

EMISSIONS INVENTORY REPORT AND MANAGEMENT PLAN

Prepared in accordance with ISO 14064-1: This report is to be read in conjunction with the Emissions Inventory spreadsheet.



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Dated: 04/11/2021

Verification Status: Unverified

Measurement Period: 01/01/2018 – 31/12/2018

Base year period: 01/01/2018 to 31/12/2018

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INTRODUCTION

Auckland University of Technology (AUT) is committed to advancing knowledge and understanding the issues and opportunities around creating a sustainable future for people and the planet and its biological ecosystems. This vision encompasses three core areas which intersect across all aspects of our activities. They are Mauri ora/Wellbeing, Ki Tua/Futures and Whanaungatanga/Connectivity. The approach is outlined through the Sustainability Roadmap which sets out goals and targets until 2025. This is also contextualised through our commitment to the United Nation's Sustainable Development Goals (SDGs) of which SDG 13, Climate Action is seen as critical.

AUT has reported on its carbon emissions to the Tertiary Education Facilities Management Association of Australasia since 2012. This provides a benchmark against other tertiary Institutes in Australasia. It has reported one of the lowest carbon footprints in this sector.

However, this report is the first one that is consistent with the International Standards Organisation ISO 14064-1:2018 which is based on the Greenhouse Gas Protocol (GHG Protocol¹). This is a Corporate Accounting and Reporting Standard (2004) and ISO 14064-1:2018 Specification with Guidance at the Organisation Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurements and reporting.

For the purposes of this report, AUT refers to the three campuses operations', AUT Foundation and AUT Ventures Ltd. It excludes AUT Millennium.

STATEMENT OF INTENT

ISO14064-1 9.3.2 (a)

This inventory forms part of AUT's commitment to gain ISO14064-1:2018 verification. This report:

- relates specifically to the CO₂e emissions of AUT;
- has been prepared following the requirements in ISO14064-1;
- has been prepared as part of an ongoing commitment to measure and reduce emissions as outlined in our Sustainability Roadmap; and
- Identifies exposure to carbon risk within our core business and our supply chain, in support of a longer-term goal of transitioning to a business model that is viable within a net zero economy.

Intended users of this report include, but are not limited to:

- Our staff and students
- Prospective students
- Our industry partners and government
- Strategic Leadership and AUT Council
- General public

Identifying the key user has proven difficult as this document is seen as an important tool for communicating with three stakeholder groups. These are the Government, via the Carbon Neutral Government Programme; AUT's strategic leadership and executive teams for their support for future carbon reduction work and our student body who have an expectation that the University will demonstrate best practise.

¹ 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 Organisational Level Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

DESCRIPTION OF AUT

ISO14064-1 9.3.1 (a) and 9.3.2 (a)

AUT is the second largest university in Aotearoa New Zealand. It operates across three campuses located in Auckland and has an enrolment of 20,133 equivalent full-time students (EFTS) and 2,424 full time equivalent (FTE) staff. Students are provided with unique learning opportunities through engagement with industry, business, and international partners.

The University has 5 Faculties:

- Faculty of Business, Economics and Law
- Faculty of Culture and Society
- Faculty of Design and Creative Technologies
- Faculty of Health and Environmental Sciences
- Te Ara Poutama (Faculty of Māori and Indigenous Development).

For more information on the University see the Annual Reports for the year ended December 2018 at www.aut.ac.nz. For further information on the structure of the organisation see figure 1 and table 1.

The University is also a 100% shareholder in AUT Foundation and AUT Ventures Ltd and is a 50% and 15% shareholder in AUT Millennium and the Waterfront Theatre respectively.

Sustainability at AUT

The mission in the University's Sustainability Roadmap is to create great graduates for a sustainable world. Collectively it is committed to ensuring that students have opportunities to develop sustainability related knowledge, that students will have opportunities for interdisciplinary collaboration on the world's most intransigent problems, through action orientated research and finally that these activities will be undertaken on campuses that are operating with ever decreasing carbon footprints in response to SDG13, climate action.

The university has set an ambitious goal of halving its CO₂e footprint by 2025 using 2018 as its baseline.

A focus on GHG measurement, reduction targets and gaining ISO14064 certification provides credibility that the organisation is committed to reducing its footprint in line with global targets.

REPORTING PERIOD COVERED

ISO14064-1 9.3.1 (c,l)

This GHG inventory report covers the financial year 1 January 2018 to 31 December 2018. This is also the baseline year. A calendar year was chosen to align with our financial reporting cycles. The frequency of this report will be annual.

ORGANISATIONAL BOUNDARIES

ISO14064-1 9.3.1 (d & j) ; 9.3.2 (e & f)

The organisational boundaries were set with reference to the methodology described in the ISO 14064-1:2018 standard. The standard allows for two distinct approaches to be used to consolidate GHG emissions: the equity share or control (either financial or operational) approaches.

The operational control approach was used to account for emissions. This approach was used to account for emissions over which the University has control and can influence reductions in line with its targets.

The criteria AUT used to define organisational boundaries consisted of mapping the organisational chart to show legal structure of all entities residing beneath AUT. Table 1 and figure 1 describe how each entity is considered and shows what has been included in the context of the organisational profile. In figure 1, the part of the structure in green indicates what has been included and those highlighted in orange what has been excluded

ISO 14064-1 requires that different activities and emissions are categorised into ‘facilities’ in line with Annex to provide data in its disaggregated form to provide transparency and flexibility to meet reporting requirements.

A facility is an operation which by its processes and geography can be separately accounted for. ISO14064 defines facility as: **“a single installation, set of installations or production processes (stationery or mobile), which can be defined within a single geographical boundary, organisational unit or production process”**²

While the university operates from three campuses and it has several subsidiaries which are included in this report, they cannot be easily separated into facilities. AUT Foundation and AUT Ventures occupy space within the university campuses and are included in the total emissions. The AUT Ventures subsidiaries i.e. Avice Ltd and Crunch House Ltd are business start-ups and staff and students involved with these organisations operate from university office spaces.

The City, South and North campuses which form Auckland University of Technology have not been separated out in this report.

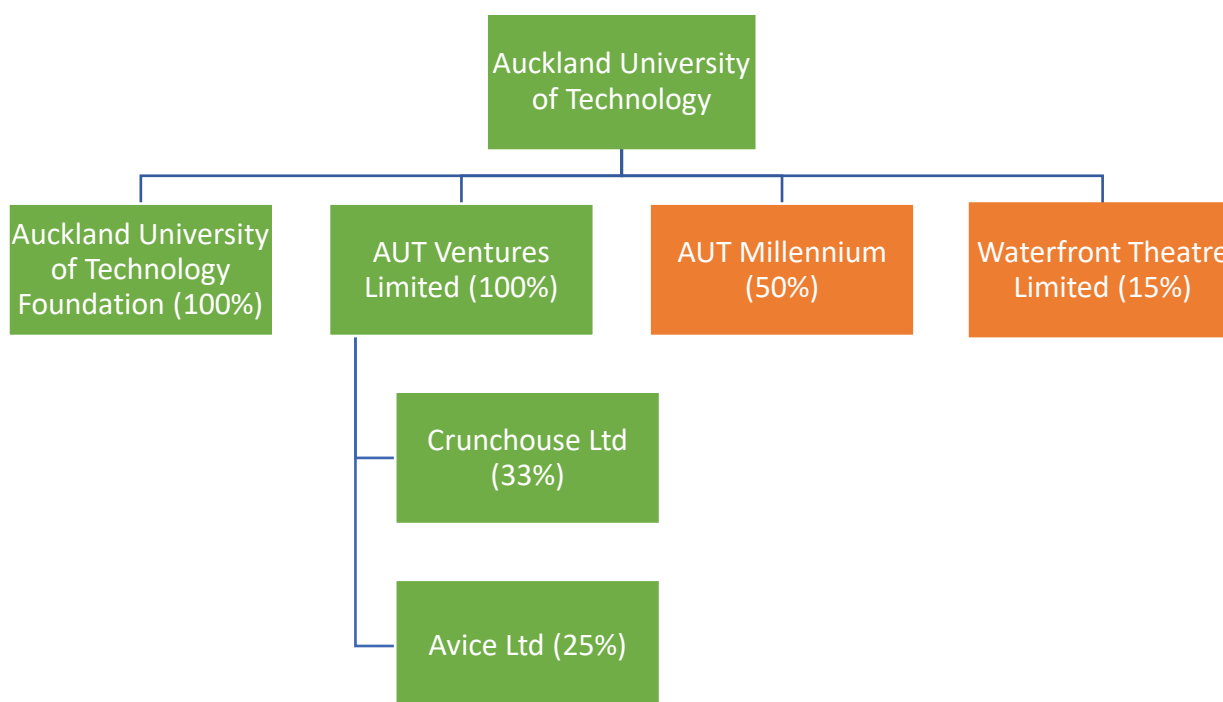


Figure 1: AUT Structure highlighting what is included in the reporting boundaries

Defining the individual facilities

A brief description of each of the facilities (including which legal entities are included within them) follows:

Table 1: Description of AUT Structure and Facilities

Facility	Description
AUT	<p>This includes the three Auckland campuses. The university operates out of 48 buildings and used 20.09GWh of electricity, 4.7GWh gas, with 20,133 EFTS students and 2,424 staff. The three campuses are:</p> <ul style="list-style-type: none"> • City campus • North campus • South campus <p>AUT staff also occupy offices at AUT Millennium. Further information about AUT can be found on AUT’s website.</p>

² ISO 14064-1:2018 section 3.4.1

AUT Millennium	New Zealand’s leading health, sport and exercise tertiary education provider managed by the AUT Millennium Ownership Trust.
AUT Ventures	The commercialisation arm of AUT which provides access to the university’s IP portfolio, research consultants, commercial research and investment opportunities.
AUT Foundation	An independent charitable trust established in 1987 set up to manage donations to the university.
ASB Waterfront Theatre	Auckland theatre located in Wynyard Quarter and is the home of the Auckland Theatre Company. AUT is a funder and one of the founding partners.

SCOPE OF INDIRECT EMISSIONS

ISO14064-1 5.2.3

The process for deciding which indirect emissions to include and exclude was determined by the following three processes:

1. Screening AUT top suppliers by spend using the Toitu screening tool;
2. Best practise within the Australasian Tertiary sector; and
3. Availability of information.

Screening tool

Procurement provided a list of the top suppliers by spend in 2018 and this information was run through the Toitu significance screening tool which provided indicative emissions. Top emitters were those associated with construction, energy use and air travel. Both electricity and air travel are included in the reporting process.

Best practise

Sustainability advisors meet monthly with colleagues across the tertiary sector in Australia and New Zealand to discuss best practise in sustainability across a wide range of university activities and to develop best practice across the sector.

Availability of Information

There is currently not sufficient data on the emissions associated with our construction activities (life cycle analysis, embodied carbon, construction, and demolition waste) or our supply chain. This is an area that will require further work in the future.

INVENTORY SUMMARY

ISO14064-1 9.3.1 (f)

A description of AUT emissions is outlined in table 2 and figure 2 and 3 below.

Table 2: Summary emissions and removals (tCO2e) by category for the period 1/1/2018 to 31/12/2018

Category	All measured emissions (tCO2e)
Category 1 direct emissions	1,080
Category 2 indirect emissions (imported energy)	2,051
Category 3 indirect emissions (transportation)	9,889
Category 4 indirect emissions (products used by organisation)	589
Category 5 indirect emissions (use of products from the organisation)	-
Category 6 indirect emissions (other sources)	-
Total direct emissions	1,080
Total indirect emissions	12,530
Total gross emissions	13,610
Category 1 direct removals	-
Certified renewable energy certificates	-
Total net emissions	13,610

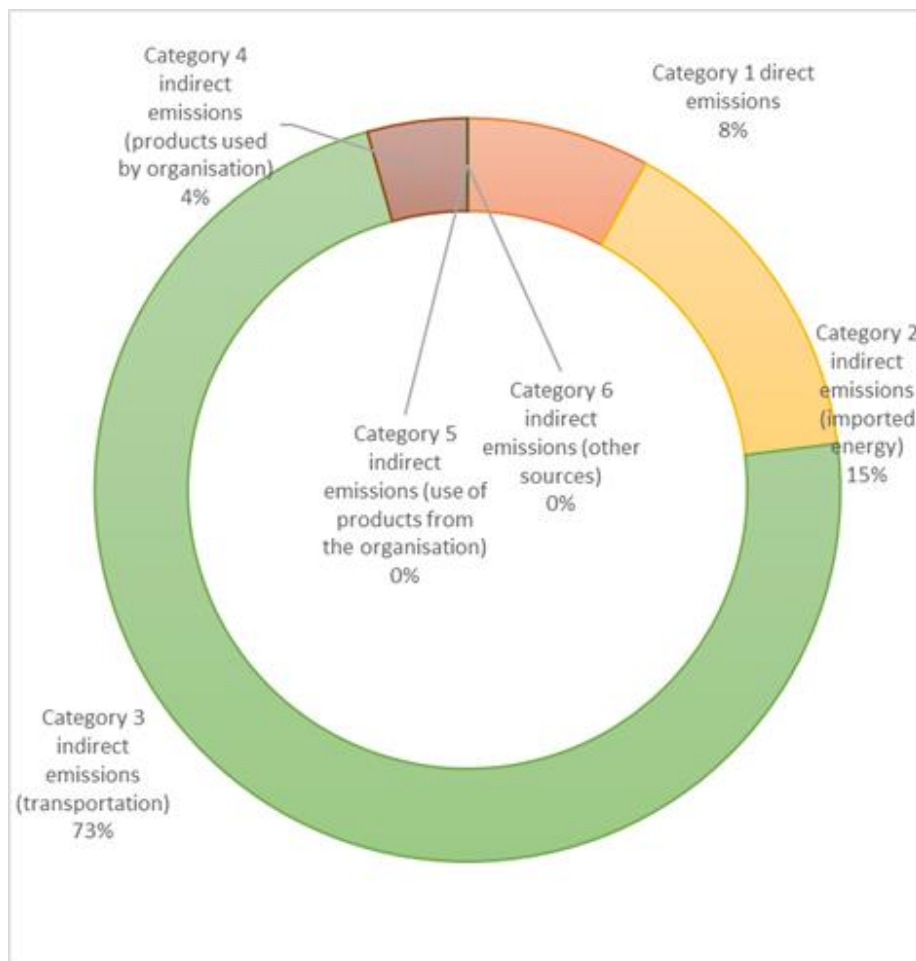


Figure 2: Emissions by Category for all measured emissions for 1/1/2018 to 31/12/2018

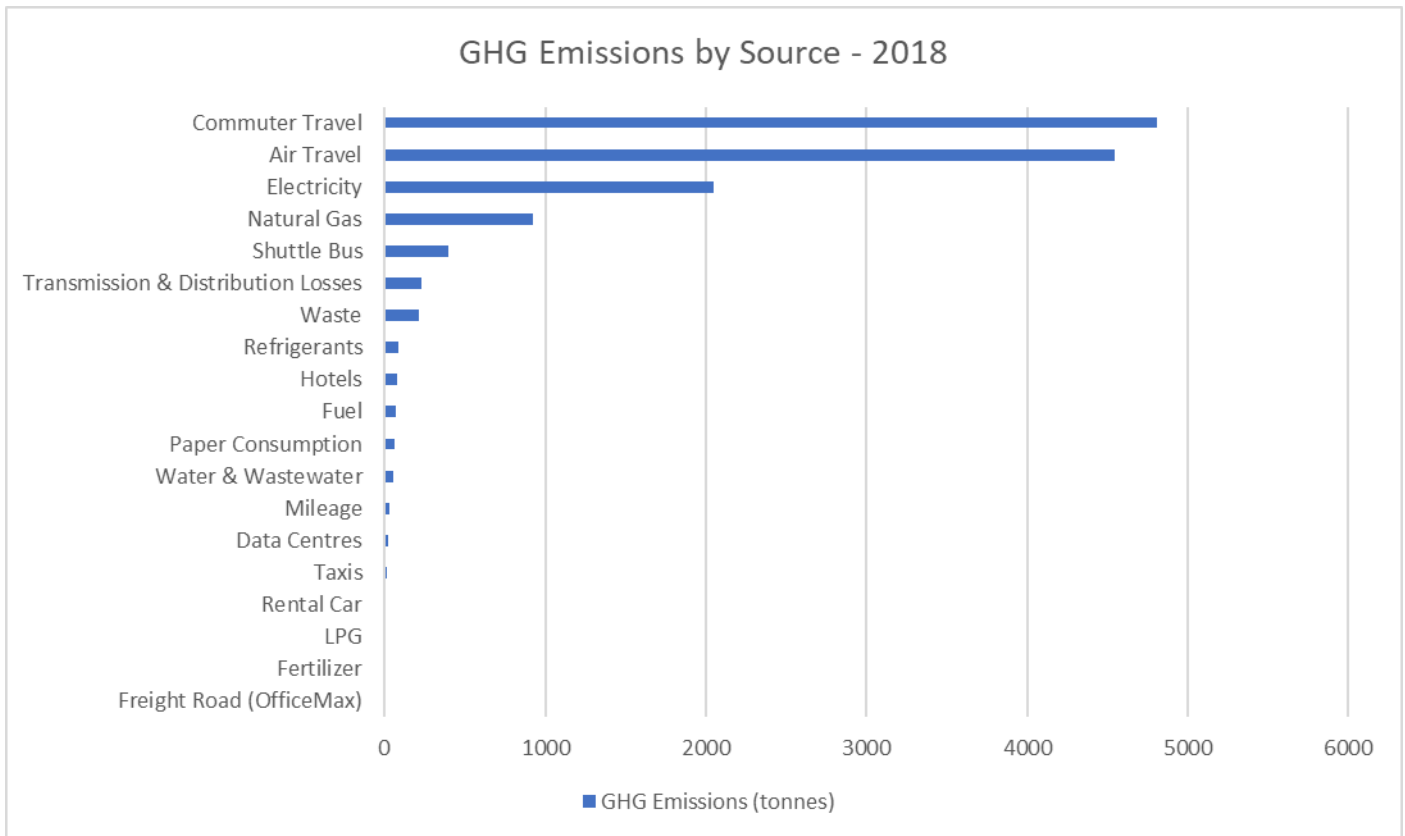


Figure 3: 2018 GHG emissions by source

Table 3: Breakdown of GHG emissions by category

Category	CO2e	CO ₂	CH ₄	N ₂ O	HFCs	SF
Category 1	1080	987	0.58	16	86	0
Category 2	2051	1970	79	3	0	0
Category 3	9889	4859	2	37	0	0
Category 4	589	183	296	26	0	0

OPERATIONAL BOUNDARIES

ISO14064-1 9.3.1 (e)

GHG emissions sources for AUT were measured using the 12-month period 1 Jan 2018 – 31 December 2018 which is our financial year. This is the first 12-month period that the emissions have been recorded and forms our baseline year.

The following categories are used based on the Toitū programme. They are:

- Direct GHG emissions/removals (Category 1): GHG emissions that are operationally controlled by the organisation:
- Indirect GHG emissions from imported energy (Category 2): GHG emissions from the generation of purchased electricity, heat or steam consumed by the company.
- Indirect emissions from Transportation (Category 3)
- Indirect emissions from products used by the organisation (Category 4)
- Products used from organisation (Category 5)

- Other indirect emissions (Category 6)

Sources and sinks were identified through regular discussions with the NZ and Australia Tertiary Sector, annual Tertiary Education Facilities Management Association (TEFMA) reporting and using the Toitū screening tool to identify \$\$ spend and associated carbon emissions.

Key considerations around what emissions to include related to the magnitude, level of influence, risk/opportunity, sector guidance, outsourcing, stakeholder engagement, ISO14064 requirements and others.

All required category 1 and 2 emissions are included. Category 3 and 4 emissions are included where data is available. Only data that is deemed de minimus (less than 1%) or where exclusion has been approved has been excluded.

SUMMARY OF EMISSION SOURCE INCLUSIONS

ISO14064-1 9.3.1 (g & m)

Table 3 provides a summary of inclusions as well as the methodologies used and the level of uncertainty associated with this data.

Table 4: Summary of Inclusions, methodologies, and uncertainties

Category	GHG emissions source	Data source	Data collection unit	Methodology, data quality, uncertainty
Category 1	Stationary combustion	Gas consumption in offices, kitchens.	EnergyPro, finance and usage portal for utilities.	Accurate records from billing information captured in EnergyPro.
	LPG	Gas consumed by BBQ,	Invoices	Usage captured through gas purchases.
	Mobile combustion	Fuel used by AUT fleet	Fuel card (Cardlink)	Litres of fuel purchased on fuel card
		Car rentals	Rental provider	Start/end odometer readings from rental company.
	Fugitive emissions	Fugitive emissions from AC systems	Maintenance records	Aquaheat provide data
Category	GHG emissions source	Data source	Data collection unit	Methodology, data quality, uncertainty
Category 2	Electricity	Electricity consumed in offices, lecture theatres, cafes etc	EnergyPro, finance and usage portal for utilities.	Accurate records from the billing system.
Category	GHG emissions source	Data source	Data collection unit	Methodology, data quality, uncertainty
Category 3 operational	Transportation	Freight (Paper)	OfficeMax Carbon Emissions Report (Verified)	OfficeMax CarbonZero certified.
		Air Travel	Orbit Travel environmental report.	Orbit provide Environmental report which uses departure date providing accurate data verified by Toitu Envirocare. Split into domestic, shorthaul & longhaul flights.
	Taxis	Data provided by finances team.	Accurate records from finances team	
	Mileage	Data provided by the finances team	Accurate records from finances team	

		Hotels	Orbit Travel environmental report.	Orbit provide Environmental report which uses departure date providing accurate data verified by Toitu Envirocare.
		Commuter Travel	Data based on Auckland Transport's biennial travel survey	Data based on biennial survey
		Shuttle Bus	Pacific Tourways invoices	Data based on monthly invoices & no. trips per month.
Category	GHG emissions source	Data source	Data collection unit	Methodology, data quality, uncertainty
Category 4		Waste	Data provided by Northland Waste monthly report & Reclaim portal	Waste & commingled recycling estimates provided by supplier based on no. of pick ups. Paper recycling based on actual weights.
		Transmission & Distribution Losses	EnergyPro, finance and usage portal for utilities.	Emissions based on electricity & gas use using MfE average emissions factors for NZ.
		Paper Consumption	Reclaim portal. CarbonZero certified. Iron Mountain portal.	Accurate records from Reclaim & Iron Mountain portal based on invoices
		Water & Wastewater	EnergyPro, finance and usage portal for utilities.	Accurate records based on invoice system in EnergyPro
		Data Centres	Data provided by Datacom & Microsoft	Accurate emissions based on Microsoft scope 1,2 & 3. Datacom based on kWh used by racks & % of total.

GHG EMISSIONS AND EXCLUSIONS

ISO14064-1 9.3.1 (i)

Table 5: Table of Category 1 and 2 exclusions

Category	GHG emissions source	Data source	Reason for exclusion	% of total category 1 & 2 inventory
Category 1	Stationary combustion			
	Diesel	Testing of backup generators	Estimates available from maintenance officers & is excluded as considered de minimus.	Less than 1%

Table 6: Table of Category 3,4, 5 and 6 exclusions

Category	GHG emissions source	Data source	Reason for exclusion
Category 3 operational	Transportation	Freight (Other than paper)	Data has not been obtained yet. Work is underway with key suppliers & will be available in the future.
		Air Travel (International students)	Data not available for this report. Will be considered for future reports.

COMPARISON TO PREVIOUS INVENTORIES

This is the first year of reporting and forms the baseline year.

PERSONS RESPONSIBLE

ISO14064-1 9.3.1 (b)

The GHG Inventory has been prepared by Lindsey du Preez, Sustainability Advisor at AUT. The Inventory is the responsibility of the Director of Sustainability, Lucy McKenzie. With a significant target to halve CO₂e emissions by 2025 the completion of the Inventory and the baseline provides the necessary information to progress forwards and achieve the target. The Sustainability team, the Estates operations staff and suppliers have provided background and supporting information. They are:

- Leslie Ginnever - Finance
- Duncan Orr – Procurement
- James Logie – Energy and Water
- Anneke Morgan – Waste,
- Sally Vallely – Fleet, Shuttle Bus
- Orbit – Air Travel
- Lindsey du Preez – Sustainability Advisor
- Rita Jacob – CFO, AUT Ventures

INFORMATION MANAGEMENT PROCEDURES

ISO14064-1 9.3.2 (i)

This is the first year of reporting. Guidelines for GHG measurement have been documented in the *Procedure for Recording GHG Emissions*.

The procedure documents the information management processes that ensures conformance with the principles of ISO14064 and the GHG Protocol: *'to ensure consistency with the intended use of the GHG inventory: provide routine and consistent checks to ensure completeness and accuracy: identify and address errors and omissions: and manage and store documentation in a safe and accessible manner'*.

The key information management procedures outline how:

- Source data is collected directly from the AUT suppliers or from AUT's financial system;
- The data is stored in the TEAMS folder and reviewed by the Sustainability Officer;
- Emissions factors and conversion factors are maintained by the Sustainability Officers;
- The GHG inventory is compiled using activity data and emissions factors;
- The report is reviewed to identify opportunities to reduce emissions and improve the information management process; and
- CO₂e emissions information will be provided to AUT's Senior Leadership Team

DATA COLLECTION, QUANTIFICATION AND UNCERTAINTIES

ISO14064-1 9.3.1 (m, n, o & t)

Table 3 provides a summary of the GHG inclusions, and the methodology and uncertainties associated with information. The data was coordinated by the Sustainability Advisor, in the Estates team and sourced from operations staff, the finance team and suppliers.

Data and supporting documentation were centrally filed and collated in a Teams folder accessible by key stakeholders. The core data is consolidated on a spreadsheet. The emission factors and supporting methodologies are taken from the Ministry for the Environment's guide. 'A Guide for Organisations 2020 Detailed Guide'³. Where this information was not available, emissions factors were taken from the Department of Environment, Food and Rural Affairs⁴ (Defra, United Kingdom). Emissions factors for purchased goods and services have been sourced from Motu⁵. Global warming potentials for refrigerants were taken from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report⁶ (AR4).

All CO₂e are reported in tonnes and broken into their constituent greenhouse gases where data is available.

There have been no changes in methodologies used as this is the first year of reporting.

LEVEL OF UNCERTAINTY

ISO14064-1 9.3.1 (p, q)

There is an inherent level of uncertainty with most data sources. Verifiable data has been used wherever this is available. A more conservative approach has been taken where there is a higher level of uncertainty.

³ Ministry for the Environment. Measuring Emissions. A Guide for Organisations: 2020 Detailed Guide. <https://environment.govt.nz/assets/Publications/Files/Measuring-Emissions-Detailed-Guide-2020.pdf>

⁴ Department for Business, Energy & Industrial Strategy, UK Government Greenhouse gas reporting conversion factors 2020. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

⁵ Romanos, Carl; Suzi Kerr & Campbell Will, 2014. 'Greenhouse Gas Emissions in NZ. A Preliminary Consumption-Based Analysis', Motu Working Paper 14-05, Motu Economic & Public Policy Research, Wellington.

<https://www.motu.nz/our-research/environment-and-resources/emission-mitigation/emissions-trading/greenhouse-gas-emissions-in-new-zealand-a-preliminary-consumption-based-analysis/>

⁶ <https://www.ipcc.ch/assessment-report/ar4/>

DOUBLE COUNTING

There is no double counting to report as AUT does not offset any of its emissions.

BASE YEAR

ISO14064-1 9.3.1 (k)

This year is our first year of reporting and forms our base year. Reporting occurs from 1 January to 31 December and is in line with our financial year.

CHANGES TO HISTORIC BASE YEAR

ISO14064-1 9.3.1 (l)

Changes will be made to this baseline year's data if significant changes occur such as changes in emissions factors or substantial changes in scope.

GREENHOUSE REMOVALS AND REDUCTIONS

ISO14064-1 9.3.1 (h) and 9.3.2 (b, c, j & k)

The University has set an absolute target to halve its emissions by 2025 based on 2018 baseline. A key focus this year has been energy reduction initiatives which have been strengthened by our ongoing working relationship with EECA. A list of current initiatives is listed in the table below.

Table 7: Emissions reduction actions 2018

Initiatives	Detail
Energy efficiency	Lighting upgrades, BMS upgrades, energy audits,
Waste reduction	Promoted reusable cups, containers. Promoted plastic free July.
Engagement with staff and students	Introduced Green Impact programme
Fleet Optimisation	Study into optimisation of current fleet and opportunities to go electric
Air Travel	Drafted policy on reduced Air Travel
Shuttle bus	Launched first electric bus in NZ
Sustainability Roadmap	Developed and launched Sustainability Roadmap with 50% CO ₂ e target by 2025.

Reducing our carbon footprint by 50% is a significant challenge which is only set to increase once work commences on our supply chain. Initial work is focussed on improved efficiency, upgrades to old technology, integrating circular economy principles to our purchases and better construction using carbon accounting framework.

AUT has no removals to report for this financial period.

ASSESSMENT OF PERFORMANCE AGAINST KPIS

ISO14064-1 9.3.2 (h)

This year forms the first year of measurement and therefore there are no prior years to compare to.

OFFSETS

ISO14064-1 9.3.3

There are no offsets applied to this inventory. Current thinking is that budget will be used for operational and capital upgrades to reduce emissions.

LIABILITIES

The stocks of HCFs for 2020 are related to the HVAC systems. There are no stocks of SF6 to report

GHG Gas	Volume held (kg)	Potential liability (tCO ₂ e)

COMPLIANCE WITH ISO14064-1

ISO14064-1 9.3.1 (r)

The GHG Inventory report has been compiled in accordance with ISO14064-1. A matrix is attached in Appendix 2.

AUDIT OF GHG INVENTORY

ISO14064-1 9.3.1 (s)

An internal review has been conducted by key staff at AUT to get reasonable confidence that the assertions and data are correct. The data has not been externally verified.

APPENDIX 1: AUT STRUCTURE 2018

Company Name	Emissions source	Legal Structure & Partners	Economic Interest held by AUT	Operational control	Comment
Auckland University of Technology	Yes	Parent company	100%	Yes	Includes City, North and South campuses
Auckland University of Technology Foundation			100%	Yes	Included in AUT emissions as operates from City campus.
AUT Ventures Limited			100%	Yes	Start-ups. Included in AUT emissions as operate from City campus.
-Crunchouse Limited			33%	Yes	Start-up
-Avice Limited			25%	Yes	Start-up
AUT Millennium			50%	No	Not included as AUT does not have operational control over facility
Waterfront Theatre Limited			15%	No	Not included as AUT does not have operational control over facility

APPENDIX 2: MATRIX TO ISO14064-1:2018 STANDARD

ISO Reporting	Page in GHG Inventory Report	
9.3.1 (a)	Page	4
9.3.1 (b)	Page	12
9.3.1 (c)	Page	4
9.3.1 (d)	Page	4
9.3.1 (e)	Page	8
9.3.1 (f)	Page	6
9.3.1 (g)	Page	9
9.3.1 (h)	Page	13
9.3.1 (i)	Page	12
9.3.1 (j)	Page	4
9.3.1 (k)	Page	13
9.3.1 (l)	Page	4,13
9.3.1 (m)	Page	9,12
9.3.1 (n)	Page	12
9.3.1 (o)	Page	12
9.3.1 (p)	Page	12
9.3.1 (q)	Page	12
9.3.1 (r)	Page	14
9.3.1 (s)	Page	14
9.3.1 (t)	Page	12
9.3.2 (a)	Page	3,4
9.3.2 (b)	Page	13
9.3.2 (c)	Page	13
9.3.2 (d)	Page	
9.3.2 (e)	Page	4
9.3.2 (f)	Page	4
9.3.2 (g)	Page	
9.3.2 (h)	Page	13
9.3.2 (i)	Page	12
9.3.2 (j)	Page	13
9.3.2 (k)	Page	13
9.3.3	Page	13