Te Tāhuhu o te Mātauranga
Ministry of Education

Te Tāhuhu o te Mātauranga | Ministry of Education Emissions Reduction Plan 2023

Te Kāwanatanga o Aotearoa
New Zealand Government

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Our Environment

"We shape an education system that delivers equitable and excellent outcomes.

He mea tārai e mātou te mātauranga kia rangatira ai, kia mana taurite ai ōna huanga."

Te Tāhuhu o te Mātauranga | Ministry of Education (Te Tāhuhu) is the Government's lead advisor on New Zealand's education system. We set direction for education agencies and providers and contribute to the Government's goals for education by shaping an education system that delivers equitable and excellent outcomes.

The Government is committed to Aotearoa becoming a world leader in climate change action and education has an important role to play. In addition to understanding our impact on the environment and reducing our emissions, the education system and the New Zealand curriculum play an important role in shaping lifelong learning around transitioning to a sustainable future.

The New Zealand Curriculum and Te Marautanga o Aotearoa are evolving so that all ākonga experience rich and responsive learning from early learning through to secondary school. As part of this, we are thinking about how the national curriculum and our supports can better enable kaiako and teachers to equip our tamariki and young people to be part of positively contributing to a low-emissions society, regardless of their life and career journeys. The goal is a system that can deliver lifelong learning and empowers people to thrive in the transition to a low emissions society.

We need to work collectively in our response to climate change. It needs to reach into every corner of our education system and the communities' schools and kura serve. With the right support, the wide network of schools and kura can be leaders in Aotearoa's journey to a low-carbon future and empower the leaders of tomorrow to shape a low-emissions society.

Our vision is advanced by five overarching objectives for the education system, from early learning through schooling to tertiary and lifelong learning:

- Learners at the centre – Learners with their whānau are at the centre of education.
- Barrier-free access – Greater education opportunities and outcomes are within reach for every learner.
- Quality teaching and leadership – Quality teaching and leadership makes the difference for ākonga | learners and their kaiako | teachers.
- Future of learning and work – Learning needs to be relevant to the lives of New Zealanders today and throughout their lives, as we meet the changing opportunities and challenges of the future of work.
- World class inclusive public education – New Zealand needs a world class inclusive public education system that meets the needs of our diverse population, now and in the future.

Executive Summary

Te Tāhuhu first developed an Emissions Reduction Plan (ERP) to support the requirements of the Carbon Neutral Government Programme (CNGP) in 2022 when it reported its corporate emissions as a CNGP tranche one participant.

Te Tāhuhu has now reported its state school sector emissions as a CNGP tranche two participant.

This ERP details the mandatory and material carbon emissions of Te Tāhuhu covering Te Tāhuhu Corporate Activities, Te Tāhuhu School Activities and School Board Activities.

Reporting Boundary

As part of extending our reporting to include state school sector emissions, Te Tāhuhu redefined its organisational boundary.

A single inventory, separated into Te Tāhuhu Corporate Activities, Te Tāhuhu School Activities and School Board Activities allows Te Tāhuhu to continue to show leadership through our Corporate Activities, and respond meaningly and consistently to the state schooling sector across Te Tāhuhu School Activities and School Board Activities. The three component parts of our inventory are interdependent.

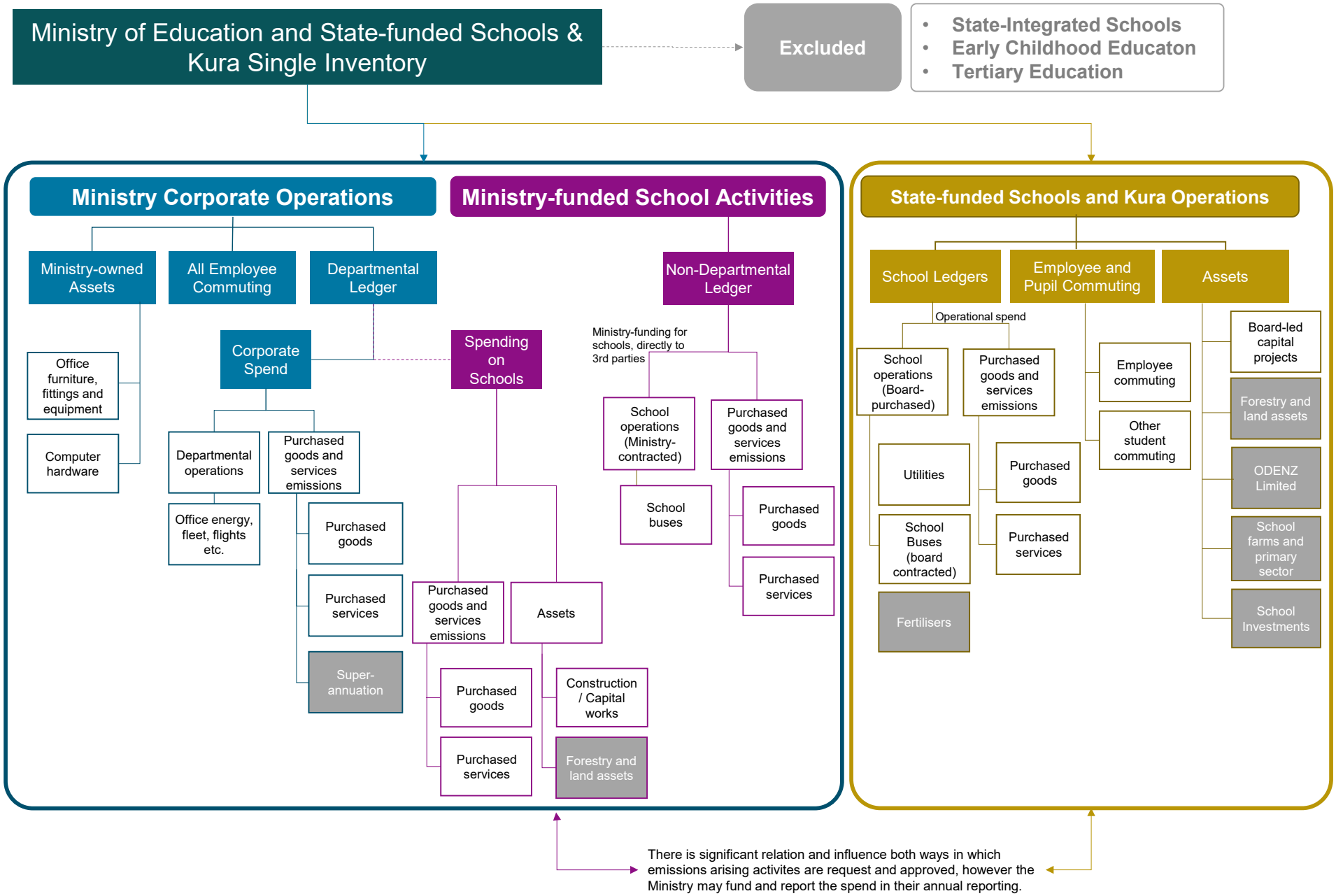
Early Learning Centres, state-integrated schools, tertiary, and any private education facilities and organisations are excluded.

Figure 1 below details the reporting boundary for the FY23 inventory.

Exclusions

Please refer to Te Tāhuhu GHG inventories for FY19, FY22 and FY23 for a complete list of exclusions.

Figure 1. Reporting boundary diagram

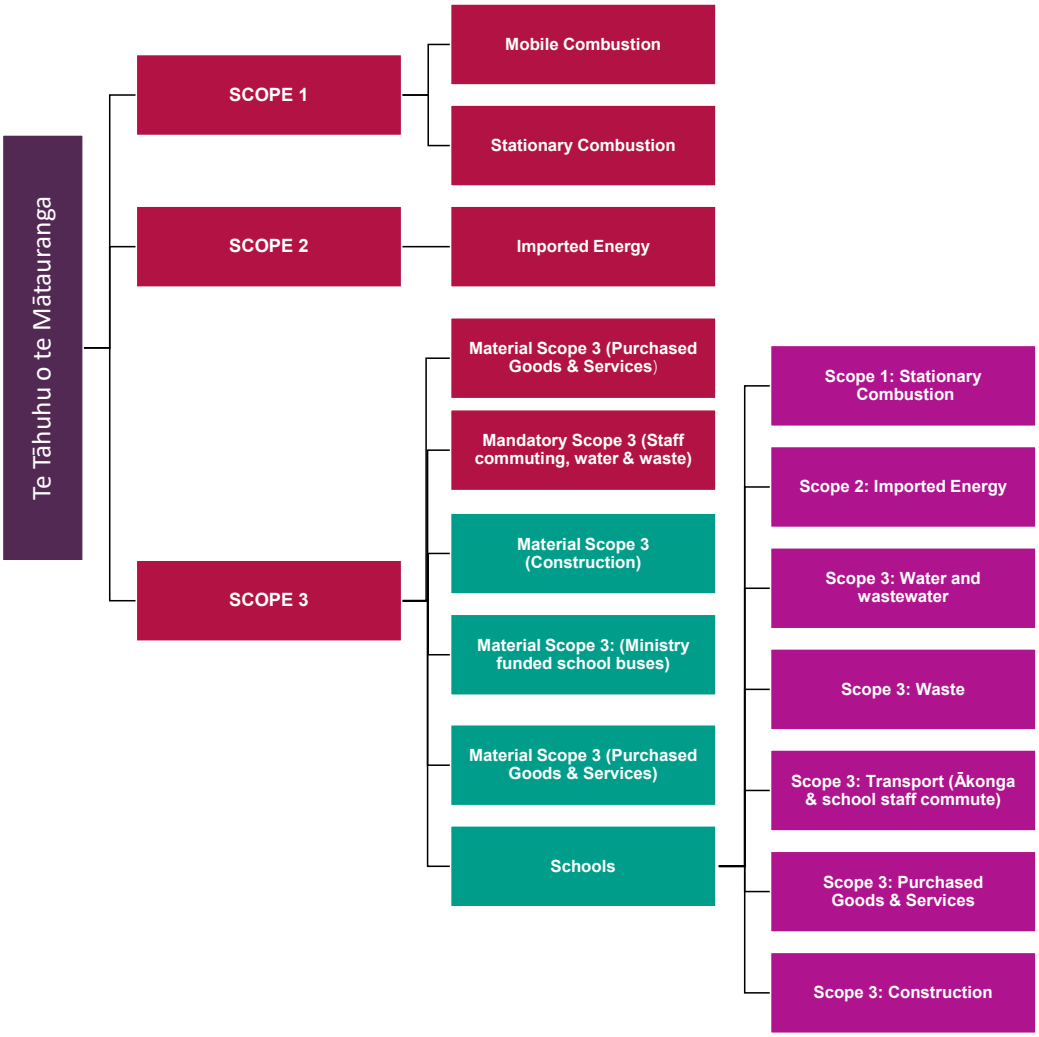


The single inventory for Te Tāhuhu and state schools and kura is split into three groupings.

1. 'Ministry corporate' group includes emissions generated from Te Tāhuhu's corporate operations and activities, such as purchased goods and services, tenant offices, energy, fleet fuel usage, air and taxi travel (Te Tāhuhu Corporate Activities).
2. The 'Ministry-funded school and kura activities' group include emissions generated from Te Tāhuhu's direct commissioning and payment of activities for schools and kura, such as school buses, capital works, and purchased goods and services including the Ka Ora, Ka Ako Healthy School Lunches programme (Te Tāhuhu School Activities).
3. 'State-funded school and kura' group includes emissions generated from schools and kura operations. This includes emissions from utilities, waste, board-led capital works projects, purchased goods and services, and board-led and private ākonga and school staff commuting (School Board Activities).

Figure 2 below explains the relationship between Te Tāhuhu Corporate Activities, Te Tāhuhu School Activities and School Board Activities from a reporting perspective. Our Te Tāhuhu Corporate Activities are shown in red, our Te Tāhuhu School Activities are shown in green and our School Board Activities are shown in blue. For clarity we have also shown the reporting categorisation for School Board Activities if School Boards were to report separately to Te Tāhuhu.

Figure 2: Financial relationship between schools and Te Tāhuhu



Corporate

"Our people engage in our sustainability journey and sustainable outcomes are created by what we do, all the time."

Our Corporate Climate Strategy

The three key themes set out in Te Tāhuhu's sustainability strategy are:

- Hohenga Āhuarangi | Climate Action
- Whakapeto Haepapa | Responsible Consumption
- Ngā Wāhi Mahi Toitū | Sustainable Workplaces

Figure 3: Te Tāhuhu Sustainability Strategy – themes and outcomes

Greenhouse Gas Emissions Policies/Strategies

Te Tāhuhu's Sustainability Strategy identifies actions to transition to a low-emissions, resilient organisation, to achieve the Carbon Neutral Government Programme (CNGP) goal of carbon neutrality by 2025.

It recognises that sustainability includes social, economic, cultural, and environmental outcomes. Te Tāhuhu is guided by the United Nations Sustainable Development Goals and an all-encompassing definition of sustainability that recognises that equity and sustainability go hand in hand.

Stakeholders within Te Tāhuhu and across the education sector care about building a sustainable future for tomorrow's tamariki and ākonga, and they are taking individual actions every day to further this work. Te Tāhuhu Sustainability Strategy formalises and builds on those actions and other work already underway. It is the commitment to a sustainability journey that honours diverse voices, supports our people and those we engage with to be agents of change, and provides a pathway to achieve longer term goals.

An updated travel policy is also being introduced in 2023 once approved by Te Pou Tokomanawa, which will also contribute to enabling the Sustainability Strategy and this Emissions Reduction Plan to be put into effect practically.

Emission Reduction Plan

The Corporate emissions actions primarily relate to the next two years but this section of the ERP is intended to be updated at least annually, or as necessary in line with progress and identification of additional reduction initiatives.

FY19 has been used as the baseline year for comparisons and target setting. Greenhouse Gas (GHG) are quantified as tonnes of carbon dioxide equivalent (tCO_2-e). Mandatory emissions targets for 2025 and 2030 of 21% and 42% reduction are in line with CNGP target setting resources, stated to be aligned to a 1.5-degree Celsius trajectory, and are noted in the Annual Report 2022 and again in the Annual Report 2023. We will continue to work on better understanding the nature, sources, size, boundaries, and scope of our material emissions over the next year.

Figure 4: Te Tāhuhu o te Mātauranga | Ministry of Education's Corporate Emissions and Reductions as a Tranche One CNGP Organisation

The Ministry of Education has met its 2023 CNGP Requirements as a Tranche One organisation

Ministry's Corporate Emissions

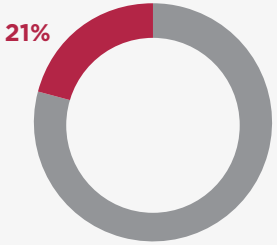
a) The Ministry has completed both a baseline year inventory for FY18/19 and an inventory for FY21/22 and FY22/23 for mandatory emissions sources required by the CNGP and additional material emissions sources.

(i) These inventories have been independently verified to limited assurance.

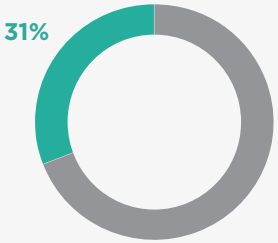
(ii) Emissions figures have been published in the annual reports FY21/22 and FY22/23.

(iii) In 2022/23 air travel emissions and fleet vehicle emissions made up 73% of mandated emissions sources. Significant emission reduction initiatives are underway in both areas, with air travel reductions expected in the next reporting period.

(iv) Material emissions are being reported as well utilizing the same methodology as was applied to the Schools carbon emissions inventory in this area. We plan to start looking at how suppliers can work more closely with us in 2024 to support this area too.



21% increase in air travel emissions between FY18/19 and FY22/23



31% decrease in fleet vehicle emissions between FY18/19 and FY22/23

Gross Emissions Reduction Targets

b) In line with CNGP requirements, the Ministry has committed to reduce mandatory category 1, 2, 3 and 4 gross emissions by 21 percent to 4,538 tonnes CO_2-e by 2024/25 from a 2018/19 base year of 5,744 tonnes CO_2-e .

c) By 2029/30 we have committed to a 42 percent reduction to 3,332 tonnes CO_2-e from the 2018/19 base year.

The Ministry of Education is on track to meeting the 2025 CNGP reduction target

Air travel

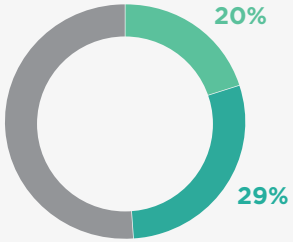
a) Te Tāhuhu is working to introduce an updated travel policy, amended flight approval delegations, advance coordination of an international travel plan and tools to assist business groups to manage flight allocations. This will enable the achievement of cost savings but also carbon emissions reductions.

b) Air emissions are the largest factor in Te Tāhuhu's carbon emissions inventory. This is a priority area to manage closely in FY23/24. A change in approach is being seen already with a 38% reduction in domestic passenger kms travelled in September 2023 versus August 2023 across Te Tāhuhu.

Vehicle Fleet Transition

c) So far, we have replaced 164, or 29% of our 565 vehicles with 73 fully electric and 91 plug-in hybrid electric vehicles. By the end of this financial year, we expect to transition a further 115 vehicles which will increase the fleet to 49% BEV/PHEV. We are also assessing alternative transport options, such as car sharing services.

29% of fleet transitioned, with a further 20% transitioned to BEV/PHEV by 30 June 2024



Energy Efficiency Office Assessments and Audits

d) The Ministry will continue to work with landlords to rate energy efficiency at the 7 largest buildings annually.

e) Two energy efficiency audits are being conducted at Albany and Tauranga offices with 75% EECA funding and the support of the two landlords. The findings due in November 2023 will be shared with these landlords who have already committed to considering the recommendations for implementation during the next 15 months.

Waste Management

f) Waste is a small portion of the Ministry's carbon emissions inventory at less than 10%. The Ministry has set a target of 60% diversion of waste away from landfill and further work will be done in 2024 re: awareness and staff education to gain further traction against this KPI. Great performance is coming through - staff at 1 The Terrace achieved 66.5% diversion of waste to recycling and organic waste and 8GT achieved 61.2% diversion - both better than the target KPI for August 2023.

Governance

This section of the ERP has been updated with approval by Te Tumu Whakarae mō te Mātauranga | Secretary for Education in November 2023 prior to being submitted to the CNGP. Prior to inclusion in the Annual Report for the period ending 30 June 2023, the Chief Executive reviewed and noted the carbon emissions inventory reports for FY23 performance against the selected baseline year, FY19, and the gross carbon emissions reduction targets set for achievement in 2025 and 2030. The ongoing governance of this section of the ERP includes:

- Assigning each action a Senior Responsible Owner (SRO).
- Implementation and review (every two years) of the ERP will be managed by Te Pou Rangatōpū | Corporate working with the appropriate governance structures.

Reporting and Monitoring

Progress against the actions and targets set out in this section of the ERP will be reviewed and monitored through:

- Quarterly progress reporting against targets to the appropriate governance structure in Te Tāhuhu.
- Emissions are measured and reported on an annual basis to the CNGP programme as well as publicly in the Annual Report.

Reporting on reduction of mandatory emissions is planned on a quarterly basis, providing performance information down to individual business group level. This will be introduced in 2024, having been delayed largely due to organisational redesign taking priority. Monthly reporting on flight allocations is also intended to begin by 2024, enabling business group leaders to track performance against targeted reductions.

Internal engagement

This section of the ERP has been developed with Te Pou Tokomanawa o te Tāhuhu o Mātauranga | Ministry of Education's senior leadership.

A drop-in session was held for Directors of the Offices of Hautū | business group leaders in October 2023 and shared with various managers across Te Tāhuhu to seek comment and input as well as being communicated for comment on Manutaki and circulated to the Business Performance Board for endorsement in November 2023.

This year's senior engagement follows a series of workshops held in September 2022 with staff and teams across Te Tāhuhu.

Our Corporate Emissions

Emissions commentary

The Annual Report 2023 shows a 1% increase in mandatory carbon emissions for FY23 (5,773 tCO_2-e) versus FY19 (5,744 tCO_2-e). Excellent progress has been achieved with a 21% reduction in emissions due to the electric vehicles transition in the past year; building energy efficiency has also shown a 41% reduction due to a shift in the national emissions factor for energy generation which has benefited the organisation's carbon emissions and finally, a continued lower level of international travel by the Ministry. However, the bounce back in domestic air travel with 21% more domestic travel in FY23 versus baseline FY19 has had a substantial impact given that air travel makes up over 50% of our mandatory carbon emissions inventory.

Work is currently being progressed to review Te Tāhuhu's travel policy to enable closer management of this important area from both a cost and carbon emissions perspective. Work will continue to understand travel emissions reduction opportunities. The vehicle fleet transition plan for 2023 has been completed and submitted to MBIE on 1 October 2023 following engagement with Hautū in Te Mahau and Te Pou Hangahanga, Matihiko.

Overall, Te Tāhuhu has progressed emissions inventory reporting together with engagement across multiple business groups for input to the emissions reduction plan and has an in-depth understanding of mandatory emissions and is developing deeper knowledge of material emissions.

Mandatory Emissions

As Table 2 shows, Category 1 emissions – Direct GHG emissions and removals decreased by 26% against FY19. A 31% reduction in vehicle fleet emissions was achieved because of a large-scale transition to lower carbon emission vehicles: petrol hybrids, PHEV and BEV. This reduced the total amount of purchased fuel.

Category 2 emissions – Indirect GHG emissions from imported energy in the table below shows that carbon emissions have reduced by 41% compared to FY19. Much of this energy reduction was made for the first time in FY22 but not reflected in that year's emissions reductions due to the national grid emissions factor increasing between 2019 and 2022.

Category 3 emissions – Indirect GHG emissions from transportation are 21% up in FY23 compared with FY19, in line with the expectations expressed last year that we would see a 'post-Covid bounce back' following a significant reduction in travel emissions in FY22. Also in line with stated expectations, Te Tāhuhu is introducing flight allocations and an updated travel policy – meaning that this category of emissions is expected to reduce against baseline in the coming year.

Category 4 emissions – Indirect GHG emissions from products used by the organisation reduced by 12% in FY23 against baseline. Within this overall reduction, there was an increase in emissions from water (50%) and wastewater (32%) emissions.

Material Emissions

Overall material employee commuting (Category 3) and purchased goods and services (Category 4) emissions reduced between FY19 (44,104 tCO_2-e) and FY23 (18,140 tCO_2-e), although the difference is not directly comparable due to changes in methodology.

Corporate Emissions Performance

Table 2: Corporate emissions performance in FY22 & FY23 against base year FY19.

EMISSIONS CATEGORY	FY19 TCO_2-e	FY22 TCO_2-e	FY23 TCO_2-e	% CHANGE AGAINST BASE YEAR
Mandatory emissions				
Category 1: Direct GHG emissions and removals	**1,577**	**999**	**1,172**	**-26%**
Fleet fuel	1,306	707	896	-31%
Natural gas	271	292	226	-17%
Refrigerants	-	-	50	
Category 2: Indirect GHG emissions from imported energy	**504**	**511**	**297**	**-41%**
Electricity	504	511	297	-41%
Category 3: Indirect GHG emissions from transportation	**3,229***	**2,085***	**3,923**	**21%**
Air travel	2,750	1,571	3,317	21%
Business travel	294	200	239	-19%
Freight	30	41	8	-73%
Accommodation*	155	100	184	19%
Working from home*	-	174	175	
Category 4: Indirect GHG emissions from products used by the organisation	**434***	**452***	**381**	**-12%**
Transmission and distribution losses electricity	70	64	34	-51%
Waste	279	281	224	-20%
Wastewater	79	99	104	32%
Water	6	8	9	50%
Mandatory emissions total	**5,744**	**4,047**	**5,773**	**1%**
Material emissions				
Category 3: Indirect GHG emissions from transportation	**4,005****	**3,985**	**3,437**	**-14%**
Employee commuting	4,005**	3,985	3,437	-14%
Category 4: Indirect GHG emissions from products used by the organisation	**40,099**	**48,646**	**14,703*****	**N/A**
Purchased goods and services	40,099	48,646	14,703***	
Material emissions total	**44,104****	**52,631**	**18,140**	
Total emissions	**49,848**	**56,678**	**23,912**	

* Emissions from hotel accommodation stays and WFH have been re-aligned from category 4 to category 3, total emissions are unchanged.

** Emissions from staff commuting were overestimated in the 2018/19 baseline year and have since been corrected.

*** Due to changes in inclusions, allocations, and methodology the 2018/19 and 2022/23 material emissions for Category 4 cannot be compared.

Corporate Emission Reduction Initiatives

To achieve emissions reduction targets it will be important to monitor air travel reduction. The base and following years' flight levels are shown in Table 3, which demonstrates the impact of reduced air travel during COVID-19 travel restrictions on both net and per FTE basis emissions. With travel activity having 'bounced back' in 2022 and the first two months (July and August 2023) for FY22/23, we are modelling flight allocations for each business group across Te Tāhuhu. This will enable Haūtu | business group leaders to actively monitor flight usage within their groups and directly see the impact of business travel on the ability of Te Tāhuhu to meet its emissions targets.

As air travel is the largest contributor to carbon emissions for Te Tāhuhu, an ongoing focus will determine both opportunities and challenges for how to effectively reduce emissions whilst ensuring service delivery and outcomes are enhanced.

The transition of the vehicle fleet provides an excellent opportunity for energy and emissions reduction and 29% of the fleet has already been transitioned to electric vehicles, either battery electric (BEV) or plug-in hybrid (PHEV). We expect to transition an additional 54 BEV by December 2023 and another 61 BEV/PHEV to be introduced into the vehicle fleet to 30 June 2024. In addition, Te Tāhuhu has received EECA co-funding for additional vehicles to be transitioned by August 2024.

For building energy performance the rating tool is the New Zealand adaptation of the National Australian Built Environment Rating System (NABERSNZ). The energy performance rating for the largest buildings will provide an indication of energy use and this can be cross referenced against actual building energy use both for energy and emissions performance and provide benchmarking information at a building level.

Table 3: Key Performance Indicators

KEY PERFORMANCE INDICATORS	FY19	FY22	FY23	% CHANGE AGAINST FY19
Full time equivalents (FTE)	3,250	4,086	4,311	33%
Domestic flights (passenger kilometres)	9,434,800	4,972,430	9,842,165	4%
International flights (passenger kilometres)	2,266,190	204,020	1,320,717	-42%
Mandatory emissions (tCO_2-e)	5,744	4,047	5,773	1%
Mandatory emissions per staff (tCO^2-e / FTE)	1.8	1.0	1.3	-28%
Domestic flights per staff (pkm/ FTE)	2,900	1,217	2,283	-21%
International flights per staff (pkm/ FTE)	700	50	281	-60%

Reduction initiatives to form the current action plan as set out in Figure 4 and Figure 5. This gives a visual summary of key emissions reduction initiatives to achieve FY25 and FY30 targets.

[1] If using this metric to compare performance with other agencies, first compare the coverage of mandatory reporting.

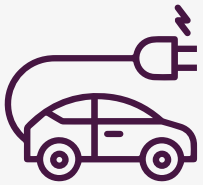
Figure 5: Te Tāhuhu o te Mātauranga | Ministry of Education's Corporate Emissions and Reductions as a Tranche One CNGP Organisation

Nearly 50% of FY19 baseline

Air travel:

Through an updated Ministry Travel policy, continued virtual engagement and more granular and regular flight reporting and the setting of flight budgets, Te Tāhuhu aims for a reduction against FY19 emissions of:

- 42% in domestic air travel
- 10% in international air travel

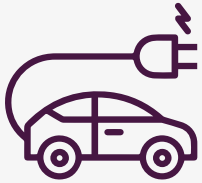


~10% of FY19 baseline

Business travel:

Through an updated travel policy and continued use of virtual engagement Te Tāhuhu will look to move to low carbon options which will be identified through:

- Feasibility study of public transport options to support staff business travel
- Engaging with suppliers to provide a greater supply of electric taxi and rental car options



Over 20% of FY19 baseline

Fleet:

Te Tāhuhu is implementing a Fleet Transition Plan, which is replacing petrol vehicles with plug-in and battery electric vehicles.

Te Tāhuhu has a fleet of 565 vehicles, 29% are already fully or partially electric

- Aiming for ~80% of fleet to be battery electric vehicles by 2025 and ~90% by 2030.
- Te Tāhuhu is leading the introduction of a car sharing system offered by Mevo for short-term car rentals.

~15% of FY19 baseline

Office energy efficiency:

There is a strong focus from the CNGP to decarbonise buildings by:

- Aiming for an average 4.5 star NABERSNZ rating for all buildings with a floor area >2,000 m2 by FY25
- Of the five Te Tāhuhu tenanted large buildings eligible to rate so far, all five have achieved successful ratings.

Communications and engagement plan:

Our staff are an integral part of the Ministry's journey to a low carbon future:

- The development of a low carbon communications plan will assist in bringing staff on board with the initiatives outlined in this Emission Reduction Plan.

<5% of FY19 baseline

Waste:

Te Tāhuhu has developed a waste management plan that focuses on:

- Improving data quality accuracy and reporting of waste
- Providing further waste streams in offices

To achieve a 40% reduction in waste to landfill by FY25 and 50% by FY30 against FY19

State Schools & Kura

"With the right support, the wide network of schools and kura can be leaders in Aotearoa's journey to a low-carbon future and empower the leaders of tomorrow to shape a low-emissions society."

State Schools & Kura Emissions

Summary

Te Tāhuhu plays a critical role in shaping the education system to deliver equitable and excellent outcomes for all tamariki, young people and ākonga. Te Tāhuhu owns and funds the nationwide state school system that includes 2,139 state schools and kura for ākonga from year 0-13.

Te Tāhuhu is responsible for the second largest social property portfolio with more than 16,000 buildings with a replacement value of $31.6 billion dollars. Te Tāhuhu invests approximately 1.4 billion in capital expenditure annually in the state school portfolio which is managed by both Te Tāhuhu and School Boards. School Boards receive operational funding to operate and maintain school buildings.

Te Tāhuhu is the second largest purchaser of passenger services, assisting more than 100,000 students to and from school each day. In total we have 700,000 ākonga and 135,000 school staff commuting to school using active transport, Ministry and Board managed bus networks, public transportation, and private vehicles.

Te Tāhuhu and School Boards invests a further $2.6 billion across purchased goods and services to support school operations, specialist teaching resources and education programmes including the Ka Ora, Ka Ako (Healthy School Lunches) programme which supplied 41.6 million lunches to 222,000 ākonga at 989 schools in FY22/23.

Te Tāhuhu School Activities

Table 5 is a summary of Te Tāhuhu School Activities. This does not include School Board Activities, which are in Table 2.

Table 5. Te Tāhuhu School Activities

CATEGORY	CATEGORY NAME	MANDATED / MATERIAL	DETAILED EMISSIONS SOURCE	TCO_2-e
1	Direct Emissions	N/A		
2	Indirect Emissions from Imported Energy	N/A		
		Material	Ministry Funded Pupil School Bus	27,365
		Subtotal		**27,365**
4	Indirect Emissions from Products and Services used by the Organisation	Material	Ministry Funded Purchased goods and services	125,233
			Ministry Funded School Lunches	71,655
			Ministry Funded Capital Works	174,362
		Subtotal		**371,250**
TOTAL				**398,615**

School Board Activities

Table 6 is a summary of School Board Activities as if reporting was undertaken by School Boards independently of Te Tāhuhu. Shown as Category 3 and Category 5 in Te Tāhuhu's combined reporting, here shown as Category 1, 2, 3 and 4 for School Boards.

CATEGORY	CATEGORY NAME	MANDATED /MATERIAL	DETAILED EMISSIONS SOURCE	TCO_2-e
1	Direct Emissions	Mandated	Schools & kura – Stationary Combustion – Natural Gas	24,102
			Schools & kura – Stationary Combustion – LPG	1,018
			Schools & kura – Stationary Combustion – Coal	9,603
			Schools & kura – Wood Biofuel	116
			Schools & kura – Stationary Combustion – Oil	1,016
		Subtotal		**35,855**
2	Indirect Emissions from Imported Energy	Mandated	Schools & kura – Electricity	18,625
		Subtotal		**18,625**
3	Indirect Emissions from Transportation	Mandated	Schools & kura – Correspondence Teaching	1,004
		Material	Schools & kura Pupil Commute – Public Transport	17,152
			Schools & kura Pupil Commute – Private Vehicles	221,417
			Schools & kura Staff Commute – Public Transport	824
			Schools & kura – Board funded transport	8,978
			Schools & kura – Travel grants	110
			Schools & kura Staff Commute – Private Vehicles	70,809
		Subtotal		**320,294**
4	Indirect Emissions from Products and Services used by the Organisation	Mandated	Schools & kura – Waste	5,984
			Schools & kura – Water Supply	103
			Schools & kura – Wastewater Treatment	1,543
			Schools & kura – Transmission and distribution Electricity	2,160
			Schools & kura – Transmission and distribution Natural Gas	888
		Material	Schools & kura – Board led capital works projects	104,549
			Schools & kura Expenditure – Purchased goods and services	232,320
		Subtotal		**347,547**
TOTAL				**722,321**

Extrapolation and calculation methodology

Operational calculation methodology

A general extrapolation methodology was utilised for electricity and stationary combustion fuels, waste, water and wastewater. This methodology involved using per-capita averages and defined typologies. These typologies are combinations of the schools/kura climate zone or region, school type (Primary, Secondary, mixed age group schools e.g., Composite schools and Specialist schools), and/or energy mix (electricity only or mixed inclusive of fossil fuels). In this methodology, gaps were only filled with average data from complete datasets in the same typology group. This ensures that gap filling procedures consider factors such as regionality and school types to reduce inaccuracies.

Construction calculation methodology

Reporting on construction emissions utilised four different calculation methodologies, from five different data sources to cover five streams of capital works; major/medium/minor works, transportable buildings, board led capital works and maintenance. We have reported on projects that were completed in the financial year for all Ministry led construction, and all spend in the FY23 relating to School Board led construction projects.

Transport calculation methodology

Commuting data for ākonga and school staff utilised a variety of data sets to develop a robust calculation methodology which includes distance travelled by each individual between their home address and registered school and applies assumptions as to the mode of transportation taken which was based on the 2018 Census and the BEATS Research from Otago University.

Purchased goods and services methodology

Multiple spend-based methodologies were utilised. For School Board Activities, emissions have been calculated at the budget level rather than individual invoice level (as completed for the Te Tāhuhu Corporate Activities and Te Tāhuhu School Activities). Ka Ora Ka Ako was calculated separately.

Food (Ka Ora Ka Ako) calculation methodology

Emissions for an average school meal was calculated using volume of ingredients supplied and their corresponding specific emission factors developed by the University of Otago. The emission calculations were ‘cradle to grave’ and looked at the entire lifecycle emissions from production and manufacture, distribution and packaging, transportation, and waste. This per meal rate specific to the Ka Ora Ka Ako programme was then multiplied by the number of meals provided in FY23.

Planning improvements for future years

- Data collection on capital works is currently limited and could benefit from targeted work in following years to track the quantities of materials purchased and used for all projects over $150,000. This would allow use of material volumes and emission factors rather than a spend-based emissions approach and allow investigation of repeatable project areas that Te Tāhuhu are investing in.
- Given that Te Tāhuhu are now working with a smaller number of suppliers for off-site manufactured buildings and relocatables/transportables, we can look to engage with suppliers to create environmental product declarations (EPDs) for specific products or do full life cycle assessments (LCAs) that are representative of their stock.
- The current information for Ministry funded school buses relies on data from 18-24 months ago so could benefit from being updated and collected annually, including sourcing more patronage data and litres of diesel per bus route from contractors.
- Consolidate and cross-reference internal databases and resources related to pupil and staff commuting calculations to streamline GIS works calculating travel distances and update assumptions through pupil and staff surveys.
- Further explore the heating sources used at each school as well as meta data describing whether the sources are permanent, for auxiliary use only, recently removed, or temporary.
- Update the accuracy of the purchased goods and services emissions estimate using a consistent methodology and set of emission factors for all purchased goods and services through invoice level data, supplier apportionment and EDPs for key major products.

Te Tāhuhu o te Mātauranga

Consolidated Emissions

Table 7 is a summary of Te Tāhuhu Corporate Activities, Te Tāhuhu School Activities and School Board Activities.

Table 7. Te Tāhuhu Emissions

EMISSIONS CATEGORY	MINISTRY (INCLUDING SCHOOLS AND KURA) TONNES CO_2-e
Mandatory emissions sources	
Category 1: Direct GHG emissions and removals (vehicle fleet and natural gas)	1,172
Category 2: Indirect GHG emissions from building electricity	297
Category 3: Indirect GHG emissions from transportation (Ministry staff business travel including air travel, accommodation and working from home)	3,923
Category 4: Indirect GHG emissions from products used (waste, water, wastewater and transmission and distribution for electricity and natural gas)	381
Mandatory emissions subtotal	5,773
Material emissions sources	
Category 3: Indirect GHG emissions from transportation (Ministry staff commute and Ministry funded pupil transport)	30,802
Category 4: Indirect GHG emissions from products used – purchased goods and services and capital works by Te Tāhuhu	385,952
Category 5: Indirect GHG emissions associated with the use of products from the organisation (School Boards related emissions; Energy used in schools, pupil and school staff commuting and school lead purchased goods and services and capital works)	722,321
Material emissions subtotal	1,139,075
Total emissions (tonnes CO_2-e)	**1,144,848**

Emission Reduction Targets

Alignment to 1.5C emissions reduction pathway

The CNGP requires government agency participants to commit to being carbon neutral by 2025 and to set emissions reduction targets for 2025 and 2030 in line with a 1.5-degree Celsius trajectory. Carbon neutrality is the result of reducing emissions as much as possible and then purchasing carbon credits to offset any remaining emissions. It has yet to be determined by the CNGP what mechanism will be used to supply Te Tāhuhu with sufficient credits to offset emissions from FY25 onwards.

FY25 and FY30 targets

CNGP target setting resources are stated to be aligned to 1.5-degree Celsius trajectory. This is designed to meet the Paris Agreement and commitment seen in Aotearoa's climate change response (Zero Carbon) Amendment Act and Aotearoa New Zealand's first Emissions Reduction Plan (ERP). Te Tāhuhu has used the CNGP target-setting resources to determine the 2025 and 2030 emissions reduction targets:

- A 2025 target: Te Tāhuhu has committed to reduce our projected mandatory category 1-4 gross emissions by 21% in 2025 to 4,538 tCO_2-e , compared to the 2019 base year of 5,744 tCO_2-e .
- A 2030 target: Te Tāhuhu has committed to reduce our projected mandatory category 1-4 gross emissions by 42% in 2030 to 3,332 tCO_2-e , compared to the 2019 base year of 5,744 tCO^2-e .

The targets are currently limited to the mandatory emissions of the CNGP for consistency in emissions reduction expectations across CNGP participants. With further guidance and consistency from Ministry for the Environment/CNGP in terms of emissions measurement and reporting, Te Tāhuhu will set a reduction target for material emissions. Specific sub-targets for our top material emissions sources are being developed.

Internal Context and Achievability

The emissions reduction achieved by Te Tāhuhu during the COVID-19 restrictions demonstrated the potential to reduce emissions associated with travel (flights and fleet). In contrast, FY23 has seen a return to above-baseline travel emissions for a wide range of business reasons including sector engagement particularly with respect to the Curriculum Refresh Programme.

The Curriculum and Assessment Change Programme (which includes the NCEA Change Programme and NZ Curriculum Refresh and Te Marautanga o Aotearoa) saw an increase in travel costs from $850k in 2021/22 to $2.85m in 2022/23 as Covid restrictions eased and domestic travel increased. This travel supported the need to engage with the sector and external groups around this work as the programme approached critical milestones for the delivery of new curriculum and NCEA subject content.

Te Tāhuhu is now working on measures to provide closer management of travel including introducing an updated travel policy, international travel plan development

for the year ahead and tools to enable business groups to work to flight allocations (pkm allowance per business group, per annum). The challenge for the coming year will be in embedding these changes so that preference is given to online and digital forms of communication and engagements, while continuing to deliver high quality outcomes in line with the purpose and values of Te Tāhuhu.

The top 3 mandatory emissions sources, reduction potential and achievability within the context of Te Tāhuhu core services are outlined in Table 8.

Table 8: Reduction Potential of Mandatory Emissions

EMISSION SOURCE	REDUCTION POTENTIAL (IN CONTROL OF TE TĀHUHU)	ACHIEVABILITY	COMMENTS
Air Travel FY19: 2,750 tCO_2-e			Te Tāhuhu is now working on changes to its travel policy and the establishment of travel carbon budgets. Engagement and analysis with business groups will continue in the coming year to assess if travel emissions reductions are impacting core business activities in line with the vision and objectives of Te Tāhuhu. Looking further out, the aviation industry is also actively looking at lower emissions aviation fuel options.
Vehicle Fleet FY19: 1,306 tCO_2-e			During this reporting period the Ministry has transitioned 70 fleet vehicles to battery-electric vehicles (BEV), bringing our total to 164 electric vehicles (EV) (74 BEV & 91 PHEV) into our fleet of 565. In addition, the ministry was successful in receiving EECA co-funding for additional fully electric vehicles and associated charging infrastructure to support our transition out to August 2024 bringing the total of BEV/PHEV to approximately 300 by this time.
Building Electricity FY19: 504 tCO_2-e			• As part of the roll out of the NABERSNZ ratings of leased buildings over 2000 m2, two further energy audits [Tauranga and Albany offices] are being undertaken currently with property owner support and 75% funding from EECA. This is alongside successful (above 4.5 star) ratings for Te Tāhuhu occupancies of five relevant buildings, with remaining buildings not suitable for ratings [e.g. 8 Gilmer Tce has not yet been occupied for a year; two other large tenancies are impacted by seismic assessment consideration]. • Where landlord funding and approval is gained, move lighting to LED lighting at leased premises. • Action and buy in outside of the control of Te Tāhuhu is also required for; • Overall improvements in supply of renewable energy to the grid by government. • Landlord engagement and investment will be required for further energy efficiency or onsite renewable initiatives.

Green: significant reduction possible with dedicated funding, existing technology, or behaviour/policy change.
Amber: limited reduction possible with dedicated funding, existing technology, or behaviour/policy change.
Red: cannot be addressed with current technology or behaviour/policy change, or reduction potential already achieved.

Further Target Setting

Te Tāhuhu is currently modelling the introduction of annual domestic flight allocations for each business group to support the attainment of the mandatory emission reduction targets and to sit alongside updated policy guidance for travellers and travel approval decision makers. This flight allocation scheme will be reviewed prior to the commencement of FY25, to ensure the scheme and allocation model is a) fit for purpose in helping Te Tāhuhu lower its emissions from flights and b) is not having unintended negative impacts on Te Tāhuhu purpose, service delivery or values.

Te Tāhuhu may set targets related to the included 'material' emissions sources in future including our Te Tāhuhu School Activities and School Board Activities. The emissions profile from these emission sources are also likely to change as data quality improves, therefore setting a provisional target at a later date is favourable.

The data quality from Te Tāhuhu Corporate Activities purchased goods and services and employee commuting may improve over time as Te Tāhuhu begins engaging suppliers and collecting more accurate information from staff. Emissions from purchased goods and service emissions is linked to the Government funding received by Te Tāhuhu, therefore alternative approaches to a spend based method over time may better demonstrate where Te Tāhuhu is reducing the emissions from purchased goods and services.

To respond effectively to the results of our Te Tāhuhu School Activities and School Board Activities requires buy-in from schools to support the achievement of any targets. A staged approach to emission reduction allows Te Tahuhu the opportunity to engage the sector in the process, to test the assumptions we have made about the effectiveness of certain reduction initiatives and learn and adapt to support emission reductions across all state schools and kura.

School pilots will allow us to learn and gain feedback through engagement with schools and kura on what targets are feasible and how reductions can be scaled across the schooling sector.

We will work with schools and kura to implement reduction initiatives that encourage and support a shift to a lower emission future. This school led Ministry supported approach represents a significant opportunity to educate and empower ākonga that individually and collectively they can reduce not only their schools' but Aotearoa's emissions as well.

To make the biggest shift toward a 1.5-degree pathway target for Te Tāhuhu School Activities and School Board Activities we will be prioritising piloting interventions in the three largest material emission –sources; transport, construction and property emissions, and food supply and waste.

External Barriers and Opportunities

Corporate

Barriers to emissions reduction beyond direct control of Te Tāhuhu:

- Fiscal constraints have potential to negatively impact Te Tāhuhu emission reductions. For example, potential and known shifts in the fleet transition funding landscape could shift the ratio of Te Tāhuhu fleet transition away from the targeted near-100% BEV transition, due to BEV being a more costly option currently than other types of electric vehicles. However, there is at least one instance, in the case of flying, where downward pressure on budgets is supporting behaviour change towards remote-first meetings and away from flights.
- Returning to 'normal' service delivery, post-Covid-19 travel restrictions, saw a demand for Te Tāhuhu to increase regional and inter regional and international face to face touchpoints – increasing travel (domestic and international flights) as well as accommodation, taxis etc.
- As more organisations transition their fleet to electric vehicles there is the potential for further vehicle supply issues and constraints.
- Dependency on increasing renewable electricity generation of the national grid in line with Climate Change Commission forecasting and proposed ambition.
- In some cases, emissions reduction of the supply chain is difficult for Te Tāhuhu to influence. For example, Air New Zealand is investigating sustainability steps such as zero emissions aircraft technologies, but the implementation of these sits outside the control or influence of Te Tāhuhu but sees a significant reduction in Te Tāhuhu emissions profile.

State Schools & Kura

Barriers to emissions reduction beyond direct control of Te Tāhuhu:

- The size, scale, complexity, geographical distribution and devolved operational model for 2,139 schools and kura is a significant challenge for accurate data collection, modelling, target setting and implementation of reduction initiatives.
- The assumptions, extrapolation and extensive modelling used in our baseline for state schools and kura, limit our ability to understand the reduction potential of different initiatives and the practicalities of achieving those reductions. Over time, more accurate reporting methods will be developed to bridge that gap.

Opportunities for action from across government to deepen or accelerate emissions reductions:

- Collaboration with other CNGP participants to engage landlords for better emissions data reporting and implementation of NABERSNZ.
- Collaboration with the same CNGP participants to carpool and share fleet vehicles to reduce the demand of each agency to purchase their own EVs and in doing so reducing overall CNGP footprint emissions.
- Collaboration with the wider CNGP to engage suppliers collectively such as transport, energy suppliers and goods and service providers.
- CNGP to share templates/resources between participants for improved reporting and engagement to drive emissions reductions across the group.
- Collaboration with other CNGP expertise to form a focus group to evaluate and share common opportunities.
- Collaboration with other CNGP participants to prepare and share emissions reduction information for engaging emissions reduction communications.

Appendix 1: Te Tāhuhu Emission Reduction Initiatives

FOCUS AREA	INITIATIVE	TARGET/OUTCOME	RESPONSIBILITY	START DATE	COMPLETION DATE
MANDATORY EMISSIONS					
Fleet (1,306 tCO_2-e)	Decarbonisation of current vehicle fleet	up to 80% BEV fleet by FY25 and up to 90% BEV fleet by FY30	Property & Sustainability	FY22	FY25
	Engage in fleet optimisation through data analysis, including vehicle utilisation patterns, and relocating vehicles to high-demand areas	Aiming to avoid fleet growth through optimisation	Manager, Vehicle Fleet Optimisation and Transition	FY23	Ongoing
	Investigate running a feasibility study/ pilot on fleet sharing with co-located agencies, building on learnings from charger-sharing in Gisborne.	Identify agencies & scope a study/ pilot	Property & Sustainability		FY25
	Provide Fleetwise dashboard reporting to relevant regional staff and senior leaders, including information on fleet utilisation	Relevant staff are accessing reporting	Manager, Vehicle Fleet Optimisation and Transition	FY23	Ongoing
	Seek funding for GPS tracking across the fleet to support greater optimisation and efficiency	Aiming for GPS tracking on all fleet vehicles by FY25	Property & Sustainability	FY24	FY25
Staff Communication & Engagement Plan	Develop a low carbon emissions communication plan: • This will develop key themes for behaviour change throughout the year, including mode shift, waste and energy. • The plan will seek to engage and empower staff, and elevate regional and local voices.	Sustainability comms rhythm to be underway in FY24	Property & Sustainability, Internal Comms, Change	FY24	Ongoing
Business Travel (3,044 tCO_2-e)	Reduction in business travel emissions, which are from air travel, accommodation, taxi, staff mileage and rental car hire.	42% reduction in domestic air travel emissions by FY30 against FY19 baseline;	Sustainability - Ka Ora Ka Ako programme	FY23	Ongoing
	Te Tāhuhu will assess if setting and monitoring carbon budgets for air travel for each business group, will help reduce emissions without limiting service delivery and outcomes.	Decision on setting of carbon budgets	Te Pou Tokomanawa	FY23	FY24
Air travel (2,750 tCO_2-e)	Update Te Tāhuhu Travel Policy to enable: • Travel to be consistent with our carbon emissions reduction targets of 21% by 2025 and 42% by 2030. • 'Minimising the Ministry's carbon footprint' as a policy principle	Travel policy is updated	Finance/ People, Sustainability and Place	FY23	FY24
	Provide monthly Orbit reporting on flight usage to business groups and the leadership team, Te Pou Tokomanawa.	All teams have access to monthly air travel use reports by end of FY23	Property & Sustainability team	FY23	Ongoing

Taxi, rental cars and staff mileage (294 tCO_2-e)	Investigate options to encourage uptake of lower carbon intra-city travel and run pilots where appropriate. For example, look into: • Improved information provision to staff re local alternative transport options. Public transport cards to borrow and/or streamlined ticket claim reimbursement. • Fleet diversification to trial ebikes or escooters.	Scope pilot potential	Property & Sustainability team/ Finance	FY24	FY25
	Introduce public car share option to support the current fleet by introducing additional capacity	Finalise and launch Mevo car-share scheme to supplement fleet/taxi use particularly in Wellington, Christchurch, Hamilton and Auckland	Procurement and Property & Sustainability	FY23	Ongoing
Building energy (775 tCO_2-e)	Ensure building energy monitoring and reporting includes all energy consumption data from Te Tāhuhu offices.	Energy consumption data is complete for all sites	Property & Sustainability team	FY22	Dec 2022
	NABERSNZ ratings will be undertaken, where possible, for each office over 2,000m2	4.5 avg NABERSNZ ratings on relevant buildings	Property & Sustainability team	FY22	Ongoing
	For new office site selection, Te Tāhuhu will develop a low carbon criteria list to help evaluate low carbon outcomes from the selection of a new office. Criteria is likely to include: • Does the site have an existing NABERSNZ rating and what's the kWh/m2 rating? • Access to a regular bus service? • Existing or suitability to install EV charging points? • Availability of end of trip facilities for active travel (related to business travel and commuting)	Follow GPG guidelines	Property & Sustainability team	FY23	Ongoing
Freight (30 tCO_2-e)	Investigate potential to reduce emissions from freight – for example: • Prioritising low emissions freight where possible • Prioritising local products over international or national produce to reduce courier distance	Scope initiative potential	Property & Sustainability/ Procurement	FY22	FY25
Waste (279 tCO_2-e)	Develop a waste minimisation plan. Actions could include: • Waste avoidance e.g. encourage printing alternatives • Waste diversion e.g. providing further recycling/ compost streams in offices • More accurate measuring and reporting of waste quantities per office	Reduction in waste to landfill against FY19 – 40% in FY25 and 50% in FY30	Property & Sustainability team	FY22	FY25
Water/wastewater (79 tCO_2-e)	Improve data accuracy of water/wastewater by collecting consumption data from landlords	Work with property managers to assess status	Facilities management team, Colliers	FY23	Ongoing
MATERIAL EMISSIONS					
Employee commuting (4,585 tCO_2-e	Undertake an inaugural staff commuting survey to improve data accuracy and help understand perceived and actual barriers to low carbon/ active commuting.	Improved data accuracy	People, Sustainability & Place	FY24	Ongoing
	Investigate initiative potential to overcome barriers and encourage commuting mode shift. For example, actions could include: • Improve end of trip facilities in existing offices e.g. secure bike parking and showers • Ride sharing mapping to help staff that commute at similar time to/from similar residences to the larger offices	Develop a feasibility study and carbon reduction potential and network with other CNGP participants	Property and Sustainability	FY24	Ongoing
Purchased goods and services (40,099 tCO_2-e)	Discovery Phase – improve data collection and quality to allow for more accurate understanding of emissions and focus areas.	Identify largest suppliers to engage	Procurement and Property & Sustainability	FY23	FY25
	Request as part of any continuous improvement clauses that major individual suppliers (top 5 by annual spend) are asked to provide a GHG inventory within a specified timescale (appropriate to the size and nature of the contract).	N/A	Procurement and Property & Sustainability	FY23	FY25

Ministry funded pupil school buses (27,364 tCO_2-e)	We are exploring how Te Tāhuhu funded bus network can support the overall transport emissions picture for all ākonga commuting. We will be encouraging greater patronage of existing bus networks by engaging with schools to understand the barriers to use of this service. It is likely that this could result in a net increase in the emissions from Ministry funded school buses, however we would expect this to coincide with a reduction in the overall commuting emissions.	N/A	Emission Reduction Schools & Kura and the Transport teams	FY23	Ongoing
Purchased goods and services – Ministry funded for state schools & kura (125,233 tCO_2-e)	Engage with top 20 suppliers to understand more about specific emissions profiles, including EPD's where available. This will allow us to understand more about our emission reduction potential and to work with our suppliers towards collective emission reduction goals.	N/A	Emission Reduction Schools & Kura and the Procurement teams	FY23	FY24
Purchased goods and services – Ka Ora Ka Ako (Healthy School Lunches) (71,655 tCO_2-e)	Te Tāhuhu has created a focus group for sustainability in the Ka Ora Ka Ako programme. They are supporting schools, kura, and suppliers to reduce their carbon impact. We intend to build on this work to investigate and test reduction initiatives across the full life cycle of food production with our schools, kura and suppliers.	N/A	Sustainability - Ka Ora Ka Ako programme	FY23	Ongoing
Purchased goods and services – State schools & kura (232,320 tCO2-e)	Discovery phase – improve data collection and quality to allow for more accurate understanding of emissions and focus areas. Due to the diverse nature and spread of this expenditure there is no clear outliers where emission reduction gains could be easily identified, and instead this represents the sum of many small investments and suppliers contributing to educational outcomes.	N/A	Emission Reduction Schools & Kura team	FY24	Ongoing
Ministry funded capital works (174,362 tCO_2-e)	Discovery phase - our strategy for reducing emissions in construction will assess our construction forecast programme, Te Tāhuhu's response to growth demands including our National Growth Plan, and our asset management strategy. This will allow us to explore and prioritise plans to build in less carbon intensive ways, build smarter and build more efficiently. We're also reducing the embodied and operational emissions of new school buildings and refurbishments by requiring more extensive application of Life Cycle Analysis (LCA's) on projects, and Green Star accreditation on new buildings over $9m.	N/A	Emission Reduction Schools & Kura and the School Design team	FY23	FY25
Capital works – State schools & kura (104,549 tCO_2-e)	Discovery phase – learnings from Te Tāhuhu funded capital works investigation can inform guidance and advice given to School Boards in regard to board led capital works projects.	N/A	Emission Reduction Schools & Kura team	FY24	FY25
Fuel - State schools & kura (36,743 tCO_2-e)	Our boiler decarbonisation programme is replacing all coal boilers in schools by 2025. The programme is also piloting a diesel boiler replacement and looking into options for transitioning our gas boilers in due course.	N/A	Coal Boiler Replacement Programme	FY22	FY24
Waste - State schools & kura (5,984 tCO_2-e)	Waste initiatives are common in schools throughout the motu, whether it be conducting a waste audit, composting for the school garden and community, or implementing a recycling scheme. We will be further exploring the relationship between food emissions and waste and encouraging greater uptake in composting initiatives.	N/A	Emission Reduction Schools & Kura team	FY24	Ongoing
Water/wastewater – State schools & kura (1,646 tCO_2-e)	Some schools and kura have installed rainwater collection tanks to supplement their water supply. Many of these systems are used for non-potable (drinking) water, for example flushing toilets or irrigation, but some systems incorporate treatment to produce potable water. These systems not only reduce reliance on mains supply but enable use of water for things such as irrigation which would otherwise be limited in dryer months. We are exploring better data from smart water meters and how this might support us in leak detection and how we might respond to any remediation required.	N/A	Water Services team	FY23	Ongoing
Electricity – State schools & kura (21,789 tCO_2-e)	Ngā Iti Kahurangi programme which is improving internal environments of small and remote schools. This programme reduces energy demands by installing LED lighting and insulation and the programme has also taken a proactive approach to maximising resources and minimising waste by partnering with suppliers who have a strong focus on environmental sustainability. Approximately 250 schools and kura have converted to solar production to supply or supplement their energy demands. Schools and kura with solar panels are also realising the educational benefits of the STEM-based activities presented by that technology. We are seeking advice to evaluate Te Tāhuhu's energy decarbonisation potential in the context of the wider emissions footprint and other work programmes, feeding into the development of emission reduction targets.	N/A	Emission Reduction Schools & Kura team	FY23	Ongoing

Pupil commuting – State schools & kura (247,543 tCO_2-e)	We plan to test a variety of emission reduction interventions that encourage active transport participation at schools. These will be school led initiatives supported by Te Tāhuhu.	N/A	Emission Reduction Schools & Kura team	FY23	Ongoing
Staff commuting – State schools & kura (71,743 tCO_2-e)	We plan to test a variety of emission reduction interventions that encourage active and public transport participation. These will be school led initiatives supported by Te Tāhuhu.	N/A	Emission Reduction Schools & Kura team	FY23	Ongoing

Te Tāhuhu School Activities
School Board Activities
Te Tāhuhu Corporate Activities

Appendix 2

State Schools & Kura Emission Reduction Pilots

Work is underway

We're committed to exploring ways in which we can continue to deliver equitable and excellent outcomes for ākonga in a less carbon intensive way, and what we can do to support schools and kura to do the same.

We've looked at how initiatives and actions in schools and kura are playing a part in reducing emissions. While they might not always be obvious, emission reductions are happening in schools across the motu everyday - from reducing waste, transitioning to cleaner energy solutions, rethinking what is purchased, selecting low emission materials in what we build, and self-supplying things like water and electricity.

Activities delivered in schools and by schools with ākonga, teachers, kaiako, and community are all working to reduce the impact we have on the planet, such as:

- Boiler decarbonisation programme which is replacing all coal boilers in schools by 2025. The programme is also piloting a diesel boiler replacement and looking into options for transitioning our gas boilers in due course.
- Reducing the embodied and operational emissions of new school buildings and refurbishments by requiring more extensive application of Life Cycle Analysis (LCA's) on projects, and Green Star accreditation on new buildings over $9m.
- Ngā Iti Kahurangi programme which is improving internal environments of small and remote schools. This programme reduces energy demands by installing LED lighting and insulation. The programme has also taken a proactive approach to maximising resources and minimising waste by partnering with suppliers who have a strong focus on environmental sustainability.
- A sector guidance booklet 'Me, Growing a Thriving World' was published in June 2023. This is a resource to support ākonga, whānau, teachers and schools to further develop their understanding of actions that can be taken to grow a healthy, thriving world.
- There are many examples of where schools and communities come together to transport ākonga to school more sustainably. A Walking School Bus (WSB) is one such way which provides a fun, safe and active way for children to travel to and from school. Some schools are also encouraging 'Park and Stride' where parents drop their children further away from school so they can walk part way.
- Schools play an important role in developing sustainability and part of that centres around educating ākonga and communities about reducing what ends up in landfills. Waste initiatives are common in schools throughout the motu, whether it be conducting a waste audit, composting for the school garden and community, or implementing a recycling scheme.

- Approximately 250 schools and kura have converted to solar production to supply or supplement their energy demands. Schools and kura with solar panels are also realising the educational benefits of the STEM-based activities presented by that technology.
- Some schools and kura have installed rainwater collection tanks to supplement their water supply. Many of these systems are used for non-potable (drinking) water, for example flushing toilets or irrigation, but some systems incorporate treatment to produce potable water. These systems not only reduce reliance on mains supply but enable use of water for things such as irrigation which would otherwise be limited in dryer months.
- Broader outcomes inclusion in our procurement policy. This is reflected in waste diversion outcome targets for our Ka Ora Ka Ako school lunches programme and our construction projects.

We have quantified the emission savings because of these initiatives and explored the impact of these activities being implemented across all state schools and kura. This analysis is summarised in the emissions savings snapshot below and formed the basis of more comprehensive decarbonisation modelling that helped define our emission reduction strategy.

Emission savings in schools and kura

A snapshot view of annualised carbon emissions that could be saved through a variety of activities undertaken by the Ministry of Education and schools and kura.

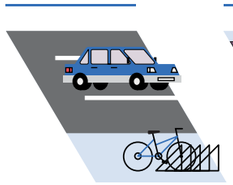
Rainwater collection

1.98 tCO_2-e

Emissions saved if all state schools and kura had a rainwater collection tank

Build fewer carparks

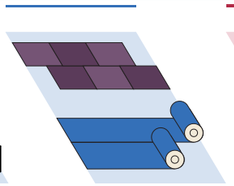
53 tCO_2-e



Average annual emissions saved by building fewer carparks for new teaching spaces

Low emission carpet

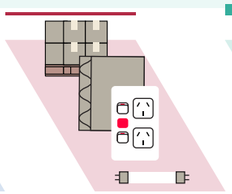
189 tCO_2-e



Average annual emissions saved by using a lower emission carpet in new teaching spaces

Ngā Iti Kahurangi

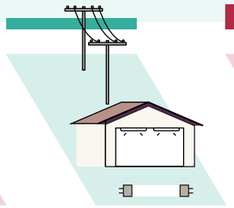
228 tCO_2-e



Emissions saved through Ngā Iti Kahurangi classroom upgrades

LED lighting

952 tCO_2-e



Emissions saved if all state schools and kura had LED lighting

Ka Ora, Ka Ako

2,105 tCO_2-e

Emissions saved if all school lunch suppliers implemented efficient route planning and composted food waste and packaging

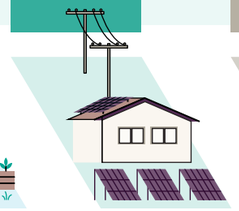
Composting

2,919 tCO_2-e

Emissions saved if all state schools and kura composted

Solar panels

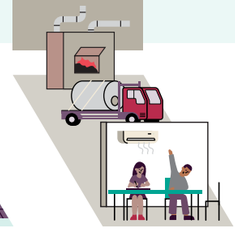
13,410 tCO_2-e



Emissions saved if all state schools and kura had solar panels

Boiler decarbonisation programme

17,256 tCO_2-e



Emissions saved if all coal, diesel and gas boilers were replaced

Active transport

77,620 tCO_2-e

Emissions saved if half of our akonga living in urban centres used active transport to get to school

Our approach for FY24

Through our inventory we have now delivered a comprehensive baseline to identify emission reduction opportunities that can be undertaken centrally by Te Tāhuhu, and by our schools and communities, empowering them to participate and contribute to our response to climate change.

We are dedicated to setting reduction targets that are in line with, and demonstrate a commitment to, a 1.5-degree global warming pathway.

Our plan:

1. Assess work underway by Te Tāhuhu and schools & kura and quantify the emission reduction potential. (Complete)
2. Model emission reduction initiatives across all emission sources in line with a 1.5-degree pathway to determine the primary areas of focus that will affect the greatest change in emissions. (Decarbonisation Roadmap - Complete)
3. Pilot emission reduction initiatives in up to 300 schools, commencing in Term 2 2024, to test the effectiveness of the initiatives and the support and resourcing required to deliver the emission reduction initiative to all state schools and kura. (Phase 1: April – October 2024)
4. Review the effectiveness of the initiative, complete marginal abatement cost analysis and extrapolate the potential to the remaining state schools and kura. (October – November 2024)
5. Set targets that are informed by practice not just theory, and with buy-in from schools. (December 2025)

Decabonisation modelling

Te Tāhuhu committed to exploring what targets could credibly be included in the 2023 Emission Reduction Plan. To inform that process we undertook decarbonisation modelling that explored and modelled practical interventions that, when implemented, would reduce our emissions in line with a 1.5-degree pathway. The decarbonisation modelling indicated that there were no credible targets that could feasibly be set over emission sources where there wasn't already work underway e.g., our decarbonisation (boiler replacement) programme without additional detailed data and cost benefit analysis, alongside engagement with schools to bridge the gap between modelled and actual data.

Our modelling has been consolidated into a 'Decarbonisation Roadmap' which is an interactive tool that allows users to toggle and slide the 'level of ambition' for a variety of reduction initiatives. The modelling does not include any lifecycle assessment, nor cost benefit analysis of any of the proposed interventions and Te Tāhuhu would undertake thorough marginal abatement cost curve (MACC) analysis before committing to any emission reduction activity.

To progress towards setting emission reduction targets we must first understand more about the potential, feasibility, and practicality of reducing emissions by challenging some of the assumptions we have created in our modelling at a portfolio level, by working with schools to understand their local context and individual emission reduction potential. We have further explained the feasibility of setting targets in Table 9 below.

No emission source we have reported on uses a data set that is completely representative of our schools and kura as it relies on a degree of extrapolation and modelling from available data sets (representing between 30%-80% of schools reported on). To effectively track reductions Te Tāhuhu needs to bridge the gap between actual and modelled data, which our pilot programmes will allow us to do.

Table 9: Reduction Potential of Mandatory Emissions[2]

EMISSION SOURCE	STEPS TO UNDERSTAND REDUCTION POTENTIAL
Fuel	Our decarbonisation programme is replacing all coal boilers in schools by 2025, which will reduce our emissions by a cumulative total of 52,859 tCO_2-e by 2030. The programme also includes a diesel boiler replacement pilot in FY23/24. Based on our modelling we anticipate a total cumulative saving 10,710 tCO_2-e by 2030 if we replace diesel and gas boilers at the same rate we have replaced coal boilers. There is opportunity for us to better understand this reduction potential by gathering more accurate diesel consumption data from schools.
Electricity	We currently collect regular electricity consumption from more than 1800 schools. Our Te Haratau programme is working to collect energy consumption data from all schools and using it to assess how school property is performing and supporting education outcomes. We have modelled a cumulative saving of 16,398 tCO_2-e by assessing the impact of greater energy efficiency in schools, achieved by installing LED lighting and creating more energy conscious behaviour. We expect the maximum achievable energy efficiency is 20% by 2030. Approximately 250 schools currently have solar panels installed. We have modelled a cumulative saving of 28,570 tCO_2-e by 2030 if all schools were to have solar panels installed. This does not consider the embodied or lifecycle emissions of solar panels, nor the suitability of installing roof-based systems to our portfolio. We anticipate that the greening of NZ's grid will have a cumulative impact of 27,720 tCO_2-e saved by 2030. We intend to work with the industry and with schools to find the right mix of decarbonisation solutions for schools and kura.
Water & wastewater	We have modelled the impact of reducing our water demands using low-flow fixtures, rainwater harvesting and water reticulation systems and more conscious consumption behaviours. It is assumed the maximum achievable water reduction is 20% which would result in an estimated cumulative saving of 1,672 tCO_2-e by 2030. We are exploring access to better data from smart water meters and how this might support us in leak detection and our response to any remediation required.

Waste	We have modelled the impact of schools diverting waste from landfill through composting, recycling, and considering alternative approaches to waste generating activities where possible. It is assumed the maximum achievable waste reduction is 30% using FY22 as our baseline. This would result in an estimated cumulative saving of 11,002 tCO_2-e by 2030. However this assumes that there is an average additional 30% reduction to be made and we are aware that composting and recycling are common practice, especially in primary schools, which could result in an overstating of the emission reduction potential. More work is required to understand the emission reduction potential by working with schools to gather more data e.g., waste audits, and survey schools to understand what waste diversion methods they currently have in place.
Transport	We have modelled a cumulative saving of 48,411 tCO_2-e by 2030 through an example of a transport initiative called a 'Park and Stride' where ākonga walk the last 500m to school each day. Through our pilot programme we will be creating a more accurate baseline for schools and understand more about how local context has a direct correlation with a schools ability to reduce their transport emissions.
Transport	We are exploring how Te Tāhuhu funded bus network can support the overall transport emissions picture for all ākonga commuting. Through our pilot programme we will be encouraging greater patronage of existing bus networks by engaging with schools to understand the barriers to use of this service. It is likely that this could result in a net increase in the emissions from Ministry funded school buses, however we would expect this to coincide with a reduction in the overall commuting emissions.
Construction	Investigating the Te Tāhuhu funded capital works can inform guidance and advice given to School Boards regarding board led capital works projects. We will specifically consider maintenance and operational (whole-of-life) emissions as part of our investigation into construction.
Construction	The initiatives we have modelled include better maintenance regimes to avoid or defer carbon intensive replacement activities such as reroofing buildings, building optimisation, building with lower carbon materials and the use of relocatable buildings. Our strategy for reducing emissions in construction will assess our construction forecast programme, Te Tāhuhu's response to growth demands including our National Growth Plan, and our asset management strategy. This will allow us to explore and prioritise plans to build in less carbon intensive ways, build smarter and build more efficiently. This is a focus for us in FY23/24.
Purchased Goods & Services	We have modelled the impact of suppliers reducing their emissions through more sustainable practise and a greater understanding of value chain and lifecycle emissions and how to reduce the impact of goods and services procured by the Ministry and schools. It is assumed the maximum achievable reduction by suppliers is 20%. This would result in an estimated cumulative saving of 147,068 tCO_2-e by 2030 over both Ministry funded and School Board led purchased goods and services. The single largest contributor to our purchased goods and services is our Ka Ora, Ka Ako (Healthy School Lunches) programme. The programme reaches more than 222,000 ākonga at 989 schools and supplied 41.6 million lunches in FY23 with a total carbon impact of 71,655 tCO_2-e . We intend to investigate and test opportunities for reduction across the full life cycle of food production with our schools, kura and suppliers.

Te Tāhuhu School Activities
School Board Activities

Decarbonisation Roadmap

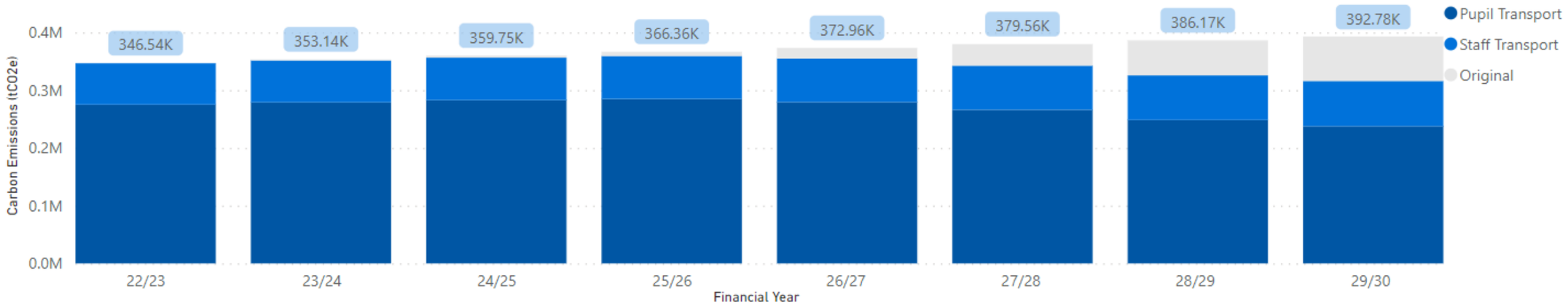
Modelling a range of emission reduction initiatives in state schools & kura against a 1.5 degree pathway

Ministry of Education
Te Tāhuhu o te Mātauranga

Summary | **Transport** | Energy | Construction | Waste | Water | Goods & Services

Cumulative transport savings (tCO2): 205,385

A national view of how 700,000 ākonga and 135,000 school staff commute to school daily. We must explore how we can provide opportunities for our ākonga to explore, participate, create, and track change across modal share initiatives.



Emission Reduction Intervention

Park and Stride	Distance ākonga travel to school using active transport (meters)	Distance from primary schools Ministry buses will now collect ākonga (meters)	Distance from secondary schools Ministry buses will now collect ākonga (meters)	Electrification of the public transport network	Greater electrification of privately owned vehicles
○ No ◉ Yes	5000	900	1300	○ No ◉ Yes	○ No ◉ Yes

Decarbonisation Roadmap

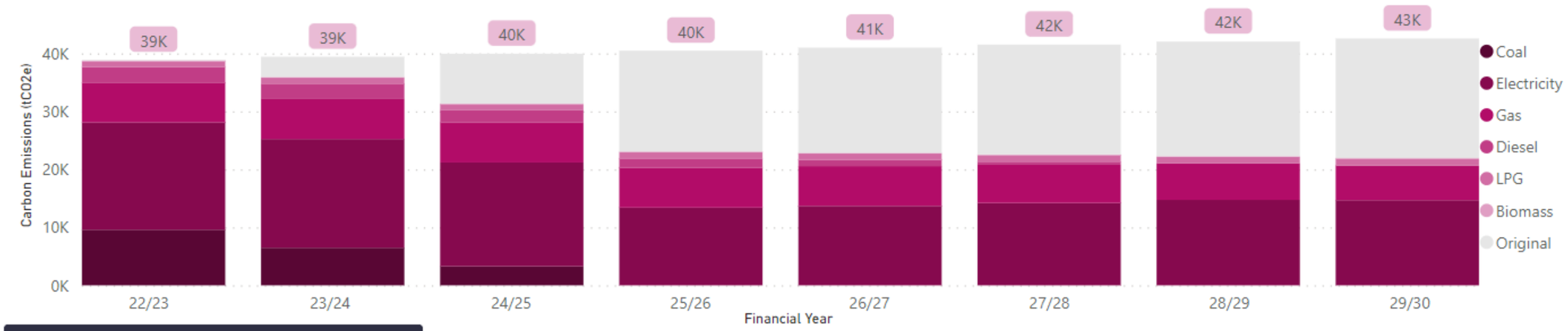
Modelling a range of emission reduction initiatives in state schools & kura against a 1.5 degree pathway

Ministry of Education
Te Tāhuhu o te Mātauranga

Summary | Transport | **Energy** | Construction | Waste | Water | Goods & Services

Cumulative energy savings (tCO2e): 107,006

250 million kWh of energy is used by 2,100 schools & kura each year. We must develop system resilience and ensure our schools are able to operate efficiently and effectively.



Emission Reduction Intervention

Greening of NZ's energy grid
- No
- Yes

Energy efficiency
No change — Max. potential efficiency

Coal boiler replacements
- No
- Yes

Diesel and gas boiler replacements
- No
- Yes

Solar PV for schools
No change — All schools have solar

Decarbonisation Roadmap

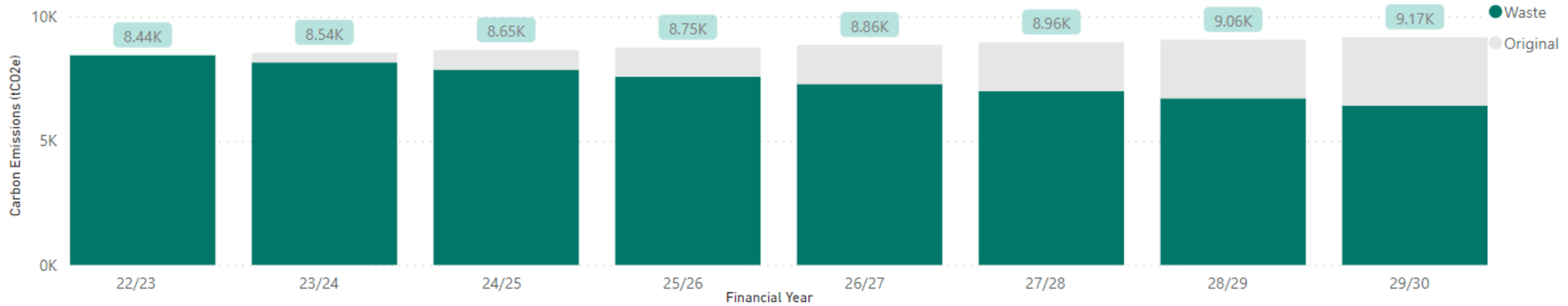
Modelling a range of emission reduction initiatives in state schools & kura against a 1.5 degree pathway

Ministry of Education
Te Tāhuhu o te Mātauranga

Summary | Transport | Energy | Construction | **Waste** | Water | Goods & Services

Cumulative waste savings (tCO2e): 11,002

27,950 tonnes of waste is generated by 2,100 schools & kura each year. We must consider how we can reduce the impact of our choices and the consequences of waste, particularly food waste, ending up in landfill.



Emission Reduction Intervention

Reducing the volume of waste sent to landfill

No change — Max. potential reduction

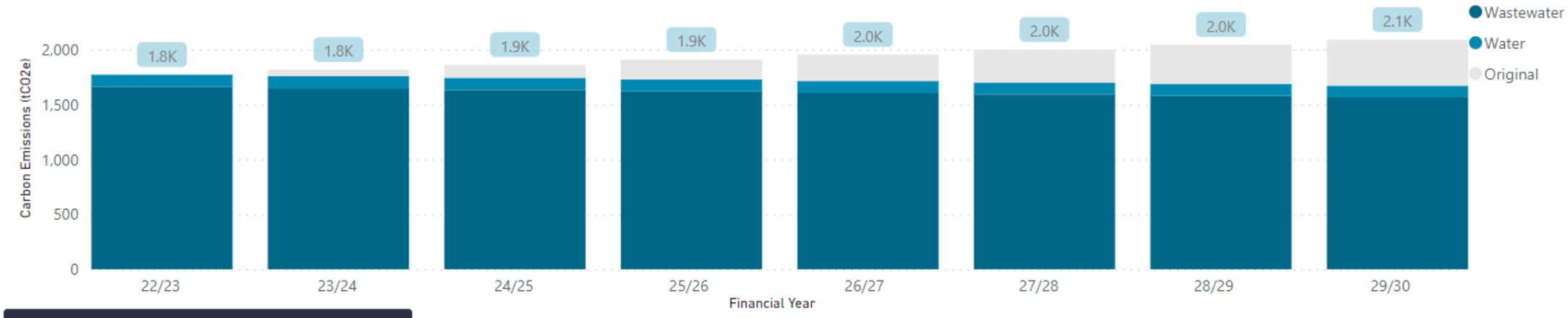
Decarbonisation Roadmap

Modelling a range of emission reduction initiatives in state schools & kura against a 1.5 degree pathway

Ministry of Education
Te Tāhuhu o te Mātauranga

Cumulative water savings (tCO2e): 1,672

2.23 billion litres of water is consumed each year by 2,100 state schools & kura. We must consider the role that we play in use, protection, and regeneration of natural resources such as water.



Emission Reduction Intervention

Reduce our water demands

No change

Max. potential reduction

Decarbonisation Roadmap

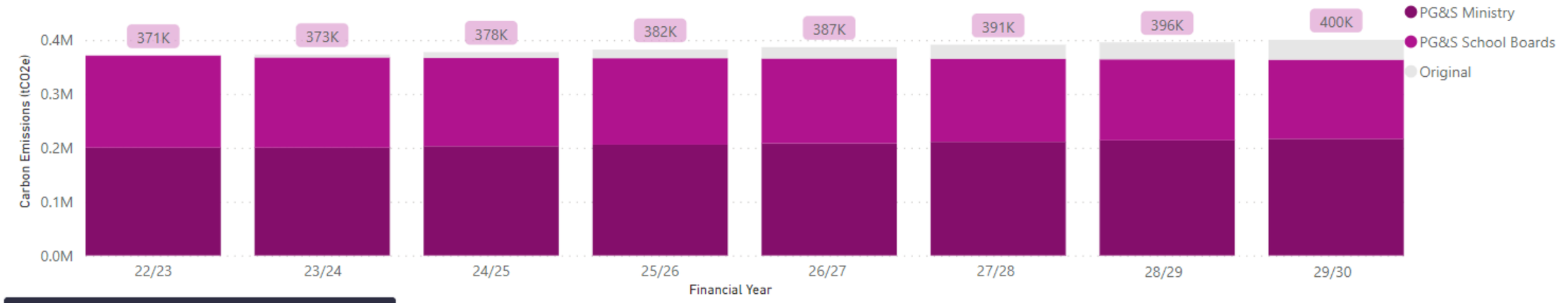
Modelling a range of emission reduction initiatives in state schools & kura against a 1.5 degree pathway

Ministry of Education
Te Tāhuhu o te Mātauranga

Summary | Transport | Energy | Construction | Waste | Water | **Goods & Services**

Cumulative PG & S savings (tCO2e): 147,068

The Ministry and School Boards spend $2.5 billion dollars annually purchasing goods and services, including the Ka Ora, Ka Ako Healthy School Lunches Programme. We must consider how we can encourage suppliers to work with us to reduce our impact and deliver what's needed using lower carbon approaches.



Emission Reduction Intervention

Suppliers and industry reduce their emissions

No change | Max. potential reduction

Pilot Programme

Before we are able to set targets on behalf of 2,139 state schools and kura that are effective and sustainable, we plan to test reduction opportunities through emission reduction pilots in schools and engage School Boards, Principals, Kaiako, and ākonga in that process. School pilots will allow us to learn and gain feedback through engagement with schools and kura on what targets are feasible and how reductions can be scaled across the schooling sector.

The pilot programme will provide schools and kura with end-to-end support to enable them to successfully implement emission reduction interventions. This support includes:

- An individual school level carbon footprint and access to the Accelerate2zero tool where schools can visualise their own emissions, track change in real time and over time, and model a range of reduction scenarios.
- Coordination and provision of dedicated people resources that will assist with the implementation of the pilots, working directly with schools and kura.
- Data collection tools and training.
- Providing teaching resources for Kaiako to connect carbon accounting, climate science, and school level data collection and insights to the New Zealand Curriculum and Te Mātaiaho.
- Upskilling and supporting the development of school based 'Carbon Neutral School Lead' via Professional Learning and Development and providing them with resources to plan and communicate with wider stakeholders such as whānau and local bodies.
- Providing the resources needed to create a new, or expand an existing, Enviro-Group in each school.

At the conclusion of the initial pilot phase, we will assess the effectiveness of the interventions by school, typology, geographic region and on a per pupil basis using cost-benefit analysis. This information will form the basis of modelling predicted emission reductions across all state schools out to the year 2030 and inform the reduction targets we set.

To make the biggest shift toward a 1.5-degree pathway target our pilot programme will focus on our three largest emission sources as priority - transport, construction and property emissions, and food supply and waste.

We intend to pilot initiatives across the three focus areas in a phased approach, with transport being the priority. Transport is scheduled first due to the level of detail of our transport data and the ability to draw on support from several other organisations including central agencies, local councils and academia who are progressing work to understand and change transport patterns and behaviour.

Focus on Transport

In order to test the interventions we have modelled, and to account for the variety and unique characteristics of state schools and kura, our pilot programme needs to have appropriate scale. The number of schools needs to offer a representative sample size to be able to draw realistic assumptions and conclusions as to how many emissions would be saved, and the cost to implement across all state schools and kura. We are proposing to implement our transport pilot in 200-300 schools in 2024.

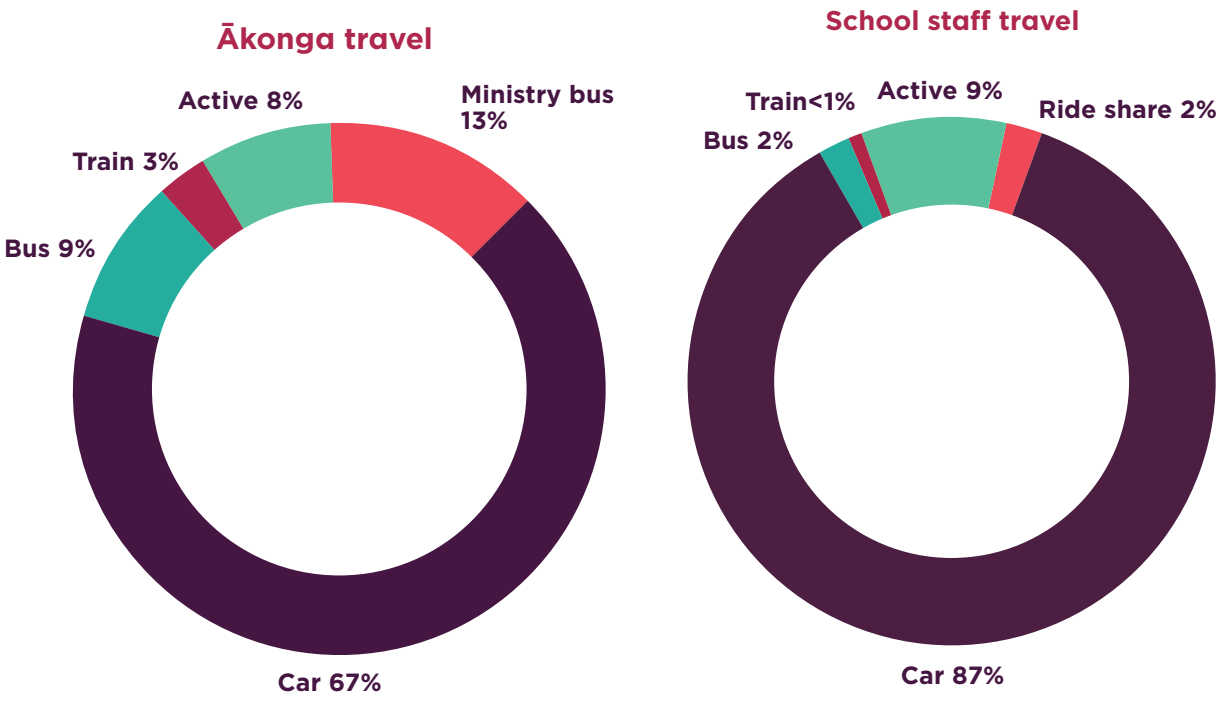
The vast majority of ākonga and school staff transportation is by private vehicle. These trips combined are responsible for 1.23 billion kilometres of travel annually and contribute 309,970 tCO_2-e to our FY22/23 GHG inventory.

The interventions implemented will cater to both primary and secondary schools, and cover ākonga and school staff transport.

The interventions are motivated by the goal of encouraging more active and public transport participation which will in turn reduce the number of private vehicle trips and associated emissions.

In addition to school-based pilot programmes encouraging active transport participation, our data analysis has included looking at the current patronage for Ministry funded bus routes and assessed the impact of emissions saved if the patronage of buses was increased. In some schools this presents a significant opportunity. We will work with our Transport team to further explore these findings, as well as working directly with schools where there is potential to increase bus patronage to understand any barriers to additional uptake on those routes and incentivize greater patronage. We will be able to report further findings in this space in December 2024.

Summary of transportation modal share by ākonga and school staff



[3] DEV-21-MIN-0190

Focus on Construction

Te Tāhuhu's construction programme is delivered by Te Tāhuhu and by School Boards through their capital and operational funding. Te Tāhuhu and school boards spend on average $1.8 billion dollars annually on minor, medium, and major construction works, and we have reported on 450 capital works projects that reached practical completion in FY22/23.

Our strategy for reducing emissions in construction will assess our construction forecast programme, Te Tāhuhu's response to growth demands including our National Growth Plan, and our asset management strategy. This will allow us to explore and prioritise plans to build in less carbon intensive ways, build smarter and build more efficiently.

To support CNGP objectives, Cabinet agreed in September 2021 that procurement mandated agencies must use an approved sustainable building rating system for new government-owned non-residential buildings[3]. The requirement was phased in for buildings with an estimated capital value of $25 million and over from 1 April 2022 and buildings with an estimated capital value of $9 million and over from 1 April 2023.

It is expected that approximately 80 Ministry capital works projects over the next four years will include buildings eligible for a sustainable building rating under the Cabinet requirement.

To achieve meaningful and impactful emission reductions Te Tāhuhu is exploring how it can deliver on government objectives for construction emission and waste reduction by developing emission reduction initiatives across construction that would apply more broadly to the capital works we undertake. Existing Ministry design standards and requirements will form the basis for the system.

We are currently undertaking a marginal abatement cost curve analysis over a number of emissions reduction initiatives in construction on a live capital project.

Focus on Energy

Energy use in state schools and kura produced 57,5282 tCO_2-e in FY23. Of this, 36,743 tCO_2-e was from non-electric energy use. A large proportion of this is from over 900 boilers fuelled by coal, natural gas, LPG, and diesel.

Schools and kura are being designed in more energy efficient ways and are choosing more energy efficient equipment through their asset replacement cycles and Te Tāhuhu has programmes and requirements in place which to drive the uptake of energy efficient technologies and practices.

Our energy needs are complex and the full potential for school and kura operational energy emissions reduction, and associated costs, are currently unknown. This creates barriers in the emission reduction target setting process.

We are seeking further advice to evaluate Te Tāhuhu's energy decarbonisation potential in the context of the wider emissions footprint and other work programmes, feeding into the development of emission reduction targets. We intend to work with the industry and with schools to find the right mix of solutions.

Focus on Food

The Ka Ora, Ka Ako (Healthy School Lunches) programme aims to reduce food insecurity by providing access to a nutritious lunch for tamariki every day. The programme reaches more than 222,000 ākonga at 989 schools and supplied 41.6 million lunches in FY23 with a total carbon impact of 71,655 tCO_2-e.

Schools, kura, and suppliers are already working to reduce their impact by minimising packaging and reducing the use of plastic food wrap and single use cutlery and tableware. Schools are encouraged to look to reduce food wastage through menu planning, ordering less and adjusting the number of lunches to reduce food wastage, and use of leftovers if it can be done safely. Suppliers are also taking proactive steps to understand and reduce their emissions by implementing a variety of initiatives including more efficient route planning, collecting food waste and compostable packaging, and arranging for composting and diverting meals from disposal through donation schemes.

We intend to build on this work to investigate and test opportunities for reduction across the full life cycle of food production with our schools, kura and suppliers.

Te Tāhuhu o te Mātauranga
Ministry of Education

He mea tārai e mātou te mātauranga kia rangatira ai, kia mana taurite ai ōna huanga.

We shape an education system that delivers equitable and excellent outcomes.

Te Kāwanatanga o Aotearoa
New Zealand Government