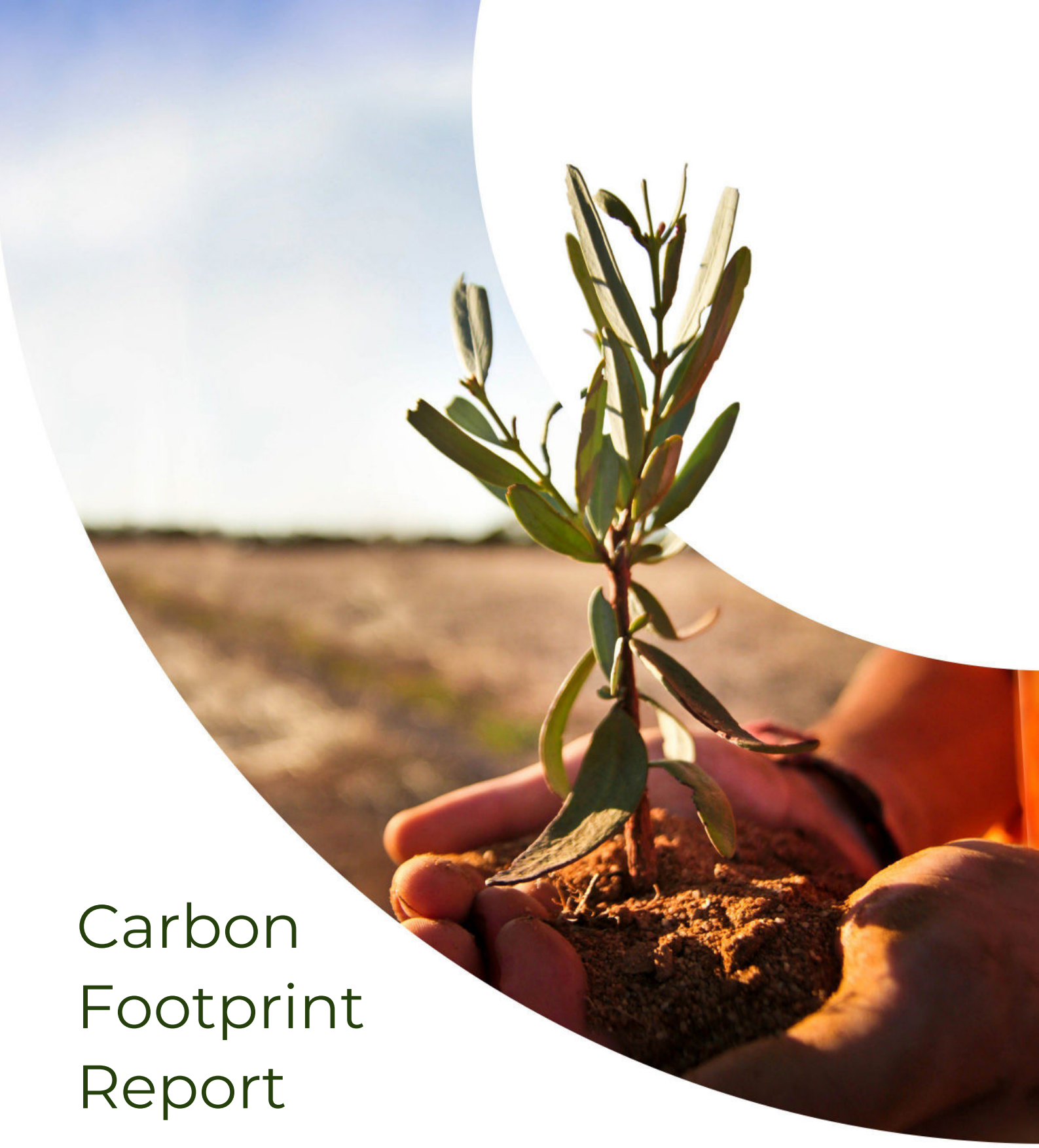

Carbon Footprint Report

Final Version 1.0

09/05/2022

For **Rocky Ridge Brewing Co**

1 July 2020 to 30 June 2021

carbonneutral

Carbon Neutral Pty Ltd

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Abbreviations

CH_4	Methane
CO_2	Carbon dioxide
CO_2-e	Carbon dioxide equivalent
DBEIS	Department for Business, Energy & Industrial Strategy (UK)
EF	Emission factor
EPiC	Environmental Performance in Construction
GHG	Greenhouse gas
GJ.	Gigajoule
HVAC	Heating, Ventilation and Air Conditioning
kg	Kilogram
kL	Kilolitre
kWh	Kilowatt-hour
L	Litre
ML	Mega litre
N_20	Nitrous oxide
NGA.	National Greenhouse Accounts
NO_x	Nitrogen oxides
PFC	Perfluorinated compound
p.km	Passenger kilometre
RFI	Radiative forcing index
t	Tonnes
t.km	Tonne kilometre
UK	United Kingdom
WBCSD	World Building Council for Sustainable Development
WRI	World Resources Institute
WTT	well to tank

Executive Summary

This Organisational Greenhouse Gas Inventory report has been prepared to assist Rocky Ridge Brewing Company (RRBC) understand its carbon footprint and set achievable targets to reduce its emissions.

This document describes the calculation boundaries, calculation methodologies, assumptions, measurement results, and key references used to prepare the Financial Year 2021 (FY21) greenhouse gas (GHG) inventory.

Scope 1, 2 and 3 GHG emissions in RRBC's operations and value chain have been included.

RRBC's total organisational GHG emissions have been estimated at 727.4 tonnes of carbon dioxide equivalent (t CO_2-e) for the period 1 July 2020 to 30 June 2021.

The main GHG emitting activities were associated with purchased goods and services and stationary equipment fuel use (see Figure 6).

About 37.2% of GHG emissions resulted from RRBC's Scope 1 (direct) fuel consumption and fugitive emissions. Scope 1 emitting activities were predominantly associated with stationary equipment use (25.3%), on-site wastewater disposal (9.9%).

Approximately 59.7% of GHG emissions resulted from Scope 3 activities associated with RRBC's supply chain, including purchased goods and services (40.9%).

The remaining 3.0% of the emissions were related to grid-supplied electricity use at RRBC's Taphouse facility (scope 2).

GHG emissions for the year have been offset using Verified Carbon Units (VCUs) so that net emissions for the year equal zero.

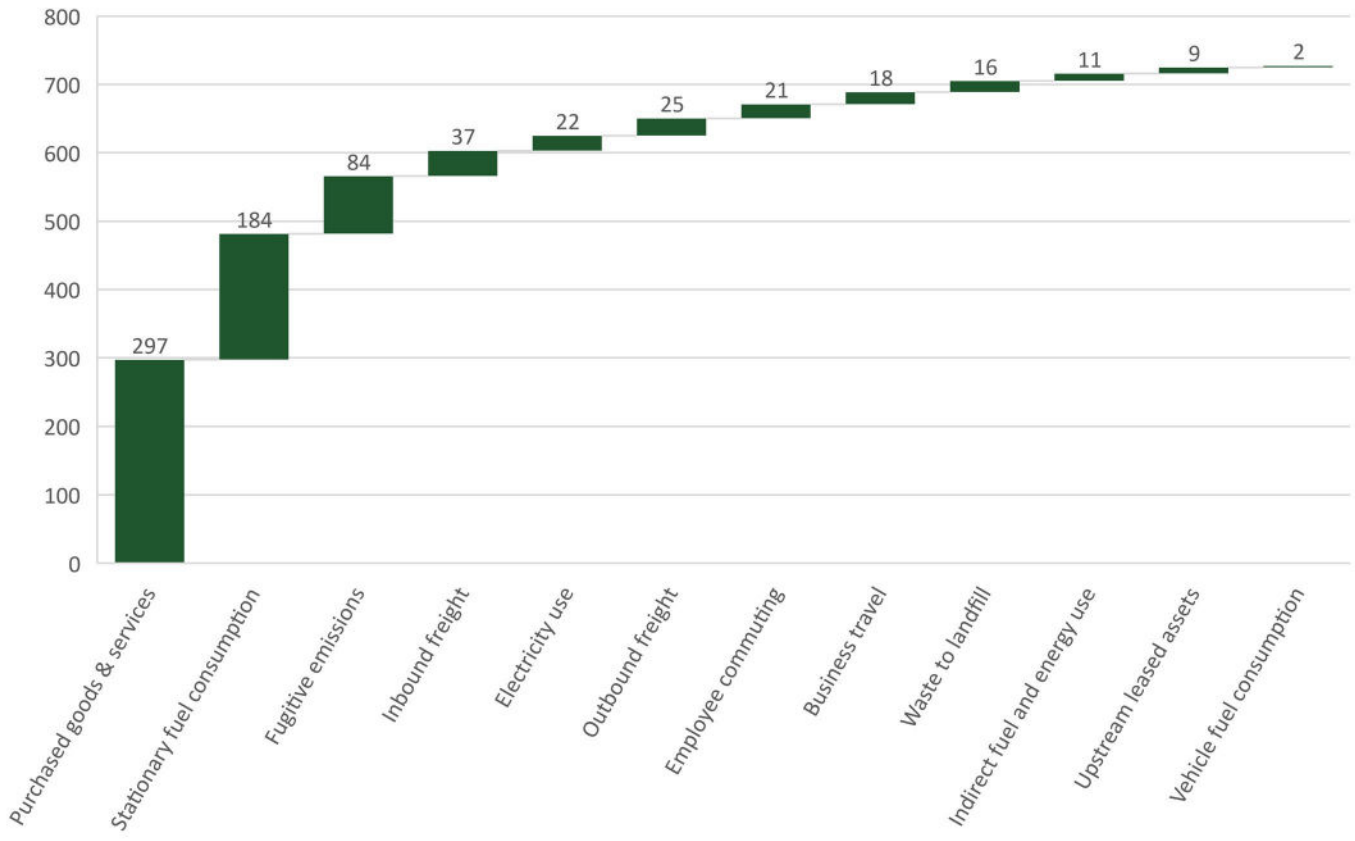

Figure 1 Summary of RRBC's emissions FY21

About Carbon Neutral

Carbon Neutral is a respected, Australian owned carbon solutions consultancy and offsets provider. We have over 20 years of experience and we have worked with over a thousand partners and organisations to deliver tangible climate change solutions.

Carbon Neutral assists organisations across Australia to minimise their impact on our environment by measuring, reducing and offsetting greenhouse gas emissions. Carbon Neutral is a market leader, has built a strong reputation within the low carbon economy and was the developer of the first web-based vehicle emissions calculator in Australia.

Carbon Neutral's services include Carbon Consulting and Reduction Programs, carbon calculators, retailing of carbon offsets, developing biodiverse reforestation projects, energy and water auditing, and Environmental Management System development and implementation. To date, Carbon Neutral has planted 30+ million trees in rural Australia.

Carbon Neutral is a long-standing, award-winning organisation that works with partners and businesses of all sizes to enrich landscapes, reduce the effects of climate crisis and deliver practical carbon solutions.

We are an independently certified (Climate Active) carbon neutral organisation.

About Rocky Ridge Brewing Co

Rocky Ridge Brewing Co (RRBC) is a family-owned business and producer of preservative free beer, made with predominantly locally sourced ingredients. The business is fiercely proud of growing the hops and barley used in its beer in an ecologically sustainable way.

Its core vision is one of sustainability and the business has implemented many practices to reduce its environmental footprint.

As well as the brewery, which is located on the family farm in Jindong, RRBC operates a cellar door/TapHouse in Busselton and leased part of a cool room facility in Jindong. It has a small head office located in shared facilities in West Leederville.

Business activity has increased significantly since the previous reporting period of FY20 both in terms of the number of staff employed as well as the volume of beer produced.

This is the second year that RRBC has estimated its emissions. Emissions from the FY20 and FY21 reporting periods are offset by the business using carbon offsets.

Figure 2 Rocky Ridge Brewing Co Image retrieved online 29/03/22. Author: RRBC

Organisational Boundary

RRBC's GHG emissions scope and organisational boundary have been determined in accordance with the GHG Protocol (World Business Council for Sustainable Development, World Resources Institute, 2004). The boundary follows the operational control model and includes the aspects of RRBC's supply chain that they have influence over. GHG emissions from the organisation have been included and reported on where activity data was captured and recorded.

The business is deemed to have operational control over its brewery and TapHouse facilities.

Emissions associated with the operation of the family farm other than brewery operations are not included in the emissions boundary.

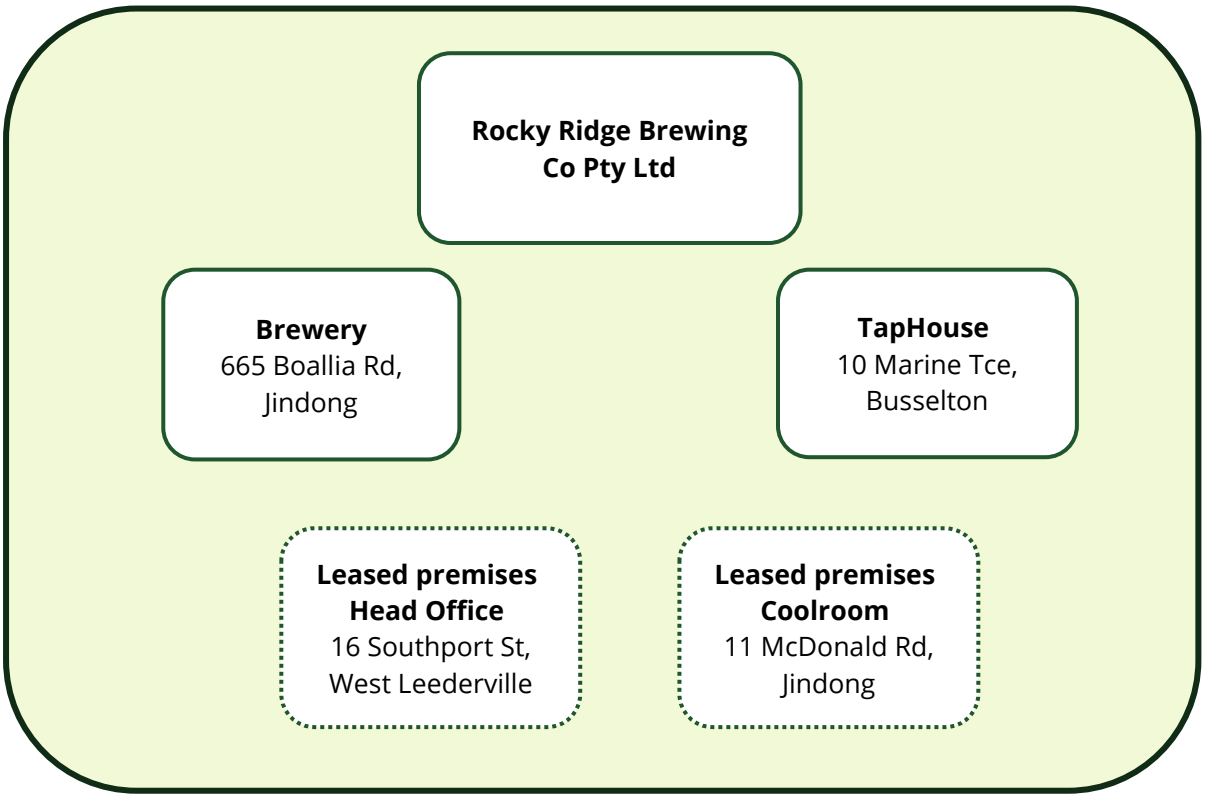

Figure 3 Organisational boundary of RRBC FY21 carbon footprint report

Emissions Scope

The seven key greenhouse gas sources recognised by the IPCC have been considered in this assessment, and include:

+ Carbon dioxide (CO_2),
+ Methane (CH_4),
+ Nitrous oxide (N_20),
+ Hydrofluorocarbons (HFCs),
+ Perfluorocarbons (PFCs),
+ Sulphur hexafluoride (SF_6) and,
+ Nitrogen trifluoride (NF_3)

All different sources are included and reported on as units of carbon dioxide equivalents (CO_2-e). This provides the ability to compare various greenhouse gasses as a single unit.

Classification Method

The GHG Protocol categorises GHG emissions into three 'scopes' (Figure 4).

Scope 1

Direct GHG emissions from operations owned or controlled by the reporting company (e.g. emissions from fuel consumed by equipment and vehicles, on-site wastewater emissions, CO_2 use in the brewery and composting).

Scope 2

Indirect emissions from the generation of purchased electricity or steam consumed by RRBC (e.g. indirect emissions from electricity consumption from the grid for TapHouse).

Scope 3

Other indirect emissions (not included in Scope 2) that occur in the value chain of RRBC.

Activities included in this GHG emissions inventory are shown in **Error! Reference source not found.**.

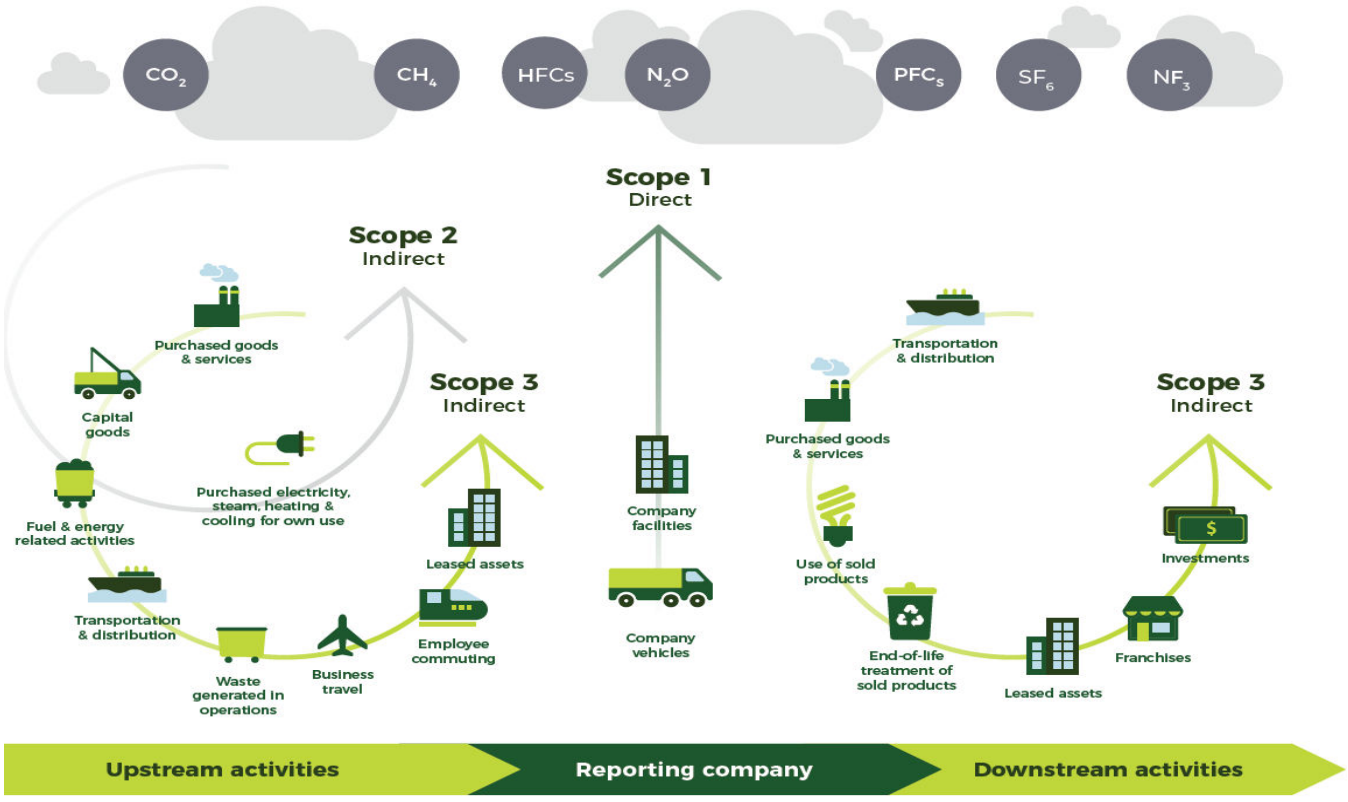

Figure 4 Diagram of scope by source

Emission Boundary

Figure 5 Activities included in RRBC's FY21 emissions inventory

	Quantified	Non-quantified	Excluded
Scope 1	Stationary fuel consumption		
	Fleet fuel consumption		
	Fugitive and Process emissions		Refrigerant leaks (N/A)
Scope 2	Electricity use		Imported steam (N/A)
Scope 3	Purchased goods and services	Waste treatment (sent for recycling)	Capital goods
	Indirect fuel and energy use	Processing of sold products	Downstream leased assets
	Incoming freight	Use of sold products	Franchises
	Waste generated in operations	End-of-life treatment of sold products	Investments
	Business travel		
	Upstream leased assets		
	Employee commuting		
	Outgoing freight		

Methodology, Data Sources & Assumptions

Except where otherwise stated, scope 1 and 2 emissions have been calculated using the methodology and emission factors presented by the Australian Government's Australian National Greenhouse Accounts (NGA) Factors.

Scope 3 emissions are often more complicated to quantify due to their varied and indirect nature. For scope 3 emissions, a variety of sources have been used, with methodologies following the guidance of the GHG Protocol Corporate Value Chain (Scope 3) Standard.

Calculation methodologies specific to each emission category are referenced in the corresponding category sections in this report. The most common calculation methodologies include the Supplier-Specific Method, Hybrid Method, Average-Product Method and Average-Spend Method.

Sources include the UK government's GHG Conversion Factors for Company Reporting 2021, the University of Melbourne's Environmental Performance in Construction (EPiC) database, Australian Bureau of Statistics and Bureau of Meteorology.

Where the Economic Input-Output methodology was used, Carbon Neutral considered inflation and used the Reserve Bank of Australia's inflation calculator (Reserve Bank of Australia, 2021).

All energy and activity data provided by RRBC is taken to be complete and accurate. Carbon Neutral did not independently verify the completeness or accuracy of this data.

Data Collection & Quality

Business activities outlined under the GHG Protocol Standard are reported against where relevant and where suitable activity data and emission factors are available.

Carbon Neutral endeavours to ensure that reliable and accurate data is used. All assumptions are outlined where appropriate.

The following process was followed:

1. Carbon Neutral provided RRBC with a list of data required to gather information about potential GHG emission activity sources.
2. RRBC provided Carbon Neutral with data relating to GHG emitting activities.
3. Carbon Neutral reviewed the supplied activity data.
4. Carbon Neutral sought clarification of activity data where necessary and provided advice and guidance to staff as required to ensure that the most complete, accurate and robust data sources were used where available.
5. Carbon Neutral applied suitable methodologies and emission factors to the supplied activity data to determine the organisational GHG emissions of RRBC for the reporting period.
6. Carbon Neutral calculated the GHG emissions of RRBC in accordance with the GHG Protocol Standard and AS ISO 14064.1 – 2018 Greenhouse gases Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.
7. Carbon Neutral prepared this Organisational Greenhouse Gas Emissions Inventory (Carbon Footprint) Report for RRBC for the reporting period 1 July 2020 to 30 June 2021 (FY21).

The veracity of the data provided by RRBC is taken to be complete and accurate and has not been audited or independently verified.

A site visit of the locations was not conducted as part of this assessment.

Carbon Neutral acknowledges the assistance of Mel Holland, RRBC Co-Founder and Director for the provision of activity data and information relating to this report.

Total Emissions Summary

The total GHG emissions for RRBC for the Financial Year 2020/21 period have been estimated at **727.4 t CO_2-e**.

A breakdown of GHG emissions by scope is presented below in Table 1 and Figure 6.

Table 1 Total GHG emissions

GHG emissions scope	Emissions (t CO_2-e)	Percentage
Scope 1 Emissions	270.8	37.3%
Scope 2 Emissions	22.0	3.0%
Scope 3 Emissions	434.6	59.7%
Total Emissions	727.4	100%

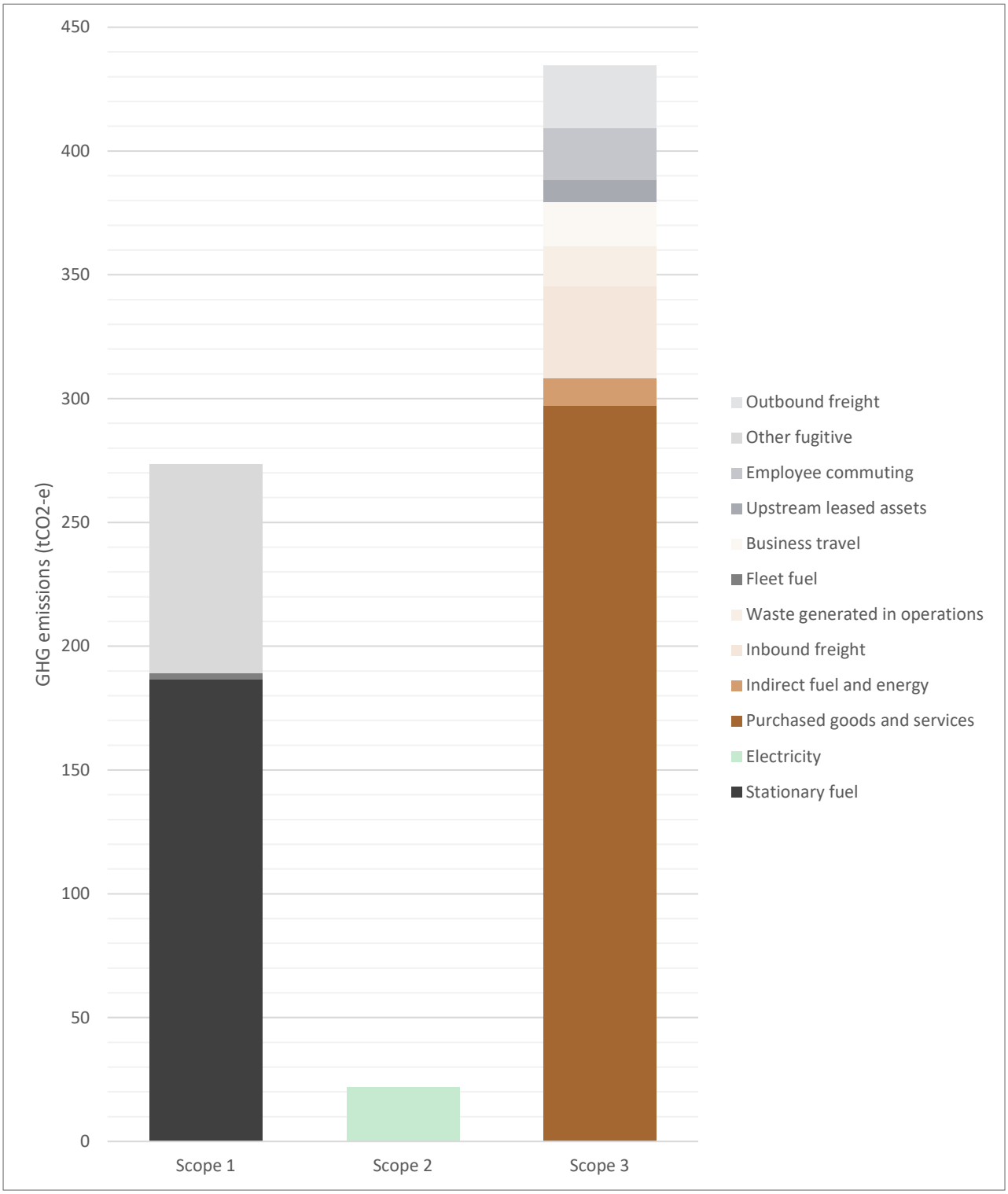

Figure 6 FY21 GHG emissions by scope for RRBC

Scope 1 Emissions

Scope 1 GHG emissions are released directly from sources that are controlled or operated by RRBC.

Scope 1 emissions for RRBC were estimated at **270.8 t CO_2-e.**

Table 2 Scope 1 emissions summary

Scope 1 activity	Emissions (t CO2-e)	Percentage
Fuel Consumption (Stationary)	184.2	68.0%
Wastewater treatment	71.7	26.5%
CO_2 use	12.3	4.6%
Fuel Consumption (Fleet)	2.4	0.9%
Compost	0.1	<0.1%
Total Emissions Scope 1	**270.8**	**100%**

Fuel consumption (Stationary)

Diesel and LPG used in stationary equipment in the brewery.

Carbon Neutral used 2021 NGA emission factors (Appendix 1) to estimate total stationary fuel consumption emissions for RRBC at **184.2 t CO_2-e.**

Fuel consumption (Fleet)

Petrol used in company owned vehicles.

Carbon Neutral used 2021 NGA emission factors (Appendix 2) to estimate total fleet fuel consumption emissions for RRBC at **2.4 t CO_2-e**

Wastewater treatment

Wastewater generated from brewery operations and disposed of on site.

N.B. An incorrect COD allowance of 1.5kg/t wastewater was applied in the initial FY2020 benchmark year. This has been corrected and adjusted from 10.4 t CO_2-e to 41.6 t CO_2-e and emissions intensities for the baseline year adjusted accordingly.

Carbon Neutral used 2021 NGA emission factors (Appendix 3) to estimate total on-site wastewater emissions for RRBC at **71.7 t CO_2-e**

CO_2 use

CO_2 used in the brewery. This activity excludes CO_2 emissions associated with fermentation of the beer.

Carbon Neutral used the total volume of CO_2 delivered to estimate direct emissions for RRBC at **12.3 t CO_2-e.**

Composting

Composting of spent yeast, fruit and hops from brewery operations.

2021 NGA emission factors (Appendix 4) to estimate total composting emissions for RRBC at **0.08 t CO_2-e**

Data source	References
Fuel consumption (Stationary) Monthly Sales Report - Geographe Petroleum LPG Usage Report	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 3: Fuel combustion emission factors – liquid fuels including certain petroleum based products for stationary energy purposes
Fuel consumption (Transport) Monthly Sales Report - Geographe Petroleum	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 4: Fuel combustion emission factors – fuels used for transport energy purposes
Wastewater treatment Mel Holland	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Section 4.4 Wastewater handling (Industrial) – wastewater treatment - Table 31: Default industrial wastewater treatment parameters by commodity type
CO_2 use Air Liquid e-mail.	Direct emissions based on volume of CO_2 delivered.
Composting Mel Holland	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Section 4.2 - Biological treatment of solid waste at the landfill – composting and anaerobic digestion

Scope 2 Emissions

Scope 2 emissions are indirect GHG emissions associated with imported electricity use.

Scope 2 emissions are relevant for the TapHouse/Cellar door.

No imported electricity is used at the brewery which is powered by a solar PV and battery backup system.

Emissions from electricity use at the leased head office and part of a coolroom facility are reported as scope 3 emissions under Category 8 Upstream Leased Assets.

The GHG indirect emissions from electricity use for RRBC were estimated at **22.0 t CO_2-e** for FY21.

Table 3 Scope 2 emissions summary

GHG emissions – Scope 2	Emissions (t CO_2-e)	kWh
Electricity use	22.0	32,832
Steam, heat or cooling as a service	Not applicable	-
Total emissions Scope 2	**22.0**	**32,832**

Electricity use

Imported electricity used in facilities controlled by the organisation.

Carbon Neutral used 2021 NGA emission factors (Appendix 5) to estimate imported electricity emissions for RRBC at **22.0 t CO_2-e**

Data sources	References
Electricity use Synergy invoices	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 46: Scope 2 and 3 emissions factors – consumption of purchased electricity by end users

Scope 3 Emissions

The GHG protocol (GHG Protocol, Carbon Trust & WRI, 2013) identifies Scope 3 emissions as upstream and downstream emissions, based on the financial transactions of the reporting company.

+ **Upstream emissions** are indirect GHG emissions related to purchased or acquired goods and services.
+ **Downstream emissions** are indirect GHG emissions related to sold goods and services.

The GHG Protocol Scope 3 Standard further divides Scope 3 emissions into fifteen distinct categories. Scope 3 emissions inventory calculations are presented according to these categories. Where it enhances relevance and transparency – or where particular emissions sources are deemed critical by RRBC – Carbon Neutral further disaggregated this data.

Guidance on the inclusion of Scope 3 emission sources is further provided by Corporate Value Chain Accounting and Reporting Standard (World Resources Institute; World Business Council for Sustainable Development, 2011)

The indirect emissions of all Scope 3 categories were estimated at **434.6 t CO_2-e** for FY21.

The most significant contribution to Scope 3 emissions in RRBC value chain came from Purchased Goods and Services.

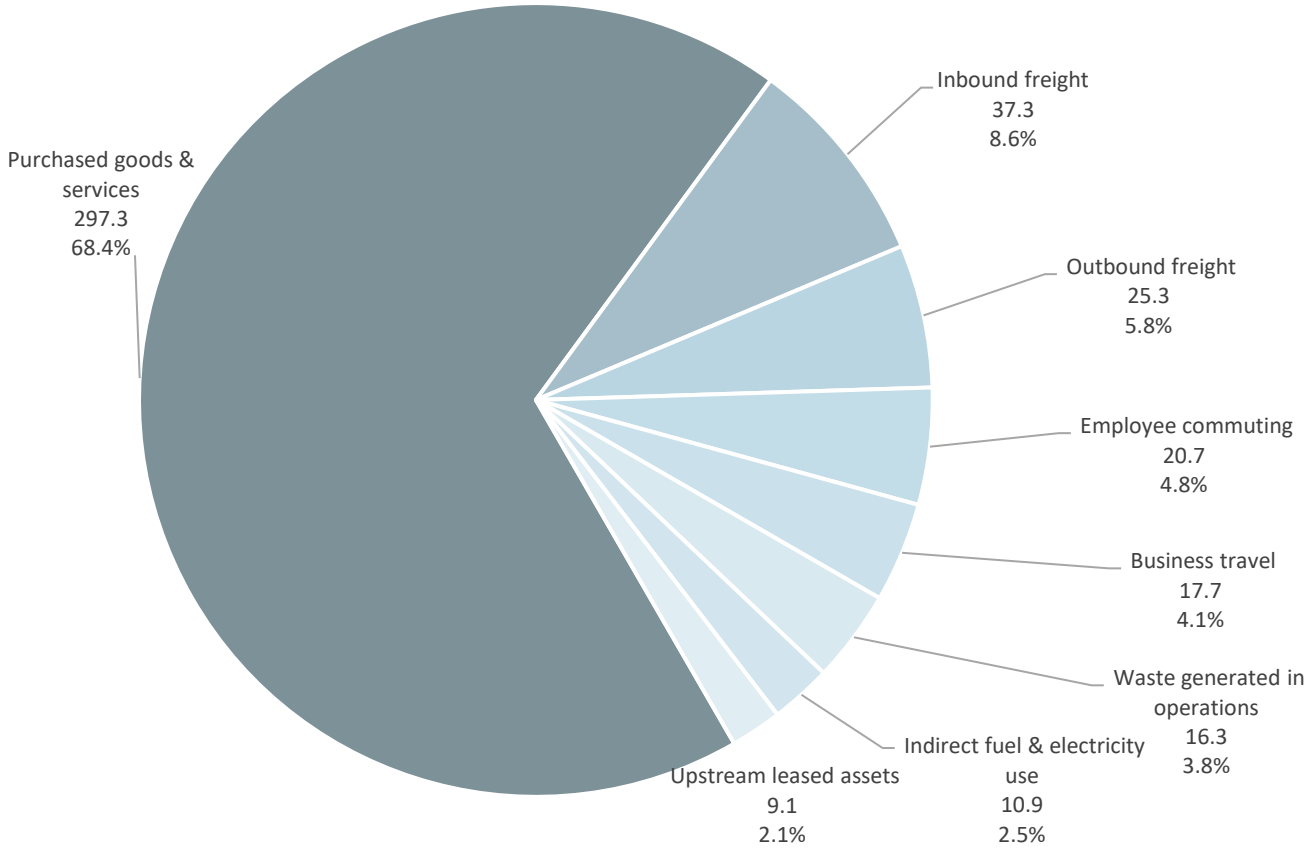

Figure 7 FY21 Scope 3 emissions by activity for RRBC (t CO_2-e; % of scope 3)

Scope 3 Emissions Summary

Table 4 Scope 3 emissions

Scope 3 GHG emissions category		Emissions (t CO_2-e)	Share of scope 3 total (%)
	Upstream emissions		
1	Purchased goods and services	297.3	68.6%
2	Capital goods	Not applicable	-
3	Indirect fuel and energy use	10.9	2.5%
4	Inbound freight	37.3	8.6%
5	Waste generated in operations	16.3	3.8%
6	Business travel	17.7	4.1%
7	Employee commuting	20.7	4.8%
8	Upstream leased assets	9.1	2.1%
	Downstream emissions		
9	Outbound freight	25.3	5.8%
10	Processing of sold products	Non-quantified	-
11	Use of sold products	Non-quantified	-
12	End-of-life treatment of sold products	Non-quantified	-
13	Downstream leased assets	Not applicable	-
14	Franchises	Not applicable	-
15	Investments	Not applicable	-
	Total emissions Scope 3	**434.6**	**100%**

Scope 3 Standard Emissions Categories

	Category 1: Purchased goods and services
Category description	Upstream (i.e., cradle-to-gate) GHG emissions from the production of products purchased or acquired by RRBC in FY21. This includes both goods (tangible products) and services (intangible products).

	Cost / Weight / Usage	Emissions (t CO_2-e)	Percentage
Cans and ends	23,126 kg	117.0	39.4%
Textiles	$67,991.40	64.9	21.8%
Cartons	47,366 kg	34.0	11.4%
Paper products	$35,745.70	20.0	6.7%
Other food products	$12,476.20	8.1	2.7%
Polymer Products	$15,142.01	8.0	2.7%
Glass products	$12,935.25	7.5	2.5%
Cleaning products	$16,807.45	7.1	2.4%
Chemicals	$5,281.45	5.8	2.0%
Other manufactured products	$10,044.90	4.5	1.5%
Labels	1,509 kg	3.7	1.3%
Wine	$8,833.39	3.7	1.2%
Beer	$5,120.00	3.3	1.1%
CO_2 production	12.325 t	3.4	1.1%
Printing	$4,416.14	1.7	0.6%
Water use	2.91 kL	1.6	0.5%
Fabricated metal products	$1,094.44	0.6	0.2%
Concrete products	$650.00	0.6	0.2%
Specialised machinery	$1,691.00	0.5	0.2%
Pallets	1,230 kg	0.4	0.1%
Wood products	$498.64	0.2	0.1%
Keg caps	63 kg	0.2	0.1%
Office paper	65 kg	0.2	0.1%
Grains	$72.00	0.2	0.1%
Total		**297.3**	**100 %**

Calculation boundary

This category covers emissions embodied within products and purchased by the business.

Materials used for packaging, beer inputs, equipment and consumable purchases were included.

Calculation methodology

A variety of methods was used to determine emissions from Purchased Goods and Services depending on the availability of data.

The 'spend-based' method was used to calculate these emissions, with industry-average emission factors applied, based on the economic value of the goods and services.

Copies of invoices and supplier spreadsheets were used to obtain expenditure on various goods and services during the reporting period.

The relevant economic sector emission factors from the EPiC database (Crawford, 2020) were then applied to calculate the overall emissions estimate for this category (Appendix 6).

Emission factors associated with the use of water and disposal of sewage (Appendix 7) are obtained from the Australian Bureau of Meteorology Department and data frp, the most recent National Performance Report 2019/20: Urban Water Utilities Dataset has been used (BoM, 2021).

Emissions associated with packaging materials (Appendix 8) are determined using the weight of input materials. Emission factors are obtained from the UK Government's 2021 conversion factors for company reporting (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021).

Emissions associated with office paper use (Appendix 9) are estimated using information obtained from Australian Paper (Paper Australia Pty Ltd, 2021) and Indufor (Indufor, 2016).

Emissions arising from the production of CO_2 are determined by applying a liquefication factor of 400kWh/t of liquid CO_2 produced (Kerry, 2007) and applying the electricity grid emission factor for the SWIS, Western Australia (Appendix 5).

Data sources	References
Packaging C & C Plastics email Ororo Cans spreadsheet VISY Packaging Customer Sales Report	UK Government Conversion Factors for Company Reporting (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021). - Material use
Packaging MCC Can Labels spreadsheet Pricemark Sales register extract **Office paper** Mel Holland	Climate Active Public Disclosure Statement (Paper Australia Pty Ltd, 2021) & Emissions differentials: Recycled paper: A comparison of greenhouse gas emissions associated with locally made and imported paper product (Indufor, 2016)
Other purchased goods & services Down South Wholesale sales report Busselton Agricultural Services - Debtor Purchase History Magnum Flavouring orders report SWAT screenshot Winequip Grandstand e-mail (share) Mosman Glass Printing invoices Juiceprint invoices	Database Environmental Performance in Construction (EPiC). (Crawford, 2020)

Data sources	References
Cont'd The Fabric Printer spreadsheet LS Merchants invoice summary Margaret River Brewhouse sales extract Swings & Roundabouts sales extract Southwest Provisions sales extract	
CO_2 production Air Liquide invoices	Industrial Gas Handbook: Gas Separation and Purification (Kerry, 2007) NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 46: Scope 2 and 3 emissions factors – consumption of purchased electricity by end users
Water use Busselton Water Summary (supply)	National Performance Report; Urban Water Utilities Part B_The_complete_dataset_2020–21 (BoM, 2021)

Category 2: Capital goods			
Category description	GHG emissions generated upstream of RRBC operations associated with the extraction, production and transportation of capital goods purchased or acquired.		
		Emissions (t CO_2-e)	**Excluded**

Not Applicable

Purchases of capital equipment such as electric pumps and tanks have been included under Category 1 Purchased goods and services.

Category 3: Indirect fuel and energy use	
Category description	Indirect GHG emissions from extraction, production, and transportation of fuels consumed in the generation of electricity, steam, heating, and cooling. It also includes indirect emissions from the transmission and/or distribution of those resources.

Fuel	Consumption	Emissions (t CO_2-e)	Percentage
Equipment diesel	24,852 L	3.5	31.8%
Transport petrol	1,039 L	0.1	1.2%
Equipment LPG	75,045 L	6.9	64.0%
Electricity			
TapHouse	32,832 kWh	0.3	3.0%
	Total	**10.9**	**100 %**

Calculation boundary

All fuel consumption (operations of stationary machinery and fleet) and grid purchased electricity was included in this category's emission calculation.

This includes diesel, petrol and LPG.

Calculation methodology

Carbon Neutral used the average-data method to calculate emissions from this category, which involves estimating emissions using secondary (e.g., industry average) emissions factors for upstream emissions per unit of consumption.

Carbon Neutral used 2021 NGA emission factors (Appendix 10) to estimate indirect fuel and energy emissions for RRBC at **10.9 t CO_2-e.**

Data sources	References
Fuel consumption (Stationary) Monthly Sales Report - Geographe Petroleum LPG Usage Report	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 45: Scope 3 emission factors – liquid fuels including certain petroleum based products
Fuel consumption (Transport) Monthly Sales Report - Geographe Petroleum	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 45: Scope 3 emission factors – liquid fuels including certain petroleum based products
Electricity use Synergy invoices	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 46: Scope 2 and 3 emissions factors – consumption of purchased electricity by end users

Category 4: Incoming freight	
Category description	GHG emissions from the transportation and distribution of products purchased by the reporting company in the reporting year between the company's suppliers and its operations.

Service Provider	Tonne.km	Emissions (t CO_2-e)	Percentage
Bintani			
- Road	118,306	15.8	42.3%
- Shipping	312,328	5.1	13.6%
Leeuwin Transport	97,981	13.1	35.0%
KONVOY	5,613	0.7	2.0%
VISY	11,177	1.5	4.0%
Ororo Cans	5,319	0.7	1.9%
CC Plastics	258	0.0	0.1%
MCC Labels	360	0.0	0.1%
Pricemark	446	0.1	0.2%
Air Liquide	2,958	0.3	0.8%
	Total	**37.3**	**100 %**

Calculation boundary

This category includes emissions from transportation and distribution of products purchased by RRBC, between their tier 1 suppliers and its operations (in vehicles and facilities not owned or controlled by RRBC).

All incoming freight was included.

Calculation Methodology

Carbon Neutral used (where applicable) the weight and distance-based method to calculate emissions from this category (Appendix 11). This involved determining the weight, distance, and transport method of each shipment; then applying the appropriate mass-distance emission factor for the vehicle using DBEIS (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021).

Where locations are provided, road distances have been obtained from Google Maps (Google Maps, n.d.). Shipping distances are obtained from the Searates shipping website (DP World, n.d.)

Total emissions of category 9 were calculated at **37.3 t CO_2-e**.

Category 5: Waste generated in operations			
Category description	GHG emissions associated with waste treatment in facilities owned or operated by third parties.		
Facility	**Weight / Volume**	**Emissions (t CO_2-e)**	**Percentage**
Brewery general waste	6.3 t	8.2	50.2%
TapHouse general waste	3.0 t	3.9	23.8%
TapHouse wastewater	1,942 kL	4.3	26.0%
Head Office	Negligible	immaterial	-
	Total	**16.3**	**100 %**

Calculation boundary

This category included all emissions that resulted from waste generated in FY21 for RRBC.

On-site wastewater treatment emissions are reported as scope 1 emissions under Other Fugitive Processes.

Calculation methodology

The volume and weight of waste materials sent to landfill from the brewery was provided by Suez.

Carbon Neutral used, where applicable, the weight or volume of waste generated from operations to calculate emissions from this category. Emission factors are obtained from the NGA Factors (Australian Government, Department of the Environment and Energy, 2021)and the National Performance Report for Urban Water Utilities (BoM, 2021) (Appendix 12).

The volume of waste sent to landfill from the TapHouse was estimated based on the weekly service of two x 240 L mobile garbage bins.

Materials separated and sent for recycling or re-use are excluded from the emissions inventory.

Total emissions of category 5 were calculated at **16.3 t CO_2-e**.

Data sources	References
General Waste Commercial & industrial	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 49: Waste emission factors for total waste disposed to landfill by broad waste stream category
Wastewater Busselton Water Summary (supply)	National Performance Report; Urban Water Utilities Part B_The_complete_dataset_2020–21 (BoM, 2021)

Category 6: Business travel	
Category description	GHG emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars.

Staff name	Distance (km)	Emissions (t CO_2-e)	Percentage
Ricky	12,500	1.2	6.7%
Mini	18,240	4.2	23.6%
Liam	16,320	5.6	31.5%
Jason	12,000	2.1	11.6%
Steele	15,466	3.8	21.3%
Ross	400	0.1	0.5%
TJ	1,225	0.3	1.4%
Hannah	250	0.0	0.2%
Hamish (Flight)	3,354	0.6	3.2%
	Total	**17.7**	**100 %**

Calculation boundary

This category included all emissions that resulted from business related travel in FY21 for RRBC.

This includes road as well as air travel by staff for business related purposes.

Calculation methodology

Details of work-related travel including vehicles used were obtained by staff survey and an estimate made of fuel consumed for these trips.

Emissions from private vehicle use are determined using 2021 NGA Factors (Australian Government, Department of the Environment and Energy, 2021) based on estimated fuel consumption (Appendix 2).

Emissions from flights are determined using 2021 DBEIS Factors (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021) (Appendix 13).

Total emissions of category 6 were calculated at **17.7 t CO_2-e.**

Data sources	References
Business related travel Staff survey	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 4: Fuel combustion emission factors – fuels used for transport energy purposes - Table 45: Scope 3 emission factors – liquid fuels including certain petroleum based products UK Government Conversion Factors for Company Reporting (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021). - Business Travel – Air. Includes an allowance for Radiative Forcing Index (x1.9) and Well to Tank (WTT) emissions.

Category 7: Employee commuting	
Category description	GHG emissions from the transportation of employees between their homes and their worksites. Emissions from employee commuting may arise from private vehicle travel, bus travel, rail travel and/or air travel.

Staff name	Commute (km)	Emissions (t CO_2-e)	Percentage
Ross	8,100	1.6	7.8%
Ricky	9,153	0.7	3.2%
Mini	5,760	1.3	6.2%
Liam	7,680	2.6	12.7%
Jason	8,300	1.4	6.8%
Steele	6,145	1.5	7.4%
Ash	3,840	0.7	3.2%
Adam	8,208	1.4	6.8%
Sean	2,400	0.7	3.2%
Mitch B	1,440	0.4	1.9%
Mitch D	1,840	0.6	3.0%
Drew	2,800	1.0	4.8%
Mike	2,304	0.4	1.9%
TJ	4,230	0.9	4.2%
Hannah	9,750	1.5	7.3%
Waverley	5,700	1.4	6.7%
Ben	11,600	2.7	12.8%
	Total	**20.7**	**100 %**

Calculation boundary

Calculation for emissions of employee commuting arise from the commute from home to work and return.

Emissions from transportation in vehicles owned or controlled by RRBC are already accounted for in Scope 1 Emissions, Fuel consumption (fleet).

Emissions from staff working from home during FY21 were immaterial and are not included.

Calculation methodology

Staff surveys were conducted to obtain details of the mode of transport to and from work and details of vehicles or public transport used.

Carbon Neutral used a combination of the distance-based method for public transport and the fuel-based method, to determine fuel consumption for commuting in private vehicles and applied the appropriate EF for all travel data.

Emissions from public transport use are determined using 2021 DBEIS Factors (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021) (Appendix 14).

Emissions from private vehicle use are determined using 2021 NGA Factors (Australian Government, Department of the Environment and Energy, 2021) based on estimated fuel consumption (Appendix 2).

Total emissions of category 7 were calculated at **20.7 t CO_2-e.**

Data sources	References
Staff commuting Staff survey	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 4: Fuel combustion emission factors – fuels used for transport energy purposes - Table 45: Scope 3 emission factors – liquid fuels including certain petroleum based products - UK Government Conversion Factors for Company Reporting (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021). - Business Travel – Land – includes WTT emissions

Category 8: Upstream leased assets	
Category description	GHG emissions from the operation of assets that are leased by RRBC. This category is applicable only to companies that operate leased assets (i.e., lessees).

	kWh	Emissions (t CO_2-e)	Percentage
Coolroom hire	12,500 kWh	8.6	95.0%
Head office (shared facility)	654 kWh	0.5	5.0%
		9.1	**100 %**

Calculation boundary

This category included facilities used by RRBC that are not deemed to be under the operational control of the business and includes the energy used in:

- A cool room facility (part) that was used for four months of the reporting period; and
- Its head offices (shared space) in West Leederville.

Calculation methodology

Metered electricity consumption was not available for these facilities, parts of which are leased by the business during the reporting period.

Emissions factors are obtained from the DoEE (Australian Government, Department of the Environment and Energy, 2021) (Appendix 5).

RRBC's share of energy consumption has been estimated at:

- Cool room facility – 12,500 kWh based on four months used in July to October 2021
- Head office – 654 kWh based on equipment use provisions. This office was used sporadically by sales-based staff.

Total emissions of category 8 were calculated at **9.1 t CO_2-e**.

Data sources	References
Electricity consumption (coolroom) Mel and Hamish Holland based on share of annual use for the period used. **Electricity consumption (head office)** Estimated based on equipment (lighting, limited heating and air conditioning and share (10%) of kitchen and ablution energy use.	NGA Factors 2021 (Australian Government, Department of the Environment and Energy, 2021) - Table 46: Scope 2 and 3 emissions factors – consumption of purchased electricity by end users

Category 9: Outbound freight	
Category description	GHG emissions that occurred from transportation and distribution of sold products in vehicles not owned or controlled by RRBC.

Service Provider	Tonne.km	Emissions (t CO_2-e)	Percentage
Craft Transport	129,427 t.km	18.1	71.4%
Leeuwin Transport	33,249 t.km	4.4	17.5%
Shipping (export)	Not provided	1.4	5.6%
Australia Post	7,268 t.km	1.4	5.5%
		25.3	**100 %**

Calculation boundary

This category includes emissions from transportation and distribution of products sold by RRBC (in vehicles not owned or controlled by RRBC).

All outgoing freight was included.

Calculation Methodology

Carbon Neutral used (where applicable) the weight and distance-based method to calculate emissions from this category (Appendix 15). This involved determining the weight, distance, and transport method of each shipment; then applying the appropriate mass-distance emission factor for the vehicle using DBEIS (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021).

For the export shipment, emissions from the freighting of this material were provided by the service provider.

Total emissions of category 9 were calculated at **25.3 t CO_2-e**.

Data sources	References
Outbound road freight Leeuwin Transport spreadsheet Craft Transport spreadsheet Australia Post spreadsheet **Outbound shipping freight** Export report screenshot **Outbound ferry freight** Australia Post spreadsheet **Outbound Air freight** Australia Post spreadsheet	UK Government Conversion Factors for Company Reporting (UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021). - Freighting Goods – Includes WTT emissions. - Emissions from shipping have been provided by the service provider and is based on shipping an unknown weight of product from Fremantle to Singapore (4,231 km). This estimate of emissions has not been validated by Carbon Neutral.

Non-quantified

Category 10: Processing of sold products	
Category description	GHG emissions from the processing of sold intermediate products by third parties (e.g., manufacturers). Intermediate products are products that require further processing, transformation, or inclusion in another product before and therefore result in emissions from processing after sale and before use by the end consumer.

Emissions (t CO_2-e)	Non-quantified

RRBC's main operation consists of producing beer for consumption. This is generally consumed and not subject to further processing.

No allowances have been made for emissions associated with using the beer as an input material for another product. These emissions are considered immaterial and not included in the emissions inventory.

Non-quantified

Category 11: Use of sold products	
Category description	GHG emissions from the downstream use of goods sold by RRBC in FY21. RRBC scope 3 emissions from the use of sold products include the scope 1 and scope 2 emissions of end users. End users include both consumers and business customers that use final products.

Emissions (t CO_2-e)	Non-quantified

No allowances have been made for emissions associated with displaying the beer for sale, transporting of the beer after retail purchase or chilling the beer prior to consumption. These emissions would be difficult to accurately quantify and are considered immaterial and not included in the emissions inventory.

Category 12: End-of-Life treatment of sold products	
Category description	GHG emissions from the waste disposal and treatment of products sold by RRBC at the end of the product's life.

Emissions (t CO_2-e)	Non-quantified

Non-quantified

No allowances have been made for emissions associated with disposal of packaging materials (e.g. cardboard, aluminium, plastic ends etc). Cardboard and paper-based packaging is generally recyclable and no emissions are emitted by inert materials such as aluminium and plastic sent to landfill.

Similarly, any emissions associated with washing equipment or premises used to serve the beer are not included in the emissions inventory.

Category 13: Downstream leased assets			
Category description	GHG emissions from the operation of assets that are owned by the reporting company (acting as lessor) and leased to other entities in the reporting year that are not already included in scope 1 or scope 2.		
		Emissions (t CO_2-e)	**Not Applicable**

Not Applicable

RRBC does not operate or own any downstream leased assets. Therefore, this category is not applicable for the organisation.

Category 14: Franchises			
Category description	GHG emissions from the operation of franchises not included in scope 1 or scope 2. A franchise is a business operating under a license to sell or distribute another company's goods or services within a certain location.		
		Emissions (t CO_2-e)	**Not Applicable**

Not Applicable

RRBC does not have any franchisees. Therefore, this category is not applicable for the organisation.

Category 15: Investments			
Category description	GHG emissions associated with RRBC's investments, not already included in scope 1 or scope 2.		
		Emissions (t CO_2-e)	**Not Applicable**

Not Applicable

RRBC has not disclosed any investments. Therefore, this category is deemed not applicable for the organisation.

Emissions Intensity

Emissions intensity expresses GHG impact per unit of physical activity or unit of economic output. These metrics allow for more meaningful comparison of emissions between years, operations and organisations.

The carbon intensity of an organisation's footprint can be calculated by dividing emissions by a relevant measure of activity.

RRBC's main operations consist of beer production. As such, an emissions intensity has been calculated per litre of beer produced for FY2021 operations. This is represented in # The *emissions for the FY20 period have been revised since the initial assessment conducted in 2021.*

Emissions Intensity	Volume of beer produced (litres)	GHG Emissions (t CO_2-e)	GHG Emissions Intensity (kg CO_2-e/L)
FY2020	424,000	465.4#	1.10
FY2021	730,000	727.4	1.0
Change from previous reporting period	**306,000 ↑**	**262.0 ↑**	**0.1 ↓**

Table 5. Additionally, Table 6 displays the emissions intensity of RRBC's operations per employee.

 # The emissions for the FY20 period have been revised since the initial assessment conducted in 2021.

Table 5 FY21 emissions intensity (per litre of beer produced).

Emissions Intensity FY21	FTE	GHG Emissions (t CO_2-e)	GHG Emissions Intensity (t CO_2-e/FTE)
FY2020	7	465.4	66.5
FY2021	18	727.4	40.1
Change from previous reporting period	**11 ↑**	**262.0 ↑**	**26.1 ↓**

Table 6 FY21 emissions intensity (FTE).

Historical GHG Emissions

Gross GHG emission have increased from 465.38 t CO_2-e in the baseline year (FY2020) to 727.4 t CO_2-e in FY2021.

This represents an increase of carbon emissions of 156% (262.0 t CO_2-e) over the year.

Table 7 and figure 8 show (excluding carbon neutral purchases) the change in emissions by activity over this period

Table 7 Historical GHG emissions by activity – FY2019 & FY2021

	GHG Emissions (t CO_2-e)		
Activity	**FY2020**	**FY2021**	**Change**
Scope 1 – Direct			
Stationary equipment fuel use	93.6	184.2	90.6
Transport fuel use	27.7	2.4	-25.3
Other fugitive emissions	52.3	84.2	31.9
Scope 2 – Indirect (electricity)	27.6	22.0	-5.6
Scope 3 – Indirect (other)			
1 – Purchased goods and services	64.5	297.3	232.8
2 – Capital goods	-	-	-
3 – Indirect fuel and energy use	9.3	10.9	1.6
4 – Inbound freight	136.6	37.3	-99.3
5 – Waste generated in operations	3.5	16.3	12.9
6 – Business travel	17.6	17.7	0.0
7 – Employee commuting	4.9	20.7	15.8
8 – Upstream leased assets	18.3	9.1	-9.2
9 – Outbound freight	9.5	25.3	14.5
10 – Processing of sold products	-	-	-
11 – Use of sold products	-	-	-
12 – End-of-life treatment of sold products	-	-	-
13 – Downstream leased assets	-	-	-
14 – Franchises	-	-	-
15 – Investments	-	-	-
Total	**465.4**	**727.4**	**262.0 ↑**

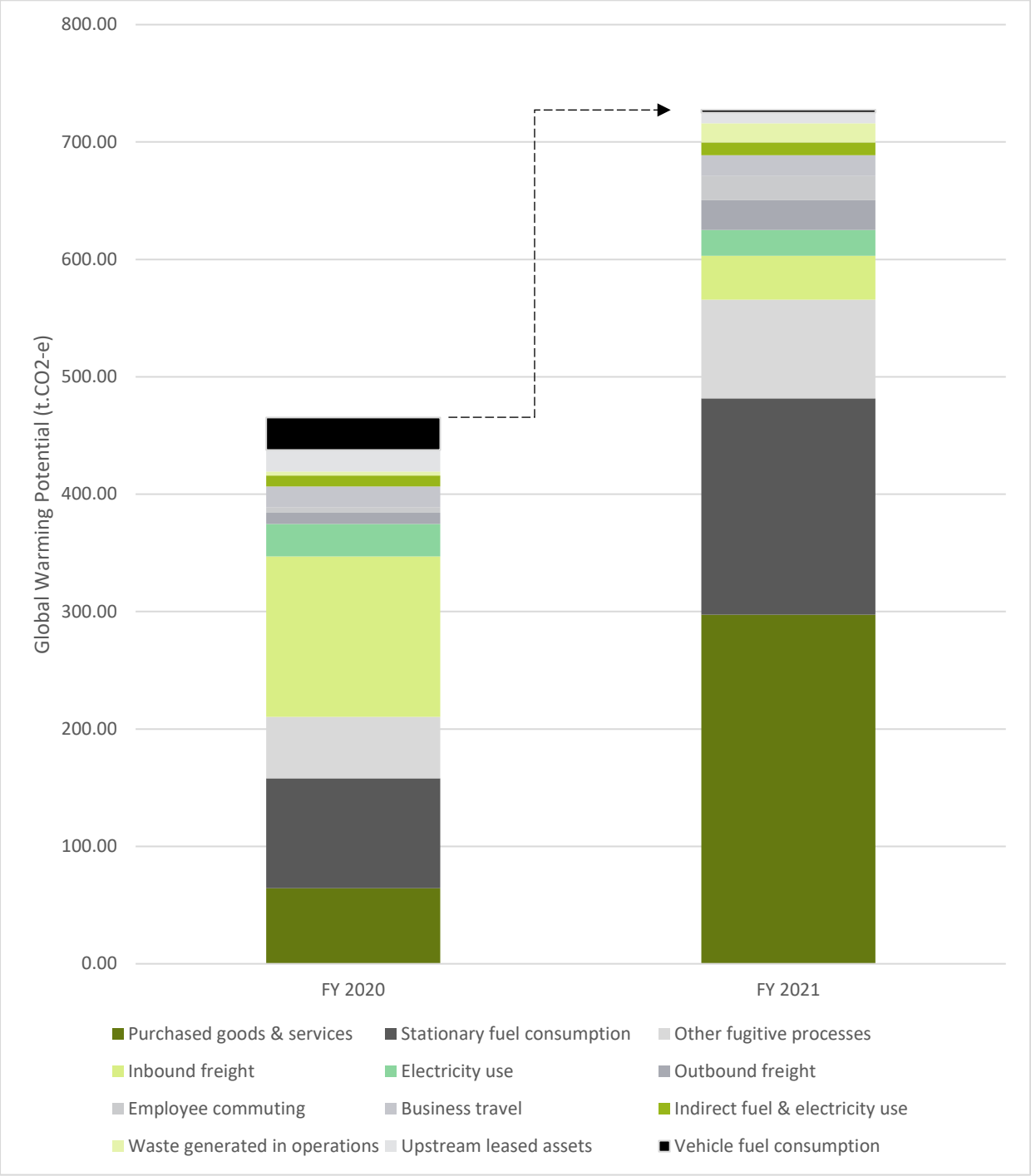

Figure 8 Historical GHG emissions by activity – FY2020 to FY2021

Carbon Reduction Opportunities

Given that approximately 68% of the RRBC's emissions are directly linked to purchased goods and services, carbon reduction strategies should consider utilising carbon neutral upstream and downstream supply chains.

The business has already implemented several measures which reduce their emissions. This includes:

- Using 100% off grid solar power for its brewery operations.
- Using rainwater and groundwater in its brewery operations.
- Utilising biopack (sugar cane) packaging holders for 4/6 packs (instead of plastic).
- Using cardboard packaging for cartons.
- Using aluminium packaging as opposed to glass to reduce the weight of materials transported.
- Composting spent grain and solid wastes from brewery operations for re-use in the farm.
- Reducing traditional water input to 4L/1L of beer produced, down from industry average of 6-10L water/1L of beer.
- Seeking input products from local sources where possible, with preference given to SW producers.
- Seeking to partner with supply chains that are also managing their carbon footprints.
- Recycling waste-paper and other materials after use where possible.

Carbon Neutrality

To claim organisational "carbon neutrality", RRBC should seek opportunities to reduce its avoidable GHG emissions as much as possible and offset the remaining emissions.

RRBC's organisational carbon footprint for FY2021 is estimated at **727.4 t CO_2-e**.

Carbon Neutral has retired **728 tonnes** of carbon offsets on behalf of RRBC to cancel the remainder of the organisation's unavoidable GHG emissions. This means that for two years running, the business has been operating as a **carbon neutral organisation**.

Table 8 Carbon offset details

Details	Serial numbers	t CO_2
FY21 GHG emissions		727.4
Carbon offsets		
Verified Carbon Standard – Verified Carbon Unit: Usak Wind Power Project, Turkey, Vintage 2015	8493-25269503-25270230-VCS-VCU-1590-VER-TR-1-1546-01012015-31122015-0 (Date retired: 9/5/2022)	728.0
Net GHG emissions FY21		**ZERO**

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Appendix 1

Scope 1 – Operations fuel consumption, emission factors

Table 9 Stationary equipment fuel use and emission factors

Fuel Combusted	Q (L)	EC (GJ/kL)	CO_2 EF (kg CO_2-e/GJ)	CH_4 EF (kg CO_2-e/GJ)	N_2O EF (kg CO_2-e/GJ)
Diesel oil	24,852	38.6	69.9	0.1	0.2
Liquefied petroleum gas	75,045	25.7	60.2	0.2	0.2

(Australian Government, Department of the Environment and Energy, 2021)

Appendix 2

Scope 1 – Fuel for vehicles emission factors

Table 10 Transport fuel use and emission factors

Fuel Combusted	Q (L)	EC (GJ/kL)	CO_2 EF (kg CO_2-e/GJ)	CH_4 EF (kg CO_2-e/GJ)	N_2O EF (kg CO_2-e/GJ)
Gasoline (other than for use as fuel in an aircraft) Post 2004 vehicle	1,039	34.2	67.4	0.02	0.2

(Australian Government, Department of the Environment and Energy, 2021)

Scope 3 – Category 7 Employee commuting emission factors

Table 11 DoEE emission factors for fuel used in staff commuting

Fuel Combusted	EC (GJ/kL)	CO_2 EF (kg CO_2-e/GJ)	CH_4 EF (kg CO_2-e/GJ)	N_2O EF (kg CO_2-e/GJ)	Scope 3 EF (kg CO_2-e/GJ)
Gasoline (other than for use as fuel in an aircraft) Post 2004 vehicle	34.2	67.4	0.02	0.2	3.6
Gasoline (other than for use as fuel in an aircraft) General transport	67.4	0.6	1.6	3.6	67.4
Diesel oil Post 2004 vehicle	38.6	69.9	0.01	0.5	3.6
Diesel oil General transport	38.6	69.9	0.1	0.4	3.6

Appendix 3

Scope 1 – On-site wastewater emission factors

Table 12 Wastewater generation on site and default wastewater emission factors

Default wastewater commodity type	Q (L)	$COD_{con,i}$
Beer (ANZSIC code 1212)	2,920,000	6.0

(Australian Government, Department of the Environment and Energy, 2021)

Appendix 4

Scope 1 – On-site composting emission factors

Table 13 Compost weight and emission factors

Biological treatment type	Wet weight (tonnes)	CH_4 EF (t CO_2-e/t waste)	N_4O EF (t CO_2-e/t waste)
Composting	4	0.021	0.025

(Australian Government, Department of the Environment and Energy, 2021)

Appendix 5

Scope 2 – State-based electricity use emission factors

Table 14 Purchased electricity use and emission factors

Facility	State or Territory	Q (kWh)	Scope 2 EF (kg CO_2-e /kWh)
TapHouse	Southwest Interconnected System (SWIS) in Western Australia	32,832	0.67
Brewery	On-site solar PV and battery	Not available	0.00

(Australian Government, Department of the Environment and Energy, 2021)

Scope 3 – Category 1 Purchased goods and services emission factors

Table 15 Purchased electricity use and emission factors

Product	State or Territory	Q (kWh)	Scope 2 & 3 EF (kg CO_2-e /kWh)
CO_2 production	Southwest Interconnected System (SWIS) in Western Australia	400 kWh/t CO_2 = 4,930 kWh (Kerry, 2007)	0.69

(Australian Government, Department of the Environment and Energy, 2021)

Scope 3 – Category 8 Upstream leased assets emission factors

Table 16 Purchased electricity use and emission factors

Facility	State or Territory	Q (kWh)	Scope 2 & 3 EF (kg CO_2-e /kWh)
Coolroom	Southwest Interconnected System (SWIS) in Western Australia	12,500 kWh	0.69
Head office	Southwest Interconnected System (SWIS) in Western Australia	654 kWh	0.69

(Australian Government, Department of the Environment and Energy, 2021)

Appendix 6

Emission factors by expense (EPiC)

Scope 3 – Category 1 Purchased goods and services emission factors

Table 17 EPiC emission factors and expenditure for Category 1 Purchased goods and services

EPiC Sector	Spend ($)	EPiC EF (kg CO_2-e/A$)
0 Sheep, Grains, Beef and Dairy Cattle	$72.00	0.15
21 Other Food Product Manufacturing	$12,476.20	8.09
23 Beer Manufacturing	$5,120.00	3.32
24 Wine, Spirits and Tobacco	$8,833.39	3.66
25 Textile Manufacturing	$67,991.40	64.93
32 Other Wood Product Manufacturing	$498.64	0.22
34 Paper Stationery and Other Converted Paper Product Manufacturing	$35,745.70	19.97
35 Printing (including the reproduction of recorded media)	$4,416.14	1.71
39 Basic Chemical Manufacturing	$5,303.95	5.83
40 Cleaning Compounds and Toiletry Preparation Manufacturing	$16,807.45	7.12
41 Polymer Product Manufacturing	$15,142.01	8.05
43 Glass and Glass Product Manufacturing	$12,935.25	7.46
46 Plaster and Concrete Product Manufacturing	$650.00	0.57
53 Other Fabricated Metal Product manufacturing	$1,125.44	0.62
61 Specialised and other Machinery and Equipment Manufacturing	$1,691.00	0.53
63 Other Manufactured Products	$10,044.90	4.52

(Crawford, 2020)

Appendix 7

Scope 3 – Category 1 Purchased goods and services emission factors

Table 18 BoM Water emission factors and consumption for Category 1 Purchased goods and services

Facility	Urban water	Water consumption (L)	EF (kg CO_2-e/kl)
TapHouse	Busselton Water	2,912	0.55

(BoM, 2021)

Appendix 8

Emission factors by weight (DBEIS)

Scope 3 – Category 1 Purchased goods and services emission factors

Table 19 DBEIS emission factors for Category 1 Purchased goods and services

Material type	Weight (kg)	EF (kg CO_2-e/t material)
Plastics: HDPE (incl. forming) - Primary Material Production	63	3,269.8
Metal: aluminium cans and foil (excl. forming) 50% primary metal / 50% closed loop sourced	23,126	5,061.0
Wood: Primary material production	1,230	312.6
Paper and board: board	47,366	718.5

(UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021)

Appendix 9

Scope 3 – Category 1 Purchased goods and services emission factors

Table 20 Office paper emission factors for category 1 Purchased goods and services

Paper type	Weight (kg)	EF (kg CO_2-e/kg paper)
Recycled domestic	65 (26 boxes)	2.44

(Paper Australia Pty Ltd, 2021), (Indufor, 2016)

Appendix 10

Scope 3 – Fuel for vehicles emission factors

Table 21 Transport fuel use and emission factors for category 3 Indirect fuel and energy use

Fuel or Energy Type	Q (L / kWh)	EC (GJ/kL)	Scope 3 EF (kg CO_2-e/GJ)
Gasoline (other than for use as fuel in an aircraft) Post 2004 vehicle	1,039 L	34.2	3.6
Diesel oil (stationary equipment use)	24,852 L	38.6	3.6
LPG (stationary equipment use)	75,045 L	25.7	3.6
Electricity (TapHouse)	32,832 kWh	N/A	4.0

(Australian Government, Department of the Environment and Energy, 2021)

Appendix 11

Scope 3 – Category 4 Incoming freight emission factors

Table 22 DBEIS emission factors for category 4 Incoming freight

Company	Freight type	Tonne.km	EF ($t CO_2$-e/t.km)
Bintani	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	118,306	0.1335
Bintani	Cargo ship: General cargo: Average: tonne.km – includes WTT	312,328	0.0162
Leeuwin Transport	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	97,981	0.1335
KONVOY	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	5,613	0.1335
VISY	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	11,177	0.1335
Ororo Cans	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	5,319	0.1335
CC Plastics	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	258	0.1335
MCC Labels	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	360	0.1335
Pricemark	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	446	0.1335
Air Liquide	HGV (all diesel): All artics: tonne.km: Average laden – includes WTT	2,958	0.1008

(UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021)

Appendix 12

Scope 3 – Category 5 Waste generated in operations emission factors

Table 23 Waste emission factors for Category 5 Waste generated in operations

Facility	Waste type	Q (litre / tonnes)	EF (kg CO_2-e/ML or t)
TapHouse	Wastewater	2,766,000 litres (based on 95% of supplied water)	1.53 t/ML
Brewery	Commercial & industrial	6.3 tonnes	1.3 t/t
TapHouse	Commercial & industrial	2.995 tonnes	1.3 t/t

(BoM, 2021), (Australian Government, Department of the Environment and Energy, 2021)

Appendix 13

Scope 3 – Category 6 Business travel emission factors

Table 24 DBEIS emission factors for air travel

Flight class	Haul	EF with RFI (kg CO_2-e/pkm)
Economy	Economy Short haul (785 - 3,700km)	0.16756

(UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021)

Appendix 14

Scope 3 – Category 7 Employee commuting emission factors

Table 25 DBEIS emission factors for public transport use

Transport type	EF with WTT (kg CO_2-e/p.km)
Light rail and tram – includes WTT	0.03279

(UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021)

Appendix 15

Scope 3 – Category 8 Outbound freight emission factors

Table 26 DBEIS emission factors for category 8 Outbound freight

Company	Freight type	Tonne.km	EF ($t CO_2$-e/t.km)
Export Shipping	Shipping	Estimated by provider	
Craft Transport	Vans: Average (up to 3.5 tonnes): tonne.km – includes WTT	1,327	0.7554
Craft Transport	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	128,100	0.1335
Leeuwin Transport	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	33,249	0.1335
Australia Post	HGV (all diesel): All HGVs: tonne.km: Average laden – includes WTT	6,969	0.1335
Australia Post	Cargo ship: RoRo-Ferry: Average: tonne.km – includes WTT	24	0.0633
Australia Post	Freight Flights: Short-haul: tonne.km: With RFI – includes WTT	103	2.55439
Australia Post	Freight Flights: Long-haul: tonne.km: With RFI – includes WTT	172	1.13047

(UK Government's Department for Business, Energy & Industrial Strategy, Department for Environment, Food & Rural Affairs, 2021)

Table 27 Allowances for weight and distances for category 8 Outbound freight

Details	Allowance
Weight per keg	60 kg
Weight per carton	7.5 kg
Weight per pallet	1,000 kg
Average weight per local delivery 'pallet'	225 kg
Jindong to Perth (unless otherwise stated in reports)	300 km
Average local delivery	10 km
Where the weight of Australia Post deliveries is not stated, an average weight has been applied.	6.5 kg
Where the destination of Australia Post deliveries is not stated, an average weight has been applied.	1,512 km

This is to certify that

Rocky Ridge Brewing

has achieved *carbon neutral* status in accordance with its estimated carbon footprint for FY2021 by permanently surrendering

728 tonnes of CO_2-e emissions

by investing in carbon offsets.

Thank you for choosing to make a difference to our planet and future generations by combating climate change.

Ray Wilson | Chief Executive Officer

Issue Date: 13 May 2022 | **Emissions Period:** 1 July 2020 - 30 June 2021

carbonneutral
Turn Emissions into Trees

Encouraging positive social, environmental and economic change with solutions that help overcome the effects of the climate crisis.