

Air New Zealand

FY2016 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 2015 to 30 June 2016. 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 2016

Scope	Category	FY2011 CO ₂ -e Emissions (Tonnes)	FY2015 CO ₂ -e Emissions (Tonnes)	FY2016 CO ₂ -e Emissions (Tonnes)
1	Jet fuel - Aviation Domestic	530,404	532,212	547,503
	Jet fuel - Aviation International	2,418,347	2,532,601	2,753,021
	LPG	3,610	3,405	2,394
	Natural Gas	2,520	2,302	2,294
	Diesel	977	2,892	3,571 ¹
	Bio Diesel (Ground)	1,194	0	0
	Petrol	84	30	146 ²
	Coal	2246	0	0
	Wood Pellets (CH ₄ and N ₂ O)	20	13	18
	TOTAL SCOPE 1	2,959,402	3,073,455	3,308,947
2	Electricity (NZ)	7,246	5,543	3,701
	TOTAL SCOPE 2	7,246	5,543	3,701
Total	TOTAL CO₂-e Emissions	2,966,648	3,078,998	3,312,648
Biomass	Wood Pellets (CO ₂ e)	1,423	880	1,235

Notes to Table 1:

¹ Includes petrol and diesel used by ground support equipment in NZ and overseas ports and by the light vehicle fleet during FY2016. Fuel used by ground support equipment in regional ports and overseas was not included in the FY2015 GHG Inventory Report or base year calculations (FY2011).

² See note 1 above.

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
Pacific Leisure Group ¹ (sold January 2016)	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

Fuel	Emission Factor	Unit	Reference
Jet fuel	2.525	tCO ₂ e/kl	Climate Change (Liquid Fossil Fuels) Regulations 2008 (SR 2008/356) (as at 04 March 2015)
	2.494	tCO ₂ /kl	Weighted average based on National Greenhouse Accounts Factors (Australia) August 2015: Department of Environment
	0.002	tCO ₂ e/kl from CH ₄	
	0.029	tCO ₂ e/kl from N ₂ O	
Liquefied petroleum gas (LPG)	3.03	tCO ₂ e/t	Climate Change (Stationary Energy and Industrial Processes) Regulations 2009 (SR 2009/285) (as at 04 March 2015)
	3.02	kgCO ₂ /kg	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2015, Using Data and Methods from the 2013 Calendar Year
	0.0014	kgCO ₂ e/kg from CH ₄	
	0.00917	kgCO ₂ e/kg from N ₂ O	
Natural gas	53.9	tCO ₂ e/TJ	Climate Change (Stationary Energy and Industrial Processes) Regulations 2009 (SR 2009/285) (as at 04 March 2015)
	53.2	kgCO ₂ /GJ	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2015, Using Data and Methods from the 2013 Calendar Year
	0.027	kgCO ₂ e/GJ from CH ₄	
	0.617	kgCO ₂ e/GJ from N ₂ O	
Diesel (automotive)	2.72	tCO ₂ e/kl	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting –
	2.67	kgCO ₂ /l	
	0.00365	kgCO ₂ e/l from CH ₄	

	0.0424	kgCO ₂ e/l from N ₂ O	2015, Using Data and Methods from the 2013
Petrol	2.36	tCO ₂ e/kl	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2015, Using Data and Methods from the 2013 Calendar Year
	2.33	kgCO ₂ /l	
	0.0163	kgCO ₂ e/l from CH ₄	
	0.015	kgCO ₂ e/l from N ₂ O	
Wood pelletsv	0.0143	kgCO ₂ e/kg	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2015, Using Data and Methods from the 2013 Calendar Year
	1.00	kgCO ₂ /kg	Ministry for the Environment – Guidance for Voluntary Corporate Greenhouse Gas Reporting – 2015, Using Data and Methods from the 2013 Calendar Year
	0.00343	kgCO ₂ e/kg from CH ₄	
	0.0109	kgCO ₂ e/kg from N ₂ O	
Electricity	0.1089	kgCO ₂ e/kWh	http://www.mbie.govt.nz/info-services/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: 2016 Greenhouse gas emissions by greenhouse gas

	Units	Volume	Emission Factor (t CO ₂ -e/unit) ²				Emissions (t CO ₂ -e/unit)				
			Total	CO ₂	CH ₄	N ₂ O	Total	CO ₂	CH ₄	N ₂ O	
Scope 1 Emissions											
Jet Fuel - Domestic	000 litres	216833									
Jet Fuel - International	000 litres	1,090,305	2.525	2.494	0.002	0.029	547,503	433.67		6,288.16	
Jet Fuel - Total	000 litres	1,307,138					2,753,021	2,180.61		31,618.85	
LPG	Tonnes	790	3.03	3.02	0.0014	0.00917	3,300,524	2,614.28	2,386	37,907.00	
Natural Gas	TJ	42,553	53.9	53.2	0.027	0.617	2,294	1.15	2,264	26.26	
Diesel ¹	000 litres	1,277	2.72	2.67	0.00365	0.0424	3,473	4.66	3,410	54.14	
Diesel ²	000 litres	36	2.72	2.67	0.00365	0.0424	98	0.13	96	1.5264	
Petrol ¹	000 litres	22	2.36	2.33	0.0163	0.015	52	0.36	51	0.33	
Petrol ²	000 litres	40	2.36	2.33	0.0163	0.015	94	0.65	93	0.6	
Wood pellets(CH ₄ and N ₂ O)	Tonnes	1,235	0.0143	0	0.00343	0.0109	18	4.24	0	13.46	
							3,308,947	2,626.57	3,268,302	38,010.56	
Scope 2 Emissions											
Electricity	kWh	33,981,211	0.0001089	0.0001089			3,701	-	3,701	-	
Total Emissions							3,312,648				
Biomass Emissions: Wood pellets (CO ₂)	Tonnes	1,235	1	1	-	-			1,235	-	

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 five main NZ ports (diesel only) and light vehicle fleet (diesel and petrol).

2. 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.}
	Diesel¹	Fuel for light vehicle fleet in NZ	Records from supplier (fuel 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 (fuel card) invoices for 5 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 5 main NZ ports.
	Petrol²	Fuel for light vehicle fleet in NZ	Records from supplier (fuel card) invoices.	Records of Premium and Regular petrol purchased by staff throughout NZ on fleet fuel cards.
		Fuel for GSEs in NZ Ports (No petrol GSEs overseas)	Estimated for regionals and overseas ports	GSE petrol usage is estimated based on no. of petrol GSE vehicles and average annual GSE diesel use (as proxy for petrol)
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	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 at the five main New Zealand domestic airports - Auckland, Wellington, Christchurch, Queenstown and Dunedin (1,165,450 litres), and estimates of diesel used at regional ports and overseas ports by GSE vehicles. There are nine diesel GSEs (Ground Support Equipment) at regional and overseas ports.

Based on 4,000 litres per year (i.e. the average diesel GSE use at the five main NZ domestic ports) the estimate for diesel use at regional and overseas ports is 36,000 litres per year. Based on the Cardlink Report for the light vehicle fleet, diesel usage for FY16 is 111,052 litres. In total, diesel use is 1,312,502 litres for FY16

- Petrol (Premium and Regular) is used by approximately 25 light vehicles. Cardlink's fuel purchase report for FY16 shows 22,253 litres of petrol was purchased for these vehicles. Ten of Air NZ's GSEs also use petrol. Based on annual average diesel (proxy for petrol) consumption for GSEs (i.e. 4000L/year), the estimate for petrol for GSEs is 40,000 litres per year. Total estimated petrol use is therefore 62,253 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	Used in light vehicle fleet in overseas locations	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> .



Lisa Daniell
Acting Head of Sustainability



**INDEPENDENT ASSURANCE REPORT ON THE AIR NEW ZEALAND GROUP
2016 GREENHOUSE GAS EMISSIONS INVENTORY REPORT
TO THE BOARD OF DIRECTORS OF AIR NEW ZEALAND LIMITED**

Report on Greenhouse Gas Emissions Inventory Report

We have undertaken a reasonable assurance engagement relating to the Greenhouse Gas Emissions Inventory Report (the "Inventory Report") of the Air New Zealand Group ("Air NZ", the "Group" or the "Company") for the year ended 30 June 2016, comprising the Inventory Report and explanatory notes set out on pages 1 to 7.

The Inventory Report provides information about the greenhouse gas emissions of the Air NZ Group for the year ended 30 June 2016 and is based on historical information. This information is stated in accordance with the requirements of the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) ("the GHG Protocol").

Board of Directors' Responsibility

The Board of Directors are responsible for the preparation of the Inventory Report, in accordance with the GHG Protocol. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation of an inventory report that is free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on the Inventory Report based on the evidence we have obtained. We conducted our reasonable assurance engagement in accordance with International Standard on Assurance Engagements (New Zealand) 3410, *Assurance Engagements on Greenhouse Gas Statements* (ISAE (NZ) 3410), issued by the New Zealand Auditing and Assurance Standards Board. That standard requires that we plan and perform this engagement to obtain reasonable assurance about whether the Inventory Report is free from material misstatement.

A reasonable assurance engagement in accordance with ISAE (NZ) 3410 involves performing procedures to obtain evidence about the quantification of emissions and related information in the Inventory Report. The nature, timing and extent of procedures selected depend on the assurance practitioner's judgement, including the assessment of the risks of material misstatement, whether due to fraud or error, in the Inventory Report. In making those risk assessments; we considered internal control relevant to the Group's preparation of the Inventory Report. A reasonable assurance engagement also includes:

- Assessing the suitability in the circumstances of the Group's use of the GHG Protocol as the basis for preparing the Inventory Report;
- Evaluating the appropriateness of quantification methods and reporting policies used, and the reasonableness of estimates made by the Group; and
- Evaluating the overall presentation of the Inventory Report.

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

Inherent Limitations

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

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of Professional and Ethical Standard 1 (Revised): *Code of Ethics for Assurance Practitioners* issued by the New Zealand Auditing and Assurance Standards Board, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.



Deloitte is the Appointed Audit Firm on behalf of the Office of the Auditor General. In addition to the audit, we have provided this assurance service which is compatible with the independence requirements of the Auditor-General, which incorporate the independence requirements of the External Reporting Board. We were also engaged to provide a data quality review of selected non-financial information to be reported in Air NZ's 2016 Sustainability Report, to provide informal feedback on the quality of Air NZ's non-financial reporting and other assignments in the areas of taxation, review of the interim financial statements and other assurance and non-assurance services, which are compatible with those independence requirements. Other than in the above capacities, we have no relationship with or interests in the Company or any of its subsidiaries, except that partners and employees of our firm deal with the Group on normal terms within the ordinary course of trading activities of the business of the Group.

The firm applies Professional and Ethical Standard 3 (Amended): *Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance Engagements* issued by the New Zealand Auditing and Assurance Standards Board, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Use of Report

This report is provided solely for your exclusive use and solely for the purpose of attaching this report to your Inventory Report. Our report is not to be used for any other purpose, recited or referred to in any document, copied or made available (in whole or in part) to any other person without our prior written express consent. We accept or assume no duty, responsibility or liability to any other party in connection with the report or this engagement including without limitation, liability for negligence in relation to the opinion expressed in this report.

Opinion

In our opinion, the Inventory Report of the Group for the year ended 30 June 2016 has been prepared, in all material respects, in accordance with the requirements of the GHG Protocol.

21 September 2016
Chartered accountants
Auckland, new zealand

This reasonable assurance report relates to the Greenhouse Gas Emissions Inventory Report of the Air New Zealand Limited Group for the year ended 30 June 2016 included on Air New Zealand Ltd's website. The Board of Directors is responsible for the maintenance and integrity of Air NZ's website. We have not been engaged to report on the integrity of Air NZ's website. We accept no responsibility for any changes that may have occurred to the 2016 Greenhouse Gas Emissions Inventory Report since it was initially presented on the website. The reasonable assurance report refers only to the Inventory Report named above. It does not provide an opinion on any other information which may have been hyperlinked to/from this Inventory Report. If readers of this report are concerned with the inherent risks arising from electronic data communication they should refer to the published hard copy of the 2016 Greenhouse Gas Emissions Inventory Report and related reasonable assurance report dated 21 September 2016 to confirm the information included in the Inventory Report presented on this website.