



Carbon Inventory Report:



Stone Arrow

JEWELLERY FROM AOTEAROA

Stone Arrow Jewellery Ltd

Period: 1st April 2020 – 31st March 2021

Unverified Inventory



Date: 9th June 2021

ekos.co.nz | ekos@ekos.co.nz

Contents

1	Summary	3
2	Background	3
2.1	Communication and dissemination	3
2.2	Reporting period and base year	4
2.3	Data included	4
2.4	Verification and Compliance with Standard	4
3	Organisational boundary	4
4	Greenhouse Gas (GHG) Inventory	6
4.1	Methodology	6
4.2	Data Collection	6
4.3	Stone Arrow Jewellery Ltd GHG Profile	7
4.3.1	Emissions breakdown	7
4.4	Uncertainty and Data Quality	10
5	Offsets and Certification	10
6	Emission Reduction Recommendations	11
	Glossary	12
	Appendix 1: Emission Factors	13

1 Summary

This carbon inventory was prepared for Stone Arrow Jewellery Ltd for the 2021 financial year period.

Organisation background	Name: Stone Arrow Jewellery Ltd Contact person: Nick Feint Contact email: nick@stonearrow.co.nz Area of business: Creation and sale of Jewellery Full Time Equivalents (FTEs): 6 Stone Arrow Jewellery Ltd creates and sells jewellery made from 100% recycled materials.
Report period	1 st April 2020 – 31 st March 2021
Organisational boundary	This measurement covers the following sites: 44a Commercial Street, Tākaka 7110
Reporting boundary	Business operations direct and indirect emissions resulting from: <ul style="list-style-type: none">• Direct (scope 1)<ul style="list-style-type: none">○ Stationary fuels• Indirect (scope 2)<ul style="list-style-type: none">○ Purchased electricity• Indirect (scope 3)<ul style="list-style-type: none">○ Fuel and energy related emissions○ Waste○ Aspects of Inward freight○ Staff Commuting○ Aspects of Purchased goods and services
Omissions	<ul style="list-style-type: none">• Outward freight• Aspects of inward freight• Water and wastewater• Freight, transport and distribution not owned by or paid for by the client
Emissions	Total emissions: 4.72tCO ₂ e
Offsets	Total offsets: 5.66tCO ₂ e

Stone Arrow Jewellery Ltd has elected to offset 120% of its measured emissions with New Zealand Carbon Units (NZUs) provided by Ekos. Through this measurement and offsetting, Stone Arrow Jewellery Ltd has qualified for Climate Positive Business Operations certification for the 2021 financial year period and has been issued 40000462.

2 Background

This report is the first annual greenhouse gas (GHG) emissions inventory, prepared for Stone Arrow Jewellery Ltd. It was prepared in accordance with the requirements of ISO 14064-1 (2018) and covers the 1st April 2020 – 31st March 2021 period.

2.1 Communication and dissemination

This inventory was prepared as a management tool for Stone Arrow Jewellery Ltd to:

- Assist it in managing its response to climate change and its reduction of GHG emissions.
- Be a communication tool that demonstrates to stakeholders that Stone Arrow Jewellery Ltd has identified its emissions profile, is aware of the significant issues related to climate change and is taking action to mitigate these issues, including offsetting unavoidable emissions.

The users of this report will include, but are not limited to, the staff, manager and Board of Stone Arrow Jewellery Ltd, its shareholders and members. The summary of this inventory will be made available to all stakeholders on request. A copy of the summary report will also be available from Ekos' website.

2.2 Reporting period and base year

This inventory is for the 2021 financial year period. The base year period for Stone Arrow Jewellery Ltd will be the 2021 financial year period. In subsequent inventories, comparisons will be made to this base year.

2.3 Data included

The data included in this inventory has been compiled from Stone Arrow Jewellery Ltd business operations and covers direct and indirect emissions which result from use of:

- Stationary fuels
- Purchased energy
- Fuel and energy related emissions
- Waste
- Aspects of Inward freight
- Aspects of Purchased goods and services
- Employee commuting

2.4 Verification and Compliance with Standard

This inventory has been prepared in compliance with the International Standards Organisation's process for calculating and reporting GHG emissions 14064-1 (2018). It should be noted that this measurement is an unverified inventory and that no verification audit has been conducted of the findings.

3 Organisational boundary

The organisational boundary identifies which facilities or subsidiaries of Stone Arrow Jewellery Ltd are included or excluded from the carbon inventory. Emissions from all aspects of the organisation are consolidated to determine the total volume. Consolidation is done using one of these methods:

- Control, whereby all emissions over which the organisation has either *financial* or *operational* control are included in the inventory
- Equity share, whereby the organisation only includes emissions for the portion of the facilities and business that the organisation owns.

For Stone Arrow Jewellery Ltd emissions calculation and inventory, the consolidation method of operational control has been used to consolidate emissions. This means that all emissions over which Stone Arrow Jewellery Ltd has operational control of have been included in the inventory.

Included in the Stone Arrow Jewellery Ltd organisational boundary are therefore all emission sources that occur within Stone Arrow Jewellery Ltd operations at 44a Commercial Street, Tākaka 7110.

Reporting boundary

The reporting boundary identifies which emission sources are included in the carbon inventory and which are excluded. ISO 14064-1(2018) categorises emissions as follows:

- Direct emissions (scope 1) are those resulting directly from the organisation's operations including stationary energy sources and vehicles owned by the company.
- Indirect emissions (scope 2 and 3) emissions are indirectly created by the company through the importation of electricity, heat or steam generated elsewhere or from the organisation's purchase of goods and services (such as business travel and the production of waste) that cause emissions to be generated by others.

In compliance with the ISO Standard, all relevant Stone Arrow Jewellery Ltd direct and indirect emissions are accounted for in this GHG inventory.

The included emission sources are shown in the following diagram:

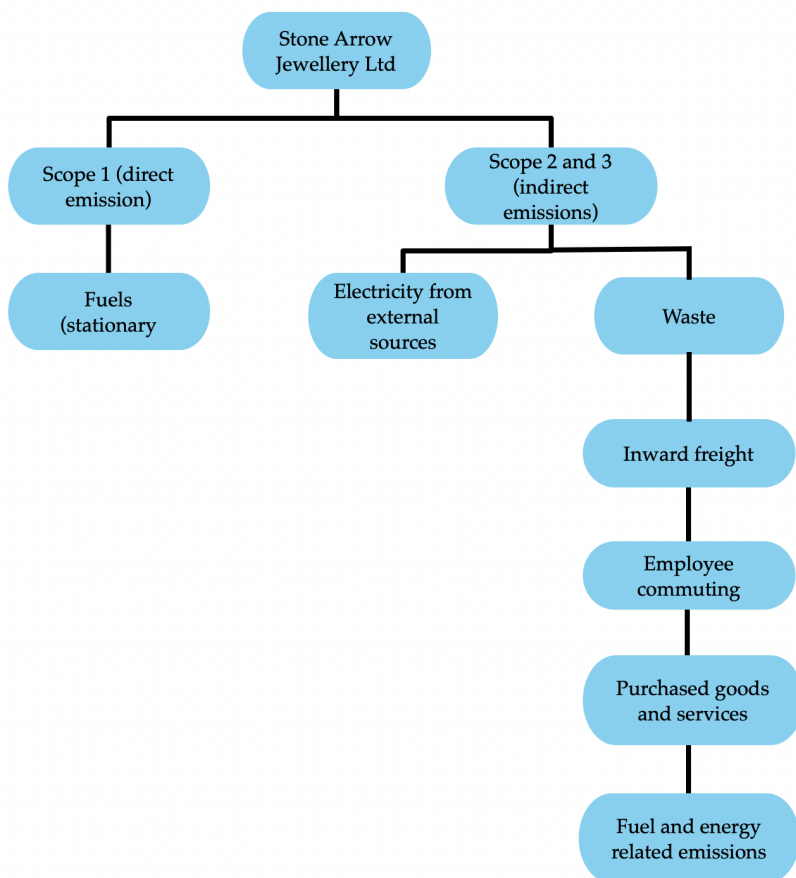


Figure 1: Emission sources for Stone Arrow Jewellery Ltd

Exclusions

- Outward freight
- Purchased goods and services
 - Potable water and waste water
 - Recycled Stirling silver used in jewellery production
- Downstream Transport and distribution
- Inward freight of metal sculptures

Outward freight, the inward transportation of the metal structures, downstream transport and distribution, potable water and waste water were excluded from the measurement due to unavailability of data.

The Recycles Stirling was excluded from measurement due to the unavailability of an accurate emissions factor.

4 Greenhouse Gas (GHG) Inventory

4.1 Methodology

This GHG inventory was prepared in compliance with the international Standards for calculating GHG emissions. These Standards are the World Resource Institute's "Greenhouse gas protocol, a corporate accounting and reporting standard (GHG protocol)" and "ISO 14064-1 (2018) Specification with guidance at the organisation level for quantification and reporting of GHG emissions and removals" (ISO 145064-1 (2018)). In measuring this inventory, the five principles of ISO 14064-1 (2018) were strictly applied.

The methodology used in measuring Stone Arrow Jewellery Ltd organisational GHG inventory is illustrated in the following diagram:

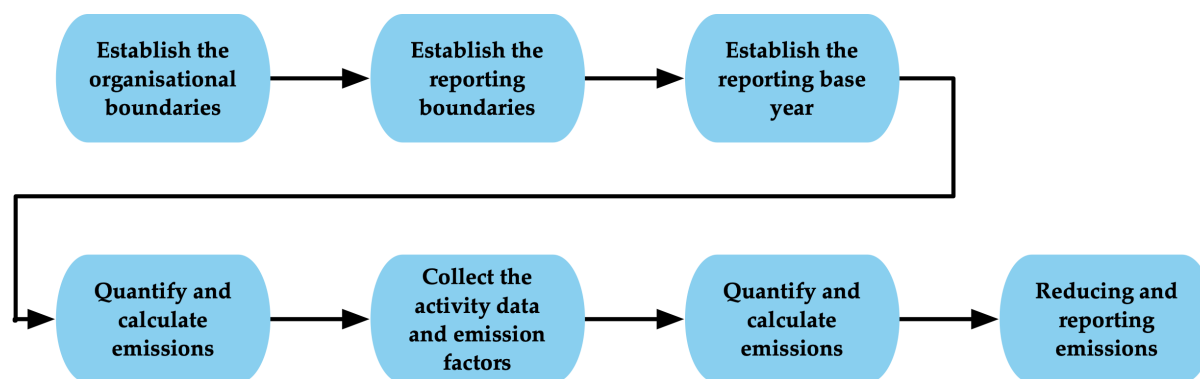


Figure 2: ISO 14064-1 (2018) methodology for measuring a GHG inventory

4.2 Data Collection

Data was collected by Stone Arrow Jewellery Ltd staff with guidance where required from Ekos. The table below provides an overview of the data collected for each emission source. All emissions were calculated using an Ekos-developed calculator. The calculation method used to quantify Stone Arrow Jewellery Ltd GHG emissions inventory was the activity data multiplied by the appropriate emission factor:

$$\text{Tonnes CO}_2\text{e} = \text{Total GHG activity} \times \text{appropriate emission factor}$$

Activity data for Stone Arrow Jewellery Ltd was obtained from a range of sources, which are outlined in the table below.

GHG emission factors were generally sourced from New Zealand's Ministry for the Environment. Where appropriate emission factors were not available, other reliable sources such as international government agencies or published research were used. A full list of the emission factors used is provided in Appendix 1.

Table 1: Data sources for Stone Arrow Jewellery Ltd emissions

Emission Source	Unit	Data Source
LPG	kg	Internal records
Electricity	KwH	Invoices from Energy Provider
Fuel and energy related emissions	KwH Km	NA NA
Purchased Goods and Services	Reams of paper	Internal records
Waste	L	Internal estimations
Staff commuting	Kms Employee/day	Internal records
Inward freight	Tonne kms	Financial records

4.3 Stone Arrow Jewellery Ltd GHG Profile

Total emissions for Stone Arrow Jewellery Ltd for the 12-month period from 1st April 2020 – 31st March 2021 were 4.72 tonnes of CO₂e.

4.3.1 Emissions breakdown

The majority of Stone Arrow Jewellery Ltd emissions are scope 3 staff commuting emissions, scope 2 electricity consumption emissions and scope 3 fuel and energy related emissions.

Table 2 shows Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope.

Table 2: Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope

Carbon Footprint by Scope

Scope 1 (Direct emissions)	0.04	1%
Scope 2 (Indirect emissions)	0.81	17%
Scope 3 (Indirect emissions)	3.87	82%
Total	4.72	

Figure 3 shows Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope

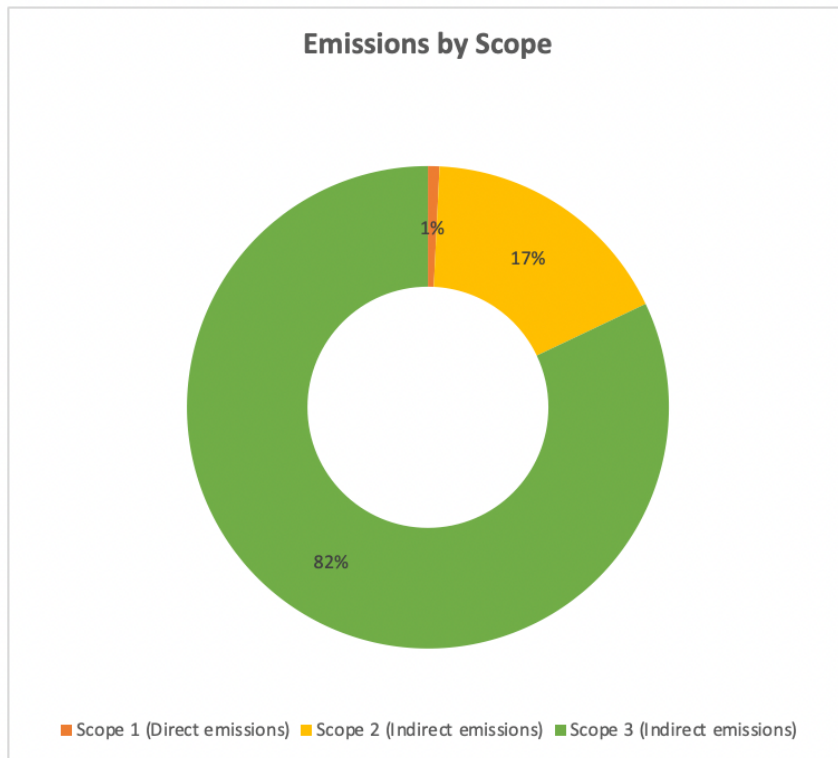


Figure 3: Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope including radiative forcing

Table 3 shows Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope and activity.

Table 3: Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope and activity

Carbon Footprint by Scope and Activity

	Activity	tCO2e	% of footprint
Scope 1 (Direct emissions)	Stationary Fuel	0.04	1%
	Mobile Combustion	NA	0%
	Industrial Processes	NA	0%
	Fugitive Emissions'	NA	0%
	Landuse Change	NA	0%
Scope 2 (Indirect emissions)	Electricity	0.81	17%
Scope 3 (Indirect emissions)	Category 1 - Purchased goods	0.00	0%
	Category 2 - Capital Goods	NA	0%
	Category 3 - Fuel Related emissions	0.48	10%
	Category 4 - Upstream Freight	NA	0%
	Category 5 - Business Waste	1.12	24%
	Category 6 - Business Travel	NA	0%
	Category 7 - Staff commuting	2.27	48%
	Category 8 - Upstream leased assets	NA	0%
	Category 9 - Downstream transport	Excluded	0%
	Category 10 - Processing of sold goods	NA	0%
	Category 11 - Use of sold goods	NA	0%
	Category 12 - End of life disposal	NA	0%
	Category 13 - Downstream leased assets	NA	0%
	Category 14 - Franchises	NA	0%
	Category 15 - Investments	NA	0%
Total		4.72	
FTEs		3	
Footprint per FTE		1.57	

Figure 4 shows Stone Arrow Jewellery Ltd direct and indirect emissions distribution by scope and activity.

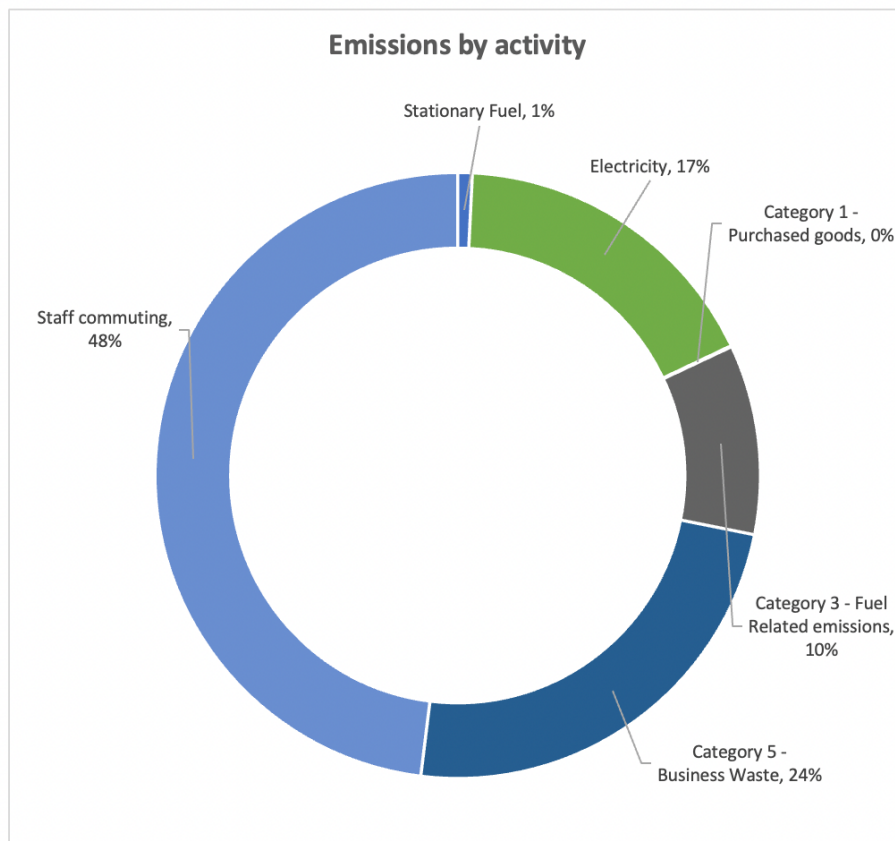


Figure 4: Stone Arrow Jewellery Ltd direct and indirect emissions by activity

4.4 Uncertainty and Data Quality

Where accurate data is not available, it is appropriate to estimate to ensure that a comprehensive inventory measurement is completed. Estimates must be carried out on a scientifically-derived basis to ensure accuracy. For Stone Arrow Jewellery Ltd GHG inventory, there are the following areas of uncertainty:

- **Staff Commuting**
Staff commuting data was not gathered throughout the measurement period. Due to this, a staff commuting estimate had to be calculated. Staff commuting was determined by calculating the distances from staff members places of work to the their personal addresses and then multiplied by the contracted days.
- **Waste**
Ekos had to rely on a retrospective volume based calculation provided by Stone Arrow Jewellery Ltd. Whilst the current waste calculation is robust enough for inclusion, the accuracy of this calculation could be improved if the waste volumes or the weight of waste was recorded when the waste was put out for collection. Such an approach would provide a more accurate annual total than the current methodology.
- **Outward freight**
Outward freight was excluded due to the unavailability of detailed freight reports. Stone Arrow Jewellery should engage with its freight service providers to make sure more in-depth freight reports are available for the 2022 financial year measurement.
- **Inward freight of metal sculptures**
The deliveries of these sculptures could be tracked throughout the year. These records need to include the departure address, origin address and the weight of each shipment.
- **Potable water and wastewater**
Water and wastewater were excluded due to the unavailability of data. These aspects of water consumption are not currently metered or charged by the Tasman District Council at 44a Commercial Street, Takaka 7110. This category will not be available for inclusion until the Tasman District Council starts recording and charging for these aspects of water consumption.

To increase the quality of the carbon inventory, Stone Arrow Jewellery Ltd should plan to improve data collection processes for staff commuting, waste, water and wastewater and business freight. These improvements should start as soon as possible.

5 Offsets and Certification

To qualify for Zero Carbon Business Operations Certification with Ekos, an organisation must measure its business operations inventory (carbon footprint) and offset 100% of direct and indirect emissions. To qualify for Climate Positive Business Operations Certification, and organisation must offset 120% of direct and indirect emissions.

Stone Arrow Jewellery Ltd has measured all required activity emissions, totalling 4.72tCO₂e and offset 5.66tCO₂e (120%), therefore, Stone Arrow Jewellery Ltd has qualified for Climate Positive Business Operations certification for the 2021 financial year period.

The offsets Stone Arrow Jewellery Ltd has selected are New Zealand Carbon Units (NZUs) produced in the Rameka Carbon Forest Project in Golden Bay, New Zealand. These offsets are retired in the New Zealand Carbon Register.

6 Emission Reduction Recommendations

Ekos recommends Stone Arrow Jewellery Ltd take action to reduce its operational carbon emissions. These recommendations are based on the emissions hotspots for Stone Arrow Jewellery Ltd. These are the highest level emission sources, and provide the greatest opportunity to reduce emissions for Stone Arrow Jewellery Ltd at the lowest cost.

The highest emission sources for Stone Arrow Jewellery Ltd are:

- Scope 3 staff commuting
- Scope 3 fuel and energy related emissions
- Scope 2 electricity consumption

Ekos recommends the following reduction interventions:

Staff Commuting

Whilst this is a difficult area for Stone Arrow Jewellery Ltd to influence as it is outside the organisations direct control, Stone Arrow Jewellery Ltd could incentivise the use of less carbon intensive modes of travel used by staff to get to and from work. Examples of this include subsidising the purchase of e – bikes (if appropriate), including the commute by bicycle in the individual’s hours worked for the day and encouraging car-pooling if this is available.

Fuel and energy related emissions

The reduction of staff commuting emissions will lead to a direct reduction in scope 3 Fuel and Energy related emissions with no further effort required from Stone Arrow Jewellery Ltd. This is due to the fact that fuel and energy related emissions are a well to tank emissions calculation. This well to tank emissions calculation is tied directly to the volume of the fuel/energy source consumed. Therefore, reducing the volume consumed automatically reduces the well to tank emissions captured in the Fuel and Energy related emissions aspect of the calculation.

Electricity

It is important to note that the company vehicle is charged at 44a Commercial Street, Tākaka. This will give the indication of high electricity consumption at this site. Whilst this is the case, the electric vehicle will be resulting in a lower operational carbon footprint overall.

Ekos also recommends focussing on staff behaviour change surrounding electricity consumption. Education should be focussed on the turning off of lights when a room is not in use and the shutting down of devices at the end of the day (saving ~10% of energy use). Whilst such behaviour change will result in small reductions overall, every aspect of reduction counts when setting lofty reduction goals. These reduction efforts also come at a low cost and help to build a low-carbon workplace culture.

Glossary

De minimis

Certain activities contribute less than 1 percent of the total of CO₂e emissions. These may be excluded from the GHG inventory, provided that the total of excluded emissions does not exceed a materiality threshold of 5 percent. That is, the total of all excluded emission sources should not exceed 5 percent of the total inventory.

Greenhouse gas (GHG)

Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth' surface, the atmosphere and clouds. These include:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

GHG Scopes:

- Scope 1: Direct emissions from sources owned or controlled by reporting entity. For example diesel generator, coal heating, own vehicle fleet, agriculture
- Scope 2: Indirect emissions generated by purchased energy. For example, electricity, gas.
- Scope 3: Indirect emissions that are a consequence of activities undertaken by the reporting organisation or related individual, but not directly controlled by the organisation. For example, flights, freight, non-company vehicles, waste, electricity line distribution and transmission losses.

Radiative Forcing (RF):

Radiative forcing helps organisations account for the wider climate effects of aviation, including water vapour and indirect GHGs. This is an area of active research, which seeks to express the relationship between emissions and climate warming effects of aviation. Inclusion of radiative forcing effects is optional for Ekos' clients as the science is still evolving.

Ekos uses a multiplier of 1.9 to account for radiative forcing effects in line with the Ministry for the Environment publication *Measuring Emissions: A Guide for Organisations 2019*.

Appendix 1: Emission Factors

Ekos uses emission factors provided by the New Zealand Ministry for the Environment (MfE) publication *Measuring Emissions: A Guide for Organisations 2019*. Where emission sources are not covered by the MfE publication, Ekos identifies suitable factors for use from the Department for Environment and Rural Affairs (DEFRA), UK Government document *Factors for Greenhouse Gas Reporting 2018*. A full list of the emission factors used in this report are shown below:

Emission source	Emission Factor	Notes
Electricity		
Electricity	0.000098 tCO ₂ e/kWh	
Electricity Transmission and Distribution	0.0000007 tCO ₂ e/kWh	
fuels		
LPG	0.003029 tCO ₂ e/kg	Stationary
Waste to Landfill		
General waste (with gas recovery)	0.00024 tCO ₂ e/kg	Conversion from kgs to L divides by 7.6923
Staff Commuting		
Vehicle mileage Working from home	0.0002647tCO ₂ e/km 0.000908tCO ₂ e/employee per day	
Purchased goods and services		
Reams of paper	0.0011909tCO ₂ e/ream	
Well to tank emissions		
Petrol (staff commuting)	0.00059732tCO ₂ e/L	
Business freight		
Van Ferry	0.000727tCO ₂ e/tonne 0.000052tCO ₂ e/tonne	