHAPTER 1: EMISSIONS INVENTORY REPORT

1.1. INTRODUCTION

This report is the annual greenhouse gas (GHG) emissions inventory and management report for Waipapa Taumata Rau | The University of Auckland.

The overall purpose of this report is to support the implementation of Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy and associated Sustainable Estate and Operations initiatives and plans. The main objective is to identify the Greenhouse Gas emissions profile of the University in a manner that is consistent with best practice and latest international standards.

The inventory report and any GHG assertions are expected to be verified by a Programme-approved, third-party verifier. The level of assurance is reported in a separate Assurance Statement provided to the directors of the certification entity.

1.2. EMISSIONS INVENTORY RESULTS

Table 2: GHG emissions inventory summary for this measurement period

Measurement period: 01 January 2022 to 31 December 2022.

Category	Toitū carbon mandatory boundary (tCO ₂ e)	Additional emissions (tCO ₂ e)	Total emissions (tCO ₂ e)
Category 1: Direct emissions	5,485.52 Acetylene use, CH ₄ , CO ₂ , Diesel stationary combustion, Diesel, Enteric Fermentation Sheep, HCFC-22 (R-22, Genetron 22 or Freon 22), LPG stationary commercial, Natural Gas distributed commercial, Petrol, R-404A, R-410A	0.00	5,485.52
Category 2: Indirect emissions from imported energy (location-based method*)	5,432.63 Electricity Toitū carbonzero certified factor Ecotricity, Electricity Toitū carbonzero certified factor Prime Energy, Electricity, Steam generation - Pre-calculated (tCO ₂ e)	0.00	5,432.63
Category 3: Indirect emissions from transportation	9,963.88 Air travel domestic (average), Air travel domestic (large aircraft), Air travel domestic (medium aircraft), Air travel domestic (small aircraft), Air travel long haul (business), Air travel long haul (econ), Air travel long haul (econ+), Air travel short haul (average), Air travel short haul (econ), Air travel short haul b/f class, Freight Air travel Domestic (average), Freight Air travel long haul (average), Freight Air travel short haul (average), Freight Road all trucks (average), Freight Road van (average), Rental Car average (diesel), Rental Car average (hybrid), Rental Car average (petrol), Rental Car EV - average, Taxi (regular)	25,217.56	35,181.44

Category	Toitū carbon mandatory boundary (tCO ₂ e)	Additional emissions (tCO ₂ e)	Total emissions (tCO ₂ e)
		Accommodation - Australia, Accommodation - Austria, Accommodation - Belgium, Accommodation - Canada, Accommodation - Chile, Accommodation - China (Hong Kong), Accommodation - Czech Republic, Accommodation - Fiji, Accommodation - Finland, Accommodation - France, Accommodation - French Polynesia, Accommodation - Germany, Accommodation - Greece, Accommodation - India, Accommodation - Indonesia, Accommodation - Ireland, Accommodation - Italy, Accommodation - Japan, Accommodation - Malaysia, Accommodation - Netherlands, Accommodation - New Zealand, Accommodation - Portugal, Accommodation - Singapore, Accommodation - South Korea, Accommodation - Spain, Accommodation - Switzerland, Accommodation - Taiwan, Accommodation - Thailand, Accommodation - Turkey, Accommodation - United Arab Emirates, Accommodation - United Kingdom, Accommodation - United States, Air travel long haul (average), Air travel short haul (average), Working from home	
Category 4: Indirect emissions from products used by organisation	1,002.63 Decontamination of medical waste - Autoclaving, Electricity distributed T&D losses, Electricity Toitū carbonzero certified factor Ecotricity (T & D losses), Electricity Toitū carbonzero certified factor Prime Energy (T & D losses), Incineration of clinical waste, Natural Gas distributed T&D losses, Waste landfilled - Hampton Downs, Waste landfilled LFGR Mixed waste	273.71 Composting, Dry ice, Paper use - default, Waste disposal recycling of Aluminium, Waste disposal recycling of Glass, Waste disposal recycling of Paper, Waste disposal recycling of Plastic, Waste disposal recycling of Steel cans, Wastewater for treatment plants (average), Water supply	1,276.34
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00	0.00
Total direct emissions	5,485.52	0.00	5,485.52

Category	Toitū carbon mandatory boundary (tCO ₂ e)	Additional emissions (tCO ₂ e)	Total emissions (tCO ₂ e)
Total indirect emissions*	16,399.14	25,491.27	41,890.42
Total gross emissions*	21,884.66	25,491.27	47,375.94
Category 1 direct removals	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00
Total net emissions	21,884.66	25,491.27	47,375.94
Emissions intensity		Mandatory emissions	Total emissions
Built environment (gross tCO ₂ e / m ²)		0.032	0.069
Equivalent Full Time Student (gross tCO ₂ e / per FTE per annum)		0.61	1.32
FTE & EFTS - Full-time employees and Equivalent full-time students combined (gross tCO ₂ e / per FTE per annum)		0.52	1.13
Full Time Employee (gross tCO ₂ e / per FTE per annum)		3.58	7.75
Operating revenue (gross tCO ₂ e / \$Millions)		15.71	34.01

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.

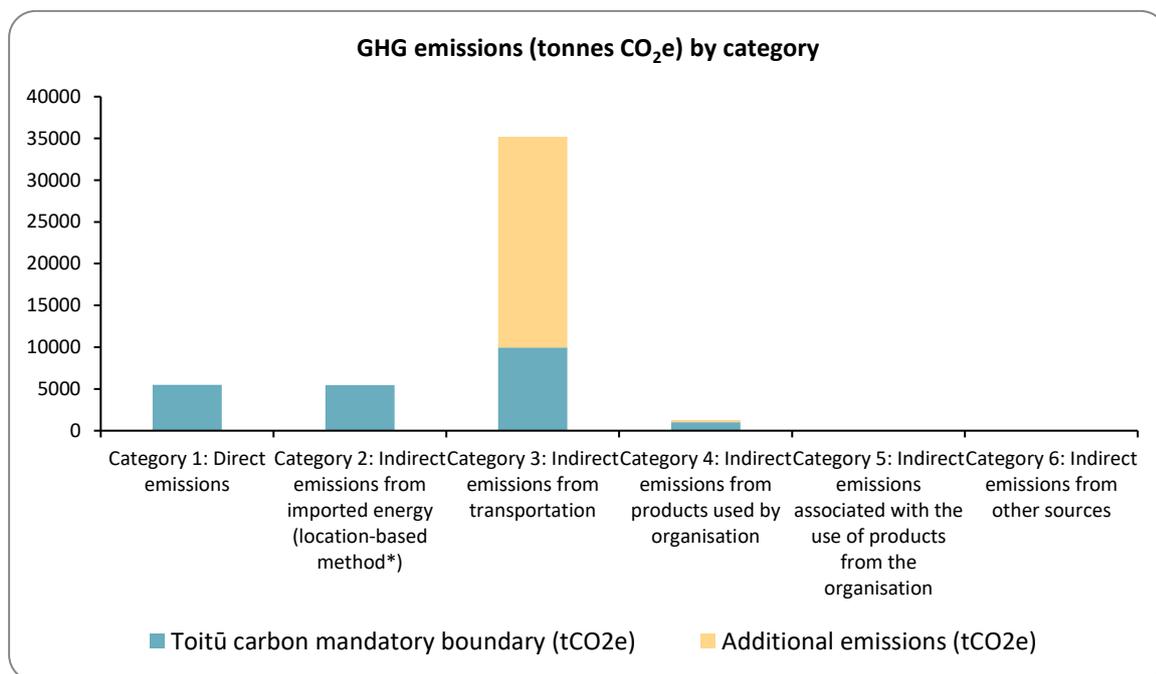


Figure 2: GHG emissions (tonnes CO₂e) by category

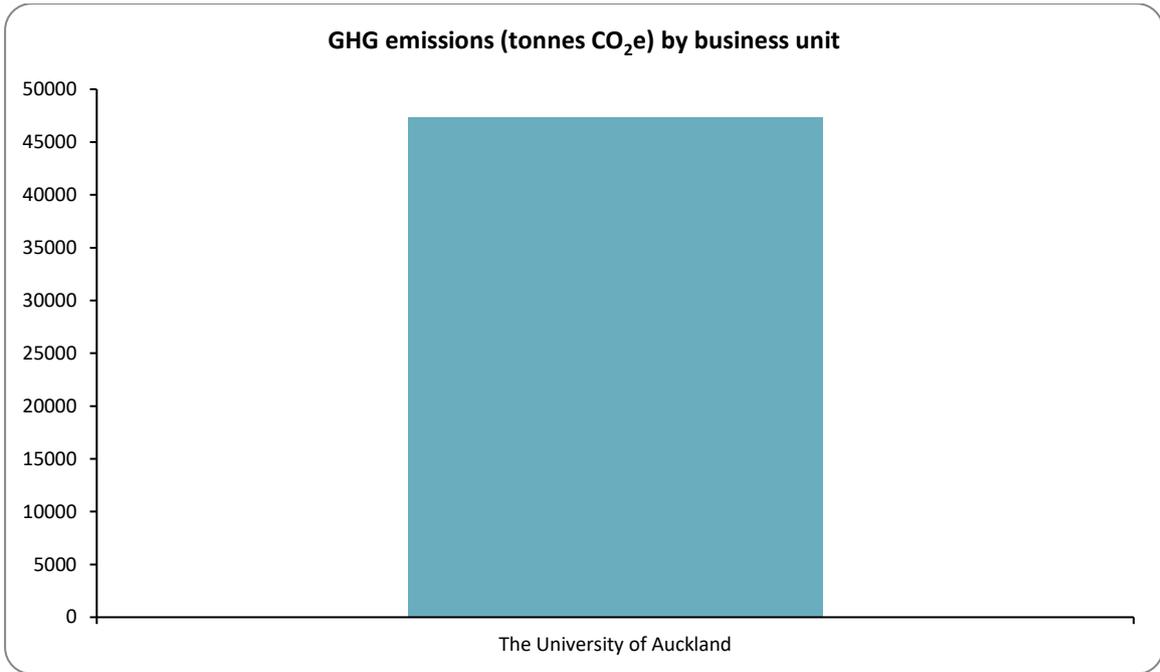


Figure 3: GHG emissions (tonnes CO₂e) by business unit

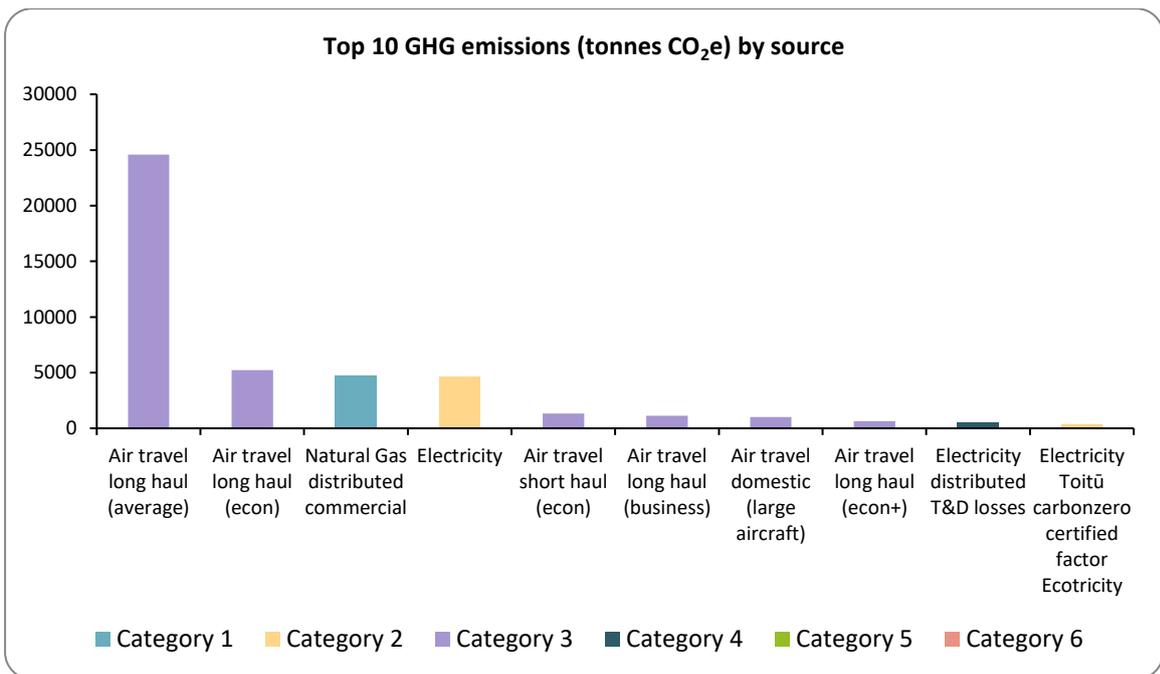


Figure 4: Top 10 GHG emissions (tonnes CO₂e) by source

1.2.1. Dual reporting of indirect emissions from purchased and generated energy

All purchased and generated energy emissions are dual reported using both the location-based method and market-based method. Dual reporting illustrates the role of supplier choice, on-site renewable energy generation and contractual instruments in managing indirect emissions from energy alongside any ongoing energy efficiency and reduction efforts.

The University of Auckland aligns to location-based reporting for tracking energy related emissions and reductions over time.

The University purchased all of the energy it consumed in 2022 and is committed to engaging and influencing suppliers to improve the carbon performance of the energy it requires for its activities. Sustainability and carbon attributes are part of electricity tendering process for selecting suppliers. In 2022, the University implemented and continued with projects to phase out fossil-fuel use by replacing energy sources such as gas with electricity. The University also increased the portion of certified carbon zero electricity supply to ~50% and continued to utilise Renewable Energy Certificates on the remaining procured electricity. In doing so, the University formally expresses its commitment to clean energy and support to phase out fossil fuel use in electricity generation in Aotearoa.

Contractual instruments are any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims. This includes Renewable Energy Certificates.

Contractual instruments are applicable for this reporting period.

Waipapa Taumata Rau | The University of Auckland consumed 67,966,871 kWh of electricity in 2022. As part of its commitment to decarbonisation, the University increased the percentage of carbon certified electricity from October 2022. A total of 9,840,325 kWh were carbonZero certified. In addition, the University purchased 30,442,857 kWh NZECS certificates covering the period of January to December 2022.

Table 3. Dual reporting of indirect emissions from imported energy

Category	Location-based methodology (tCO ₂ e)	Market-based methodology (tCO ₂ e)
Category 1: Direct emissions	5,485.52	5,485.52
Category 2: Indirect emissions from imported energy	5,432.63	2,633.12
Category 3: Indirect emissions from transportation	35,181.44	35,181.44
Category 4: Indirect emissions from products used by organisation	1,276.34	1,191.70
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00
Total direct emissions	5,485.52	5,485.52
Total indirect emissions	41,890.42	39,006.26
Total gross emissions	47,375.94	44,491.78
Category 1 direct removals	0.00	0.00
Total net emissions	47,375.94	44,491.78

1.3. ORGANISATIONAL CONTEXT

1.3.1. Organisation description

The University of Auckland was founded in 1883 as a constituent college of the University of New Zealand. Under the University of Auckland Act 1961, the college became an autonomous university. The University is administered under the 1961 Act and the Education Act 1989 and its amendments.

The University's governing body is the Council, which comprises elected staff and students; a member appointed to advise on Māori issues; a member appointed from the alumni; Council appointees; and Ministerial appointees. The Vice-Chancellor is also a member of Council. Council is chaired by the Chancellor, who is a lay member of Council.

Under the Education Act 1989, Council has the following functions:

- Appoint a chief executive
- Adopt the Investment Plan
- Ensure that the institution is managed in accordance with the Investment Plan
- Determine the policies of the institution in relation to the carrying out of the Investment Plan and, subject to the State Sector Act 1988, the management of its affairs.

In 2022, the University had 35,827 Equivalent Full Time Students (EFTS) and 6,116 Full Time Equivalent Staff (FTE), occupied 112 premises in New Zealand, 80 of which are owned by the University. The principal activities of the University and Auckland UniServices Limited (AUL) are the provision of teaching and research services.

Commitment to certification

The University's Vision 2030 is to become internationally recognised for its unique contribution to fair, ethical and sustainable societies. This is expressed in 'Taumata Teitei Vision 2030 and Strategic Plan 2025' developed collectively with input from all sectors of the University in 2020 and published in 2021. As part of this vision, Waipapa Taumata Rau made a commitment to Net Zero reflected in 'Te Taumata Tukuwaro kore | Net Zero Carbon Strategy' 2022. The strategy includes a progressive pathway for a Net Zero trajectory. Toitū's CarbonReduce certification provides support and assurance to the University's carbon reduction efforts and progress.

GHG Reporting

One of the key commitments expressed in Taumata Teitei is to achieve Net-Zero Carbon status and to publish meaningful metrics of the University's progress towards overall sustainability. The contents of this report are important to better understand the emissions profile of the University and to identify effective pathways to net-zero that reflect the commitments and aspirations of Taumata Teitei.

Climate Change Impacts

The process for adequately assessing climate related risks and opportunities for the University is complex. Especially those related to transition risks. Key impacts that are likely to occur may include:

- Disruption of campus activities and limited access to facilities (both built and non-built parts of the estate)
- Risk of temporary or extended isolation due to major infrastructure such as airports and other transport hubs becoming compromised, with severe implications for staff and students (both domestic and international) being able to fully participate in campus activities.
- Risk of building stock becoming no longer fit for purpose under increased temperature or as a result social changes regarding 'on campus' presence and other transition risks.
- Risk of associated financial implications of all the above

1.3.2. Statement of intent

This inventory forms part of the organisation's commitment to gain Toitū carbonreduce certification. The intended uses of this inventory are:

Intended use and users

This report is intended for use by the members of the Sustainable Estate and Operations Working Group and Governance Group, and the wider community of Waipapa Taumata Rau. Understanding the emissions profile and progress towards Net Zero by all members of the University is essential to foster collective efforts towards carbon reduction across all University's operations.

Other schemes and requirements

The inventory is expected to align with best practice in GHG measuring and reporting, especially with ISO14064-1:2018. Alignment with International and local schemes such as the Science Based Targets Initiative (SBTi) and the New Zealand Carbon Neutral Government Programme (CNGP) are also intended.

1.3.3. Person responsible

Simon Neale, Chief Property Officer is responsible for overall emission inventory measurement and reduction performance, as well as reporting results to top management. Simon Neale, Chief Property Officer has the authority to represent top management and has financial authority to authorise budget for the Programme, including Management projects and any Mitigation objectives.

State any other people/entities involved

Ainslie Moore, Deputy Director, International Office

Amorita Volschenk, Senior Technologist, Technical Services

Ben Hollies, Campus Service Manager, Facilities Management, Property Services

Brett Chapman-Richards, Senior Planning Analyst, Planning and Information Office

Chip McKenzie, Space Planning Analyst, Planning and Capital Projects, Property Services

Dhanuka Liyanage, Procurement Manager, Strategic Procurement

Doug Oliver, Campus Services Coordinator, Facilities Management, Property Services

Emma Bain, Human Resources Manager, Human Resources

Emmet Mackle, Associate Director Facilities, Facilities Management, Property Services

Fiona Moffat Procurement Manager, Strategic Procurement

Greg Inman, Snr Energy Efficiency Engineer, Facilities Management, Property Services

Gregg Pardoe, Livestock and Facility Manager, Liggins Institute

Harry Tetteroo, Procurement Manager, Strategic Procurement

Karyn Floyd, International Student Support Services Manager, International Office

Kerrin Grigg, Compliance Analyst, One Finance

Lee Bentley, Data Centre Tech Specialist, Connect, Digital Services

Muru Mohan, Asset Manager, Facilities Management, Property Services

Marama Nakamura, Carbon and Sustainability Project Administrator - Data reconciliation and document management

María José Baldoni, Carbon Auditor - ISO 14064-3:2019 (Accredited 2021)

Natalia Abrego, Chemical Safety Advisor, Health and Safety

Philip Kirkham, Campus Operations Manager, Facilities Management, Property Services

Russell Baillie, Energy Manager, Facilities Management, Property Services

Siân Camp, Carbon and Sustainability Manager, Sustainability and Environment (ISO 14064-1:2018 accreditation in progress)

Tony Johns, Campus Service Manager, Facilities Management, Property Services

Top management commitment

The University published two key strategies in 2022, Te Rautaki Aronga Toitū | Sustainability Strategy and Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy. It also established a Sustainable Estate and Operations Working Group to implement the progressive pathway to net-zero carbon. Membership includes senior staff representing Pro VC Māori, Campus Life, Finance, Procurement, Digital Services, International Office, Planning and Information Office, Digital Services, Property Services, as well as academic and student representatives. Progress is overseen by a Sustainable Estate and Operations Governance Group, chaired by the Chief Property Officer. Membership of the governance group includes, Kaiaarataki Pro Vice-Chancellor (Māori), Chief Financial Officer, Director of Planning and Information Office, Chief Digital Officer and Director of Campus Life.

Management involvement

María Baldoni, Associate Director, Sustainable Estate and Operations is responsible for overall emission inventory measurement and reduction performance, as well as reporting results to leadership. The Sustainability and Environment team works with internal senior partners in other divisions to seek data from existing data bases and third-party suppliers, providing guidance, templates and clarifications in those cases in which data had not originally been collected for carbon reporting purposes.

The Sustainability and Environment team then checked completeness, accuracy, and overall integrity of data, recording any limitations and assumptions in the summary data sheet and supporting documents, including a comprehensive list of definitions for the measures included in this report.

1.3.4. Reporting period

Base year measurement period: 01 January 2019 to 31 December 2019

This period January to December corresponds to the University of Auckland's overall reporting period. The University has been reporting carbon emissions from utilities (electricity, water, gas), waste disposal, paper consumption and staff air travel since 2011. The change in base year to 2019 responds to a more comprehensive approach taken considering changes to international best practice, including expectations to set baselines no earlier than 2015.

Measurement period of this report: 01 January 2022 to 31 December 2022

Reporting will be done annually with an alignment to the University financial reporting year which coincides with the calendar year.

Alignment to financial reporting year which coincides with calendar year.

1.3.5. Organisational boundary and consolidation approach

An operational control consolidation approach was used to account for emissions.⁴

Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards.

Justification of consolidation approach

The operational control approach was chosen as the University has control over the operations of its units and service divisions and has authority to introduce operating policies and corresponding implementation plans.

Organisational structure

Figure 5 shows what has been included in the context of the overall structure.

The University of Auckland was established by The University of Auckland Act 1961. The University of Auckland (the University), Auckland UniServices Limited (AUL), and the University of Auckland Foundation (the Foundation) are all controlled entities and together form 'the Group'. AUL operates in China and has a branch in the Kingdom of Saudi Arabia although the latter will soon be deregistered as projects there have been completed. The principal activities of the University and AUL are the provision of teaching and research services. The principal activities of the Foundation are raising and stewardship of funds for charitable purposes and advancement of education and healthcare, assistance of students to pursue courses of study at the University of Auckland, and the general advancement of the University.

The central office of the University's management is located at the Clock Tower, 22 Princes St, Auckland, New Zealand.

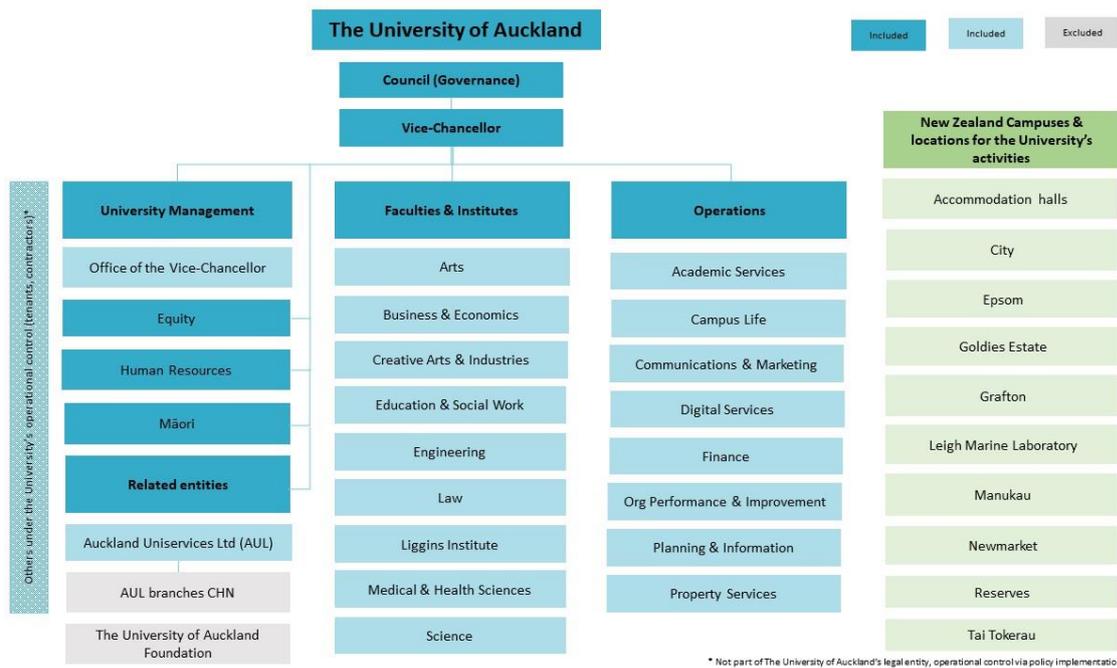


Figure 5: Organisational structure

⁴control: the organisation accounts for all GHG emissions and/or removals from facilities over which it has financial or operational control. equity share: the organisation accounts for its portion of GHG emissions and/or removals from respective facilities.

Table 4. Brief description of business units, sites and locations included in this emissions inventory

FACILITY_NAME	PHYSICAL ADDRESS	ADDRESS_CITY	FACILITY_OWNERSHIP	FACILITY_PRIMARY_USE
OLD GOVERNMENT HOUSE	PRIVATE BAG 92019; 3A SYMONDS ST	AUCKLAND	OWNED	SERVICE
ALFRED NATHAN HOUSE	24 PRINCES ST	AUCKLAND	OWNED	ADMIN
OLD CHORAL HALL	7 SYMONDS ST	AUCKLAND	OWNED	ACAD
THE CLOCKTOWER	22 PRINCES ST	AUCKLAND	OWNED	ACAD
BIOLOGY BUILDING	5 SYMONDS ST	AUCKLAND	OWNED	ACAD
MACLAURIN CHAPEL	18 PRINCES ST	AUCKLAND	OWNED	SERVICE
GENERAL LIBRARY	5 ALFRED ST	AUCKLAND	OWNED	ACAD
THOMAS BUILDING	3 SYMONDS ST	AUCKLAND	OWNED	ACAD
THOMAS BUILDING EXTENSION	3A SYMONDS ST	AUCKLAND	OWNED	ACAD
THE CLOCKTOWER - EAST WING	5 SYMONDS ST; 22 PRINCES ST	AUCKLAND	OWNED	ACAD
LODGE: OGH	16 PRINCES ST	AUCKLAND	OWNED	RESID
PEMBRIDGE HOUSE	31 PRINCES ST	AUCKLAND	LEASED	ADMIN
19A PRINCES STREET	19A PRINCES ST	AUCKLAND	LEASED	ADMIN
HUMAN SCIENCES BUILDING	10 SYMONDS ST	AUCKLAND	OWNED	ACAD
SOCIAL SCIENCES BUILDING - EAST	10 SYMONDS ST; 11 WYNYARD ST; 17 WYNYARD ST	AUCKLAND	OWNED	ACAD
HUMANITIES BUILDING	14A SYMONDS ST	AUCKLAND	OWNED	ACAD
CLL BUILDING	18 SYMONDS ST	AUCKLAND	OWNED	ACAD
BELGRAVE	12 SYMONDS ST	AUCKLAND	OWNED	ACAD
OKARETA	14 SYMONDS ST	AUCKLAND	OWNED	ACAD
MONA	16 SYMONDS ST	AUCKLAND	OWNED	ACAD
8 GRAFTON ROAD	8 GRAFTON RD	AUCKLAND	OWNED	ACAD
BAYREUTH	10 GRAFTON RD	AUCKLAND	OWNED	ACAD
THE JAMES HENARE MAORI RESEARCH UNIT	18 WYNYARD ST	AUCKLAND	OWNED	ACAD
ALTEN RD EARLY LEARNING CENTRE	3 ALTEN RD	AUCKLAND	OWNED	SERVICE
SPORTS CENTRE	5-7 WYNYARD ST	AUCKLAND	OWNED	SERVICE
MUSIC SCHOOL	6 SYMONDS ST	AUCKLAND	OWNED	ACAD
TANENUJARANGI (MEETING HOUSE)	16 WYNYARD ST	AUCKLAND	OWNED	SERVICE
TE KOHANGA REO, HINETEIWAIWA	23 ALTEN RD	AUCKLAND	OWNED	SERVICE
SIR OWEN G GLENN BUILDING	12 GRAFTON RD	AUCKLAND	OWNED	ACAD
FALE - OFFICE BUILDING	20 WYNYARD ST	AUCKLAND	OWNED	ADMIN
SCIENCE CENTRE 301	23 SYMONDS ST	AUCKLAND	OWNED	ACAD
SCIENCE CENTRE 302	23 SYMONDS ST; 40 WELLESLEY ST EAST	AUCKLAND	OWNED	ACAD
SCIENCE CENTRE 303	38 PRINCES ST	AUCKLAND	OWNED	ACAD

FACILITY_NAME	PHYSICAL ADDRESS	ADDRESS_CITY	FACILITY_OWNERSHIP	FACILITY_PRIMARY_USE
STUDENT COMMONS BLOCKS A-D	34 PRINCES ST	AUCKLAND	OWNED	SERVICE
KATE EDGER INFORMATION COMMONS	9 SYMONDS ST	AUCKLAND	OWNED	SERVICE
4 ALFRED STREET	4 ALFRED ST	AUCKLAND	OWNED	ADMIN
ENGINEERING BLOCK 1	20 SYMONDS ST	AUCKLAND	OWNED	ADMIN
ENGINEERING BLOCK 5	7 GRAFTON RD; 5 GRAFTON RD	AUCKLAND	OWNED	ACAD
UNI PRESS	9 GRAFTON RD	AUCKLAND	OWNED	ADMIN
SECURITY	24 SYMONDS ST	AUCKLAND	OWNED	SERVICE
SYMONDS STREET EARLY LEARNING CENTRE	26 SYMONDS ST	AUCKLAND	OWNED	SERVICE
CONFERENCE CENTRE BUILDING	22 SYMONDS ST	AUCKLAND	OWNED	ACAD
FINE ARTS STUDIO	20 WHITAKER PL	AUCKLAND	OWNED	ACAD
44 SYMONDS STREET	44 SYMONDS STREET	AUCKLAND	OWNED	RESID
58 SYMONDS ST	58 SYMONDS ST	AUCKLAND	OWNED	ADMIN
UNIVERSITY HALL APARTMENTS	14 WHITAKER PL	AUCKLAND	OWNED	RESID
AUCKLAND BIOENGINEERING HOUSE	70 SYMONDS ST	AUCKLAND	LEASED	ADMIN
UNIVERSITY HALL	30 WHITAKER PLACE	AUCKLAND	OWNED	RESID
WAIPARURU HALL 441	35 WHITAKER PL	AUCKLAND	OWNED	RESID
BUILDING 450	5 WHITAKER PLACE	AUCKLAND	LEASED	RESID
M&HS BUILDING 501	85 PARK RD	AUCKLAND	OWNED	ACAD
M&HS BUILDING 505	85 PARK RD; 2 BOYLE CRES	AUCKLAND	OWNED	ACAD
M&HS BUILDING 507	28 PARK AVE	AUCKLAND	OWNED	ACAD
TE AKO O TE TUI	11 PARK AVE	AUCKLAND	OWNED	SERVICE
STUDENT FLATS ANNEX	70 SEAFIELD VIEW RD	AUCKLAND	OWNED	ADMIN
8 PARK AVENUE	8 PARK AVE	AUCKLAND	OWNED	ACAD
2-6 PARK AVENUE	2-6 PARK AVE	AUCKLAND	OWNED	ACAD
93 GRAFTON RD	93 GRAFTON RD	AUCKLAND	LEASED	ADMIN
18 CARRICK PLACE	18 CARRICK PL	AUCKLAND	OWNED	ACAD
WAIPARURU HALL - WHITAKER 601	16 ST MARTIN'S LN	AUCKLAND	OWNED	RESID
WAIPARURU HALL - WHITAKER 602	27 WHITAKER PL	AUCKLAND	OWNED	RESID
LEIGH MARINE RESEARCH LABORATORY	160 GOAT ISLAND RD	AUCKLAND	OWNED	ACAD
O'RORKE HALL	16 MOUNT ST	AUCKLAND	OWNED	RESID
BUILDING 616	55 SYMONDS ST	AUCKLAND	LEASED	RESID
7 CITY ROAD	7 CITY ROAD	AUCKLAND	LEASED	ADMIN
67 SYMONDS ST	67 SYMONDS ST	AUCKLAND	LEASED	ADMIN
49 SYMONDS STREET	49-51 SYMONDS ST	AUCKLAND	OWNED	ADMIN

FACILITY_NAME	PHYSICAL ADDRESS	ADDRESS_CITY	FACILITY_OWNERSHIP	FACILITY_PRIMARY_USE
GRAFTON HALL RESIDENCES	6R CARLTON GORE RD	AUCKLAND	OWNED	RESID
ARDMORE RADIO RESEARCH STATION	MULLINS RD	PAPAKURA	OWNED	ACAD
38 SEAFIELD VIEW ROAD	38 SEAFIELD VIEW RD	AUCKLAND	OWNED	RESID
GEOTHERMAL HOUSE	50 SEAFIELD VIEW RD	AUCKLAND	OWNED	RESID
FRENCH HOUSE	62 SEAFIELD VIEW RD	AUCKLAND	OWNED	RESID
CARLTON PINES	10 CARLTON GORE RD	AUCKLAND	OWNED	RESID
GRAFTON HALL BLOCK A	40 SEAFIELD VIEW RD	AUCKLAND	OWNED	RESID
BINDERY & OFF CAMPUS STORE	4 NEILPARK DR	AUCKLAND	LEASED	SERVICE
6 OSTERLEY WAY	6 OSTERLEY WAY	AUCKLAND	LEASED	ACAD
950 FERRY ROAD	950 FERRY ROAD	CHRISTCHURCH	LEASED	ADMIN
11/521 ANGLESEA ST	11/521 ANGLESEA STREET	HAMILTON CITY	LEASED	ADMIN
68 OXFORD TERRACE	68 OXFORD TERRACE	CHRISTCHURCH	LEASED	ADMIN
WAITAKERE HOSPITAL - SNELGARD BLDG	WAITAKERE HOSPITAL	AUCKLAND	LEASED	ACAD
NORTH SHORE HOSPITAL - KAHUI MANAAKI BLDG	NORTH SHORE HOSPITAL	AUCKLAND	LEASED	ACAD
BROUGHAM HOUSE	50 DEVON STREET WEST	NEW PLYMOUTH	LEASED	ADMIN
WELLCOME LEAP	222 BEALEY AVE	CHRISTCHURCH	LEASED	ADMIN
GOLDIE ESTATE WINERY	18 CAUSEWAY RD	AUCKLAND	OWNED	ACAD
GOLDIE ESTATE WILMA RD HOUSE	WILMA RD	WAIHEKE ISLAND	OWNED	RESID
PETER ROTHWELL ACADEMIC CENTRE	WAIKATO HOSPITAL	HAMILTON	LEASED	ACAD
MIDDLEMORE HOSPITAL	HOSPITAL RD	AUCKLAND	LEASED	ACAD
54 EPSOM AVE	54 EPSOM AVE	AUCKLAND	OWNED	ADMIN
A - BLOCK EPSOM	EPSOM CAMPUS	AUCKLAND	OWNED	ACAD
KOHIA TEACHERS CENTRE	78 EPSOM AVE	AUCKLAND	OWNED	ACAD
L - BLOCK EPSOM	EPSOM CAMPUS GATE 3	AUCKLAND	OWNED	ACAD
R - BLOCK EPSOM	EPSOM CAMPUS GATE 4	AUCKLAND	OWNED	ACAD
PETHERICK TOWERS	PETHERICK TOWERS	WELLINGTON	LEASED	ADMIN
NGAPOURI FARM, REPOROA, NEAR TAUPO	NGAPOURI FARM	REPOROA	LEASED	ACAD
ROTORUA HOSPITAL	ARAWA STREET	ROTORUA	LEASED	ACAD
TAURANGA HOSPITAL POHUTUKAWA HOUSE	829 CAMERON ROAD	TAURANGA	LEASED	ACAD
A - BLOCK WHANGAREI	TAI TOKERAU CAMPUS	WHANGAREI	OWNED	ACAD
WHANGAREI HOSPITAL MAIN BUILDING	WHANGAREI HOSPITAL	WHANGAREI	LEASED	ACAD

FACILITY_NAME	PHYSICAL ADDRESS	ADDRESS_CITY	FACILITY_OWNERSHIP	FACILITY_PRIMARY_USE
WHAKATANE HOSPITAL MAIN BUILDING	WHAKATANE HOSPITAL	WHAKATANE	LEASED	ACAD
32 THOMAS PEACOCK PL	32 THOMAS PEACOCK PL	AUCKLAND	OWNED	SERVICE
9 EDEN CRESCENT	9 EDEN CRES	AUCKLAND	LEASED	ADMIN
15 EDEN CRESCENT	15 EDEN CRES	AUCKLAND	LEASED	ACAD
17 EDEN CRESCENT	17 EDEN CRES	AUCKLAND	OWNED	ADMIN
FISHER BUILDING	18 WATERLOO QUADRANT	AUCKLAND	OWNED	ADMIN
1-11 SHORT STREET	1-11 SHORT ST	AUCKLAND	LEASED	ADMIN
TE TIROHANGA O TE TOANGAROA	128 ANZAC AVE	AUCKLAND	LEASED	RESID
KENNETH MYERS CENTRE	74 SHORTLAND ST	AUCKLAND	OWNED	ACAD
CARLAW B831	CARLAW PARK	AUCKLAND	LEASED	RESID
CARLAW B838	28-38 STANLEY ST	AUCKLAND	LEASED	RESID
70 STANLEY ST	70 STANLEY ST	AUCKLAND	LEASED	SERVICE
RAY MEYER BUILDING	262 KHYBER PASS	AUCKLAND	OWNED	ACAD
BUILDING 907	368 KHYBER PASS	AUCKLAND	OWNED	ACAD

1.3.6. Excluded business units

The University Foundation is excluded from the GHG emissions boundary as it is not under the operational control of the University. The principal activities of the Foundation are raising and stewardship of funds for charitable purposes and advancement of education and healthcare, assistance of students to pursue courses of study at the University of Auckland, and the general advancement of the University.

The Auckland UniServices Limited (AUL) operations in China, are also excluded from the GHG emissions boundary as these business units are not under the University's operational control.

CHAPTER 2: EMISSIONS MANAGEMENT AND REDUCTION REPORT

2.1. EMISSIONS REDUCTION RESULTS

As expected, in 2022, the University's carbon profile begun to show an overall upward trend compared to the previous year. This is mainly as a result of Aotearoa's borders opening fully and a return to travel after the Covid-19 restrictions were lifted. The three key sources of emissions for this reporting period were once again air travel and associated accommodation, electricity, and gas.

Most emissions were the result of air travel with work-related travel accounting for over 20% of gross emissions for 2022. This category 3 source showed the largest increase from 2021 to 2022 which is consistent with travel restrictions being lifted. Despite the increase, work-related air travel remains 66% lower than the 2019 baseline, reflecting the slower than expected pace of return to work-related travel.

Indirect emissions from imported energy (location-based method) have continued a decreasing trend from 2021 with a reduction of now 33%. This change has been a result of procurement of certified carbon zero energy. Although the University's consumption of electricity (kWh) has increased 4% from 2021, the consumption of natural gas (kWh) has decreased by 3%. This indicates the University is on a solid path of decarbonisation.

Table 5: Comparison of historical GHG inventories

Category	2019	2020	2021	2022
Category 1: Direct emissions	5,667.38	5,723.70	5,426.74	5,485.52
Category 2: Indirect emissions from imported energy (location-based method*)	8,066.06	8,058.39	7,865.56	5,432.63
Category 3: Indirect emissions from transportation	65,935.12	4,252.51	1,906.21	35,181.44
Category 4: Indirect emissions from products used by organisation	2,799.14	1,552.13	1,461.75	1,276.34
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00	0.00	0.00
Total direct emissions	5,667.38	5,723.70	5,426.74	5,485.52
Total indirect emissions*	76,800.31	13,863.02	11,233.52	41,890.42
Total gross emissions*	82,467.70	19,586.71	16,660.26	47,375.94
Category 1 direct removals	0.00	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00	0.00
Total net emissions	82,467.70	19,586.71	16,660.26	47,375.94
Emissions intensity				

Category	2019	2020	2021	2022
Built environment (gross tCO ₂ e / m ²)	0.13	0.028	0.024	0.069
Built environment (gross mandatory tCO ₂ e / m ²)	0.071	0.028	0.023	0.032
Equivalent Full Time Student (gross tCO ₂ e / per FTE per annum)	2.39	0.57	0.45	1.32
Equivalent Full Time Student (gross mandatory tCO ₂ e / per FTE per annum)	1.30	0.56	0.43	0.61
FTE & EFTS - Full-time employees and Equivalent full-time students combined (gross tCO ₂ e / per FTE per annum)	2.04	0.49	0.39	1.13
FTE & EFTS - Full-time employees and Equivalent full-time students combined (gross mandatory tCO ₂ e / per FTE per annum)	1.11	0.47	0.37	0.52
Full Time Employee (gross tCO ₂ e / per FTE per annum)	13.81	3.27	2.78	7.75
Full Time Employee (gross mandatory tCO ₂ e / per FTE per annum)	7.54	3.20	2.64	3.58
Operating revenue (gross tCO ₂ e / \$Millions)	64.72	15.88	12.20	34.01
Operating revenue (gross mandatory tCO ₂ e / \$Millions)	35.31	15.50	11.57	15.71

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.



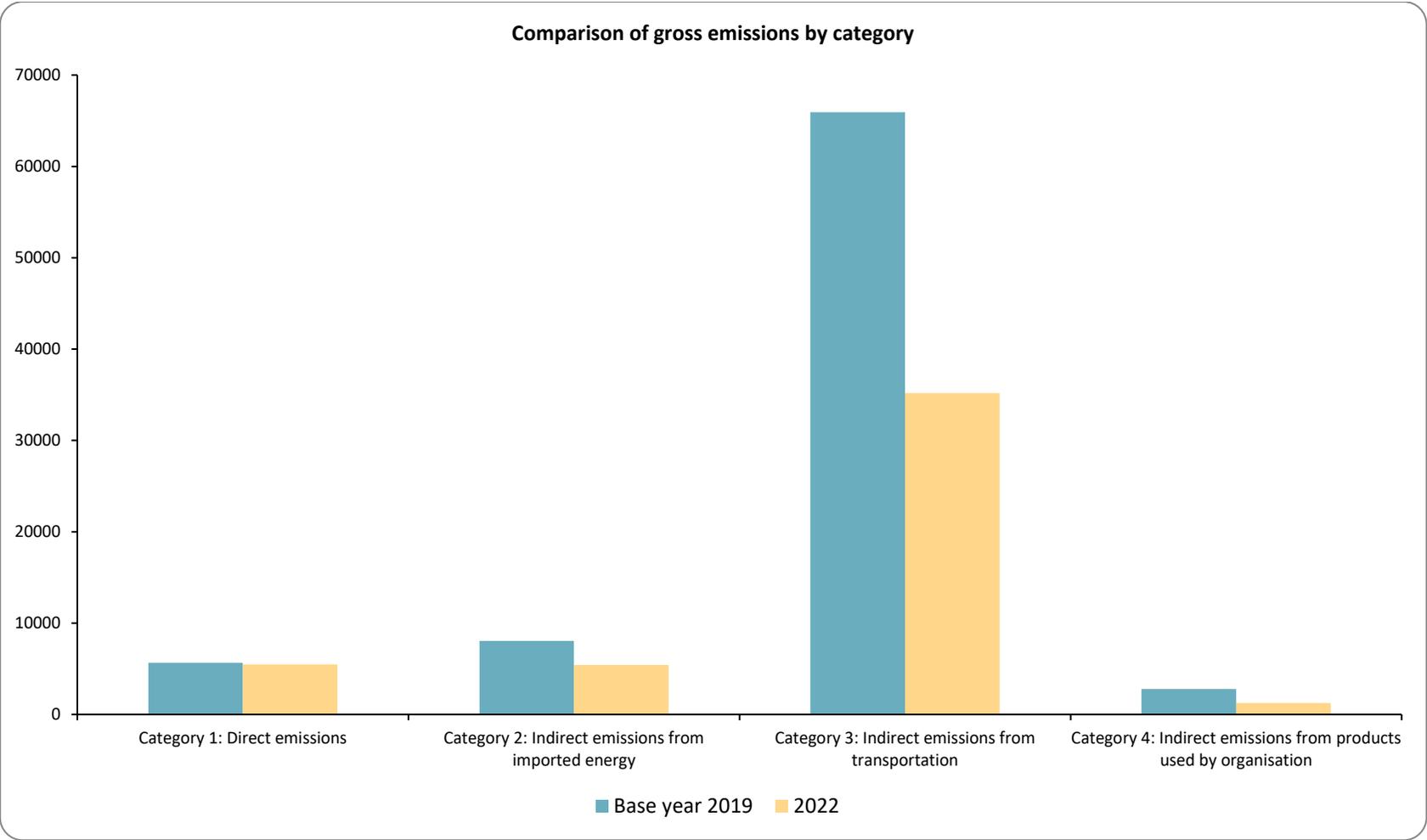


Figure 6: Comparison of gross emissions by category between the reporting periods



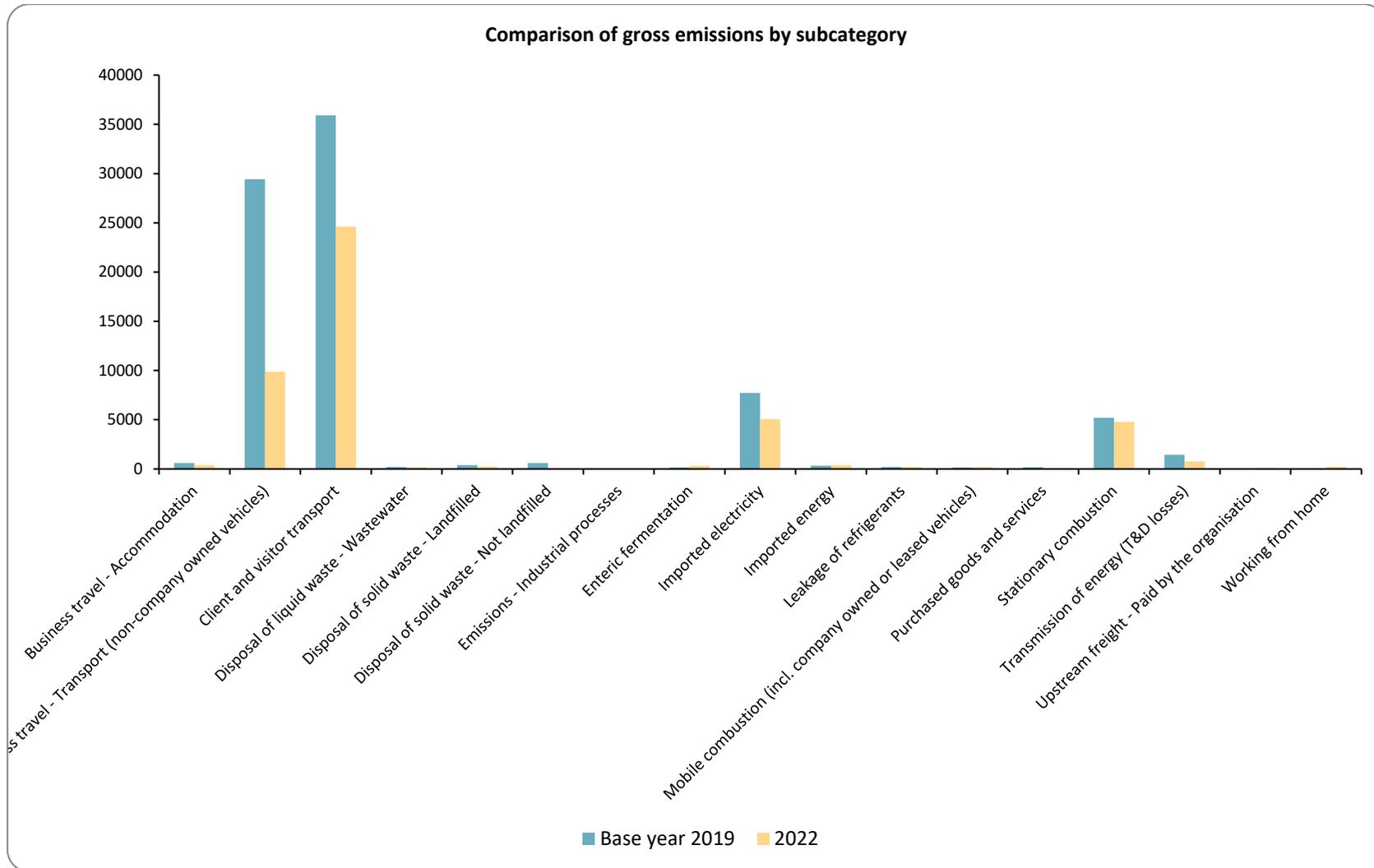


Figure 7: Comparison of gross emissions by subcategory between the reporting periods



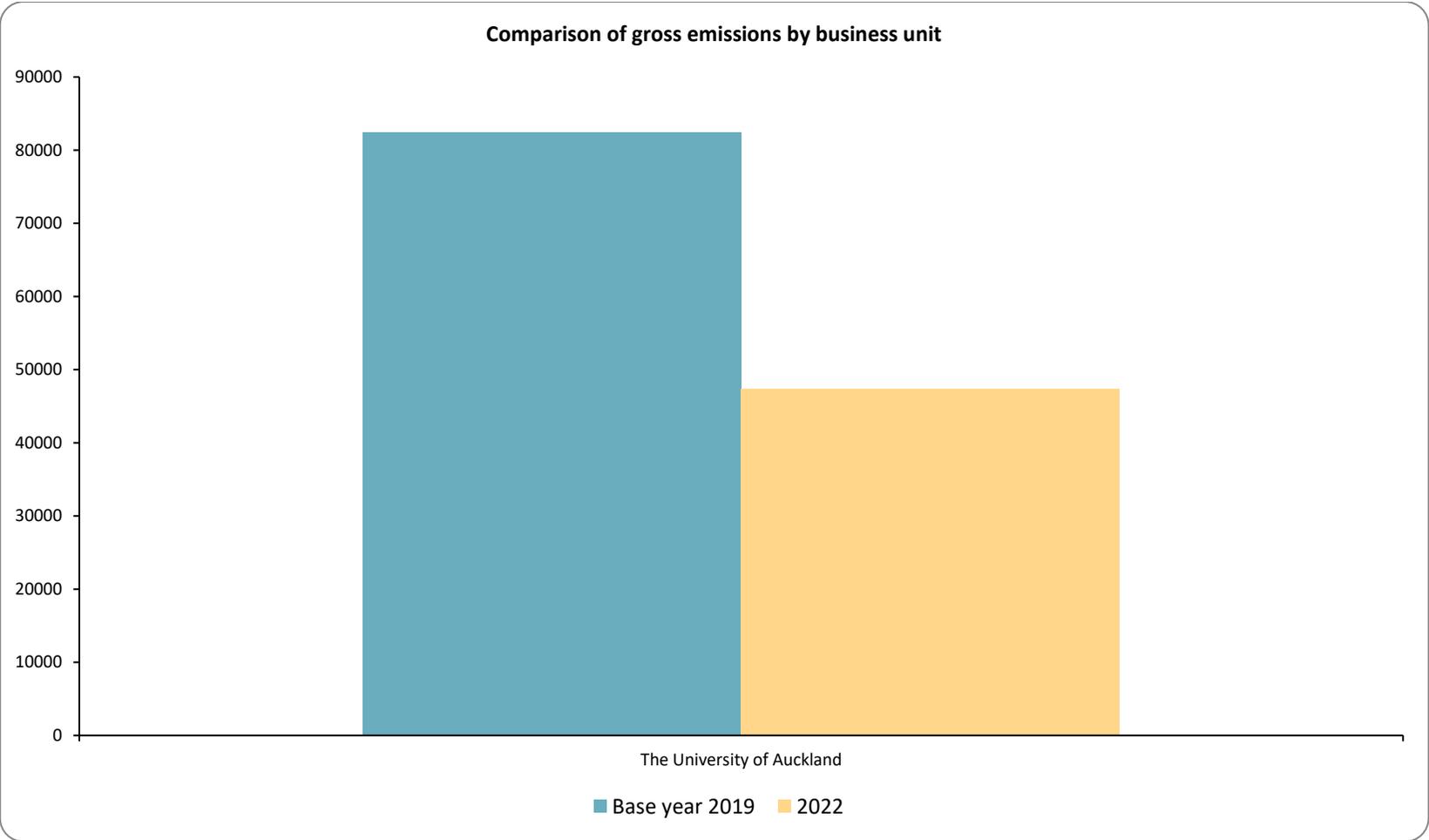


Figure 8: Comparison of gross emissions by business unit between the reporting periods



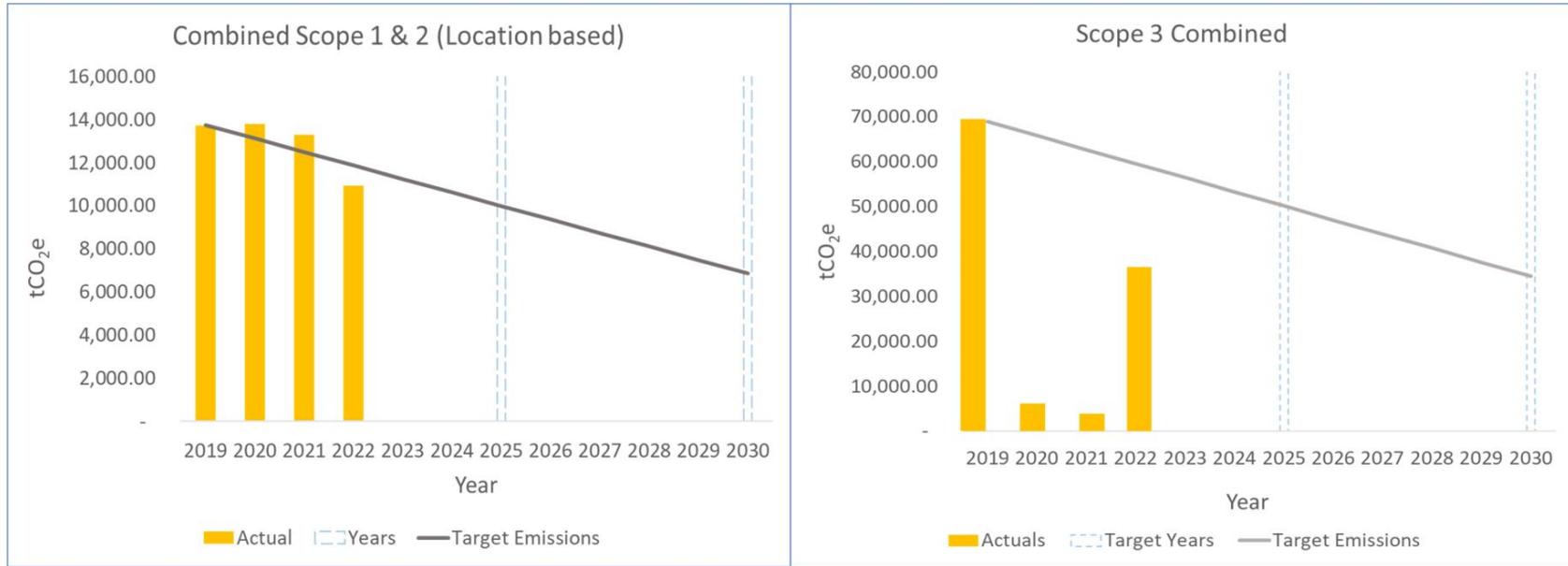


Figure 9: Performance against target since base year

Table 6. Performance against plan

Target name	Baseline period	Target date	Type of target (intensity or absolute)	Current performance (tCO ₂ e)	Current performance (%)	Comments
Work related Air travel, staff and students	2019	2030	Absolute	9,782	-66.53	
Energy and fuel	2019	2030	Absolute	7,605	-39.51	
Waste	2019	2030	Absolute	273	-72.47	

2.2. SIGNIFICANT EMISSIONS SOURCES

Significant sources

The return to travel marked an increase against the 2021 Covid-19 year, with work-related air travel representing just over 20% of 2022 emissions. The return of international students also had a significant effect on the inventory, accounting for 52% of emissions for 2022.

The University relies on air travel for global partnerships, research, and international engagement in academic conferences. Due to Aotearoa's geographical isolation, air travel is carbon intensive and makes a significant contribution to the University's carbon profile. Work-related air travel within New Zealand was almost 15% less (pkm) in 2022 than what was recorded in the baseline. The country experienced a very rapid and widespread uptake of technology that enabled remote work- especially meetings, lecture delivery and video conferencing in general- during Covid-19. This could explain this decrease. However, only once the 2023 carbon profile is available it will be possible to assess this domestic air travel trend more accurately.

In addition, during 2022 the University community made a conscious commitment to consider the carbon impact of work-related travel by updating the University's travel policy. The policy is in final stages of consultation and once finalized, is expected to be implemented from 2024 onwards.

Activities responsible for generating significant emissions

As noted in the progressive pathway to Net Zero, the University has identified a second significant source of carbon that is comprised of all Energy and Fuel (both stationary and non-stationary). The University has a large portfolio of buildings, complex facilities and fleet to deliver its services to staff and students as well as general public. In 2022, the most important trend observed was that the consumption of reticulated gas (kWh) was reduced by over 7.5%. The overall consumption of electricity (kWh) was 4.3% lower than the 2019 baseline. In terms of carbon emissions for the overall category of energy and fuel, the drop was 23%. This drop is also associated with the increase in the % of carbonZero certified electricity.

It must be noted that 2021 to 2022 increases are understood to be due to the return to 'on campus' activities and that the trends against the baseline are encouraging.

Influences over the activities

Emissions from waste are another significant source for the University, these increased by 381.5t from 2021 to 2022, as expected, following the return of students and staff to campus. This resulted in a 19% increase in emissions. However, from the 2019 baseline year, total waste (t) has decreased by just over 10% and associated emissions by over 72% as a result of gas collection from landfill.

Increased efforts to remove bins and offer more opportunities for waste diversion from landfill has resulted in an overall reduction of both total waste and emissions from the 2019 baseline. Along with the gross reductions, there has been an improvement in the diversion rates. The proportion of waste that is composted or recycled has increased from 24% in 2019 to 28% in 2022, and total waste to landfill has decreased by 252t.

Significant sources that cannot be influenced

Waipapa Taumata Rau was the first University in New Zealand to formally recognize the materiality of International Student Air Travel for its carbon profile. In 2022, this activity accounted for over 50% of the emissions in the GHG inventory. The University is committed to improving the way it understands and estimates the emissions from international students air travel and, in 2022 improved the methodology by including all international students in the count, and not just those who may have arrived during the calendar year. This in turn resulted in an increase in calculated emissions. Given there is no operational control over students mode of travel, this activity is outside of the University's carbon mitigation boundary. The University will continue to engage with its international student community to both improve outcomes in terms of carbon emissions and education of climate conscious travelers.

2.3. EMISSIONS REDUCTION TARGETS

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 7 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, and time-constrained).

Targets have been set as part of the commitments of Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy, published in Q4 2022.

Although performance is showing on track to meet the targets of the Net Zero progressive pathway, the effects of Covid-19 on the figures needs to be acknowledged as a significant influencing factor, even in 2022. Better understanding of trends, especially around work-related air travel, once the 2023 inventory has been finalised.

There is also evidence of the implementation of projects and initiatives under way as part of the progressive pathway are also producing successful results. As these projects and initiatives mature, especially around data granularity, monitoring progress will significantly improve.

Table 7. Emission reduction targets

Progressive pathway and targets - Te Taumata Tukuwaro-kore -Net Zero Carbon Strategy, November 2022						
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	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	Establish / Improve baseline	Set Targets		Achieve target set in 2024
Data improvement, monitoring (2025 target review cycle)	- Embodied Carbon (from materials) - Information and Communication Technology - Food on campus	Develop	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	Develop a well-informed, evidence-based carbon mitigation programme	Begin mitigation programme	Achieve Net Zero Trajectory Status



2.4. EMISSIONS REDUCTION PROJECTS

In order to achieve the reduction targets identified in Table 7, specific projects have been identified to achieve these targets, and are detailed in Table 8 below.

Table 8. Projects to reduce emissions

Objective	Project	Responsibility	Completion date
Waste Reduction	Building 201 project	Property Services, Planning and Development and Capital Works	6-Star Greenstar Design Rating Achieved. Construction and As-Built Rating underway.
	The project has a waste diversion from landfill target of 80% and is current diversion is tracking at over 90% of the demolition and construction waste.		
	Adaptive reuse of existing building reduces waste to landfill and embodied carbon		
Carbon and Fuel Reduction	Building 201 Project	Property Services, Capital Works	6-Star Greenstar Design Rating Achieved. Construction and As-Built Rating underway.
	Electrification and decarbonisation of the building and the district heating network it supported.		
	Elimination of fossil fuel consumption on-site with all electric HVAC, central plant and domestic hot water to be generated through electric reverse cycle air source heat pumps.		
	Fossil fuels have been eliminated from the project site (including the commercial kitchen) which, in combination with energy efficient HVAC systems and a new façade, reduces operational carbon emissions by nearly 70% over the baseline reference design.		
	B250 CAI Music School as part of B201 installing new electric plant to remove gas boiler space heating		
	Low and Zero Global Warming Potential refrigerants have been specified to all of the large chillers and heat pumps reducing emissions associated with refrigerant leakage by over 80%.		
	End-of-trip facilities to encourage more cycling and walking.		
Energy Efficiency	Building 201 Project	Property Services, Capital Works	6-Star Greenstar Design Rating Achieved. Construction and As-Built Rating underway.
	A photovoltaic array providing 10% of the buildings energy.		



Objective	Project	Responsibility	Completion date
	The building's glazing uses a Low-E double-glazed insulating glass unit with a spectrally selective coating to minimise solar gain whilst providing high levels of daylight. The new glazing provides both a 70% reduction in solar gains over the original glazing and halves the building's annual heating demand.		
	The new building envelope reduces the whole of building energy consumption by over 25% and is targeting an air permeability of 5.0 m ³ /hr/m ² at 50Pa which will make it the first and largest building in New Zealand to be pressure tested for air permeability.		
	Over 130 kWp of solar panels are being installed with an expected annual output of around 140 MWh which should meet around 10% of the buildings electricity demand and reduce carbon emissions by an equivalent amount (excluding small power and plug loads).		
Water Efficiency	Building 201 Project	Property Services, Capital Works	6-Star Greenstar Design Rating Achieved. Construction and As-Built Rating underway.
	Predicted water consumption 75% less than standard building - a combination of air source heat rejection, rainwater harvesting and high performance WELS rated sanitary fixtures and fittings		
	The combination of water-efficient fixtures and fittings and rainwater harvesting system is expected to reduce potable water demand by over 80% against a standard practice building		
Carbon and fuel reduction	Waipapa Marae Project	Property Services, Capital Works	Ongoing – Construction phase
	Replacing all gas heating and kitchen equipment in the Marae with electricity		
Energy Efficiency	Waipapa Marae Project	Property Services, Capital Works	Ongoing – Construction phase
	Efficient underfloor heating and new LED light fittings have been installed		
Waste Reduction	Waipapa Marae Project	Property Services, Capital Works	Ongoing – Construction phase



Objective	Project	Responsibility	Completion date
	The recycling of kitchen equipment via online auction allowed for its re-use by others		
Water Efficiency	B242 Temporary Courts Project	Property Services, Facilities Management	Ongoing
	Three 25,000 litres rain water collection tanks are fed by the roof of the Temporary Courts		
Waste Reduction	Divestment of Redundant Furniture	Strategic Procurement	2022
	A process developed to prevent furniture from going to landfill where possible		
Energy efficiency	Lighting audit in building B260 carpark - Audit completed, upgrade works planned for 2022	Energy, Facilities Management	Audit completed - implementation of recommendations in progress
Decarbonising Electricity	Increase procured certified carbonzero electricity to >50%	Property Services	Completed 2022
Reducing emissions from air travel	Include carbon and sustainability considerations into Travel Policy update	Strategic Procurement	Under way - Policy due out for consultation in 2023
Waste prevention	Introduced guidelines to limit the amount of pizza box waste	Campus Life - Event Services	Completed
Sustainable buildings	Improved Project Management - Added carbon tag to Project Management platform	Property Services, Capital Works	Initial phase started late 2022 - over 12 projects already identified for their carbon reduction benefits (end of trip facilities to improve cycling to work opportunities, lighting upgrades, replace gas cooking facilities with electric ones)
Sustainable buildings	Introduced carbon and sustainability consideration into capital works business cases	Property Services, Capital Works	Ongoing - since 2022
Building operations - Decarbonisation	Recreation Wellness Center (RWC) - Changed plans for consented gas and heating systems and replaced with electric reverse cycle heat pumps	Energy, Facilities Management	Building project in construction phase.
Building operations - Decarbonisation	Old Choral Hall (OCH) Changed plans for consented gas and heating systems and replaced with electric reverse cycle heat pumps	Energy, Facilities Management	Building project in construction phase.
Composting - food waste prevention and recovery at events	Sustainable Events Guide	Event Services, Sustainability Team	Ongoing



Objective	Project	Responsibility	Completion date
Energy conservation	Air conditioning chilled water temperature control -Changing control systems so that chillers do not chill the air conditioning water to a lower temperature than what is needed. This will reduce the amount of electricity consumed by the air conditioning chillers.	Energy, Facilities Management	Completed in 2022. Multiple buildings throughout UoA portfolio have been upgraded.
Energy conservation	Space heating water temperature control. Changing control systems so that existing boilers do not heat water to a higher temperature than what is needed. This will reduce the amount of gas burnt in the boilers.	Energy, Facilities Management	Completed in 2022.
Energy efficiency	Grafton chiller upgrades. Modification of two of the four chillers to be more energy efficient.	Energy, Facilities Management	In progress
Energy efficiency	B260 chiller upgrades. Modification of two of the three main building chillers (not data centre) to be more energy efficient.	Energy, Facilities Management	In progress – due for completion 2023.
Food waste recovery - waste prevention	Waste diversion from landfill - Food waste recovery for offsite composting at student accommodation halls	Ngā Wharenoho/Accommodation Services, Waste Minimisation specialist	2019 - ongoing
Minimise water use	Building washing programme - Using sustainable water supply of non-potable (untreated) for building cleaning	Energy, Facilities Management	Initiated 2020, now BAU
Reduce water waste	Green Your Room initiative - Water saving initiative for students to opt into actions to reduce their personal environmental footprint and promote sustainability awareness amongst residents.	Ngā Wharenoho/Accommodation Services	Ongoing - 2022 participation figures tbc
Reducing paper use	Follow Me printing - All printing activated by Campus Card identity and access cards. Only prints a document when the user is at the printer, helping to eliminate unnecessary printing and waste	IT Services	2019-ongoing
Waste - resource recovery	Waste diversion from landfill - Repurpose and rehome furniture and other materials from decants and refurbishments	Property Services (Facilities Management), Waste Minimisation specialist	2019-ongoing



Table 9 highlights emission sources that have been identified for improving source the data quality in future inventories.

Table 9. Projects to improve data quality

Emissions source	Actions to improve data quality	Responsibility	Completion date
Emissions source	Actions to improve data quality	Responsibility	Completion date
Staff and student work related air travel	Stage 2, improved reporting by modifying the templates suppliers provide on monthly basis. Supplier now providing flights boarded data instead of bookings made.	Procurement and Sustainability Team collaboration - Stage 2 incorporates Planning and Quality Office for increased automation into the University's data lake	Stage 2 - completed 1/07/2022 - Stage 3 Automation Completion date TBC
Waste to landfill	Address data gaps - special wastes and gantry bins used for decants and moves were incorporated in the monitoring to improve completeness of the University's waste profile	Waste Minimisation Specialist	1/12/2021
Refrigerants and other gases	Engaged Chemical risk team to works towards consolidation of asset related and research and other uses of gases. Further supplier engagement to continue improving reports.	Sustainability and Facilities Management, Chemical Risk Team, Procurement	Under way
Electricity	Current multi-year projects	Energy, Facilities Management	In progress
	1. New utilities monitoring and reporting system		
	2. Check meter upgrades – upgrading once a month manually read meters to meters that give 15-minute interval data. Both these projects enable better identification of reduction opportunities.		
Utilities	Building 201 Project	Energy, Facilities Management	In progress
	Extensive electrical, thermal and water metering to measure and report on the environmental performance of the building		
Freight, Couriers and Working from Home	Starting in 2022, the University incorporated two new measures to the GHG inventory:	Sustainability, Procurement	In progress
	· Freight and couriers		
	· Working from home		
	Further data improvements will be required in order to better identify reduction opportunities and the wider implications of these emissions. Especially those related to working from home.		

The emissions inventory chapter identified various emissions liabilities (see GHG Storage and liabilities section). Table 10 details the actions that will be taken to prevent GHG emissions from these potential emissions sources.

Table 10. Projects to prevent emissions from liabilities

Liability source	Actions to prevent emissions	Responsibility	Completion date
Refrigerants accidental release from units	Engage contractors to ensure adequate maintenance and servicing of units.	Property Services, Facilities Management	Ongoing
Refrigerants and other gases, accidental release	Consolidate location monitoring (asset and research related gas holdings)	Property Services and Chemical Risk Team	Estimated Q1 2024

2.5. STAFF ENGAGEMENT

Active engagement with staff and students during 2022 included:

- A Sustainability Symposium offered staff the opportunity to engage with the Sustainability and Net Zero Carbon Strategy programme leaders and sponsors and included a poster session of 2019 GHG baseline inventory.
- Students were invited to participate in an online Q&A session on 25 July 2022.
- The Sustainable Estate and Operations Working Group members actively engage with their colleagues across service divisions on key implementation initiatives.
- The Sustainability and Environment team also form a part of the Events Coordination Group (ECG) to assist in implementation of the Sustainable Events Guide and provide subject matter expertise for university events.
- Sustainability and Environment team had stalls in all large University events such as Open day for students and ASPIRE, the professional staff conference.

2.6. KEY PERFORMANCE INDICATORS

Additional KPIs are in line with University's existing service performance indicators included in the Annual Report.

Table 11. Key Performance Indicators (KPIs).

KPI	Rationale of using the additional KPI
GFA (Gross Floor Area)	In line with University's existing environmental service performance indicators included in the Annual Reporting
EFTS (Equivalent Full Time Student)	In line with University's existing service performance indicators included in the Annual Reporting
FTE (Full Time Employee)	In line with University's existing service performance indicators included in the Annual Reporting
EFTS & FTE (Equivalent full-time students and Full-time employees combined)	In line with University's existing service performance indicators included in the Annual Reporting

2.1. MONITORING AND REPORTING

The Sustainability and Environment Team will be responsible for the monitoring and reporting as well as the metrics and other methods identified in the Sustainable Estate and Operations Plan and the Integrated Sustainability Reporting Standards once these are finalised. The team will work closely with internal partners in Pro VC Māori, Procurement, Campus Life, Finance, Digital Services, International Office, Planning and Information Office, Finance, Property Services and other areas within the University's Operations to regularly publish initiatives and plans.

APPENDIX 1: DETAILED GREENHOUSE GAS INVENTORY

Additional inventory details are disclosed in the tables below, and further GHG emissions data is available on the accompanying spreadsheet to this report (Appendix1-Data Summary Waipapa Taumata Rau | The University of Auckland.xls).

Table 12. Direct GHG emissions and removals, quantified separately for each applicable gas

Category	CO ₂	CH ₄	N ₂ O	NF ₃	SF ₆	HFC	PFC	Desflurane	Sevoflurane	Isoflurane	Emissions total (tCO ₂ e)
Stationary combustion	4,758.81	11.25	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4,772.25
Mobile combustion (incl. company owned or leased vehicles)	194.62	1.10	3.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	199.58
Emissions - Industrial processes	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
Removals - Industrial processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leakage of refrigerants	9.30	0.16	0.00	0.00	0.00	201.46	0.00	0.00	0.00	0.00	210.92
Treatment of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment of wastewater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions - Land use, land-use change and forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Removals - Land use, land-use change and forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertiliser use	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Addition of livestock waste to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Addition of crop residue to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Addition of lime to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enteric fermentation	0.00	302.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	302.68
Open burning of organic matter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity generated and consumed onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medical gases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exported electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total net emissions	4,962.82	315.19	6.05	0.00	0.00	201.46	0.00	0.00	0.00	0.00	5,485.52

Table 13. Non-biogenic, biogenic anthropogenic and biogenic non-anthropogenic CO₂ emissions and removals by category

Category	Anthropogenic biogenic CO₂ emissions	Anthropogenic biogenic (CH₄ and N₂O) emissions (tCO₂e)	Non-anthropogenic biogenic (tCO₂e)
Category 1: Direct emissions	0.00	302.68	0.00
Category 2: Indirect emissions from imported energy	0.00	0.00	0.00
Category 3: Indirect emissions from transportation	0.00	0.00	0.00
Category 4: Indirect emissions from products used by organisation	0.00	194.93	0.00
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00	0.00
Total gross emissions	0.00	497.61	0.00

A1.1 REPORTING BOUNDARIES

A1.1.1 Emission source identification method and significance criteria

The GHG emissions sources included in this inventory are those required for Programme certification and were identified with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards as well as the Programme Technical Requirements.

The following methods were used to identify relevant sources:

1. Preliminary gap analysis conducted in 2019 to assess monitoring and reporting of greenhouse gas emissions since 2011
2. Direct communication with relevant staff
3. Review of main categories of expenditure reports
4. Direct communication with key suppliers and in some cases development of new templates for reporting to ensure data was complete, accessible and that measures and metrics were correctly defined.

Significance of emissions sources within the organisational boundaries has been considered in the design of this inventory. The significance criteria used comprise:

- All direct emissions sources that contribute more than 1% of total Category 1 and 2 emissions
- All indirect emissions sources that are required by the Programme.

No changes to the significance criteria have been made since this inventory was initially developed in the base year.

A1.1.2 Included sources and activity data management

As adapted from ISO 14064-1, the emissions sources deemed significant for inclusion in this inventory were classified into the following categories:

- **Direct GHG emissions (Category 1):** GHG emissions from sources that are owned or controlled by the company.
- **Indirect GHG emissions (Category 2):** GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- **Indirect GHG emissions (Categories 3-6):** GHG emissions that occur as a consequence of the activities of the company but occur from sources not owned or controlled by the company.

Table 14 provides detail on the categories of emissions included in the GHG emissions inventory, an overview of how activity data were collected for each emissions source, and an explanation of any uncertainties or assumptions made based on the source of activity data. Detail on estimated numerical uncertainties are reported in Appendix 1.

Data collection for the 2019 baseline inventory was initiated in 2021 and collated in 2022 following the requirements of ISO14064-1:2018 and in alignment with the technical guidelines of the Carbon Neutral Government Programme and Toitū Carbonreduce Programme. Data for this report was collected in 2022 and collated in 2023.

Table 14. GHG emissions activity data collection methods and inherent uncertainties and assumptions

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
Category 1: Direct emissions and removals	Stationary combustion	Diesel stationary combustion LPG stationary commercial Natural Gas distributed commercial	Assumed all supplier reports are accurate data comes from contractors via Campus Services Manager, Facilities Management using templates provided.	Default unit and emission factor selected to report on these sources	NO
	Mobile combustion (incl. company owned or leased vehicles)	Diesel mobile combustion (fuel cards) Petrol mobile combustion (fuel cards)	Assumed all supplier reports are accurate. Data comes from Procurement Manager, Finance	Default unit and emission factor selected to report on these sources	NO
	Leakage of refrigerants	CH ₄ CO ₂ HCFC-22 (R-22, Genetron 22 or Freon 22) R-404A R-410A	UoA prepared a reporting template and requested suppliers to fill it in, following MfE 2022 guidelines for monitoring and reporting of GHG. Purchases/top-ups and leakage assumed as equal during measurement period.	Default unit and emission factor selected to report on these sources	NO
	Emissions - Industrial processes	Acetylene use	Assumed all supplier reports are accurate. Data comes from Procurement Manager, Finance	Default unit and emission factor selected to report on these sources	NO
	Enteric fermentation	Enteric Fermentation Sheep	Data provided by farm manager is assumed to be accurate. Increased level of uncertainty due to no systematic data collection.	Default unit and emission factor selected to report on these sources	NO
Overall assessment of uncertainty for Category 1 emissions and removals		0%	Low		

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
Category 2: Indirect emissions from imported energy	Imported electricity	Electricity Toitū carbonzero certified factor Ecotricity Electricity Toitū carbonzero certified factor Prime Energy Electricity	Assumed all supplier invoices are accurate. Data comes from Energy Manager, Facilities Management	Supplier specific emission factors provided by Toitū have been used for carbonzero certified electricity when using market-based reporting. Otherwise, default unit and grid emission factor selected to report on these sources (location-based)	YES for Toitū carbonzero certified suppliers NO for grid electricity supplier
	Imported energy	Steam generation - Pre-calculated (tCO ₂ e)	Assumed all supplier invoices are accurate. Data comes from Energy Manager, Facilities Management	Default unit and emission factor selected to report on these sources	NO
Overall assessment of uncertainty for Category 2 emissions and removals		0%	Low		
Category 3: Indirect emissions from transportation	Business travel - Accommodation	Accommodation - Australia Accommodation - Austria Accommodation - Belgium Accommodation - Canada Accommodation - Chile Accommodation - China (Hong Kong) Accommodation - Czech Republic Accommodation - Fiji Accommodation - Finland Accommodation - France Accommodation - French Polynesia	Assumed data from supplier is correct and accurate - Accommodation data is based on number of room nights paid for by the University. Data comes from Procurement Manager, Finance. Not all countries have a specified emission factor. As more countries are added assessed, these emissions will have more certainty on accuracy.	Default unit and emission factor selected to report on these sources For countries without a specified emission factor, the New Zealand emission factor has been selected as the default.	NO

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
		Accommodation - Germany Accommodation - Greece Accommodation - India Accommodation - Indonesia Accommodation - Ireland Accommodation - Italy Accommodation - Japan Accommodation - Malaysia Accommodation - Netherlands Accommodation - New Zealand Accommodation - New Zealand Accommodation - Portugal Accommodation - Singapore Accommodation - South Korea Accommodation - Spain Accommodation - Switzerland Accommodation - Taiwan Accommodation - Thailand			



GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
		Accommodation - Turkey Accommodation - United Arab Emirates Accommodation - United Kingdom Accommodation - United States			
	Business travel - Transport (non-company owned vehicles)	Air travel domestic (average) Air travel domestic (large aircraft) Air travel domestic (medium aircraft) Air travel domestic (small aircraft) Air travel long haul (business) Air travel long haul (econ) Air travel long haul (econ+) Air travel short haul (average) Air travel short haul (econ) Air travel short haul b/f class Rental Car average (diesel) Rental Car average (hybrid) Rental Car average (petrol)	Assumed data from supplier is correct and accurate - Air transport data is based on flights boarded. Rental car data is based on bookings paid for by the University. Data comes from Procurement Manager, Finance.	EF factors specific to aircraft size (domestic), class booked (international) and short/long haul flights (international). When an average EF is selected, this is due to not knowing the type of aircraft or class booked.	NO



GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
		Rental Car EV - average Taxi (regular)			
	Client and visitor transport	Air travel long haul (average) Air travel short haul (average)	High uncertainty. Assumptions: departure airport allocated by student's country of citizenship. It is assumed 80% of international students located in New Zealand took a return to their countries of citizenship within the same year. The remaining 20% are assumed to have taken a one-way flight to New Zealand from their countries of origin.	The average EF was selected due to not knowing the type of aircraft or class booked.	NO
	Upstream freight - Paid by the organisation	Freight Air travel Domestic (average) Freight Air travel long haul (average) Freight Air travel short haul (average) Freight Road all trucks (average) Freight Road van (average)	Medium uncertainty. Assumed supplier reports are accurate, some estimation required. When distance (km) is not included in a report, assumptions are made to estimate the distance. If weight (kg) is not included, assumptions are made to estimate the average package size based on a similar freight report.	The average EF was selected due to not knowing the type of aircraft or vehicle used for transit.	NO
	Working from home	Working from home	High uncertainty. Data taken from a staff poll taken from 45 of UoA's senior professional staff leaders (7 September 2022). This data is used, as it is based on estimates of actual employee days.	Default unit and emission factor selected to report on these sources	NO
Overall assessment of uncertainty for Category 3 emissions and removals		0%	Medium to High		
Category 4: Indirect emissions from products used by organisation	Purchased goods and services	Dry ice Paper use - default Water supply	Assumed supplier reports are accurate	Default unit and emission factor selected to report on these sources	NO

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
	Disposal of solid waste - Landfilled	Decontamination of medical waste - Autoclaving Incineration of clinical waste Waste landfilled - Hampton Downs Waste landfilled LFGR Mixed waste	Recycling of plastic, aluminium and glass carries higher level of uncertainty. Assumptions based on 2019 baseline waste analysis of 'bottles and cans' materials distribution.	Where landfill location is known, specific emission factor is applied. Default unit and emission factor selected to report on all other sources.	NO
	Disposal of solid waste - Not landfilled	Waste disposal recycling of Aluminium Waste disposal recycling of Glass Waste disposal recycling of Paper Waste disposal recycling of Plastic Waste disposal recycling of Steel cans	Assumed supplier reports are correct	Default unit and emission factor selected to report on these sources	NO
	Disposal of solid waste - Not landfilled	Composting	Assumed supplier reports are correct	Default unit and emission factor selected to report on these sources	NO
	Disposal of liquid waste - Wastewater	Wastewater for treatment plants (average)	Assumed supplier reports are correct	Default unit and emission factor selected to report on these sources	NO
	Transmission of energy (T&D losses)	Electricity distributed T&D losses Electricity Toitū carbonzero certified factor Ecotricity (T & D losses) Electricity Toitū carbonzero certified factor Prime Energy (T & D losses)	Assumed supplier reports are accurate	Default unit and emission factor selected to report on these sources	NO

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Explanation of uncertainties or assumptions around your data and evidence	Use of default and average emissions factors	Pre-verified data
		Natural Gas distributed T&D losses			
Overall assessment of uncertainty for Category 4 emissions and removals		0%	Low		
For more detail refer to:					
<ul style="list-style-type: none"> University of Auckland Information Management Procedures for Carbon Audit 					
<ul style="list-style-type: none"> University of Auckland GHG Inventory Definitions & Source Information 					



A1.1.3 Excluded emissions sources and sinks

Emissions sources in Table 15 have been identified and excluded from this inventory.

Table 15. GHG emissions sources excluded from the inventory

Business unit	GHG emissions source or sink	GHG emissions category	Reason for exclusion
The University of Auckland	Staff and student commuting	Indirect - Category 3 (Emissions from transportation)	No data available for 2022
The University of Auckland	Construction and demolition	Indirect - category 4 - (From products and services used by the organisation)	No data available for 2022 as these data have not been systematically collected directly or via contractors to date. Construction and demolition emission sources are deemed material to the University's given the role buildings and the estate in general play in the provision of educational and research activities. Streamlined data collection to start with a baseline expected 2023-2024. This will be in a separate report under the estate strategy.
The University of Auckland	Products and services (≤ \$99,000)	Indirect - category 4 - (From products and services used by the organisation)	Data is not systematically collected in a way that enables analysis of this kind, mostly due to \$ not always suitable unit of collection for applying emission factors or lack of significance screening factor in eManage tool.
The University of Auckland	Sinks		No data available on sinks for 2022 - these data have not been systematically collected to date.
The University of Auckland	Staff travel - reimbursement of accommodation, air travel and fuel	Indirect - Category 3 (Emissions from transportation)	Data available for 2022 only in \$spent. Metrics km, litres, pNgts not available. Materiality assessment using \$ resulted in item considered de minimis - Recommendation to adjust data due to mandatory category - best practice
The University of Auckland	Special wastes	Indirect - Category 4 (Emissions from waste)	Chemical, battery (de minimis), cytotoxic, fluoro waste excluded due to no emission factor available and no screening tool (combined weight 1,688kg)

A1.2 QUANTIFIED INVENTORY OF EMISSIONS AND REMOVALS

A1.2.1 Calculation methodology

A calculation methodology has been used for quantifying the emissions inventory based on the following calculation approach, unless otherwise stated below:

$$\text{Emissions} = \text{activity data} \times \text{emissions factor}$$

The quantification approach(es) has changed since the previous measurement period

All emissions were calculated using Toitū emanage with emissions factors and Global Warming Potentials provided by the Programme (see Appendix 1 - data summary.xls). Global Warming Potentials (GWP) from the IPCC fifth assessment report (AR5) are the preferred GWP conversion⁵.

Where applicable, unit conversions applied when processing the activity data has been disclosed.

There are systems and procedures in place that will ensure applied quantification methodologies will continue in future GHG emissions inventories.

A1.2.2 Historical recalculations

Historical recalculations have been conducted.

Details

Toitū statement on emission factor changes and adjustments:

"Emission factors change regularly. Factors applied to activity data to translate activities into greenhouse gas emissions, are based on the best available information at the time. Toitū aligns with the most up to date publications, most frequently from MfE or the UK equivalent, BEIS, which means changes happen semi regularly.

Emission factors may go up or down simply because there is a more accurate way to calculate the emissions. In some cases, new specific variations of the factor have been introduced.

In the MfE Measuring Emissions Guidance published in August 2022, the following statement referring to electricity-related emission factors was included:

The previous methodology was based on electricity consumption data rather than electricity generation data. This resulted in a slight overlap between the scope 2 method and the scope 3 method which accounts for indirect emissions due to transmission and distribution losses.

The magnitude of change between the 2020 guidance and 2022 guidance emission factors for purchased electricity is around -8 per cent. Organisations will need to recalculate their purchased electricity emissions using the current emission factors if the impact of this change is material to their inventory.

Under the Toitū programme, the materiality threshold for recalculating historical inventories is defined as greater than 5% of the total inventory.

Due to the nature of emissions measurement being based on models and emission factors, the highest level of assurance we provide over the emissions inventory will be "Reasonable" rather than "Absolute" to account for uncertainties and variances in emission factors."

The historical inventories for The University of Auckland saw impacts from:

⁵ If emission factors have been derived from recognised publications approved by the programme, which still use earlier GWPs, the emission factors have not been altered from as published.

- The new emission factor in category 2 (electricity) and category 4 (Transmission and Distribution losses for electricity). Noting that the impact of the electricity emission factor updates in August 2022 are not expected to impact inventories from calendar year 2022 onwards.
- Inclusion of Ecotricity and Prime Energy kWh under location-based reporting instead of only market-based reporting
- Rounding of the emission factors to 3 significant figures rather than 6 or 7 significant figures

The impact on the historical inventories from this change is:

2019: +1177.64 tCO₂e, 1.45%

2020: +7.16 tCO₂e, 0.04%

2021: +25.05 tCO₂e, 0.15%

As the changes fall under the materiality threshold described, the historical emissions have been recalculated within this report, but have not required new verification. Therefore, minor discrepancies in historical emissions compared to previous reports may be observed.

As stated in Te Taumata Tukuwāro kore | Net Zero Carbon Strategy Progressive Pathway (table 7), Working From Home (WFH) and Freight data have been collected for 2022 and added to the inventory, both activities are within the Extended Net Zero Boundary. It must be noted, that as these two data sets have been collected for the first time in 2022, there are still data quality improvements to pursue as the reporting progresses.

The quantification approach for International Student air travel has been adjusted since the previous measurement period. Previously only data for students with international residency that arrived within the calendar year was calculated. However, a new approach has been made where all students with international residency in 2022 that are known to be in New Zealand at some point in time in 2022 are included, regardless of when the student arrived.

A1.2.3 GHG Storage and liabilities

A1.2.3.1 GHG STOCKS HELD ON SITE

Refrigerants and fuels may be stored on site, but their accidental leakage or release could result in a large increase in emissions for that period. Refrigerants such as HFCs, PFCs and SF₆ are GHGs with high global warming potentials, so material volumes of these or fuel are reported as potential liabilities.

Table 16. Total storage as of year end with potential GHG emissions liabilities.

GHG gas stock held	Quantity	Unit	Potential liability (tCO ₂ e)
Acetylene use	128.27	kilograms	0.43
CH ₄	26.67	kilograms	0.67
CO ₂	7,540.00	kilograms	7.54
Desflurane	2.47	kilograms	4.42
Diesel stationary combustion	88,652.00	litres	236.62
HCFC-22 (R-22, Genetron 22 or Freon 22)	525.70	kilograms	951.52
HFC-134a	4,308.00	kilograms	6,160.44
HFC-32	10.00	kilograms	6.75
Isoflurane	7.90	kilograms	2.77
LPG stationary commercial	402.00	kilograms	1.22
N ₂ O	1.27	kilograms	0.38
Petrol	400.00	litres	0.98
R-290 (Propane)	5.87	kilograms	0.02

GHG gas stock held	Quantity	Unit	Potential liability (tCO ₂ e)
R-404A	168.89	kilograms	662.32
R-407A	33.60	kilograms	70.80
R-407C	244.30	kilograms	433.35
R-410A	3,138.58	kilograms	6,551.79
R-449A	0.00	kilograms	0.00
Sevoflurane	3.06	kilograms	0.66
Sulphur Hexafluoride (SF ₆)	7.22	kilograms	164.62
Total potential liability			15,257.28

A1.2.4 Supplementary results

Holdings and transactions in GHG-related financial or contractual instruments such as permits, allowances, verified offsets or other purchased emissions reductions from eligible schemes recognised by the Programme are reported separately here.

APPENDIX 2: SIGNIFICANCE CRITERIA USED

Table 17. Significance criteria used for identifying inclusion of indirect emissions

Emission source	Magnitude: Where an indirect source was anticipated or assumed to be quantitatively substantial when compared to international standards requirements	Ability to influence and engage: where the University has a reasonable ability to monitor and reduce emissions and engage staff and students	Main significance criterion: Measuring will inform decision making on Net-Zero Carbon Strategy for the University (intended use and users)	Included in the inventory
Accommodation	√ This indirect source of emissions was assumed to be quantitatively substantial not necessarily in itself but as a direct result of another indirect source, 'staff and student work related air travel'.	√	√	YES
Air travel domestic, Short and Long haul (average) : : Work related (staff and students)	√	√ (measured and reported since 2011)	√	YES
Air travel short and long haul (average) : Category 3 - Emissions from Client and visitor transport : International students inbound	√ This source was anticipated to be quantitatively substantial.		√	YES
Bus travel (city) : : Tamaki - City loop Student Bus	Any source of emission that involves the direct use of fuel by the University and is under is considered significant	√		YES
Direct fugitive emissions arising from the release of GHGs	ALL Categories 1 and 2 deemed significant in principle			YES
Composting :		√	√	YES
Diesel : : Fuel cards		√	√	YES
Diesel : : Inter Campus Staff Shuttle		√	√	YES
Diesel stationary combustion : : City campus generator		√	√	YES
Diesel stationary combustion : : Fire pumps		√	√	YES
Electricity : : Purchased electricity	ALL Categories 1 and 2 deemed significant in principle			YES

Emission source	Magnitude: Where an indirect source was anticipated or assumed to be quantitatively substantial when compared to international standards requirements	Ability to influence and engage: where the University has a reasonable ability to monitor and reduce emissions and engage staff and students	Main significance criterion: Measuring will inform decision making on Net-Zero Carbon Strategy for the University (intended use and users)	Included in the inventory
Electricity distributed T&D losses : Category 4 - Emissions from purchased fuel and energy related activities	ALL Energy T&D losses deemed significant in principle			YES
Electricity Toitū carbonzero certified factor Ecotricity : Category 2 - Indirect emissions from imported electricity	Not applicable for 2019 - only 2020 onwards due to supplier certification			n/a
Enteric Fermentation Dairy Cattle : : Leigh Marine Lab			√	YES
Enteric Fermentation Sheep : : Liggins Research Farm Laboratory, Wai-o-tapu.			√	YES
Freight				YES
LPG stationary commercial :	ALL Categories 1 and 2 deemed significant in principle		√	YES
Natural Gas distributed commercial :	ALL Categories 1 and 2 deemed significant in principle		√	YES
Natural Gas distributed T&D losses : Category 4 - Emissions from the transmission of energy	ALL Energy T&D losses deemed significant in principle		√	YES
Paper use - default : Category 4 - Emissions from purchased goods		√ (measured and reported since 2011)	√	YES
Petrol : : Fuel cards		√	√	YES
Rental Car average (all fuel types) :		√	√	YES
Steam generation CO ₂ e : : Purchased from ADHB	ALL Categories 1 and 2 deemed significant in principle			YES
Taxi (regular) :		√	√	YES
Waste disposal recycling of Aluminium : Category 4 - Emissions from the disposal of solid waste : From 'Bottles&Cans' collected for recycling		√	√	YES

Emission source	Magnitude: Where an indirect source was anticipated or assumed to be quantitatively substantial when compared to international standards requirements	Ability to influence and engage: where the University has a reasonable ability to monitor and reduce emissions and engage staff and students	Main significance criterion: Measuring will inform decision making on Net-Zero Carbon Strategy for the University (intended use and users)	Included in the inventory
Waste disposal recycling of Glass : Category 4 - Emissions from the disposal of solid waste : From 'Bottles&Cans' collected for recycling		√	√	YES
Waste disposal recycling of Paper :		√	√	YES
Waste disposal recycling of Plastic : Category 4 - Emissions from the disposal of solid waste : From 'Bottles&Cans' collected for recycling		√	√	YES
Waste landfilled LFGR Mixed waste : Category 4 - Emissions from the disposal of solid waste : 2019 only - 2020 onwards Hampton Downs e factor applies		√	√	YES
Waste landfilled LFGR Mixed waste : Category 4 - Emissions from the disposal of solid waste : Decant/clear-out waste remaining after diversion		√	√	YES
Waste landfilled LFGR Mixed waste : Category 4 - Emissions from the disposal of solid waste : Skip bins from Faculties and Service Divisions		√	√	YES
Water supply :		√	√	YES
Working From Home		√		YES

APPENDIX 3: CERTIFICATION MARK USE

Waipapa Taumata Rau | The University of Auckland may choose to make use of the Certification Marks for the period 2022 in marketing and communication materials both internally and externally.

APPENDIX 4: REFERENCES

International Organization for Standardization, 2018. ISO 14064-1:2018. Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. ISO: Geneva, Switzerland.

World Resources Institute and World Business Council for Sustainable Development, 2004 (revised). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. WBCSD: Geneva, Switzerland.

World Resources Institute and World Business Council for Sustainable Development, 2015 (revised). The Greenhouse Gas Protocol: Scope 2 Guidance. An amendment to the GHG Protocol Corporate Standard. WBCSD: Geneva, Switzerland.

APPENDIX 5: REPORTING INDEX

This report template aligns with ISO 14064-1:2018 and meet Toitū carbonreduce programme Organisation Technical Requirements. The following table cross references the requirements against the relevant section(s) of this report.

Section of this report	ISO 14064-1:2018 clause	Organisational Technical Requirement rule
Cover page	9.3.1 b, c, r 9.3.2 d,	TR8.2, TR8.3
Availability	9.2 g	
Chapter 1: Emissions Inventory Report		
1.1. Introduction	9.3.2 a	
1.2. Emissions inventory results	9.3.1 f, h, j 9.3.3	TR4.14, TR4.16, TR4.17
1.3. Organisational context	9.3.1 a	
1.3.1. Organisation description	9.3.1 a	
1.3.2. Statement of intent		TR4.2
1.3.3. Person responsible	9.3.1 b	
1.3.4. Reporting period	9.3.1 l	TR5.1, TR5.8
1.3.5. Organisational boundary and consolidation approach	9.3.1.d	TR4.3, TR4.5, TR4.7, TR4.11
1.3.6. Excluded business units		
Chapter 2: Emissions Management and Reduction Report		
2.1. Emissions reduction results	9.3.1 f, h, j, k 9.3.2 j, k	TR4.14, TR6.18
2.2. Significant emissions sources		
2.3. Emissions reduction targets		TR6.1, TR6.2, TR6.4, TR6.6, TR6.8,
2.4. Emissions reduction projects	9.3.2 b	TR6.8, TR6.11, TR6.12, TR6.13, TR6.14, TR6.15
2.5. Staff engagement		TR6.1, TR6.9
2.6. Key performance indicators		TR6.19

Section of this report	ISO 14064-1:2018 clause	Organisational Technical Requirement rule
2.7. Monitoring and reporting	9.3.2 h	TR6.2
Appendix 1: Detailed greenhouse gas inventory	9.3.1 f, g	TR4.9, TR4.15
A1.1 Reporting boundaries		
A1.1.1 Emission source identification method and significance criteria	9.3.1 e	TR4.12, TR4.13
A1.1.2 Included emissions sources and activity data collection	9.3.1 p, q 9.3.2 i	TR5.4, TR5.6, TR5.17, TR5.18,
A1.1.3 Excluded emissions sources and sinks	9.3.1 i	TR5.21, TR5.22, TR5.23
A1.2 Quantified inventory of emissions and removals		
A1.2.1 Calculation methodology	9.3.1 m, n, o, t	
A1.2.2 Historical recalculations		
A1.2.3 GHG Storage and liabilities		
A1.2.3.1 GHG stocks held on site		TR4.18
A1.2.3.2 Land-use liabilities	9.3.3.	TR4.19
A1.2.4 Supplementary results		
A1.2.4.1 Carbon credits and offsets	9.3.3.3	
A1.2.4.2 Purchased or developed reduction or removal enhancement projects	9.3.2 c	
A1.2.4.3 Double counting and double offsetting		
Appendix 2: Significance criteria used	9.3.1.e	TR4.12
Appendix 3: Certification mark use		TR3.6
Appendix 4: References		
Appendix 5: Reporting index		



INDEPENDENT AUDIT OPINION

Toitū carbon programme certification

TO THE INTENDED USERS

Organisation subject to audit: The University of Auckland

Toitū Carbon Programme: Toitū carbonreduce

ISO 14064-1:2018

ISO 14064-3:2019

Audit Criteria: Toitū Programme Technical Requirements 3.1
Audit & Certification Technical requirements 3.0
Certification Mark Guide v 3.0

Responsible Party: The University of Auckland

Intended users: The inventory is intended for use by the members of the Sustainable Estate and Operations Working Group and Governance Group, and the wider community of Waipapa Taumata Rau.

Registered address: 3A Symonds St, Auckland Central, Auckland, 1010

Inventory period: 01/01/2022 to 31/12/2022

Inventory report: IMR_22_The University of Auckland_CR_Org.pdf

We have reviewed the greenhouse gas emissions inventory report ("the inventory report") for the above named Responsible Party for the stated inventory period.

RESPONSIBLE PARTY'S RESPONSIBILITIES

The Management of the Responsible Party is responsible for the preparation of the GHG statement in accordance with ISO 14064-1:2018 and the requirements of the stated Toitū carbon programme. This responsibility includes the design, implementation and maintenance of internal controls relevant to the preparation of a GHG statement that is free from material misstatement.

VERIFIERS' RESPONSIBILITIES

Our responsibility as verifiers is to express a verification opinion to the agreed level of assurance on the GHG statement, based on the evidence we have obtained and in accordance with the audit criteria. We conducted our verification engagement as agreed in the audit letter, which define the scope, objectives, criteria and level of assurance of the verification.

The International Standard ISO 14064-3:2019 requires that we comply with ethical requirements and plan and perform the verification to obtain the agreed level of assurance that the GHG emissions, removals and storage in the GHG statement are free from material misstatement.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit carried out in accordance with the ISO 14064-3:2019 Standards will always detect a material misstatement when it exists. The procedures performed on a limited level of assurance vary in nature and timing from, and are less in extent compared to reasonable assurance, which is a high level of assurance. Misstatements are differences or omissions of amounts or disclosures, and can arise from fraud or error. Misstatements are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of readers, taken on the basis of the information we audited.

GHG quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

BASIS OF VERIFICATION OPINION

Our responsibility is to express an assurance opinion on the GHG statement based on the evidence we have obtained. We conducted our assurance engagement as agreed in the Contract which defines the scope, objectives, criteria and level of assurance of the verification.

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

VERIFICATION

We have undertaken a verification engagement relating to the Greenhouse Gas Emissions Inventory Report (the 'Inventory Report')/Emissions Inventory and Management Report of the organisation listed at the top of this statement and described in the emissions inventory report for the period stated above.

The Inventory Report provides information about the greenhouse gas emissions of the organisation for the defined measurement period and is based on historical information. This information is stated in accordance with the requirements of International Standard ISO 14064-1 Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals ('ISO 14064-1:2018') and the requirements of the stated Enviro-Mark Solutions Limited (trading as Toitū Envirocare) programme.

VERIFICATION STRATEGY

Our verification strategy used a combined data and controls testing approach. Evidence-gathering procedures included but were not limited to:

- activities to inspect the completeness of the inventory;
- interviews of site personnel to confirm operational behaviour and standard operating procedures;
- re-perform access controls to onsite records;
- sampling of fuel, air travel and electricity records to confirm accuracy of source data into calculations;
- recalculation of emissions;
- sense checking of accommodation, waste and refrigerant gas data.

The data examined during the verification were historical in nature.

QUALIFICATIONS TO VERIFICATION OPINION

The following qualifications have been raised in relation to the verification opinion:

The opinion is unmodified.

VERIFICATION LEVEL OF ASSURANCE

	tCO ₂ e	Level of Assurance
Category 1	5,485.52	Reasonable
Category 2	5,432.63	Reasonable
Category 3 (mandatory) - work related air travel	9,781.82	Reasonable
Category 3 (mandatory remaining)	182.06	Limited
Category 3 (additional)	25,217.56	Limited
Category 4 (mandatory)	1,002.63	Limited
Category 4 (additional)	273.71	Limited
Total inventory	47,375.94	

RESPONSIBLE PARTY'S GREENHOUSE GAS ASSERTION (CERTIFICATION CLAIM)

Toitū carbonreduce organisation certified: The University of Auckland including Auckland Uniservices Limited, all campuses and operational emissions. Toitū carbonreduce certified means measuring emissions to ISO 14064-1:2018 and Toitū requirements; and managing and reducing against Toitū requirements.

VERIFICATION CONCLUSION

EMISSIONS - REASONABLE ASSURANCE

We have obtained all the information and explanations we have required. In our opinion, the emissions, removals and storage defined in the inventory report, in all material respects:

- comply with ISO 14064-1:2018 and the requirements of the stated Toitū Envirocare Toitū carbon programme; and
- provide a true and fair view of the emissions inventory of the Responsible Party for the stated inventory period.

EMISSIONS - LIMITED ASSURANCE

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the emissions, removals and storage defined in the inventory report:

- do not comply with ISO 14064-1:2018 and the requirements of the stated Toitū Envirocare Toitū carbon programme; and
- do not provide a true and fair view of the emissions inventory of the Responsible Party for the stated inventory period.

OTHER INFORMATION

The responsible party is responsible for the provision of Other Information to meet Programme requirements. The Other Information may include emissions management and reduction plan and purchase of carbon credits, but does not include the information we verified, and our auditor's opinion thereon.

Our opinion on the information we verified does not cover the Other Information and we do not express any form of audit opinion or assurance conclusion thereon. Our responsibility is to read and review the Other Information and consider it in terms of the programme requirements. In doing so, we consider whether the Other Information is materially inconsistent with the information we verified or our knowledge obtained during the verification.

Verified by:		Authorised by:	
Name:	Neil Gilbert	Name:	Ana Tatana
Position:	Verifier, Constantia Consulting	Position:	Certifier, Toitū Envirocare
Signature:		Signature:	
Date verification audit:	08 and 09 May 2023	Date:	7 November 2023
Date opinion expressed:	19 September 2023		



SUMMARY OF TOITŪ CARBONREDUCE CERTIFICATION¹

FOR WAIPAPA TAUMATA RAU | THE
UNIVERSITY OF AUCKLAND



Summary for 01 January 2022 to 31 December 2022

TOITŪ CARBONREDUCE ORGANISATION CERTIFIED: WAIPAPA TAUMATA RAU | THE UNIVERSITY OF AUCKLAND INCLUDING AUCKLAND UNISERVICES LIMITED, ALL CAMPUSES AND OPERATIONAL EMISSIONS

Toitū carbonreduce means committing to ongoing reductions while achieving annual measurement for at least the Toitū mandatory emissions.ⁱⁱ



Measured emissions to **ISO 14064-1:2018** and [Toitū requirements](#)



Managing and reducing against [Toitū requirements](#)

This report provides a summary of the annual greenhouse gas (GHG) emissions inventory and management report for Waipapa Taumata Rau | The University of Auckland as part of the annual work to achieve Toitū carbonreduce certification. Additional details of the annual achievements, commitments, and verification are available on request from Waipapa Taumata Rau | The University of Auckland.

The overall purpose of this report is to support the implementation of Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy and associated Sustainable Estate and Operations initiatives and plans. The main objective is to identify the Greenhouse Gas emissions profile of the University in a manner that is consistent with best practice and latest international standards.

ACHIEVEMENTS

These achievements have been verified in line with ISO 14064-3:2019 and Toitū carbonreduce Programme Technical Requirements for the 01 January 2022 to 31 December 2022 measurement period.

EMISSIONS MEASUREMENT

Waipapa Taumata Rau | The University of Auckland's greenhouse gas emissions for this year (01 January 2022 to 31 December 2022) were 47,375.94 tCO₂e. Waipapa Taumata Rau | The University of Auckland has measured the emissions resulting from its operational activities, purchased energy, and selected impacts from its value chain activities, including business travel, freight, and waste sent to landfill.

The annual inventory is detailed in the following table. Emissions and reductions are reported using a location-based methodology.ⁱⁱⁱ

Category (ISO 14064-1:2018)	Scopes (GHG Protocol)	GHG emissions (tCO ₂ e)		
		Base Year 2019	Previous Year 2021	Current Year 2022
Category 1: Direct emissions	Scope 1	5,667.38	5,426.74	5,485.52
Category 2: Indirect emissions from imported energy (location-based method*)	Scope 2	8,066.06	7,865.56	5,432.63
Category 3: Indirect emissions from transportation	Scope 3	65,935.12	1,906.21	35,181.44
Category 4: Indirect emissions from products used by organisation		2,799.14	1,461.75	1,276.34
Category 5: Indirect emissions associated with the use of products from the organisation		0.00	0.00	0.00
Category 6: Indirect emissions from other sources		0.00	0.00	0.00
Total gross emissions*		82,467.70	16,660.26	47,375.94
Category 1 direct removals		0.00	0.00	0.00
Total net emissions		82,467.70	16,660.26	47,375.94

*Gross and net emissions are reported using a location-based methodology. Contact Waipapa Taumata Rau | The University of Auckland for full details.

The operational GHG emission sources included in this inventory are shown in Figure 1 below.

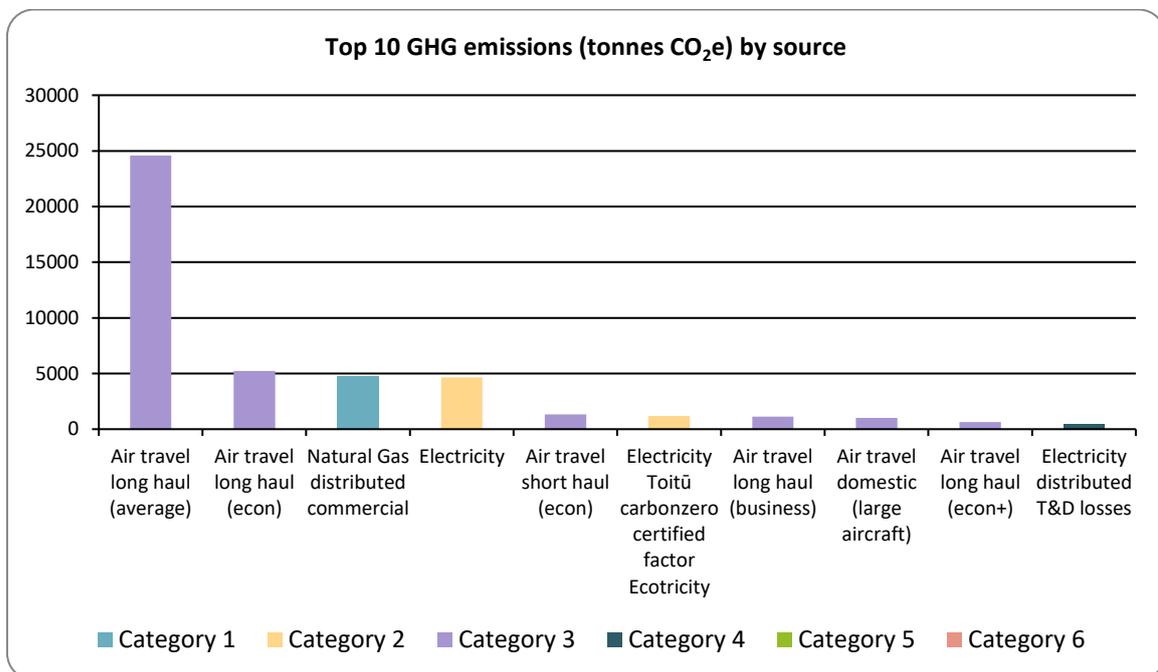


Figure 1: Top 10 GHG emissions (tonnes CO₂e) by source

SCOPE OF MEASURED INVENTORY

CONSOLIDATION APPROACH

An operational control consolidation approach was used to account for emissions. Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards.^{iv}

The operational control approach was chosen as the University has control over the operations of its units and service divisions and has authority to introduce operating policies and corresponding implementation plans.

BOUNDARIES

The University of Auckland was established by The University of Auckland Act 1961. The University of Auckland (the University), Auckland UniServices Limited (AUL), and the University of Auckland Foundation (the Foundation) are all controlled entities and together form 'the Group'. AUL operates in China and has a branch in the Kingdom of Saudi Arabia although the latter will soon be deregistered as projects there have been completed. The principal activities of the University and AUL are the provision of teaching and research services. The principal activities of the Foundation are raising and stewardship of funds for charitable purposes and advancement of education and healthcare, assistance of students to pursue courses of study at the University of Auckland, and the general advancement of the University.

The central office of the University's management is located at the Clock Tower, 22 Princes St, Auckland, New Zealand.

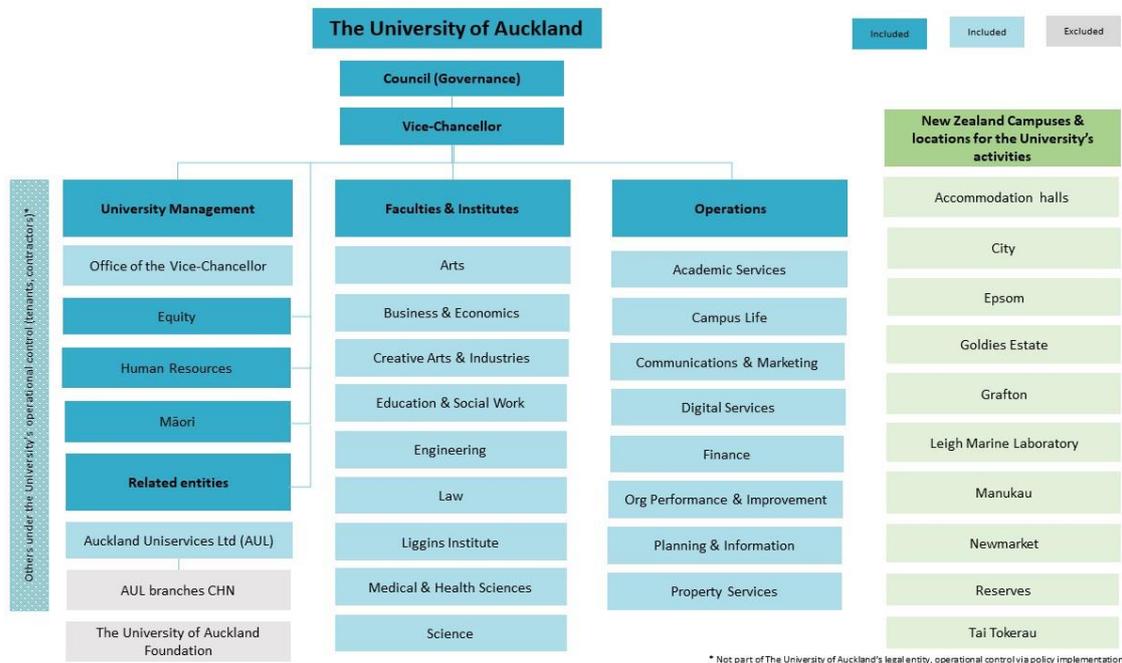


Figure 2: Organisational structure showing business units included and excluded

The University Foundation is excluded from the GHG emissions boundary as it is not under the operational control of the University. The principal activities of the Foundation are raising and stewardship of funds for charitable purposes and advancement of education and healthcare, assistance of students to pursue courses of study at the University of Auckland, and the general advancement of the University. Excluded emissions do not exceed 5% of the total footprint within the organisation boundary stated.

The Auckland UniServices Limited (AUL) operations in China, are also excluded from the GHG emissions boundary as these business units are not under the University's operational control.

MANAGING AND REDUCING

This is the fourth year of reporting under the Toitū carbonreduce programme. An absolute reduction in Category 1 and 2 emissions of 2,896.23 tCO₂e has been achieved against base year. A reduction in emissions intensity (for Category 1, 2 and mandatory Category 3 and 4 emissions) of 14.92 tCO₂e/\$M has been achieved based upon a 4-year rolling average.

As expected, in 2022, the University's carbon profile began to show an overall upward trend compared to the previous year. This is mainly as a result of Aotearoa's borders opening fully and a return to travel after the Covid-19 restrictions were lifted. The three key sources of emissions for this reporting period were once again air travel and associated accommodation, electricity and gas. International students air travel accounted for the highest emissions and work related air travel was the second highest source of emissions.

Target name	Baseline period	Target date	Type of target (intensity or absolute)	Current performance (tCO ₂ e)	Current performance (%)	Comments
Work related Air travel, staff and students	2019	2030	Absolute	9,783	-66.53	
Energy and fuel	2019	2030	Absolute	12,370	-1.61	
Waste	2019	2030	Absolute	200	-79.81	

COMMITMENTS

REDUCTION TARGETS

Waipapa Taumata Rau | The University of Auckland is committed to managing and reducing its emissions. Waipapa Taumata Rau | The University of Auckland's commitments, including GHG emissions reduction targets and plans, have been reviewed and are in line with Toitū carbonreduce programme requirements.

Targets have been set as part of the commitments of Te Taumata Tukuwaro-kore | Net Zero Carbon Strategy, published in Q4 2022.

Targets with % listed:

Reduce absolute total energy and fuel emissions by 25% by the year 2025, relative to base year.

Reduce absolute total work related travel emissions by 50% by the year 2030, relative to base year.

Looking ahead, Waipapa Taumata Rau | The University of Auckland is currently focused on the following projects.

Objective	Project	Responsibility	Completion date
Below are some examples of emission reduction efforts under the ongoing Sustainability programme covering the period 2019 to 2022. The Sustainable Estate and Operations Working Group will identify further reduction projects in line with Te Taumata Tukuwaro-kore			
Building operations - Decarbonisation	Recreation Wellness Centre (RWC) - Changed plans for consented gas and heating systems and replaced with electric reverse cycle heat pumps	Energy, Facilities Management	Building project now underway
Building operations - Decarbonisation	Old Choral Hall (OCH) Changed plans for consented gas and heating systems and replaced with electric reverse cycle heat pumps	Energy, Facilities Management	Building project now underway
Composting - food waste prevention and recovery at events	Sustainable Events Guide	Event Services, Sustainability Team	Ongoing
Energy conservation	Air conditioning chilled water temperature control -Changing control systems so that chillers do not chill the air conditioning water to a lower temperature than what is needed. This will reduce the amount of electricity consumed by the air conditioning chillers.	Energy, Facilities Management	In progress
Energy conservation	Space heating water temperature control. Changing control systems so that existing boilers do not heat water to a higher temperature than what is needed. This will reduce the amount of gas burnt in the boilers.	Energy, Facilities Management	In progress
Energy efficiency	Grafton chiller upgrades. Modification of two of the four chillers to be more energy efficient.	Energy, Facilities Management	In progress
Energy efficiency	B260 chiller upgrades. Modification of two of the three main building chillers (not data centre) to be more energy efficient.	Energy, Facilities Management	In progress

Objective	Project	Responsibility	Completion date
Energy efficiency	Lighting audit in building B260 carpark - Audit completed, upgrade works planned for 2022	Energy, Facilities Management	Audit completed - implementation of recommendations in progress
Food waste recovery - waste prevention	Waste diversion from landfill - Food waste recovery for offsite composting at student accommodation halls	Ngā Wharenoho/Accommodation Services, Waste Minimisation specialist	2019 - ongoing
Minimise water use	Building washing programme - Using sustainable water supply of non-potable (untreated) for building cleaning	Energy, Facilities Management	Initiated 2020, now BAU
Reduce emissions from electricity	Increase to >50% the amount of certified carbon zero electricity	Property Services	completed
Reduce water waste	Green Your Room initiative - Water saving initiative for students to opt into actions to reduce their personal environmental footprint and promote sustainability awareness amongst residents.	Ngā Wharenoho/Accommodation Services	Ongoing - 2022 participation figures tbc
Reducing emissions from air travel	Include carbon and sustainability considerations into Travel Policy update	Strategic Procurement	Under way - Policy due out for consultation in 2023
Reducing paper use	Follow Me printing - All printing activated by Campus Card identity and access cards. Only prints a document when the user is at the printer, helping to eliminate unnecessary printing and waste	IT Services	2019-ongoing
Sustainable buildings	Improved Project Management - Added carbon tag to Project Management platform	Property Services, Capital Works	Initial phase started late 2022 - over 12 projects already identified for their carbon reduction benefits (end of trip facilities to improve cycling to work opportunities, lighting upgrades, replace gas cooking facilities with electric ones)
Sustainable buildings	Introduced carbon and sustainability consideration into capital works business cases	Property Services, Capital Works	Ongoing - since 2022

Objective	Project	Responsibility	Completion date
Waste - resource recovery	Waste diversion from landfill - Repurpose and rehome furniture and other materials from decants and refurbishments	Property Services (Facilities Management), Waste Minimisation specialist	2019-ongoing
Waste prevention	Introduced guidelines to limit the amount of pizza box waste	Campus Life - Event Services	completed
Waste reduction - embodied carbon	Adaptive reuse of existing building - Building 201 project	Property Services, Capital Works	Construction under way

CERTIFICATE DETAILS

Certification status:	Toitū carbonreduce certified organisation
Certificate number:	2022275J, Year 3 of 3 year certificate period
Valid until:	10 October 2025
Measurement period:	01 January 2022 to 31 December 2022
Base year:	01 January 2019 to 31 December 2019
Audited by:	Constantia Consulting
Level of assurance:	Reasonable for Category 1, 2 and Category 3 work related air travel, Limited for remaining category 3 and category 4

ⁱ ©Enviro-Mark Solutions Limited 2020.

Disclaimer: This Certification Summary Statement is a summary of the information (validated and verified for relevant components of the certification) considered for certification and the certification decision. It should not be taken to represent the full submission for certification. Whilst every effort has been made to ensure that the information in this Statement is accurate and complete, Enviro-Mark Solutions Limited (trading as Toitū Envirocare) does not, to the maximum extent permitted by law, give any warranty or guarantee relating to the accuracy or reliability of the information.

ⁱⁱ The mandatory sources that must be included in any Toitū carbon programme inventory include:

- All direct emissions from the activities of the organisation, or the part of the organisation being certified. Direct emissions come from assets owned or controlled by the organisation, such as emissions from fleet vehicles, boilers, generators and HVAC systems.
- All emissions from imported energy (electricity, heat and steam)
- Emissions from business travel and freight paid for by the organisation
- Emissions associated with waste disposed of by the organisation, as well as the transmission and distribution of electricity, and natural gas

ⁱⁱⁱ All purchased and generated energy emissions are dual reported using both the location-based method and market-based method in the certified Inventory Report and appendices. This summary document presents the information using the location-based method. Note that reductions and any required compensation are assessed using that method. Dual reporting illustrates the role of supplier choice, onsite renewable energy generation and contractual instruments in managing indirect emissions from energy alongside any ongoing energy efficiency and reduction efforts. This dual reporting aligns with ISO 14064-1:2018 and the GHG Protocol. Please contact this organisation for the dual reporting details applicable to this inventory.

^{iv} Control: the organisation accounts for all GHG emissions and/or removals from facilities over which it has financial or operational control. Equity share: the organisation accounts for its portion of GHG emissions and/or removals from respective facilities.



Toitū carbonreduce organisation certified: The University of Auckland including Auckland Uniservices Limited, all campuses and operational emissions



Measured emissions to **ISO 14064-1:2018** and **Toitū requirements**

A C H I E V E M E N T C L A I M S

Measure period: 01/01/2022 to 31/12/2022

Toitū boundary, category 1: 5,485.52 tCO₂e

Toitū boundary, category 2 (location-based method): 5,432.63 tCO₂e

Toitū boundary, category 3-6 (location-based method): 10,966.51 tCO₂e

Toitū boundary, total (location-based method): 21,831.77 tCO₂e

Additional emissions, category 3-6: 25,491.27 tCO₂e

All measured emissions (location-based method): 47,375.94 tCO₂e



Managing and reducing against **Toitū requirements**

A C H I E V E M E N T C L A I M S

Toitū boundary cat 1 and 2: -2,896.23 tCO₂e against base year

Toitū boundary, total: -14.92 tCO₂e/\$M based on a 4 year rolling average

C O M M I T M E N T C L A I M S

Reduce absolute total energy and fuel emissions by 25% by the year 2025, relative to base year.

Reduce absolute total work related travel emissions by 50% by the year 2030, relative to base year.