

Air New Zealand

FY2017 Greenhouse Gas Inventory Report

Introduction

This document is the annual greenhouse gas (GHG) emissions inventory report for the Air New Zealand group of companies for the period 1 July 2016 to 30 June 2017. Air New Zealand's reporting process and emissions classifications are consistent with international protocols and standards. This report has been written in accordance with *The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard, Revised Edition* ('Greenhouse Gas Protocol').

Table 1: Greenhouse gas emissions inventory summary for Air New Zealand 2017

Scope	Category	CO ₂ -e Emissions (Tonnes)		
		FY2011 (Baseline)	FY2016	FY2017
1	Jet Fuel - Domestic	530,404	547,503	578,959
	Jet Fuel - International	2,418,347	2,753,020	2,891,465
	LPG	3,610	2,394	1,630
	Natural Gas	2,520	2,292	2,458
	Diesel	977	3,571	3,370
	Bio-Diesel	1,194	0	0
	Petrol	84	151	46
	Coal	2246	0	0
	Wood Pellets(CH ₄ and N ₂ O)	20	19	15
Total Scope 1		2,959,402	3,308,950	3,477,944
2	Electricity	7,246	3,636	2,624
Total Scope 2		7,246	3,636	2,624
Total CO₂-e Emissions (Scope 1 & 2)		2,966,648	3,312,586	3,480,567
Biomass	Wood Pellets (CO ₂ -e)	1,423	1,235	998

Organisational Boundary

Air New Zealand's organisational boundary encompasses the companies listed in the table below. Apart from where indicated, Air New Zealand has operational control of these companies.

Table 2: Air New Zealand's Organisational Boundary

List of all legal entities or facilities over which Air New Zealand has equity share, financial control or operational control	% equity share in legal entity	Does reporting company have operational control? (yes/no)	Does entity or facility produce GHG emissions (yes/no)? If yes, are they included in the GHG inventory figures (yes/no)?
ADP (New Zealand) Limited	100%	Yes	Yes/Yes
Air Nelson Limited	100%	Yes	Yes/Yes
Air New Zealand Regional Maintenance Limited	100%	Yes	Yes/Yes
Air New Zealand Travel Business Limited ¹	100%	Yes	No
Eagle Air Maintenance Limited	100%	Yes	Yes/Yes
Eagle Airways Limited	100%	Yes	Yes/Yes
Mount Cook Airline Limited	100%	Yes	Yes/Yes
Teal Insurance Limited	100%	Yes	No
Air New Zealand Aircraft Holdings Limited	100%	Yes	No
Air New Zealand Associated Companies Limited	100%	Yes	No
Air New Zealand Associated Companies (Australia) Limited	100%	Yes	No
Air New Zealand Express Limited	100%	Yes	No
Ansett Australia & Air New Zealand Engineering Services Limited	100%	Yes	No
Air New Zealand (Australia) Pty Limited ¹	100%	Yes	No
ANZGT Field Services LLC ¹	51%	No	Yes/No
11ANTS Analytics Group Limited ¹	50%	No	Yes/No
The London Shoppe Limited ²	50%	Yes	No
C.I. Air Services Limited ²	90%	Yes	No
ANNZES Engines Christchurch Limited ²	100%	Yes	No

Notes to Table 2:

¹ Joint Control - Air NZ does not control the operations of ANZGT, 11ANTS or Pacific Leisure Group based on the definition given in *The Greenhouse Gas Protocol*.

² Non-trading entity.

Air New Zealand applies an operational control approach allowing the company to focus on those emissions sources over which it has control and can therefore implement management actions, consistent with Air New Zealand's corporate responsibility objectives.

Operational Boundary

Air New Zealand has chosen to report only Scope 1 and 2 emissions, given that emissions from the use of aviation jet fuel are the most significant emissions source in the organisation's value chain and are under Air New Zealand's ability to manage and influence. No Scope 3 emissions are reported for the Air New Zealand group of companies.

Baseline Year

The base year is 1 July 2010 to 30 June 2011. This was chosen as the base year because it was the first year that Air New Zealand had complete data for Scope 1 and 2 emissions. If Air New Zealand's Scope 1 or 2 emissions were to change by more than 10% due to company or portfolio acquisitions or divestments, it acknowledges a base year recalculation would be appropriate.

Methodologies and uncertainties

Air New Zealand used Microsoft Excel spreadsheets to calculate GHG emissions. Emissions for Scope 1 and 2 have been quantified using the calculation method based on activity data multiplied by GHG emissions factors. Emissions factors have been sourced from the following publically available publications:

Table 3: Emissions Factors and Sources

Source	Unit measure	Emission Factor (kg CO ₂ e/Unit)			Reference	
		Total	CO ₂	CH ₄		N ₂ O
Jet fuel	l	2.525			2	
Jet fuel	l		2.02	0.00151	0.0211	3
Liquefied Petroleum Gas (LPG)	kg	3.03	3.02	0.00594	0.00142	1
Natural gas	GJ	53.86	53.81	0.0225	0.0268	1
Electricity*	kWh	0.082				4
Diesel (automotive)	l	2.72	2.67	0.00356	0.0424	1
Regular Petrol	l	2.44	2.33	0.0246	0.0793	1
Wood Pellets	kg	0.015	1	0.00578	0.00918	1

References:

- 1 Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2016, Using Data and Methods from the 2014 Calendar Year
- 2 Climate Change (Liquid Fossil Fuels) Regulations 2008 (SR 2008/356) (as at 29 December 2015)
- 3 National Greenhouse Accounts Factors (Australia) August 2016: Department of Environment
- 4 Average electricity emissions data from MBIE for the four most recent quarters (to March 2017) [www.mbie.govt.nz/info-service/sectors-industries/energy/energy-data-modelling/statistics/greenhouse-gas-emissions]

To minimise uncertainties in the accuracy of this inventory, data has been sourced wherever possible from a verifiable source as detailed in the inclusions table.

Verification of GHG Inventory

This report has been verified by Deloitte, a third party independent assurance provider. A reasonable level of assurance has been given over the assertions and quantifications included here.

Deloitte is also the financial auditor of Air New Zealand on behalf of the Office of the Auditor-General.

Table 4: 2017 Greenhouse gas emissions by greenhouse gas

Source	Units	Volume	Emission Factor (t CO ₂ -e/unit) ¹			Emissions (t CO ₂ -e)				
			Total	CO ₂	CH ₄	N ₂ O	Total	CO ₂	CH ₄	N ₂ O
Scope 1 Emissions										
Jet Fuel - Domestic	000 litres	229,291	2.525	2.02	0.00151	0.0211	578,959	463,167	346,229,034	4,838.03
Jet Fuel - International	000 litres	1,145,135	2.525	2.02	0.00151	0.0211	2,891,465	2,313,172	1,729,153,46	24,162.34
Jet Fuel - Total	000 litres	1,374,425	2.525	2.02	0.00151	0.0211	3,470,424	2,776,339	2,075,382,494	29,000.38
LPG	Tonnes	538	3.03	3.02	0.00594	0.00142	1,630	1,625	3,195,72	0.76
Natural Gas	TJ	46	53.86	53.81	0.0225	0.0268	2,458	2,456	1,026,765	1.22
Diesel ¹	000 litres	1,239	2.72	2.67	0.00356	0.0424	3,370	3,308	4,410,84	52.53
Petrol ¹	000 litres	19	2.44	2.33	0.0246	0.0793	46	44	0,4674	1.51
Wood pellets (CH ₄ and N ₂ O)	Tonnes	998	0.015	0	0.00578	0.00918	15	0	5,768,44	9.16
Total Scope 1							3,477,944	2,783,772	2,090	29,066
Scope 2 Emissions										
Electricity	kWh	31,995,733	0.000082	0.000082	-	-	2,624	2,624	-	-
Total Scope 2							2,624	2,624		
Total Emissions Scope 1 & 2							3,480,567			
Biomass Emissions: Wood pellets (CO₂)	Tonnes	998	1	1	-	-	998	998	-	-

Notes to Table 4:

* Air New Zealand does not have emissions of SF₆, PFCs, or NF₃. Emissions from HFCs have been excluded as de minimus (see exclusions table).

¹ Actual figures from four main NZ ports (diesel only) and light vehicle fleet (diesel and petrol). Estimated figures for GSE diesel and petrol consumption at regional and overseas ports.

Inclusions

Table 5: Inclusions

Scope	Category	GHG Emissions Source	Data Source	Methodology, data quality, uncertainty (qualitative)
1	Aviation Fuel	Fuel used to operate aircraft domestic and international	Records from supplier invoices.	Accurate records of fuel purchased.
	LPG	Fuel used for heating and GSEs	Records from supplier invoices.	Accurate records of fuel purchased.
	Natural Gas	Fuel used for heating	Records from supplier invoices.	Accurate records of fuel purchased.
	Ground Bio Diesel	Fuel for ground vehicle fleet	Records from supplier invoices.	(N/A in current reporting period, however included in base year.)
	Diesel ¹	Fuel for light vehicle fleet in NZ	Records from supplier (Cardlink and Z card) invoices.	Records of diesel purchased by staff throughout NZ on fleet fuel cards
		Fuel for GSEs in NZ and overseas ports	Records from supplier (Mini Tankers) invoices for 4 main NZ ports. Estimated for regionals and overseas ports	Diesel used by GSEs at regional and overseas ports is estimated based on GSE diesel used at the 4 main NZ ports.
	Petrol ²	Fuel for light vehicle fleet in NZ	Records from supplier (Cardlink and Z card) invoices.	Records of Premium and Regular petrol purchased by staff throughout NZ on fleet fuel cards.
Coal	Not used during relevant reporting period.	No invoices held for relevant reporting period.	N/A in current reporting period, however included in base year.	
2	Electricity	Electricity used in offices and facilities in New Zealand	Records from supplier invoices validated by energy meters	Accurate records of electricity purchased.
Biomass Emissions	Wood Pellets	Fuel used for heating	Records from supplier invoices.	Records of wood pellets purchased from different suppliers.

Notes to Table 5:

¹ Includes diesel used for Ground Support Equipment at the four main New Zealand domestic airports - Auckland, Wellington, Christchurch, and Dunedin (1,164,964 litres) and light vehicles (9635 Litres)

There are 9 diesel GPUs (Ground Power Units) at regional and overseas ports. Based on 4000 litres per year (the average diesel GPU use at the four NZ domestic ports) the estimate for diesel use at regional and overseas ports is 36,000 litres per year.

There are 15 Tugs at regional and overseas ports. Based on 600 Litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use at regional and overseas port is 9000 Litres

There are 4 pushback tractors at regional and overseas ports. Based on 900 Litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use at regional and overseas port is 3600 Litres

There are 11 belt loaders at regional and overseas ports. Based on 300 Litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use at regional and overseas port is 3300 Litres

There are 11 fork hoists at regional and overseas ports. Based on 300 Litres per year (the average diesel fork hoist use at Dunedin) - the estimate for diesel use at regional and overseas port is 3300 Litres

There are 4 transporters at regional and overseas ports. Based on 1800 Litres per year (the average diesel Transporter use at Dunedin) - the estimate for diesel use at regional and overseas port is 7200 Litres

There are 3 Trucks at regional and overseas ports. Based on 1000 Litres per year (the average diesel Truck use at Queenstown) - the estimate for diesel use at regional and overseas port is 3000 Litres

No estimates were made for motorised stairs (4) or de-icing units (14) due to very low usage.

Total diesel use for fy17 is 1,239,999 litres.

² Total petrol (Premium and Regular) purchased in FY17 is 18,698 Litres. Cardlink's fuel purchases for FY17 shows (Premium 155 Litres and Regular 1,151 Litres) and Z Card fuel purchases for FY17 show (Premium 10,029 Litres and 7,363 Litres)

Exclusions

The following exclusions are **estimated to be** less than 5% of Air New Zealand's total GHG emissions.

Table 6: Exclusions

Scope	Category	GHG Emissions Source	Reason for Exclusion
1	Fugitive Emissions	Fugitive emissions from air-conditioning systems.	Difficult to obtain the data, estimated to be <i>de minimus</i> .
1	Petrol and Diesel	Owned light vehicle fleet (28) and offshore vehicles (13)	Difficult to obtain the data, estimated to be <i>de minimus</i> .
2	Electricity	Used in buildings/facilities in overseas locations	Difficult to obtain the data, estimated to be <i>de minimus</i> .

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