

*AIR NEW ZEALAND* 

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**GREENHOUSE GAS  
INVENTORY REPORT  
2021**





# 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 2020 to 30 June 2021. This report has been written in accordance with The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard, Revised Edition ('Greenhouse Gas Protocol').



# GREENHOUSE GAS INVENTORY 2021

Table 1. Greenhouse Gas Emissions Inventory Summary

Scope 1 Emissions Tonnes of CO <sub>2</sub> -e <sup>1</sup>				
Category	2011 <sup>2</sup>	2019	2020	2021
Jet Fuel - Domestic	551,837	629,876	518,607	508,737
Jet Fuel - International	2,516,069	3,286,502	2,649,922	817,078
Jet Fuel - Ground <sup>3</sup>	NA	941	1,180	1,616
LPG	3,610	1,579	1,437	1,227
Natural Gas	2,520	2,732	2,275	2,249
Diesel <sup>4</sup>	977	3,935	3,129	2,218
Bio-Diesel	1,194	NA	NA	NA
Petrol	84	73	67	52
Coal	2,246	NA	NA	NA
Wood Pellets (CH <sub>4</sub> and N <sub>2</sub> O)	20	13	18	14
Total Scope 1	3,078,557	3,925,651	3,176,635	1,333,191
Scope 2 Emissions Tonnes CO <sub>2</sub> -e <sup>5</sup>				
Category	2011 <sup>2</sup>	2019	2020	2021
Electricity	7,246	3,098	2,832	2,720
Total Scope 2	7,246	3,098	2,832	2,720
Total CO <sub>2</sub> -e Emissions (Scope 1 and 2)	3,085,803	3,928,749	3,179,467	1,335,911

Biomass Tonnes CO <sub>2</sub>				
Category	2011 <sup>2</sup>	2019	2020	2021
Wood Pellets	1,423	725	1,050	828

Notes to Table 1

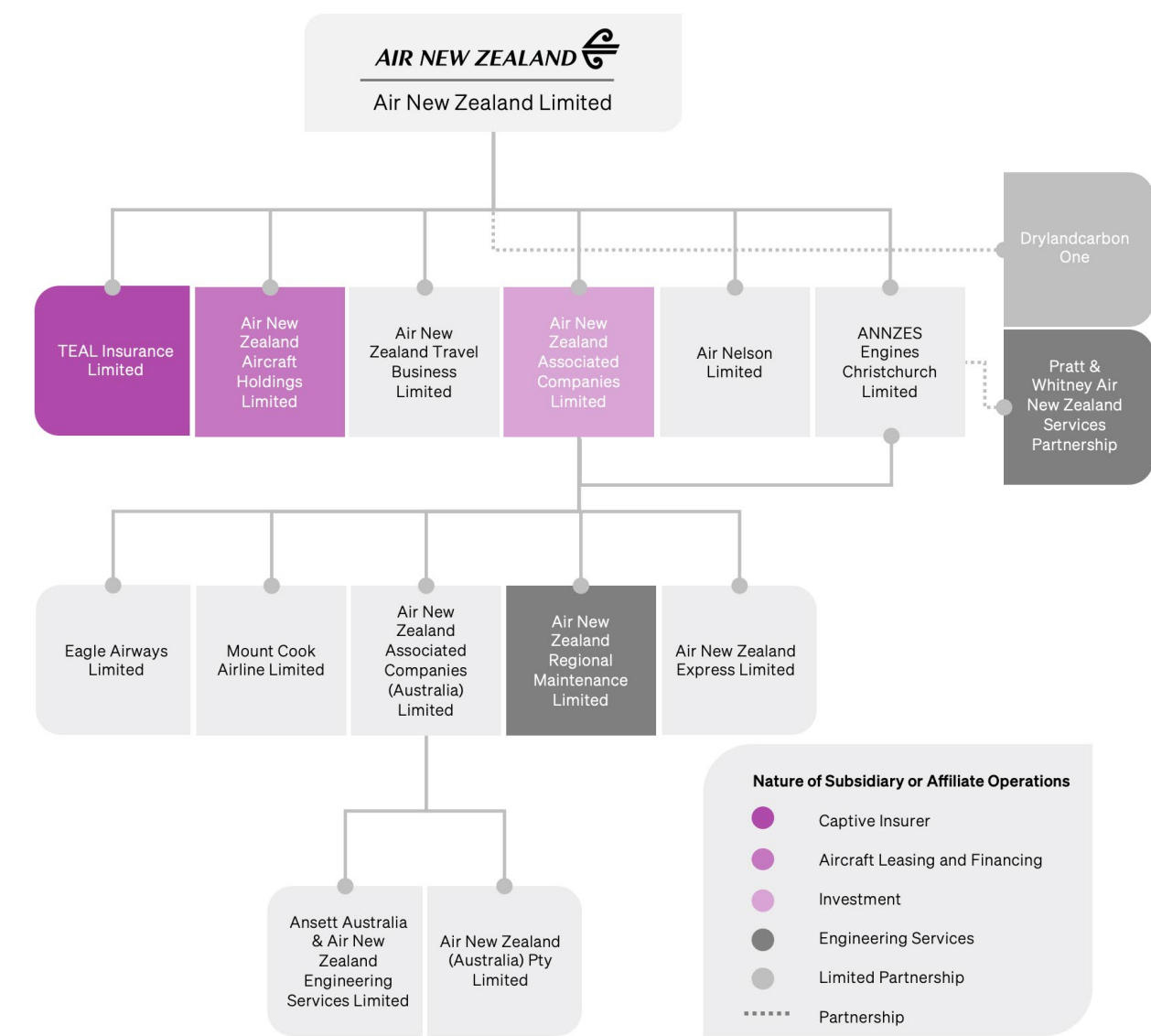
- 1. Scope 1 Emissions : Accounts for direct GHG emissions from sources that are operated or controlled by Air New Zealand.
- 2. In 2019, the New Zealand Ministry for the Environment updated greenhouse gas emissions factors for organisational reporting, including for the first time an emissions factor for aviation fuel. Air New Zealand has adopted this figure to stay consistent with national greenhouse gas inventory guidance, a process which has included updating the baseline inventory (2011).
- 3. Emissions from Jet Fuel - Ground sources were not measured in 2011.
- 4. Diesel includes mobile and stationary sources.
- 5. Scope 2 Emissions : Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by Air New Zealand.





Organisational Boundary

Air New Zealand's organisational boundary encompasses the companies listed in the table below. Apart from where indicated in the exclusions (Table 2) overleaf, Air New Zealand has operational control of these companies.



Operational Boundary

Air New Zealand applies an operational control approach to determine the boundary of the airline's GHG Inventory. A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation.

Emissions from excluded entities are described in Table 2 overleaf.

Air New Zealand reports on 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 Air New Zealand does not report on Scope 3 emissions at this stage.

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.

Table 2. List of Excluded Entities

Entity	Reason for Exclusion
Air New Zealand Travel Business Limited	Non-operating company.
Eagle Airways Limited	Non-operating company.
TEAL Insurance Limited	No activities that produce GHG emissions.
Air Nelson Limited	No activities that produce GHG emissions.
Mount Cook Airline Limited	No activities that produce GHG emissions.
Air New Zealand Aircraft Holdings Limited	No activities that produce GHG emissions.
Air New Zealand Associated Companies Limited	Non-operating holding company.
Air New Zealand Associated Companies (Australia) Limited	Non-operating holding company.
Air New Zealand Express Limited	Non-operating company.
Ansett Australia & Air New Zealand Engineering Services Limited	Non-operating company.
Air New Zealand (Australia) Pty Limited	Non-operating company.
ANNZES Engines Christchurch Limited	Non-operating company.
Pratt & Whitney Air New Zealand Services Partnership	No operational control.
Drylandcarbon One Limited Partnership	Limited partnership, no operational control.





Methodologies and Uncertainties

Emissions for Scope 1 and 2 have been quantified using the calculation method based on activity data multiplied by greenhouse gas emissions factors. Emissions factors have been sourced from official Ministry for the Environment factors detailed in Table 4.

To minimise uncertainties in the accuracy of this inventory, data has been sourced wherever possible from a verifiable source as detailed in Table 3 below.

Assurance of GHG Inventory

A reasonable level of assurance has been given over the scope 1 and 2 assertions and quantifications for FY21, included in this report by Deloitte Limited.

Refer to Appendix One for the Assurance Report.

Table 3. Inclusions			
Scope 1 Emissions			
Category	GHG Emissions Source	Data Source	Methodology, Data Quality, Uncertainty
Jet Fuel	Fuel used to operate aircraft (domestic and international).	Records from supplier invoices.	Records of fuel purchased.
Jet fuel - Ground	Fuel used for ground engine testing.	Fuel reconciliation process.	Records of fuel purchased.
LPG	Fuel used for heating.	Records from supplier invoices.	Records of fuel purchased.
Natural Gas	Fuel used for heating & process plant.	Records from supplier invoices.	Records of fuel purchased.
Diesel <sup>1</sup>	Fuel for light vehicle fleet in New Zealand.	Records from supplier (Cardlink and LeasePlan) invoices.	Records of fuel purchased.
	Fuel for Ground Support Equipment (GSE) at five domestic airports and from Engineering and Cargo operations in Auckland and Christchurch.	Records from supplier (Mini Tankers).	Records of fuel purchased.
Diesel <sup>2</sup>	Fuel for Ground Support Equipment at regional New Zealand ports and Rarotonga.	Estimated for Regional New Zealand ports and Rarotonga.	Estimated based on diesel use at the five domestic airports.
Diesel <sup>3</sup>	Testing hangar deluge system, emergency generators and boilers at Auckland Engineering.	Estimated for Auckland Engineering.	Estimations based on testing duration and consumption data.
Bio Diesel	Fuel for ground vehicle fleet	Records from supplier invoices.	(N/A in current reporting period, however included in base year).
Petrol <sup>1</sup>	Fuel for light vehicle fleet in New Zealand.	Records from supplier (Cardlink and LeasePlan) invoices.	Accurate records of fuel purchased.
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.

Table 3. Inclusions (Continued)			
Scope 2 Emissions			
Category	GHG Emissions Source	Data Source	Methodology, Data Quality, Uncertainty
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			
Category	GHG Emissions Source	Data Source	Methodology, Data Quality, Uncertainty
Wood Pellets	Fuel used for heating.	Records from supplier invoices.	Records of wood pellets purchased from supplier Azwood.

Notes to Table 3

1. Diesel GSE, and petrol and diesel light vehicle fleet assumptions & exclusions
  - Includes diesel (GSE) consumed at the five main New Zealand domestic airports - Auckland, Wellington, Christchurch, Nelson and Dunedin; diesel consumed by fleet at Engineering and Cargo operations at Auckland and Christchurch; (728,866 litres).
  - Air New Zealand has 105 fleet vehicles consisting of; Diesel (36); Petrol (9); Plug-in Electric (Fully) (22); Plug-in Hybrid Electric (PHEV) (22); Hybrid (Battery/Petrol) (15); Hybrid (Battery/Diesel) (1). Petrol and diesel was purchased for the fleet through Cardlink and LeasePlan (Petrol - 21,091 litres, Diesel - 21,107 litres)  
Exclusion:
    - There are 13 light vehicles offshore. There is no visibility on fuel consumption for these vehicles.
2. Diesel (Ground Support Equipment) at New Zealand regional ports and including Rarotonga

At the time of writing, Air New Zealand had no data on diesel consumption at regional ports and Rarotonga. The following assumptions were made.

  - Estimations for diesel consumption at regional ports and Rarotonga (66,000 litres).
  - 9 diesel GPUs (Ground Power Units) at regional ports and Rarotonga. Based on 4,000 litres per year (the average diesel GPU use at the five New Zealand domestic ports) the estimate for diesel use is 36,000 litres per year.
  - 12 aircraft container loaders at regional ports and Rarotonga. Based on 1,800 litres per year (the average diesel Transporter use at Dunedin) - the estimate for diesel use is 21,600 litres.
  - 4 Tugs at regional and ports and Rarotonga. Based on 600 litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use is 2,400 litres.
  - 2 pushback tractors at regional ports and Rarotonga. Based on 900 litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use is 1,800 litres.
  - 3 ambulifts at regional ports and Rarotonga. Based on 400 litres per year the estimate for diesel use is 1,200 litres.
  - A toilet truck in the regional ports. Estimated diesel consumption is 1,000 litres.
  - 3 fork hoists at regional ports and Rarotonga. Based on 300 Litres per year (the average diesel fork hoist use at Dunedin) - the estimate for diesel use is 900 litres.
  - 2 belt loaders at regional ports and Rarotonga. Based on 300 litres per year (the average diesel Tug use at Dunedin) - the estimate for diesel use is 600 litres.
  - A truck mounted stair at regional ports. Estimated diesel consumption is 250 litres.
  - 7 motorised stairs at regional ports and Rarotonga. Estimated diesel consumption is 250 litres.
3. Diesel (Stationary systems) at Auckland Engineering

Estimation of diesel consumption of testing stationary systems at Auckland Engineering is estimated at (7,500 litres).  
Exclusion:
  - Estimates of diesel consumption when testing Christchurch deluge systems was not available at the time of this report. Consumption is considered minimal.



GREENHOUSE GAS INVENTORY 2021

Table 4. Greenhouse Gas Emissions by Greenhouse Gas Type

Scope 1 Emissions CO <sub>2</sub> -e				
Source	Emissions (tonnes)*1			
	CO <sub>2</sub> -e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Jet Fuel - Domestic	508,737	491,587	3,459	13,691
Jet Fuel - International	817,078	789,534	5,555	21,989
Jet Fuel - Ground	1,616	1,562	11	44
Jet Fuel - Total	1,327,431	1,282,683	9,025	35,724
LPG	1,227	1,226	<1	1
Natural Gas	2,249	2,247	1	1
Diesel (mobile) <sup>2</sup>	2,020	1,986	3	32
Diesel (mobile) <sup>3</sup>	178	175	<1	3
Diesel - Total Mobile	2,198	2,161	3	35
Diesel - Stationary <sup>4</sup>	20	20	<1	<1
Petrol <sup>2</sup>	52	49	1	2
Wood pellets (CH <sub>4</sub> and N <sub>2</sub> O)	14	NA	6	9
Total Scope 1 Emissions	1,333,191	1,288,386	9,036	35,772

Scope 2 Emissions CO<sub>2</sub>-e

Source	Emissions (tonnes)*1			
	CO <sub>2</sub> -e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Electricity	2,720	2,612	104	4
Total Scope 2 Emissions	2,720	2,612	104	4
Total Scope 1 and 2 Emissions	1,335,911			

Biomass CO<sub>2</sub>

Source	Emissions (tonnes)*1			
	CO <sub>2</sub> -e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Wood pellets	NA	828	NA	NA

Notes to Table 4

\*Air New Zealand does not have emissions of PFCs, or NF<sub>3</sub>. Emissions from HFCs have been excluded (see Table 5).

1. 2020 MfE Factors, link [here](#).
2. Actual figures from five New Zealand domestic airports and Engineering and Cargo operations in Auckland and Christchurch (diesel only, GSE) and light vehicle fleet (diesel and petrol).
3. Estimated figures for ground support equipment (diesel) at regional ports and Rarotonga.
4. Testing systems at Auckland Engineering.

Emissions Source Exclusions

The following emissions sources have been excluded from the 2021 GHG Inventory. Reasons provided in Table 5 below.

Table 5. List of Excluded Emissions Sources

Scope	Category	GHG Emissions Source	Reason for Exclusion
1.	Aircraft Engine Oil	Operation of aircraft fleet.	Difficult to obtain the data.
1	Fugitive Emissions	Fugitive HFC emissions from air-conditioning systems.	Difficult to obtain the data.
1	Diesel and Petrol	Owned light vehicle fleet at regional ports and offshore vehicles.	Difficult to obtain the data.
1	LPG	Swap a bottle for Ground Support Equipment in Wellington.	Difficult to obtain the data.
1	Fugitive Emissions	SF <sub>6</sub> used in electrical switchgear, and transformers as electrical insulation.	Difficult to obtain the data.
2	Electricity	Used in buildings/facilities in overseas locations.	Difficult to obtain the data.

Marty Forsman  
Senior Manager Environmental Stewardship  
August 2021



# APPENDIX ONE

INDEPENDENT ASSURANCE REPORT ON THE AIR NEW ZEALAND GROUP 2021 GREENHOUSE GAS EMISSIONS INVENTORY REPORT TO THE BOARD OF DIRECTORS OF AIR NEW ZEALAND LIMITED



## INDEPENDENT ASSURANCE REPORT ON THE AIR NEW ZEALAND GROUP 2021 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 Air New Zealand Limited and its subsidiaries ('the Group') for the year ended 30 June 2021, comprising the Emissions Inventory Report and explanatory notes set out on pages 1 to 8.

The Inventory Report provides information about the greenhouse gas emissions ('GHG') of the Group for the year ended 30 June 2021 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.

### Our 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.

We did not evaluate the security and controls over the electronic publication of the Inventory Report.

A reasonable assurance engagement undertaken 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

Non-financial information, such as that included in the Group's inventory report, is subject to more inherent limitations than financial information, given both its nature and the methods used and assumptions applied in determining, calculating and sampling or estimating such information. Specifically, 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 *International Code of Ethics for Assurance Practitioners (including International Independence Standards)* (New Zealand) 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.

The Auditor-General has appointed Peter Gulliver, using the staff and resources of Deloitte Limited to carry out the audit of the consolidated financial statements of the Group on his behalf. In addition to this engagement, we have carried out assurance services relating to the review of the interim financial statements, passenger facility charges and compliance with student fee protection rules. In addition, we provide non-assurance services relating to tax compliance for the Corporate Taxpayers Group. These services are compatible with those independence requirements. In addition to these engagements, principals, and employees of our firm deal with the Group on normal terms within the ordinary course of trading activities of the Group. These engagements and trading activities have not impaired our independence as auditor of the Group. Other than in the above capacities, we have no relationship with or interests in 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

Our assurance report is made solely to the directors of Air New Zealand Group in accordance with the terms of our engagement. Our work has been undertaken so that we might state to the directors those matters we have been engaged to state in this assurance report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the directors of Air New Zealand Group for our work, for this assurance report, or for the conclusions we have reached.

### Opinion

In our opinion, the inventory report of Air New Zealand Group for the year ended 30 June 2021 has been prepared, in all material respects, in accordance with the requirements of the GHG Protocol.

**Chartered Accountants  
Auckland, New Zealand  
17 August 2021**

*This reasonable assurance report relates to the GREENHOUSE GAS EMISSIONS INVENTORY REPORT of Air New Zealand Limited for the year ended 30 June 2021 included on Air New Zealand Limited's website. Air New Zealand Limited is responsible for the maintenance and integrity of the Air New Zealand Limited website. We have not been engaged to report on the integrity of the Air New Zealand Limited's website. We accept no responsibility for any changes that may have occurred to the GREENHOUSE GAS EMISSIONS INVENTORY REPORT since they were initially presented on the website. The reasonable assurance report refers only to the GREENHOUSE GAS EMISSIONS INVENTORY REPORT named above. It does not provide an opinion on any other information which may have been hyperlinked to/from these GREENHOUSE GAS EMISSIONS 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 GREENHOUSE GAS EMISSIONS INVENTORY REPORT and related reasonable assurance report to confirm the information included in the GREENHOUSE GAS EMISSIONS INVENTORY REPORT presented on this website.*



