



NAB's Carbon Inventory

Scope 1 Stationary combustion

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Stationary energy – diesel	MFE – New Zealand Government, Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Diesel – Fuel tab).	<ul style="list-style-type: none"> Activity data for diesel is in litres. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. 				✓		
	National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023, Schedule 1, Part 3.	<ul style="list-style-type: none"> Activity data for diesel is in kL. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. 		✓				
Stationary energy –gas	DBEIS 2023 – UK Government conversion factors for Company Reporting, Fuels (Gross CV).	<ul style="list-style-type: none"> Activity data for gas is in GJ. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 					✓	



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	MFE – New Zealand Government, Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Gas – Fuel tab).	<ul style="list-style-type: none"> Activity data for gas is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. Accruals are used for gas where data is incomplete for the reporting period (based on average daily consumption over the prior 6 months where possible). 				✓		
	National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023, Schedule 1, Part 2.	<ul style="list-style-type: none"> Activity data for gas is in GJ. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. 		✓				

Scope 1 Fugitive emissions

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Building-based refrigerants –	DBEIS 2023 – UK Government conversion factors for Company Reporting, Refrigerant &	<ul style="list-style-type: none"> Leakage activity data is in kgs. Method reflects GHG Protocol worksheet titled hfc-pfc (1) - Worksheet 3: Screening 	<ul style="list-style-type: none"> Installation emissions occur at manufacturer’s site and are not relevant, unless maintenance personnel have recorded onsite 	✓	✓			✓	✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
in HVAC and refrigerators	Other. Greenhouse Gas Protocol, Global Warming Potentials 5th Assessment Report.	Method for HFC and PFC Emissions from Refrigeration/AC Equipment: Emission Factor Based Approach. <ul style="list-style-type: none"> Determine Gross HFC and PFC Emissions from Operation of Refrigeration/AC Equipment. $\text{GHG Emissions (tCO}_2\text{-e)} = \text{Emission Factor} \times \text{Activity Data} / 1000$	recharge. <ul style="list-style-type: none"> Disposal emissions not relevant to Asia at leased facilities. Only relevant for small number of owned property if disposal of refrigeration equipment occurs as part of refurbishment. Default charge and leakage rates used. Actual charge volume could not be collected from labelling on equipment Australia only: Number of kitchen refrigerators based on property classification. Kitchen refrigerants are measured once every three years, unless there is a material shift in operations. The base year for the current assumptions is 2021. 						
	DBEIS 2023 – UK Government conversion factors for Company Reporting, Refrigerant & Other. Greenhouse Gas Protocol,	<ul style="list-style-type: none"> Leakage activity data is in kgs. Method reflects: Classification of units into size bands via cooling capacities - ICF International, Development of GHG Refrigeration and Air- 	<ul style="list-style-type: none"> Installation emissions occur at manufacturer’s site and are not relevant, unless maintenance personnel have recorded onsite recharge. Disposal emissions not relevant to leased facilities in New 				✓		



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	Global Warming Potentials 5th Assessment Report.	conditioning Model, Final Report December 2011, page 23. <ul style="list-style-type: none"> • Operational leakage rates – HM Government, Environmental Reporting Guidelines, March 2019 page 101. • Installation leakage rates - HM Government, Environmental Reporting Guidelines, March 2019 page 100. • GHG Protocol worksheet titled hfc-pfc (1) - Worksheet 3: Screening Method for HFC and PFC Emissions from Refrigeration/AC Equipment: Emission Factor Based Approach: Determine Gross HFC and PFC Emissions from Operation of Refrigeration/AC Equipment. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	Zealand. Only relevant for small number of owned property if disposal of refrigeration equipment occurs as part of refurbishment. <ul style="list-style-type: none"> • Default charge and leakage rates used where actual charge volume could not be collected from labelling on equipment. 						



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Business travel – work use vehicle fleet (air conditioning refrigerant)	<p>DBEIS 2023 – UK Government conversion factors for Company Reporting, Refrigerant & Other.</p> <p>Greenhouse Gas Protocol, GWP 5th Assessment Report.</p>	<ul style="list-style-type: none"> Leakage activity data is in kgs. Method reflects GHG Protocol worksheet titled hfc-pfc (1) - Worksheet 3: Screening Method for HFC and PFC Emissions from Refrigeration/AC Equipment: Emission Factor Based Approach. Determine Gross HFC and PFC Emissions from Operation of Refrigeration/AC Equipment. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Australia: Where refrigerant gas is unknown have assumed refrigerant is R410A. New Zealand: Where refrigerant gas is unknown have assumed refrigerant is R134A. Installation emissions occur at manufacturer’s site and are not relevant for NAB/BNZ vehicle fleet. Disposal emissions not relevant to NAB/BNZ vehicle fleet which are leased for a three-year term on an agreed km distance and then returned to the fleet manager. 		✓		✓		

Scope 1 Mobile combustion

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Business travel – work use	National Greenhouse and Energy Reporting	<ul style="list-style-type: none"> Activity data captured in litres of fuel. 	<ul style="list-style-type: none"> All fuel is purchased with fuel card provided. 		✓				



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
vehicle fleet (fuel consumption emission)	(Measurement) Amendment (2023 Update) Determination 2023, Schedule 1, Part 4.	GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> All vehicles were produced post 2004. Data provided by fleet provider is complete. 						
Business travel – work use vehicle fleet (fuel consumption)	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Diesel & petrol – Fuel tab, electricity – Purchased Energy tab, Private car default PHEV electricity consumption – Travel tab).	<ul style="list-style-type: none"> Activity data captured in litres of fuel (diesel & petrol), kWh of electricity in kms travelled for PHEV allocated vehicle electricity). GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Fuel is purchased with fuel card provided and an uplift is applied for non-fuel card purchases. All remote BEV & PHEV pool vehicle charging is sourced from the preferred supplier charging network. Remote PHEV allocated vehicle charging occurs remotely. 				✓		



Scope 2 Purchased energy

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Stationary energy - electricity	MFE – New Zealand Government, Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Electricity – Purchased Energy tab). Toitu Envirocare – Confirmation Statement Electricity Market based emission factor 2022 NZECS, Resources, Residual Supply, 2021/22 https://www.certifiedenergy.co.nz/residual-supply-21-22	<ul style="list-style-type: none"> Activity data for electricity and gas is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000 Scope 2 Electricity Dual Reporting – location and market based emission methods.	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. Accruals are used for electricity where data is incomplete for the reporting period (based on average daily consumption over the prior 6 months where possible). 				✓		
	eGRID2021, Unit, Generator, Plant, State, Balancing Authority Area, eGRID Subregion, NERC Region, U.S., and Grid Gross Loss (%) Data Files (January 2023).	<ul style="list-style-type: none"> Activity data for electricity is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 						✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023, Schedule 1, Part 6.</p> <p>National Greenhouse Accounts (NGA) Factors, August 2023, Table 2a.</p>	<ul style="list-style-type: none"> Activity data for electricity is in KWh. Activity data for diesel is in kL. Activity data for gas is in GJ. <p>Location Based: GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p> <p>Market Based: GHG Emissions (tCO₂-e) = Residual Mix Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. Where invoices for electricity are yet to be received, we extrapolate data (small portion of applicable sites) based on net lettable area (NLA). 		✓				
	<p>ADEME – Bilans GES Site, Continental France, Average, Grid Electricity 2021 – https://bilans-ges.ademe.fr/en/basecarbone/donnees-consulter/liste-element/categorie/64</p>	<ul style="list-style-type: none"> Activity data for electricity is in KWh. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 			✓			
	<p>IEA (2022), Emission Factors, CO2KWH ELE tab.</p>	<ul style="list-style-type: none"> Activity data for electricity is in KWh. 	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 	✓					



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
		GHG Emissions (t CO ₂ -e) = Emission Factor x Activity Data/1000							
	DBEIS 2023 – UK Government conversion factors for Company Reporting, Fuels (Gross CV).	<ul style="list-style-type: none"> Activity data for electricity is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 					✓	

Scope 3 Purchased goods and services

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
A4 and A3 paper purchased for office use	EPA Victoria, Greenhouse gas (GHG) inventory and management plan 2020-2021 (2021).	<ul style="list-style-type: none"> Method reflects those in the Emissions Factor Source Documentation. Activity data captured as kg of paper purchased. 	<ul style="list-style-type: none"> Consumption of paper obtained from stationery provider is accurate. 	✓		✓		✓	✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>EPA Victoria, Greenhouse gas (GHG) inventory and management plan 2020-2021 (2021).</p> <p>Paper Australia PTY LTD 2020, Climate Active Public Disclosure Statement.</p> <p>Carbon neutral certification – provided by recognised certification body e.g. Department of Industry, Science and Resources.</p> <p>Climate Active Carbon Neutral Standard.</p>	<p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p> <ul style="list-style-type: none"> Method reflects those in the Emissions Factor Source Documentation. Activity data captured as kg of paper purchased. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Consumption of paper obtained from stationery provider is accurate. 		✓		✓		
Customer statements purchased paper	<p>EPA Victoria, Greenhouse gas (GHG) inventory and management plan 2020-2021 (2021).</p>	<ul style="list-style-type: none"> Activity data is captured as kg of printed customer statements. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by supplier is complete. 				✓		



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Courier, freight and postage¹	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Freight transport tab).</p> <p>NZ Post – Kg CO2e Average per item p.a. 2022.</p>	<ul style="list-style-type: none"> Activity data units: couriers – tonne.km, cash in transit – litres, postage – number of items. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by suppliers is complete. Cash-in transit activity is a shared service and thus activity data is estimated based on revenue share of supplier fuel consumed. Average per item postage emission factor is reflective of BNZ postage profile. JB Were regards freight and postage to be any postage of goods > 2 kg. 				✓		
	<p>DBEIS 2022 - UK Government conversion factors for Company Reporting, Freight Goods tab, HGV (all diesel), Rigid (>7.5 tonnes-17 tonnes), 100% Laden.</p> <p>National Greenhouse Accounts (NGA) Factors, Feb 2023, Table 7.</p>	<ul style="list-style-type: none"> Activity data units: cash in transit – litres, postage and courier – emissions are calculated by suppliers. 	<ul style="list-style-type: none"> Data and emission factors provided by suppliers is complete. 		✓				

¹ Courier, freight and postage services have been included under Purchased goods and services, not under the categories of Upstream transportation and distribution and Downstream transportation and distribution.



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	Australia Post 2023 Environmental Reporting Data Dictionary.	GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000							
Water	ADEME – Bilans GES Site, Water – without infrastructure (https://bilans-ges.ademe.fr/en/basecarbone/donnees-consulter/liste-element/categorie/288).	<ul style="list-style-type: none"> Activity data captured in kL of water consumed. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> For unknown, data extrapolation is based on water (kL) per area (m²) using a representative sample of measured data from sample sites. 			✓			
	DBEIS 2023 – UK Government conversion factors for Company Reporting, Water supply + Water Treatment.	<ul style="list-style-type: none"> Activity data captured in kL of water consumed. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 					✓	
	EPA Victoria, Greenhouse gas (GHG) inventory and management plan 2020-2021 (2021).	<ul style="list-style-type: none"> Activity data captured in kL of water consumed. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlord and utilities is complete. Emission Factor for Victoria has been applied to the entire portfolio as Victoria accounts for the majority of the water consumption across the portfolio. 		✓				



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Water Supply and Wastewater tab).</p> <p>DBEIS 2023 – UK Government conversion factors for Company Reporting, Water supply + Water Treatment.</p> <p>EPA Victoria, Greenhouse gas (GHG) inventory and management plan 2020-2021 (2021).</p> <p>ADEME – Bilans GES Site, Water – without infrastructure (https://bilans-ges.ademe.fr/en/basecarbone/donnees-consulter/liste-element/categorie/288).</p>	<ul style="list-style-type: none"> Water usage data (kL) is sourced from a mix of local council and building owner invoices. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Accruals are used where data is incomplete for the reporting period (based on average daily consumption over the prior 6 months where possible). Data is extrapolated for those sites that do not report water usage, this is based on in sample data and attendance (FTE). 	✓					
	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year,</p>	<ul style="list-style-type: none"> Water usage data (kL) is sourced from a mix of local council and building owner invoices. Harvested water (kL) 	<ul style="list-style-type: none"> Accruals are used where data is incomplete for the reporting period (based on average daily consumption over the prior 6 months 				✓		



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	published July 2023 (Water Supply and Wastewater tab).	<p>data comes from BMS systems via the Property Services Team.</p> <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<p>where possible).</p> <ul style="list-style-type: none"> Data is extrapolated for those sites that do not report water usage, this is based on in sample data and property portfolio area (m²). 						

Scope 3 Fuel- and energy-related activities

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Stationary energy – Transmission losses and well to tank-diesel, electricity and gas	<p>Diesel – National Greenhouse Accounts (NGA) Factors, February 2023, Table 7.</p> <p>Electricity – National Greenhouse Accounts (NGA) Factors, February 2023, Table 1.</p> <p>Electricity – National Greenhouse Accounts (NGA) Factors, August 2023, Table 2a.</p>	<ul style="list-style-type: none"> Activity data for electricity is in kWh. Activity data for diesel is in GJ. Activity data for gas is in GJ. <p>Location Based: GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p> <p>Market Based:</p>	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. 		✓				



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	Gas – National Greenhouse Accounts (NGA) Factors, February 2023, Table 5.	GHG Emissions (tCO ₂ -e) = Residual Mix Factor x Activity Data/1000							
	eGRID2021, Unit, Generator, Plant, State, Balancing Authority Area, eGRID Subregion, NERC Region, U.S., and Grid Gross Loss (%) Data Files (January 2023).	<ul style="list-style-type: none"> Activity data for electricity is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 						✓
	IEA (2022), Emission Factors, T&D losses adjustment tab.	<ul style="list-style-type: none"> Activity data for electricity is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by electricity provider or landlords is complete. 	✓					
	ADEME – Bilans GES Site, Continental France, Average, Grid Electricity 2021 – https://bilans-ges.ademe.fr/en/basecarbone/donnees-consulter/liste-element/categorie/64	<ul style="list-style-type: none"> Activity data for electricity is in KWh. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 			✓			
	DBEIS 2023 – UK Government conversion factors for Company Reporting, Transmission & Distribution.	<ul style="list-style-type: none"> Activity data for electricity is in KWh. Activity data for gas is in GJ. 	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. 					✓	



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
		GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000							
	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (T&D Losses tab).</p> <p>Toitu Envirocare – Confirmation Statement Ecotricity Market based emission factor 2022.</p>	<ul style="list-style-type: none"> Activity data for electricity is in kWh. Activity data for diesel is in GJ. Activity data for gas is in GJ. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p> <p>Scope 3 Electricity T&D Losses Dual Reporting – location and market based emission methods.</p>	<ul style="list-style-type: none"> Data provided by facilities manager and utilities is complete. 				✓		

Scope 3 Waste generated in operations

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Waste – Incineration	DBEIS 2023 – UK Government conversion factors for Company	<ul style="list-style-type: none"> Activity data captured in kg of waste sent to incineration. 	<ul style="list-style-type: none"> Extrapolation based on of waste tonnage per area (m²). 					✓	



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US	
	Reporting, Waste disposal, Commercial and Industrial Waste – Combustion.	GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000								
Waste – Landfill	ADEME – Bilans GES Site, Waste treatment, household and assimilated, Residual household waste, Landfill, Impacts (https://bilans-ges.ademe.fr/en/basecarbone/donnees-consulter/liste-element/categorie/660).	<ul style="list-style-type: none"> Activity data captured in kg of waste sent to landfill. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> For unknown, data extrapolation is based on waste tonnage per area (m²) using a representative sample of measured data from sample sites. 			✓				
	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Waste tab). National Greenhouse Accounts (NGA) Factors, February 2023, Table 15, Waste emission factors for total waste disposed to landfill by broad waste stream category.	<ul style="list-style-type: none"> Activity data captured in tonnes of waste sent to landfill. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by service provider is complete. 							✓
	National Greenhouse Accounts (NGA) Factors, February 2023, Table 15, Waste	<ul style="list-style-type: none"> Activity data captured in kg of waste sent to 	<ul style="list-style-type: none"> For known data assume data provided by waste 		✓					



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	emission factors for total waste disposed to landfill by broad waste stream category.	landfill. GHG Emissions (tCO ₂ -e) = Emissions Factor x Activity data/1000	services provider is complete. This data can include weighed data, the count of bins, bin size and waste stream. • For unknown data extrapolation is based on waste tonnage per area (m ²) using a representative sample of measured data from sample sites.						
Waste – Landfill and Incineration	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Waste tab). National Greenhouse Accounts (NGA) Factors, February 2023, Table 15, Waste emission factors for total waste disposed to landfill by broad waste stream category. DBEIS 2023 – UK Government conversion factors for Company	• Activity data captured in tonnes of waste sent to landfill or incineration. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	• Data provided by service provider is complete. • Data is extrapolated for those sites that do not report waste, this is based on in sample data and attendance (FTE).	✓					



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	Reporting, Waste disposal, Commercial and Industrial Waste – combustion.								
Waste – Landfill and Compost	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Waste tab).	<ul style="list-style-type: none"> Activity data captured in kgs of waste sent to landfill or composted. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> For sites where landfill waste data is not available, extrapolation of waste to landfill has been made based on data for prior periods. All waste to landfill and compost is captured via supplier record keeping. 				✓		
Materials recycled	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Waste tab).	<ul style="list-style-type: none"> Activity data captured in kgs of waste can be recycled. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> All waste recycling is captured via supplier record keeping. 				✓		



Scope 3 Business travel

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Business travel – air	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business travel with RF, WTT Business travel – air.	<ul style="list-style-type: none"> As noted in Emissions Factor Source Documentation. Activity data captured in passenger km (pkm). Flight categories applied are as follows: <ul style="list-style-type: none"> Domestic – economy – long distance (>1,200 km) Domestic – economy – short distance (≤1,200 km) Long Haul International (>3700 km) – Business Long Haul International (>3700 km) – Economy Long Haul International (>3700 km) – Premium Economy Long Haul International (>3700 km) – First Class Short Haul International (≤3700 km) – Business Short Haul International (≤3700 km) – Economy 	<ul style="list-style-type: none"> Data provided by corporate travel provider is complete. New Zealand only: Uplift factors have been applied to BNZ air travel data to allow for bookings that have occurred outside our preferred travel data suppliers (no uplift applied for JBWere NZ). These were as follows: <ul style="list-style-type: none"> Domestic air travel data uplifts of 0.90%. International air travel data uplift – Of 0% (H1) and 0% (H2). 	✓	✓	✓	✓	✓	✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
		GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000							
Business travel – employee claims for use of personal vehicles for work purposes	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business Travel land, and WTT - Business travel land.	<ul style="list-style-type: none"> Activity data captured in distance travelled (kms) on claim forms. Average Car (unknown fuel). GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Australia: All employees adhere to the NAB Travel and Expense Guidelines. New Zealand: All employees adhere to the Motor Vehicles – Private Use policy. All personal vehicles are average passenger vehicles– with unknown fuel. 		✓		✓		
Business travel – hotel stays	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Travel tab).	<ul style="list-style-type: none"> No Emissions from food consumption included in Factor Calculator. Uplift factors have been applied to hotel stays data. <ul style="list-style-type: none"> New Zealand: Uplift factors have been applied to allow for bookings that have occurred outside our preferred travel data suppliers. 11.7% (H1) & 19.48% (H2) for domestic hotels, 0% (H1) & 7.4% (H2) for TransTasman and 0% 	<ul style="list-style-type: none"> Data provided by travel providers is complete. 	✓	✓	✓	✓	✓	✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
		(H1) & 0% (H2) for International bookings (no uplift applied for JBWere and New Zealand). <ul style="list-style-type: none"> o Australia: Uplift of 8.99% assumed for hotel stays not booked through corporate travel provider based on reconciliation between travel costs. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000							
Business travel – rail	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business Travel land, and WTT - Business travel land.	<ul style="list-style-type: none"> • Activity data captured distance travelled (kms) provided by service providers. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> • Data provided by service providers is complete. 			✓		✓	
	US Environmental Protection Agency - 2022 Emission Factors for Greenhouse Gas Inventories, Table 10, intercity Rail.	<ul style="list-style-type: none"> • Activity data captured distance travelled (miles) provided by service providers. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> • Data provided by service providers is complete. 						✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	2022 Global JR annual report (https://global.jr-central.co.jp/en/company/ir/annualreport/_pdf/annualreport2022-18.pdf). Japan Rail (JR East) group report integrated report 2021 (https://www.jreast.co.jp/e/environment/pdf_2021/p066-077.pdf).	<ul style="list-style-type: none"> Activity data captured distance travelled in (kms) provided by service providers. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by service providers is complete. 	✓					
Business travel – rental cars	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business Travel land, and WTT - Business travel land.	<ul style="list-style-type: none"> Activity data captured in distance travelled (kms) provided by rental company. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by service providers is complete. Rental cars vary so have used average car (unknown fuel). Uplift of 49% assumed for rental cars not booked through corporate rental car provider based on reconciliation between travel costs. 		✓				
	ADEME – Bilans GES Site, Passenger Transport, Road, Personal car, Car/Mid-engine/2018 (https://base-	<ul style="list-style-type: none"> Activity data captured in distance travelled (kms) provided by rental company. 	<ul style="list-style-type: none"> Data provided by service providers is complete. Rental cars vary so have used medium car. 			✓			



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>empreinte.ademe.fr/donnees/jeu-donnees)</p> <p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Travel tab).</p>	<p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p> <ul style="list-style-type: none"> Activity data captured in distance travelled (kms) provided by rental company. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by service providers is complete. <p>Asia:</p> <ul style="list-style-type: none"> Emission factor assumes that all representative vehicles are petrol. All vehicles are post 2015. <p>New Zealand:</p> <ul style="list-style-type: none"> Rental cars categorized by size and fuel type. BNZ uplift 10.8% (H1) and 33.2% (H2) assumed for rental cars not booked through corporate rental car provider based on reconciliation between travel costs (no uplift applied for JBWere and New Zealand). 	✓			✓		



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Business travel – taxi use	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business Travel land, and WTT - Business travel land.	<ul style="list-style-type: none"> Activity data captured in AUD spent on taxi travel converted into distance travelled (kms) with information from state Taxi administrator websites. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by service providers is complete. Taxi Information based on weighted average of flagfall and fare per km rates across NSW, QLD and VIC (proportionate to the FTE in each of these states). All travellers adhere to the NAB Group Travel and Expense Guidelines. Each expense item or charge in the general ledger represents one trip. All taxis are average passenger vehicles with unknown fuel type. 		✓				
	DBEIS 2023 – UK Government conversion factors for Company Reporting, Business Travel land, and WTT - Business travel land.	<ul style="list-style-type: none"> Activity data captured in GBP spent on taxi travel converted into distance travelled (kms) with information from state Taxi administrator website (https://tfl.gov.uk/modes/taxis-and-minicabs/taxi-fares). GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided through the expense travel system is complete. Pounds converted to miles (and then kms). Miles calculated using the Taxi Company description data and a Google Maps calculation for distance. 					✓	



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting, Data and Methods for the 2021 Calendar Year, published July 2023 (Travel tab).</p>	<ul style="list-style-type: none"> Activity data captured in NZD spent on taxi travel. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Taxi expense is captured in relevant general ledger account(s) using SAP. Expenditure is inclusive of GST. MFE Emission factor uses conversion - dollars No additional changes and no waiting time. Emission factor assumes that all representative vehicles are petrol. spent (\$3.20/km). 				✓		
	<p>TCR (The Climate Registry) – 2022 default emission factors, Table 2.5.</p> <p>Greenhouse Gas Protocol, Global Warming Potentials 5th Assessment Report.</p>	<ul style="list-style-type: none"> Activity data captured in USD spent on taxi travel converted into distance travelled (kms) with information from taxi invoices and regions’ relevant taxi authorities. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by service providers is complete. All travellers adhere to the NAB Group Travel and Expense Guidelines. Each expense item or charge in the general ledger represents one trip. All taxis are average passenger vehicles with unknown fuel type. No additional charges and no waiting time. 						✓



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
	<p>SNCF 2022 – Greenhouse Gases Information for Transport Services, General Methodology, Emissions for other transport modes, short distance.</p>	<ul style="list-style-type: none"> Activity data captured in GBP spent on taxi travel converted into distance travelled (kms) with information from the region’s relevant taxi authorities. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> All taxi expense is captured in relevant general ledger account(s) using SAP. Emission factor assumes that all representative vehicles are petrol. No additional charges and no waiting time. 			✓			
	<p>MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Travel tab).</p> <p>MLIT (Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism), Summary of the White Paper on Land, Infrastructure, Transport and Tourism in Japan, 2022</p>	<ul style="list-style-type: none"> Activity data captured in local currency \$ spent on taxi travel converted into distance travelled (kms) with information from each region's relevant taxi authorities. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<p>Hong Kong:</p> <ul style="list-style-type: none"> Taxi charges Information used to convert expenditure into distance travelled in kms is based on Urban Taxi flag fall rates from HK Department of Transport – http://www.td.gov.hk/en/publications_and_press_releases/press_releases/transport_department/index_id_2168.html There are surcharges for using Toll Tunnels. <p>Singapore:</p> <ul style="list-style-type: none"> Taxi charges Information used to convert expenditure into distance travelled in kms is based on information provided by Singapore 	✓					



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
			<p>Land Transport Authority – https://www.lta.gov.sg/content/lta.gov/en/getting_around/taxis_private_hire_cars/taxi_fares_payment_methods.html</p> <ul style="list-style-type: none"> Grab rideshare charges information used to converted expenditure into distance travelled in kms is based GrabCare rate – https://www.grab.com/sg/safety/covid-19/grabcare/ <p>Japan:</p> <ul style="list-style-type: none"> Taxi charges information used to convert expenditure into distance travelled in kms is based on information provided by Tokyo Hire-Taxi Association, assuming all trips travelled are in the 23 wards of Tokyo, Musashino city and Miaka city - https://www.taxi-tokyo.or.jp/english/call/pricelist.html <p>China:</p> <ul style="list-style-type: none"> Taxi charges information used to convert expenditure into distance travelled in kms is based on information provided by GobyTaxi, 						



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
			assuming all trips travelled are in Shanghai - https://www.gobytaxi.com/asia/china/shanghai						
Business travel – work use vehicle fleet (transmission losses and well to tank)	National Greenhouse Accounts (NGA) Factors, February 2023, Table 7.	<ul style="list-style-type: none"> Activity data captured in litres of fuel. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> All fuel is purchased with fuel card provided. All vehicles were produced post 2004. Data provided by fleet provider is complete. 		✓				
Business travel – work use vehicle fleet (transmission losses and well to tank)	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (electricity transmission losses – T&D Losses tab).	<ul style="list-style-type: none"> Activity data captured in KWh of electricity transmission losses. Activity data captured in litres of fuel. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Fuel is purchased with fuel card provided and an uplift is applied for non-fuel card purchases. 				✓		

Scope 3 Employee commuting



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Working from home (WFH)	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (Working from home tab).	<ul style="list-style-type: none"> Activity data for working from home electricity is employee per day. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> BNZ employee per day activity data is sourced from BNZ remote access systems. It is assumed that weekend access is for a full day and that staff will login onto to the network when working from home. Given the smaller numbers of colleagues located in our JBWere offices, applying the Australian Climate Active calculator for colleagues working from home as a result of COVID-19 was deemed appropriate for 2023. JBWere: the Victorian state calculations were applied as they use the highest emission factors. 				✓		
	WFH calculator developed by Energetics and provided by Climate Active (Department of Industry, Science, Energy and Resources)	<ul style="list-style-type: none"> Activity data is average FTE working from home. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> The calculator contains embedded assumptions and emission factors relating to employee energy usage for heating and cooling, lighting, equipment uses. Relevant transmission losses are embedded in the calculator. Given the small number of colleagues ROW (excluding New Zealand), applying the Australian Climate Active calculator for colleagues working from home because of COVID-19 was deemed appropriate for 2023. The Victorian state calculations were applied as they use the highest emission factors. 	✓	✓	✓		✓	✓



Scope 3 Upstream leased assets

Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Base-building energy use – electricity and gas not under NAB's operational control	<p>National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023 – Schedule 1, Part 6, Electricity.</p> <p>Gas – National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023, Schedule 1, Part 2.</p>	<ul style="list-style-type: none"> Activity data for electricity is in KWh. Activity data for gas is in GJ. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by landlords and utilities is complete. For non-billed sites we estimate consumption using known energy factors and building size. 		✓				
Base-building energy use – electricity not under NAB's operational control	MFE New Zealand Government: Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 – (Purchased Energy tab).	<ul style="list-style-type: none"> Activity data for electricity is in KWh. <p>GHG Emissions (tCO₂-e) = Emission Factor x Activity Data/1000</p>	<ul style="list-style-type: none"> Data provided by BNZ (ATM's) and external data centre providers is complete. Remote ATM weighted average KWh consumption per ATM type is representative of actual consumption. 				✓		



Emission source / activity	Emission Factor Source Documentation	Calculation Method	Assumption/limitation and justification	Asia	Australia	Europe	New Zealand	UK	US
Base-building energy use – Transmission losses – (electricity and gas) not under NAB's operational control	Electricity – National Greenhouse Accounts (NGA) Factors, February 2023, Table 1. Gas – National Greenhouse Accounts (NGA) Factors, February 2023, Table 5.	<ul style="list-style-type: none"> Activity data for electricity is in KWh. Activity data for gas is in GJ. GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by landlord and utilities is complete. For non-billed sites we estimate base building consumption using known energy factors and building size. 		✓				
Base-building energy use – Transmission losses – (electricity not under NAB's operational control)	MFE – New Zealand government Guidance for Voluntary, Corporate Greenhouse Gas Reporting. Data and Methods for the 2021 Calendar Year, published July 2023 (T&D Losses tab).	<ul style="list-style-type: none"> Activity data for electricity is in KWh GHG Emissions (tCO ₂ -e) = Emission Factor x Activity Data/1000	<ul style="list-style-type: none"> Data provided by BNZ (ATM's) and external Data Centre providers is complete. 				✓		

Note 1: Stationary energy is energy used in the building portfolio.

Note 2: Base building energy is energy used to provide shared base building services in commercial buildings such heating, ventilation, and air conditioning, lifts and escalators.

Note 3: Table has been reported for the Group's operations in Australia, New Zealand (BNZ and JBWere), the United Kingdom (UK), Asia, Europe and the United States of America (US).



CALCULATING NAB'S CARBON INVENTORY

Links to methodology and emissions factors

The following links provide information on the methodology and emission factors used in the calculation of NAB's carbon inventory/emission factor update in 2023.

- ADEME - Site Bilans GES – France
- Department for Business, Energy & Industrial Strategy (DBEIS) Greenhouse Gas (GHG) conversion factors 2023 - UK
- eGrid 2021 GHG Annual Output Emission Rates - USA
- Emission Factors for Greenhouse Gas Inventories (epa.gov) - USA
- EPA Victoria Greenhouse gas (GHG) inventory and management plan 2020 to 2021
- International Energy Agency Emissions Factors (IEA) 2022
- Ministry for the Environment (MFE) Measuring emissions: A guide for organisations: 2023 emission factors summary | Ministry for the Environment, published 2023 – New Zealand
- Australian National Greenhouse Accounts Factors February 2023
- Australia Post 2023 Environmental Reporting Data Dictionary
- National Greenhouse and Energy Reporting (Measurement) Determination 2008, Compiled 2021
- National Greenhouse Gas Inventory Report of Japan, 2017 - Ministry of the Environment, Japan
- NZECS Resources, Attributes of Residual Supply, 2021/22
- Paper Australia, Climate Active, Public Disclosure Statement, 2020
- Corporate Standard | The Greenhouse Gas Protocol
- MLIT (Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism), Summary of the White Paper on Land, Infrastructure, Transport and Tourism in Japan, 2022
- JR East Group Report INTEGRATED REPORT 2021



- 2022 Global JR annual report
- SNCF 2022 – Greenhouse Gases Information for Transport Services, General Methodology
- WFH calculator developed by Energetics and provided by Climate Active (Department of Industry, Science, Energy and Resources, Australia)
- Greenhouse Gas Protocol, Global Warming Potentials 5th Assessment Report
- Standards | GHG Protocol
- Climate Active Carbon Neutral Standard for Organisations | Climate Active