

ORGANISATIONAL GREENHOUSE GAS EMISSIONS (CARBON FOOTPRINT) DISCLOSURE

**Carbon Neutral Pty Ltd &
Carbon Neutral Charitable Fund**

1 January 2016 – 31 December 2016



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EXECUTIVE SUMMARY

Carbon Neutral has calculated its 2016 organisational greenhouse gas (GHG) emissions. This latest GHG Emissions Report covers the reporting period from 1st January 2016 to 31st December 2016.

Total gross GHG emissions (scope 1, 2 and 3) for this period have been calculated at 35.21 tonnes carbon dioxide equivalent (t CO₂-e). This equates to an emissions intensity of 5.16 t CO₂-e per FTE.

The main source of emissions come from electricity use and staff travel. Carbon Neutral's GHG emissions for the period have been sequestered through the use of biodiverse reforestation carbon offsets so that net operational GHG emissions are zero.

ABOUT THE BUSINESS

Carbon Neutral is a carbon solutions provider and reforestation developer. Carbon Neutral specialises in carbon consultancy and is one of Australia's longest standing GHG offset providers.

Carbon Neutral services include carbon consulting and reduction programmes, carbon calculators and information on climate change, trading of carbon offsets, carbon sink establishment and revegetation projects, energy and water auditing and environmental management system development and implementation.

Carbon Neutral is a long-standing, award-winning organisation that seeks mutually beneficial relationships to deliver practical carbon solutions to businesses, government, tertiary and not for profit sectors.

EMISSIONS SCOPE & OPERATIONAL BOUNDARY

The emissions scope and organisational boundary for the GHG emissions inventory has been developed in accordance with the GHG Protocol and includes GHG emitting activities considered to be under the *operational control* of Carbon Neutral Pty Ltd and the Carbon Neutral Charitable Fund which were located in 9/7 Hector Street, Osborne Park, before relocating to 6/85 Forest St, Cottesloe.

Some emissions from the Auscarbon Group are included in this GHG inventory. Emissions from Auscarbon's farm facilities and farm based travel are excluded as these have been reported and offset as part of the Gold Standard certification process.

Auscarbon share offices with Carbon Neutral and electricity use, waste generation and consumable use is shared and reported. Auscarbon's travel is associated with Carbon Neutral's Gold Standard biodiverse reforestry offsets and Carbon Neutral has included these emissions in this carbon footprint assessment.

Scope 1, 2 and relevant scope 3 emissions are considered and included where possible. Activity is assessed for potential greenhouse gas emissions as well as for the availability of accurate activity data.

GHG emissions from administration and workshop operations have been included and reported on.

The seven greenhouse gas sources covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃) are included and reported as units of carbon dioxide equivalents (CO₂-e).

CLASSIFICATION METHOD

The classification method used to categorise Greenhouse gas emissions from the business are categorised into three main types of greenhouse gas scopes.

SCOPE 1

These are emissions relating to the burning of fossil fuels, used for building heating, gas boilers for hot water, to run generators or fuel for fleet vehicles. It also includes fugitive emissions such as refrigerant leakages from air conditioning plant and equipment.

SCOPE 2

These are the indirect, upstream emissions from imported electricity purchased from power stations

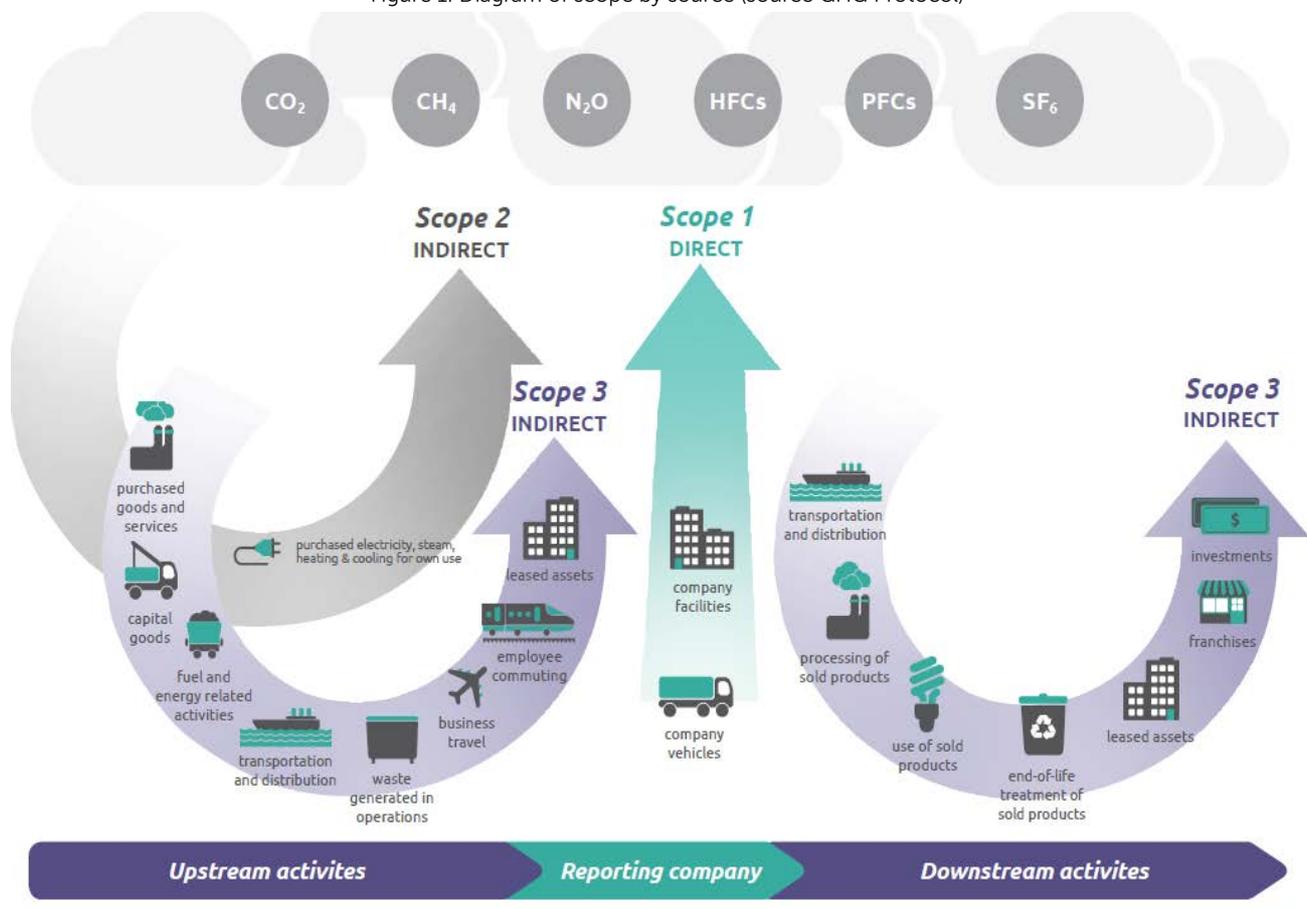
to run electrical equipment, heating and lighting systems.

SCOPE 3

The inclusion of scope 3 emissions provides an opportunity to be innovative in GHG management.

These are emissions from activities such as waste generation, staff commuting, paper use, accommodation, food, consumables, etc. and from full fuel cycle emissions. The full fuel cycle for transport fuel, electricity and gas includes emissions associated with the extraction, refining, transportation and delivery of these energy sources. The boundary of this scope generally only includes what the business can quantify and influence.

Figure 1: Diagram of scope by source (source GHG Protocol)



Following an initial screening process, the activities listed in Table 1 on the following page are included in the 2016 GHG emissions inventory report.

Table 1: Activity Sources and Scope of Emissions (2016)

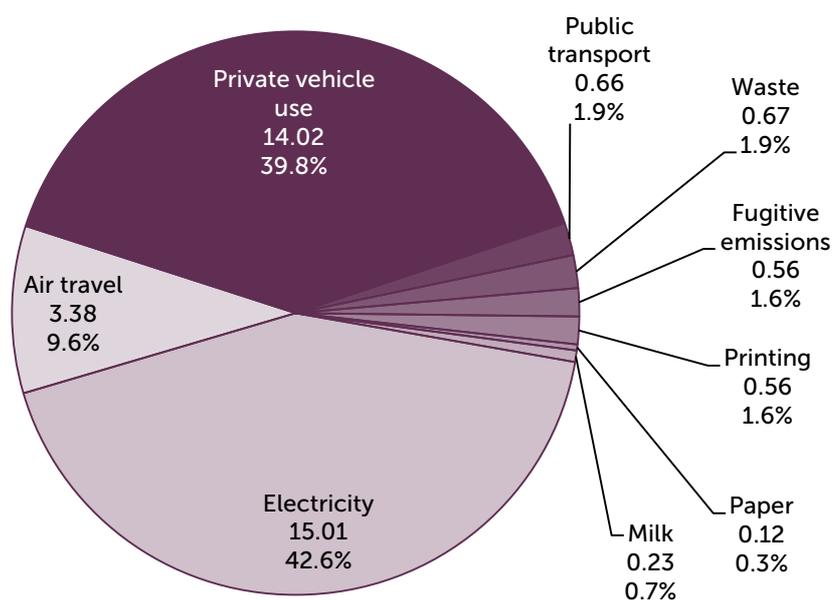
SCOPE 1	SCOPE 2	SCOPE 3
Fugitive Emissions	Electricity	Air travel
		Waste
		Consumables
		- Toner & printing
		- Stationery
		- Milk
		Private vehicle use
		Public transport
		Electricity

2016 CARBON INVENTORY BY ACTIVITY

The total GHG emissions calculated for Carbon Neutral is calculated to be 35.21 tonnes of carbon dioxide equivalent (t CO₂-e) in 2016.

A breakdown of emissions by activity can be seen in the following diagram.

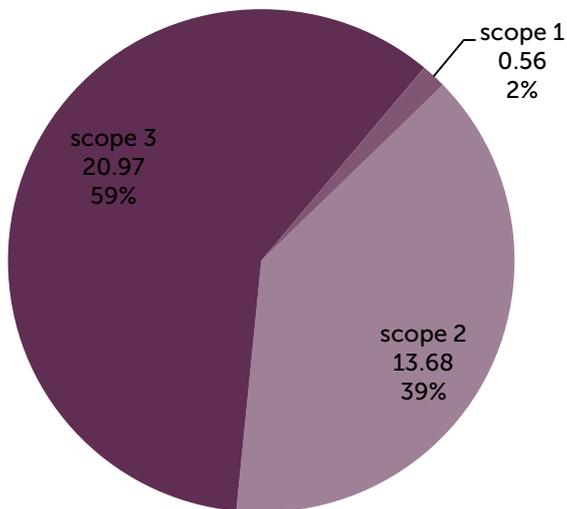
Figure 2: GHG emissions by activity (t CO₂-e; %)



GHG EMISSIONS BY SCOPE

The breakdown of Carbon Neutral's GHG inventory by scope 1, 2 and 3 emissions can be seen in the following graph.

Figure 3: GHG emissions by scope for 2016 (t CO₂-e, %)



Scope 1

Scope 1 (direct) emissions arise from estimates of refrigerant leakages from in air conditioning systems used by the business.

Scope 2

Scope 2 emissions arise from the use of electricity at the facilities it occupied during the period. Scope 2 emissions account for the upstream emissions that are released when electricity used by the business is generated.

Scope 3

Scope 3 emissions for the business are emissions which are emitted from activities which are outside of Carbon Neutral's operational control. Included scope 3 emissions for the arise from embodied emissions associated with consumable use (printing, toner, office paper and milk) the disposal of waste generated by the business to landfill, air travel, private vehicle use and public transport use for commuting and business purposes and from energy and extraction, production, transport, transmission and distribution.

HISTORICAL OVERVIEW OF CARBON INVENTORY

Table 2 provides an overview of Carbon Neutral's gross GHG emissions for 2013 to 2016.

Updated emission factors have also been applied and adjustments for inflation have been used where appropriate.

Table 2: Historical GHG emissions (t CO₂-e)

ACTIVITY	2013	2014	2015	2016
Fugitive emissions	0.47	0.47	0.56	0.56
Electricity use	12.56	13.76	14.50	15.01
Private vehicle use & public transport	8.46	13.06	11.22	14.68
Air travel	3.53	3.03	5.99	3.38
Consumables (paper, printing & milk*)	1.72	0.72	0.78	0.91
Waste	0.20	0.43	0.65	0.67
Capital equipment purchases (electronic equipment)	0.35	-	0.45	-
Freight	-	-	0.36	-
Accommodation	-	-	0.08	-
TOTAL (tonnes CO₂-e)	27.28	31.47	34.61	35.21

* Milk is a new inclusion for 2016

GHG FACTORS & CALCULATION METHOD

Principles

Carbon Neutral conducts its assessment of its GHG emissions inventory in accordance with the GHG Protocol as adopted under the Commonwealth government's National Carbon Offset Standard (NCOS). These principles are consistent with those outlined under the Australian and International Standards including AS ISO 14064: Greenhouse gases Part 1, 2 and 3. A copy of these principles can be found in the following table.

Table 3: GHG Accounting Principles (GHG Protocol Standard)

Relevance	Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company.
Completeness	Account for and report on all GHG emission sources and activities within the inventory boundary. Disclose and justify any specific exclusion.
Consistency	Use consistent methodologies to allow for meaningful performance tracking of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
Transparency	Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
Accuracy	Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable confidence as to the integrity of the reported information.

GHG EMITTING ACTIVITIES

GHG emitting activity data and the methodology adopted to determine emissions are summarised in this section.

FUGITIVE EMISSIONS – 0.56 t CO₂-e

Details on air conditioning provisions are not available and have been estimated. It is assumed that the air conditioner contains 3kg of R410A refrigerant.

Fugitive emissions are determined by applying a default leakage factor (9%) taken the National Greenhouse Account (NGA) Factors (August 2016) for both facilities:

$$E_{jk} = \text{Stock}_{jk} \times L_{jk}$$

The global warming potential (gwp) of R410A is obtained from the UK Government's Greenhouse Gas Conversion Factors 2016. R410A has a gwp of 2,087.5 times that of carbon dioxide.

ELECTRICITY – 15.01 t CO₂-e

Electricity use is determined by Synergy invoices for both facilities.

Scope 2 and 3 emissions are determined using the methodology and emission factors outlined in the NGA Factors 2016.

19,003 kWh of electricity was used during the reporting period.

Scope 2 emissions from electricity use are calculated to be 13.68 t CO₂-e while scope 3 emissions are calculated at 1.33 t CO₂-e.

AIR TRAVEL – 3.38 t CO₂-e

Emissions from air travel are determined by using the UK Government's 2016 Conversion Factors. A radiative forcing index (RFI) of x 1.9 and an uplift factor of 1.08 has been included.

The total flight distances travelled by flight length classification and cabin class are as follows:

Medium haul (785 – 3,700km) – 18, 494 (economy)

Carbon offsets for one flight were purchased through Qantas. As Qantas do not include a RFI in their offset calculations, a further x0.9 of total emissions from this flight has been included in Carbon Neutral's reported GHG inventory.

PRIVATE VEHICLE USE – 14.02 t CO₂-e

Data for this activity is provided by staff that provided details of the distance travelled to work, mode of transport and vehicle type and efficiency.

Estimates of the distance travelled in privately owned vehicles for business related are provided by staff survey.

This information was used to determine the volume of fuel consumed and emission factors and the methodology used to determine GHG emissions are sourced from the NGA Factors.

PUBLIC TRANSPORT USE – 0.66 t CO₂-e

Emission factors for train travel are sourced from the Bureau of Infrastructure, Transport and Regional Economics.

A total distance of 16,052km was travelled by urban train resulting in 0.66 t CO₂-e of GHG emissions while bus emissions are immaterial with only an estimated 5km travelled by bus.

WASTE – 0.67 t CO₂-e

The volume of waste has been estimated by staff at 1/3 of a 240 litre mobile garbage bin per week.

Emissions are determined by using the Co-mingled commercial and industrial waste emission factors and the methodology outlined by the NGA Factors 2016.

Material sent for recycling has not been included in waste activity data.

CONSUMABLES – 0.91 t CO₂-e

Office consumables include printing expenses, office paper and milk by the business.

Emission factors for printing are obtained from the University of Sydney and CSIRO's Balancing Act 2005, adjusted for inflation using the Reserve Bank of Australia's Inflation calculator. The total embodied emissions factors in the input-output tables of the Balancing Act (sector 2401 – printing) have been used and an inflation factor of 1.68 has been applied to account for inflation.

Emissions from the use of paper are determined using the EPA Victoria's Information Bulletin – Greenhouse Gas Emission Factors for Office Copy paper. Emission factors for imported virgin paper are used.

Emissions from the consumption of milk are based on the EPA Victoria's Australian Greenhouse Calculator reference report: Food, Grocery & Service, with adjustments for the current dollar value based on the Reserve Bank of Australia's inflation calculator from 2010 to 2016.

EMISSIONS INTENSITY

GHG emissions per full time equivalent employee have been calculated at 5.16 t CO₂ e for 2016.

This includes Carbon Neutral as well as Auscarbon staff based at the Cottesloe offices.

External contractors and Auscarbon staff based at other locations are excluded from emissions intensity calculations.

EXCLUSIONS AND JUSTIFICATIONS

Exclusions and justifications are outlined in this section. Exclusions and justifications are provided where adequate activity data was not available, where emissions were deemed to be insignificant or incidental or where reliable emission factors are not available.

The GHG Protocol and Australian and Internal Standard 14054.1 provides guidance on reporting relevant scope 3 emission sources that could be included in organisational GHG inventories.

Recycling

Materials sent for recycling have not been included in emissions calculations in this Report as per the NGER Technical Guidelines.

Approximately 0.48 tonnes of co-mingled materials was sent for recycling which equates to avoided emissions of approximately 0.67 t CO₂-e.

CARBON OFFSETS

Carbon Neutral has chosen to offset its unavoidable emissions by purchasing Biodiverse Reforestation Carbon Offsets to cancel any remaining offsets from the business.

A total of 35 tonnes of offsets have been allocated to the Preston Waters Project that falls within the *Yarra Yarra Biodiversity Corridor* Project and retired permanently against Carbon Neutral for these 2016 GHG emissions.

The serial numbers retired for these offsets are as follows:

Table 4: Details of offsets purchased

OFFSET TYPE	VOLUME (TONNES)	SERIAL NUMBERS
TOTAL Gross GHG Emissions	35.21	
Less light offsets purchased from Qantas	-0.57	
GHG emissions	34.64	
Australian Native Reforestation – Yarra Yarra Biodiversity Corridor – Gold Standard VER Purchased and surrendered Public Registry	35.00	GS1-1-AU-GS3039-22-2020-5300-38059 to 38093
NET GHG Emissions for 2016	-0.36	