

# Emissions Management and Reduction Plan

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CEMARS and the carboNZero programme



## Auckland International Airport Limited

Person responsible: Martin Fryer, Sustainability Manager, Auckland Airport

Prepared by: Martin Fryer, Sustainability Manager, Auckland Airport

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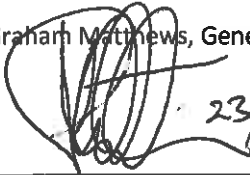




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*Approved for release by:*

Graham Matthews, General Manager, Airport Development & Delivery

 23/01/16.

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## 1 Introduction

This report is the annual greenhouse gas (GHG) Emissions Management and Reduction Plan prepared for Auckland International Airport Limited and forms the manage step part of the organisation's application for Programme certification.<sup>12</sup>

## 2 Rationale

Auckland Airport is the key gateway into New Zealand, processing 75% of international visitor arrivals, and is an important trade hub. It is also a long haul destination and there is a risk from climate change on long haul tourism and trade. In 2005 Auckland Airport identified climate change risk as important to the business and began calculating and disclosing its carbon footprint from 2006 onwards. The company has had a pro-active energy management team in place for many years and an on-going energy management plan to reduce fuel and energy use and thereby reduce its own carbon footprint. It is also working closely with airlines to reduce their fuel burn whilst on the ground by providing ground power units on all international gates. These units enable aircraft to use electricity rather than jet fuel whilst they sit on the gate.

## 3 Top management commitment

The climate change and energy efficiency programme is sponsored by Graham Matthews the General Manager of Airport Development and Delivery.

## 4 Person responsible

Martin Fryer, Sustainability Manager is responsible for overall emission reduction performance and reporting to top management.

## 5 Awareness raising and training

The Sustainability Manager has a sustainability blog on the company intranet, energy efficiency projects are regularly featured there and in The Airport Times, an electronic publication distributed within and outside the business. In addition staff inductions involve a face to face meeting with the Sustainability Manager. Specific staff undertake targeted training to ensure energy efficiency projects continue to deliver benefits e.g. electricians receive training in DALI lighting controls as and when required. Auckland Airport has a comprehensive corporate social responsibility section on its company website that includes its responses to climate change risk.

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<sup>1</sup>Throughout this document 'emissions' means 'GHG emissions'.

<sup>2</sup>Programme means the Certified Emissions Measurement And Reduction Scheme (CEMARS) and carbonZero certification programme.

## 6 Significant emissions sources

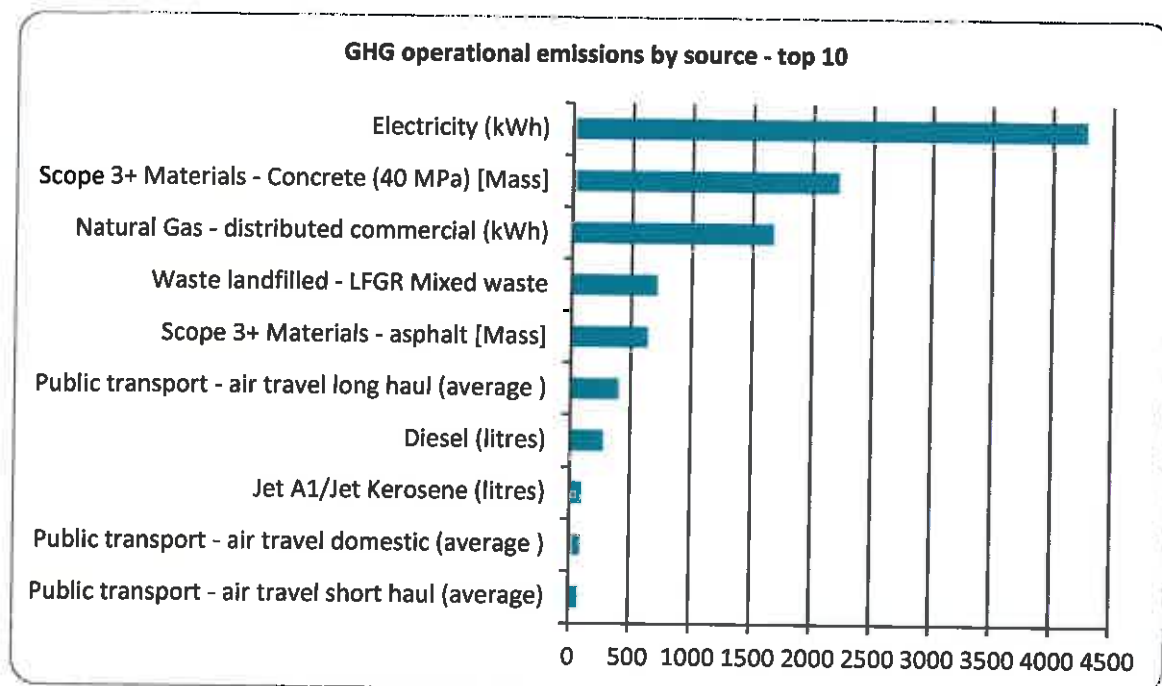


Figure 1: GHG emissions by source.

By far the biggest emission source is from the consumption of electricity (scope 2) as this is used for cooling, lighting and power in the terminals and airport company buildings. Natural gas is the second biggest as this is used for heating in the terminals. Auckland Airport has operational control over both these sources and through its energy conservation group has undertaken many projects to reduce consumption of both. Improvements are being made to increase visibility of energy consumption, particularly in the terminals, to help target future energy efficiency projects. In older parts of the terminal, for example, improvements to plant and equipment has realised significant savings in both gas and electricity, this approach has now been taken for the entire terminal. In March 2014 the company committed \$2.5M to updating the international terminals building management system software and associated technology. This three year programme will see significant energy efficiency gains and reductions in greenhouse gases are estimated as over 1,000 tonnes CO<sub>2</sub>e. Over the past two years extensive lighting projects in the international terminal have introduced LED lighting with smart controls delivering the required amount of light at the right time and saving as much energy as possible.

## 7 Targets for emissions reduction

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 1 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, time-constrained).



Table 1: Emission reduction targets

Emissions reduction initiative	Target	Baseline (tCO <sub>2</sub> e)	Target date	Metrics/ KPI	Responsibility	Rationale
Corporate Target = 20% reduction in total mandatory GHG emissions per 1,000 passenger by 2020	20%	23	30/06/2020	(tCO <sub>2</sub> e/'000 passengers)	Company Wide	Auckland Airport set a long term intensity target, during a review of the company's sustainability policy in 2012, to manage climate change risk and illustrate its commitment to greenhouse gas reductions.
Reduce electricity consumption in international terminal	20%	4282	30/06/2017	kWhr	Energy Management Team	Rolling programme of plant room upgrades will reduce consumption and carbon.
Reduce gas consumption in international terminal	20%	1673	30/06/2017	kWhr	Energy Management Team	Rolling programme of plant room upgrades will reduce consumption and carbon.
Reduce fuel consumption from vehicle fleet	20%	344	30/06/2019	kWhr	Energy Management Team	Rolling programme of vehicle fleet upgrades will reduce consumption and carbon.
Reduce electricity consumption from street and car park lighting	50%	TBC	30/06/2020	kWhr	Energy Management Team	Rolling programme of lighting upgrades will reduce consumption and carbon.

## 8 Specific emissions reduction projects

In order to achieve the reduction targets identified in Table 1 specific projects have been evaluated to achieve these targets. These are detailed below.

**Table 2:** Projects to reduce emissions.

Objective	Actions	Responsibility	Completion date
Reduce electricity and gas consumption	BMS Replacement –Plantroom 3A (SP8) Pier A	Martin Todd	FY16
Reduce electricity and gas consumption	BMS Replacement – Main Plantroom (SP9) Pier a	Martin Todd	FY16
Reduce electricity and gas consumption	HVAC Retro Commissioning ITB Wide	Martin Todd	On-going
Reduce electricity and gas consumption	BMS Replacement – Sky bridge Plantroom (SP3) ITB	Martin Todd	FY16
Reduce electricity and gas consumption	BMS Replacement – Arrivals Plantroom (SP2) ITB	Martin Todd	FY16/17
Reduce electricity and gas consumption	BMS Replacement – FCU & VAV Units Controls (SP12) ITB Wide	Martin Todd	FY16/17
Reduce electricity and gas consumption	BMS Replacements – Plantrooms 1 & 2 (SP6) Pier A	Martin Todd	FY17
Reduce electricity and gas consumption	BMS Replacements – Plantroom 4 (SP10) Pier A	Martin Todd	FY17
Reduce electricity and gas consumption	BMS Replacement – Air NZ & Qantas VIP Lounge (SP7) ITB	Martin Todd	FY17
Reduce electricity and gas consumption	BMS Replacement – FIDS Interface & BMS Graphics (SP11) ITB Wide	Martin Todd	FY17
Reduce electricity consumption	Street and car park lighting upgrades	Kamalesh Prasad	On-going
Reduce vehicle fuel consumption	Fleet upgrades to include more fuel efficiency, hybrid and plug-in hybrids	Kevin Ingle	On-going
Reduce waste to landfill	Increase waste recovery and recycling	Martin Fryer	On-going

**Table 3:** highlights emission sources that contributed to poor data quality in the Emissions Inventory Report and describes the actions that will be taken to improve the data quality in future inventories.

**Table 3:** Projects to improve data quality.

Emissions source	Actions to improve data quality	Responsibility	Completion date
Electricity	Use of EnergyPro software to improve understanding of consumption across the campus.	Energy Management Team	30/06/2017
Gas	Use of EnergyPro software to improve understanding of consumption within the terminal buildings.	Energy Management Team	30/06/2017

The emissions inventory identified various emissions liabilities. Table 4 details the actions that will be taken to prevent GHG emissions from these potential emissions sources.

Table 4: Projects to prevent emissions and reduce liabilities.

Project details
Auckland Airport has comprehensive procedures in place to minimise losses from GHG holdings. These include sub-contracted maintenance of heating, ventilation and air conditioning (HVAC) plant and equipment. Two separate contractors are used for the aeronautical assets and property portfolio. This maintenance includes regular checks of plant condition and refrigerant holdings. Auckland Airport also has a rolling programme of upgrading and replacement of HVAC plant and equipment to ensure the latest technologies are used.

## 9 Unintended environmental impacts

ENVIRONMENTAL IMPACTS	Project 1	Project 2	Project 3
	Reduce electricity and gas consumption	Reduce vehicle fuel consumption	Reduce waste to landfill
Resource use			
Electricity consumption			
Fuel consumption			
Water consumption			
Wastewater discharge			
Waste to landfill			
Air, land and water quality			
Transport congestion			
Biodiversity			
Land use			
Flooding			



## 11 Monitoring and reporting

In this reporting period Auckland Airport installed EnergyPro, a cloud based utilities database, allowing the capture, verification, storage and interpretation of utility consumption data. The consumption data can easily be transferred to E-Manage for annual carbon foot-printing but access to interim data allows regular internal monitoring and reporting of GHG emission reductions.

For specific energy efficiency projects additional metering has been installed to capture the energy, carbon and cost savings to report on the return on investments to interested stakeholders.

The company's Sustainability Manager is responsible for compiling GHG emissions reports for both internal and external communication of company performance.

## 12 Emissions reduction calculations

Table 7: GHG inventory results.

	2012	2013	2014	2015	2016
Scope 1	2,290.62	2,106.48	1,877.78	1,737.83	2,115.90
Scope 2	6,204.21	5,456.06	4,307.28	5,086.32	4,282.05
Scope 3 Mandatory	1,308.44	1,151.12	1,289.37	1,372.69	1,295.74
Scope 3 Additional	46.25	48.56	47.97	44.69	50.82
Scope 3 One time	2,025.93	1,810.07	1,465.60	2,191.63	2,854.76
Total gross emissions	11,875.45	10,572.29	8,988.00	10,433.16	10,599.28
Reporting reductions					
5-year average (tCO <sub>2</sub> e)	11,875.45	11,223.87	10,478.58	10,467.23	10,493.64
5-year average (tCO <sub>2</sub> e) (scope 1 & 2)	8,494.83	8,028.68	7,414.14	7,266.64	7,092.91
Emissions intensity reductions					
Turnover/revenue (\$Millions)	426.00	448.46	476.00	508.50	573.90
GDP deflator values Yr1 prices (assumed)					
Adjusted turnover (\$M)					
Emissions intensity (tCO <sub>2</sub> e/\$M)	27.88	23.57	18.88	20.52	18.47
5-year average emissions intensity (tCO <sub>2</sub> e/\$M)	27.88	25.73	23.44	22.71	21.86
Percentage change in absolute emissions	(no data)	-10.97	-14.99	16.08	1.59
Percentage change in emissions intensity	(no data)	-15.43	-19.90	8.66	-9.98

ENVIRONMENTAL IMPACTS	Project 1	Project 2	Project 3
Local economy			
Dark Green	Significant positive impact		
Light Green	Some positive impact		
White	No change		
Yellow	Some adverse impact		
Red	Significant adverse impact		

## 10 Key performance indicators

Table 5: KPIs.

KPI	2012	2013	2014	2015	2016
'000 Passenger (PAX)	14,006.12	14,516.22	15,062.09	15,816.79	17,260.35
FTE	319.00	340.00	322.00	346.50	346.00
Turnover/revenue (\$Millions)	426.00	448.46	476.00	508.50	573.90

Table 6: GHG emissions per KPI.

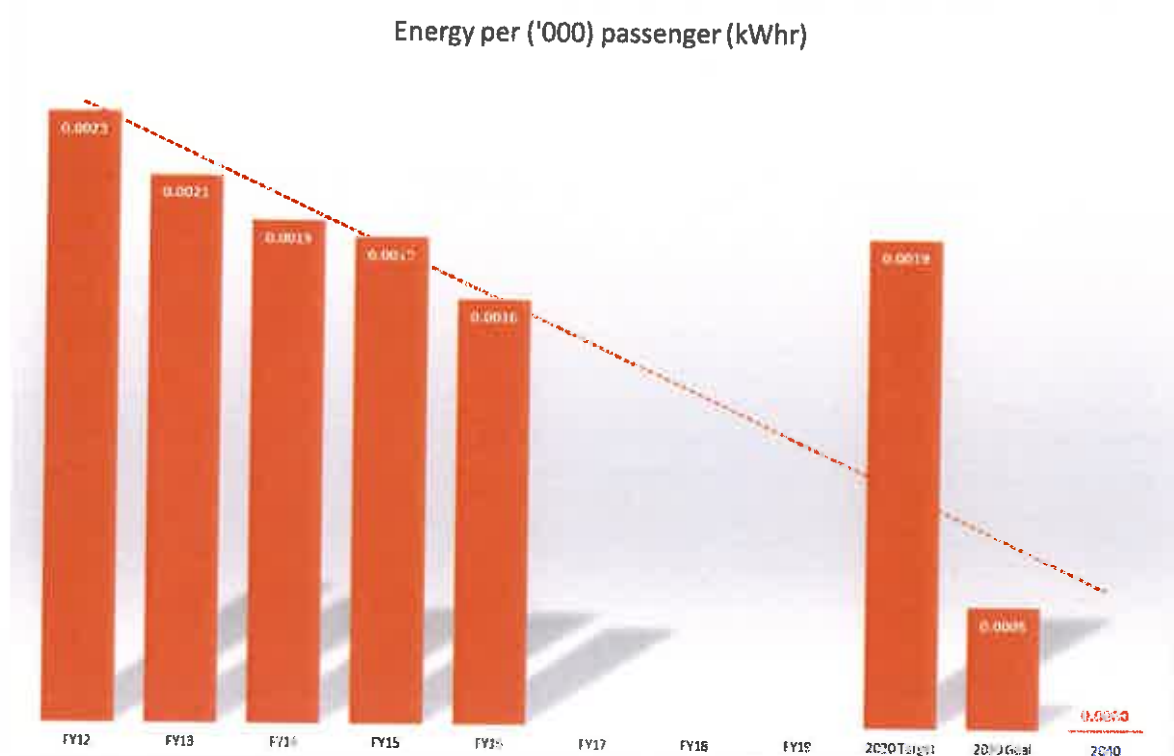
KPI	2012	2013	2014	2015	2016
Total gross GHG emissions per '000 Passenger (PAX)	0.85	0.73	0.60	0.66	0.61
Total mandatory GHG emissions per '000 Passenger (PAX)	0.70	0.60	0.50	0.52	0.45
Total gross GHG emissions per FTE	37.23	31.09	27.91	30.11	30.63
Total mandatory GHG emissions per FTE	30.73	25.63	23.21	23.66	22.24
Total gross GHG emissions per Turnover/revenue (\$Millions)	27.88	23.57	18.88	20.52	18.47
Total mandatory GHG emissions per Turnover/revenue (\$Millions)	23.01	19.43	15.70	16.12	13.41

As the majority of greenhouse gas emissions are associated with the operation of the aeronautical infrastructure it is appropriate for key performance indicators to relate GHG emissions to passenger numbers. Although corporate reduction targets are an intensity target striving to achieve them will lead to total reductions in GHG emissions.

## 13 Performance against plan

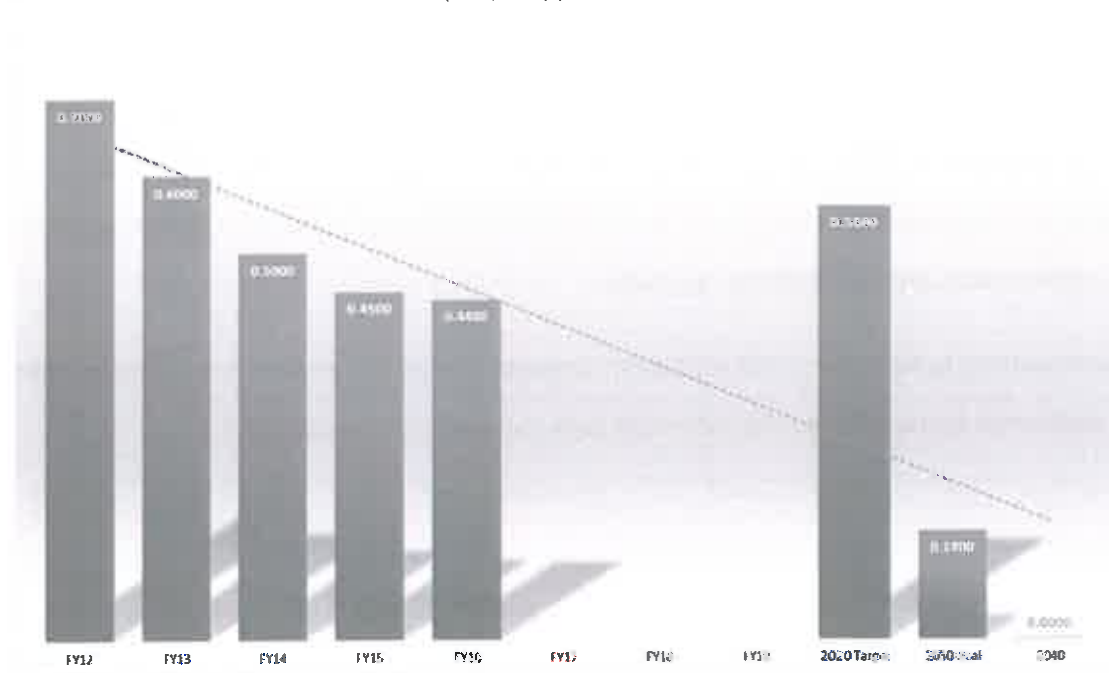
Auckland Airport has in place ambitious 20% by 2020 reduction targets, on a per passenger basis, for energy and carbon. These targets have been achieved ahead of schedule due to a comprehensive approach to energy management which includes a rolling programme of airport terminal plantroom and LED lighting upgrades.

Over the reporting period there has also been unprecedented 8% growth in passenger numbers adding additional demand onto the infrastructure and plant and equipment.



During the FY16 period performance has been improved with energy reducing by 16% on a per passenger basis and carbon per passenger falling by 13% on a per passenger basis over the 2016 financial year.

Carbon per ('000) passenger (tonnes)



Total energy reductions for the 2016 financial year are 3.4GWhr, 1.4GWhr of electricity and 2.0GWhr of gas.