ACH CONSULTING ENGINEERS

Carbon Footprint Report

2022-2023

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Executive Summary

ACH Consulting has produced the following Carbon Footprint for the April 2022 - March 2023 financial year. A carbon footprint is a valuable use of data available within the business to quantify carbon emissions during a specific year. This is then related to our previous years to inform trends and analysis.

ACH emitted a total of 128.12 tonnes of carbon dioxide equivalent (tCO2e) for the financial year of 2022-2023, equivalent to approximately 3.54 tCO2e per Full-time Equivalent (FTE) employee. This is an increase of 4% in last year's carbon dioxide emissions per full-time equivalent employee.

However, taking our metric of tCO2e per thousand dollars turnover, we see a decrease in carbon dioxide emissions by 6% compared to last year's emissions.

During the 2022-23 financial year, carbon emissions due to transport were the largest contributor at 93% of total emissions. This is on-trend with previous reports and continues to be an area to focus on.

This report contains recommendations on how ACH can reduce emissions from transport, which was the primary leading carbon source. Some of these recommendations and others include:

- When upgrading vehicles invest in Electric Vehicles (EV) or Hybrid's as a low-carbon alternative.
- Minimise vehicle use by using phone calls, video calls or email where possible.

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1. Introduction

1.1 What is a Carbon Footprint?

A Carbon footprint is a total amount of Carbon Dioxide (CO2) emitted, typically expressed as tonnes of carbon dioxide, by the activities of an individual or organization. The information collected over time helps us to understand trends, inform management planning and provide a strategy for the organisation to improve their sustainability performance through the reduction of their carbon footprint.

1.2 About ACH Consulting

ACH Consulting (ACH) is a structural and civil engineering consultancy based in Auckland. Our main services include structural engineering, public infrastructure, forensic engineering, land development, stormwater, wastewater, and water supply services. For the 2022-23 year, ACH employed approximately 36 full-time equivalent staff (FTE's).

ACH wishes to understand their carbon footprint better and inform management planning to demonstrate an ongoing commitment to reducing their environmental impacts. ACH's responsibility to measure and understand its carbon footprint allows it to identify opportunities for improvement and to take actions to lower its emissions. This supports our ongoing commitment to meeting the ISO 14001: 2015 standard, and our commitment to ensure our customers can make an informed choice when engaging consultants. This is especially true for our clients with a large social responsibility, such as our local Government.

1.3 Scope and Boundary of the Carbon Footprint

ACH's carbon footprint was calculated for the 2022-2023 year and compared against the carbon footprint of preceding years and the base year of 2015-16.

The boundary of the footprint includes all of ACH's operations. However, the scope was limited to available data such as vehicle use (company and personal), air travel, taxi travel, landfill waste and electricity use.

The operational boundary for ACH's carbon footprint report includes the following:

- Scope 1: Transport in company vehicles and employee-owned vehicles
- Scope 2: Purchased electricity used within the building.
- Scope 3: Domestic air travel, taxi fares and office waste data.

1.4 Methodology

The Greenhouse Gas Protocol (www.ghgprotocol.org) has informed the development of ACH's carbon calculator and the reporting process. Table 1 identifies the various datasets for ACH that were entered into the carbon calculator and the emission factors used.

GHG Protocol Scope	Transaction type	Unit	Emission factors
Scope 1 - Gross direct emissions	Company car (Diesel)	Litre	0.00269
	Company car (Petrol)	Litre	0.00245
	Personal mileage	Km	0.00231
Scope 2 - Gross indirect emissions	Purchased electricity	kWh	0.000138
Scope 3 - Gross other indirect emissions	Taxi fares	$	0.000102
	Domestic air travel	Km	0.00016
	Waste disposal	Kg	0.00184

Table 1 - Datasets used in ACH 2022-23 Carbon Footprint Report

2. ACH Carbon Footprint

2.1 Data Summary

ACH emitted a total of 128.12 tonnes of carbon dioxide equivalent (tCO2e) for the financial year of 2022-2023, equivalent to approximately 3.54 tCO2e per Full - Time Equivalent (FTE) employee or, 0.016 tCO2e per thousand dollars turnover.

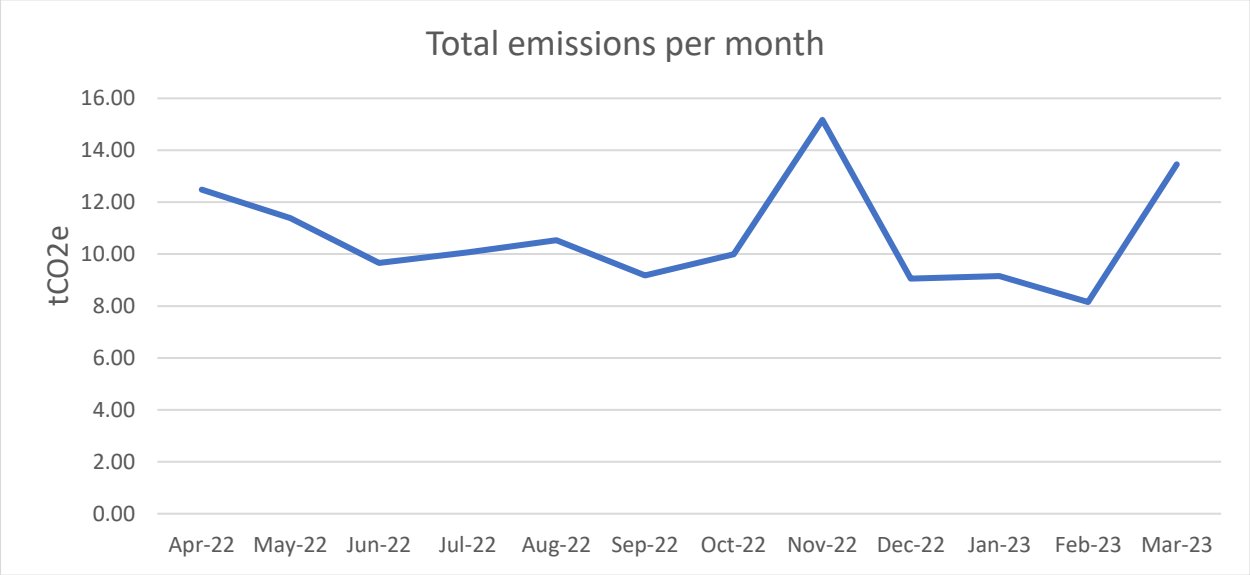
Table 2 below shows a breakdown of emissions by source. The greatest proportion of emissions resulted from car usage for travel to project sites and related meetings. Even though the mileage was still the greatest emissions source during this financial year, we can see that numbers have dropped greatly compared to last financial year. This could be related to the end of the COVID-19 pandemic, which means staff again have the option of carpooling and sharing fleet vehicles. The next largest contributor to emissions was electricity, followed by negligible contributions from landfill waste.

Emission Source	Total (tC02e)	Percentage of Emissions (%)
Company car- Diesel	32.4	25%
Company car - Petrol	36.5	29%
Staff Mileage	50.0	39%
Electricity	7.72	6%
Air travel - domestic	0	0%
Landfill waste	0.01	1%
Taxi	0.008	0%

Table 2 - Emissions by Source

The analysis of total emissions per month is illustrated in Figure 1 below. November 2022 yielded the greatest total emissions over this period at 15.17 tCO2e. The figure shows we have a significant drop-off in carbon emissions after October and reached our lowest amount in February with 8.38 tCO2e.

Figure 1: Total emissions per month



2.2 Improvement Initiatives

Our main improvement initiatives currently focus on reducing our emissions from travel, as this is the area where we can make the largest impact. We have committed to focusing on lower emissions vehicles such as hybrid and electric options when upgrading our fleet and requiring staff to use these over their own personal cars wherever possible.

We have also committed to reducing the amount of unnecessary travel for meetings. Covid has taught us that so much can be achieved through video conferencing capabilities, and we have established systems in-house to enable this method of coordination to be used most regularly. This should reduce the number of trips being made.

We will still have a level of unavoidable travel for site inspections and investigative work, which at this stage will remain part of the usual day-to-day business.

2.3 Comparison between the base year and the previous year

Financial year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
tCO2e	122.84	108.06	105.87	109.13	129.69	103.50	123.42	128.12
Staff (FTE)	27	28	30	30	31	33	37	36
tCO2e/staff (FTE)	4.48	3.86	3.5	3.67	4.18	3.17	3.35	3.54
$k turnover	5196	6727	5632	5978	5991	6193	7009	7843
tCO2e/$k turnover	0.023	0.016	0.018	0.018	0.021	0.016	0.017	0.016

Table 3 - tCO2e generation rates - Comparison

ACH emitted a total of 128.12 tonnes of carbon dioxide (tCO2e) for the 2022–23 financial year. This amounted to 3.54 tonnes of carbon dioxide per FTE, or 0.016 tonnes of carbon dioxide per $1,000 turnover.

Though our number of staff has seen a slight reduction on the previous period, our turnover has increased by a significant amount. Despite this, our carbon emissions per $1,000 turnover is at its lowest historical point. This is a good sign that our work is becoming more efficient and easier on our environment.

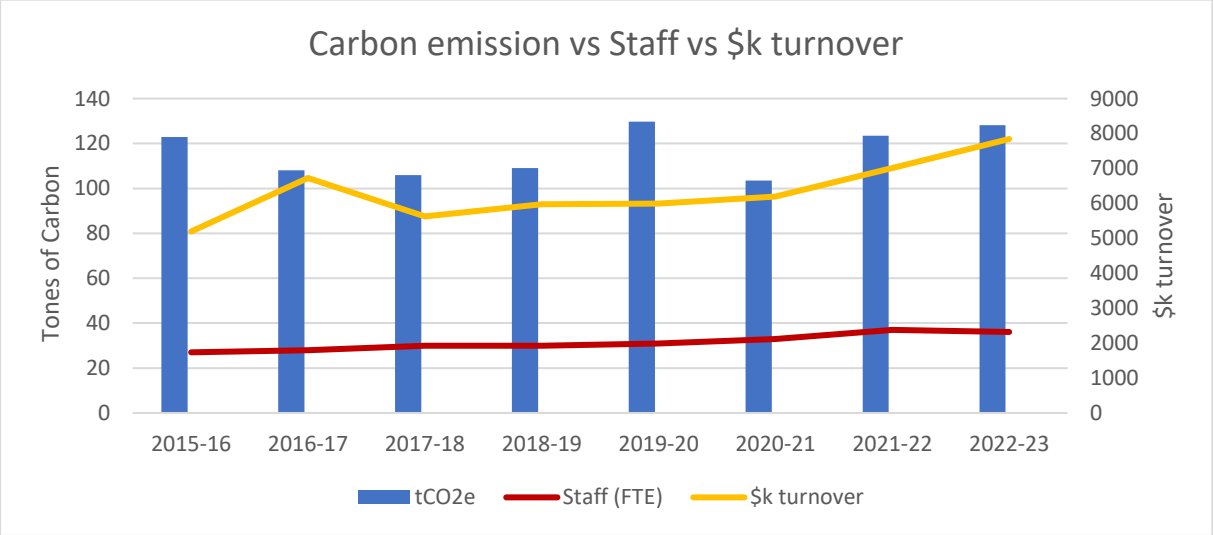


Figure 2: Carbon emission vs Staff vs $k turnover

3. Recommendations

ACH Consulting continues to implement initiatives to improve its carbon footprint. We have implemented strategies to reduce our emissions and monitor and improve the accuracy of recording emissions.

As ACH work towards becoming carbon neutral a continued focus on improving the efficiency of our vehicle fleet, reducing waste, and improving the accuracy of total emissions tracking has seen positive impacts on our carbon footprint.

To continue improving in this area, and to work towards carbon neutrality, ACH need to continue to record and report on carbon emissions regularly. Sharing with staff carbon footprint goals and progress towards carbon neutrality can encourage staff to contribute ideas for improvement.

3.1 Further strategies

As detailed in this report, the ACH activity with the largest footprint is transport, making up 93% of total emissions. Ideas for reducing car emissions are:

- When upgrading vehicles, invest in Electric Vehicles (EV) or Hybrid's as a low-carbon alternative. Converting all fleet to EV's can be a long term goal for ACH as it will significantly decrease the number of carbon emissions from transport.
- Minimise company car use by using technology, such as phone calls and video calls to replace face-to-face meetings. This decreases gas emissions but also improves efficiencies in time management.
- Properly maintained cars can improve fuel economy and gas emissions, therefore, ensuring regular services for vehicles, inflated tyres and clean oil and air filters.
- Keeping tyres at optimum inflation can reduce fuel consumption by 4% (EECA)
- Tyre brands which meet the EECA Energy Wise Standard can reduce fuel consumption by 7%.

Within the office recommendations include:

- Encourage the use of reusable coffee cups and lunch boxes.
- Try to use recycled stationery (i.e., paper, pens, etc.).
- Encourage staff to print only when necessary.
- Encourage staff to use a compostable bin for their green waste, which includes fruit and vegetable scraps, used tea, coffee grounds, crushed eggshells, etc.