PUBLIC DISCLOSURE STATEMENT

ORIGIN ENERGY LIMITED
CARBON NEUTRAL SOLAR
PRODUCT CERTIFICATION
CY2022 TRUE UP

Australian Government

Climate Active
Public Disclosure Statement

An Australian Government Initiative

NAME OF CERTIFIED ENTITY	Origin Energy Limited
REPORTING PERIOD	1 January 2022 – 31 December 2022 True Up
DECLARATION	*To the best of my knowledge, the information provided in this public disclosure statement is true and correct and meets the requirements of the Climate Active Carbon Neutral Standard.*  James Magill Executive General Manager, Origin Zero Date 17.10.2023

Australian Government
Department of Climate Change, Energy, the Environment and Water

Version March 2023.

1. CERTIFICATION SUMMARY

TOTAL EMISSIONS OFFSET	0 tCO2-e
THE OFFSETS USED	20% ACCUs, 80% VCUs (Banked)
RENEWABLE ELECTRICITY	0%
CARBON ACCOUNT	Prepared by: Origin Energy Point Advisory prepared the initial certification
TECHNICAL ASSESSMENT	23 March 2022 Amélie Uhrig Point Advisory Next technical assessment due: 23 March 2025
THIRD PARTY VALIDATION	Type 3 22 March 2022 Tim Grant Lifecycles (Life Cycle Strategies Pty Ltd)

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2. CARBON NEUTRAL INFORMATION

Description of certification

This Public Disclosure Statement (PDS) relates to Origin Energy Limited (Origin)'s carbon neutral certification of a Solar PV product under Climate Active. This product is sold as "Carbon Neutral Solar".

This is the base year and the first year of certification of Origin's "Carbon Neutral Solar" product. The emissions reported in this PDS are for CY2022. The data is through actual sales from the various market segments applicable to Origin's Solar PV. Total emissions for Origin's "Carbon Neutral Solar" are calculated to be 0 t CO2-e in CY2022. This is lower than our initial forecast as there were no "Carbon Neutral Solar" product sales for CY22.

Product description

The "Carbon Neutral Solar" product allows customers to offset greenhouse gas emissions associated with the extraction, manufacturing, transport, installation, and maintenance of their solar PV systems.

Origin's solar PV product includes product inputs (photovoltaic panels, inverters), as well as the installation and maintenance of solar PV's for its customers.

"Carbon Neutral Solar" is offered as an opt-in product to Origin's Solar customers across all current and future market segments, within Commercial and Industrial (C&I) and Small to Medium Enterprise (SME) customers.

The emissions boundary for this product entails relevant cradle-to-grave emissions. Further details are provided in Section 3, including quantified and non-quantified emissions. It includes all activities associated with solar PV product and installation for customers who opt-in to the product.

The functional unit is kilowatt (kW) of solar PV installed during the applicable period, with emission expressed as tonnes of CO2-e (t CO2-e) per kW.

3.EMISSIONS BOUNDARY

Inside the emissions boundary

All emission sources listed in the emissions boundary are part of the carbon neutral claim.

Quantified emissions have been assessed as 'attributable processes' of a product or service. These attributable processes are services, materials and energy flows that become the product or service, make the product or service and carry the product or service through its life cycle. These attributable emissions have been quantified in the carbon inventory.

Non-quantified emissions have been assessed as attributable and are captured within the emissions boundary, but are not measured (quantified) in the carbon inventory. All material emissions are accounted for through an uplift factor. Further detail is available at Appendix C.

Outside the emissions boundary

Non-attributable emissions have been assessed as not attributable to a product or service. They can be **optionally included** in the emissions boundary and therefore have been offset, or they can be listed as outside of the emissions boundary (and are therefore not part of the carbon neutral claim). Further detail is available at Appendix D.

Inside emissions boundary

Quantified

Solar PV equipment & installation

Waste

Repairs and maintenance

Origin retailing activities, including:

Electricity

Construction Materials and Services

ICT services and equipment

Office equipment & supplies

Postage, courier and freight

Professional services

Stationary Energy (gaseous fuels)

Transport (Air)

Transport (Land and Sea)

Waste

Working from home

Non-quantified

N/A

Optionally included

N/A

Outside emission boundary

Non-attributable

Corporate activities not related to solar PV installation or sales to C&I or SME customers

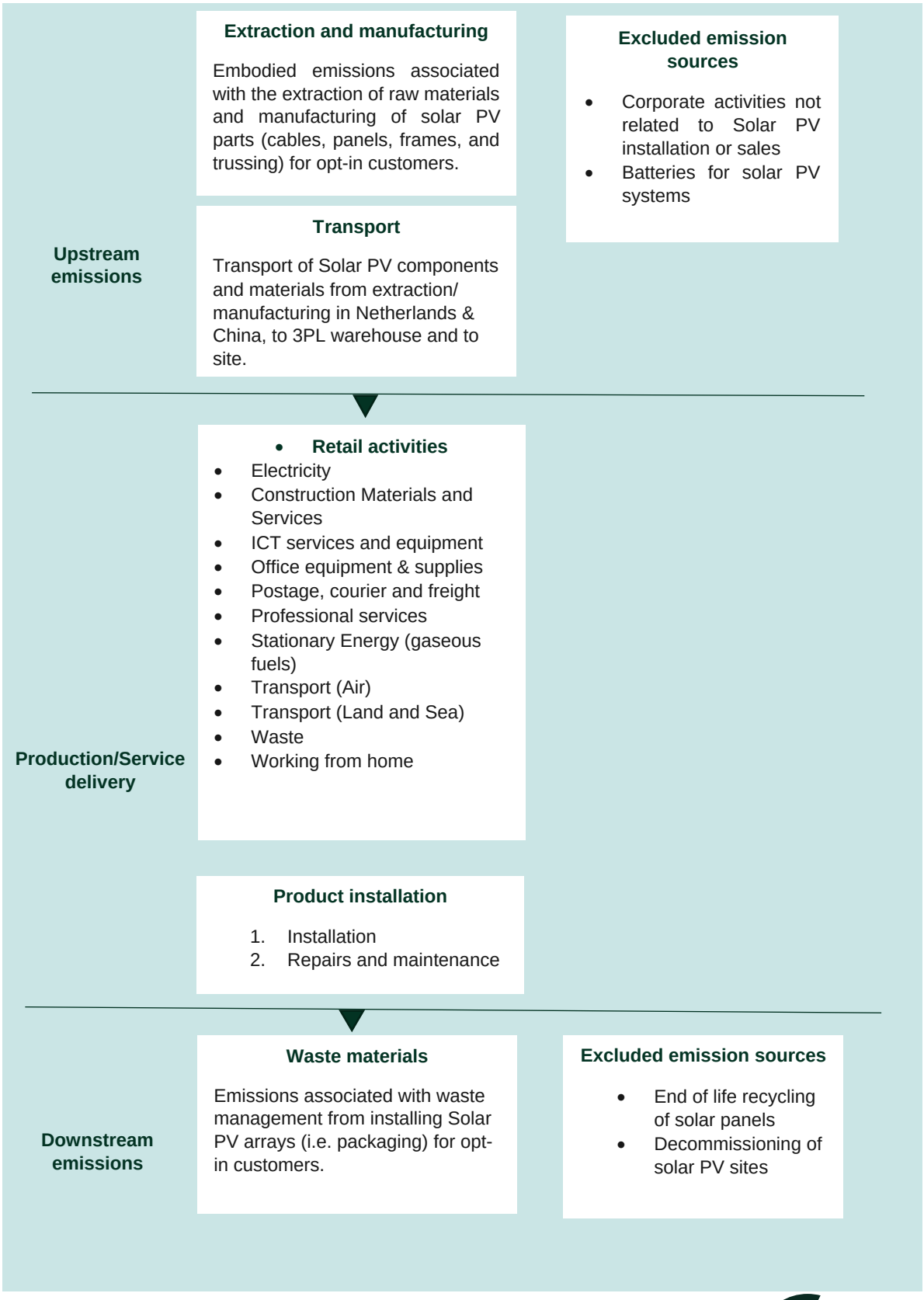
Embodied carbon of batteries for solar PV

End of life recycling of solar panels or inverters

Decommissioning of solar PV sites

Product process diagram

Cradle-to-grave



4. EMISSIONS REDUCTIONS

Emissions reduction strategy

Climate change is one of the most significant challenges facing society today and Origin's strategy is anchored in a belief in decarbonisation and the opportunities created by the energy transition.

In August 2022, Origin released its first Climate Transition Action Plan (CTAP), which outlines the company's strategy and ambition to lead the energy transition through cleaner energy and customer solutions. Our ambition is supported by three strategic objectives and priorities to drive decarbonisation and evolve our portfolio. These are:

1. Unrivalled customer solutions and enable customers to decarbonise:
    - We are providing customers with a growing portfolio of simple, affordable lower-carbon products and cleaner energy solutions, including rooftop solar and batteries, renewable energy, EV solutions, renewable power PPAs, load and demand management, as well as our Origin Go Zero Electricity, Origin Go Zero Natural Gas, and Origin Go Zero LPG products, which are certified carbon neutral by Climate Active.
    - We aim to grow a portfolio of carbon credits that will be offered to customers to support them to achieve their decarbonisation commitments.
    - Grow scale at Octopus, which is number two in the UK market by customer accounts, supplying electricity sourced from 100 per cent renewable energy including wind, hydroelectric and solar power.
2. Accelerate renewable and cleaner energy and grow our portfolio of renewables and cleaner energy:
    - We aim to grow renewables and storage capacity to within our generation portfolio to 4 GW by 2030
    - We aim to grow our Virtual Power Plant – which we expect to play an increasingly important role in helping us optimise the supply and demand balance in the electricity market – to 2 GW under management by FY2026.
    - Investments in Future Fuels – we are exploring both domestic and export market opportunities for hydrogen and ammonia through a number of projects, while recognising the early-stage nature of the hydrogen market in Australia and the technology advancements required.
3. Deliver reliable energy through the transition and reduce emissions from our existing operations:

Accelerate Eraring closure - In February 2022, we announced plans to accelerate our exit from coal-fired power generation at the Eraring Power Station to potentially as early as August 2025. Bringing forward our exit from coal-fired power generation is the most significant step we expect to take towards achieving our emissions targets.

Reduce emissions from our gas operations. As upstream operator for Australia Pacific LNG, we aim to reduce fugitive emissions by replacing equipment and devices with more efficient and advanced technologies, retrofitting facilities to reduce methane venting, and using targeted planning and the implementation of artificial intelligence tools.

Exiting upstream exploration portfolio. In November 2022, we completed the sale of our interest in the Beetaloo Basin exploration project, and we have also entered into agreements to exit our interests in the Canning and Cooper-Eromanga Basins.

The CTAP also includes targets to accelerate emissions reduction across Origin and create value for shareholders, towards a long-term ambition to be net zero emissions by 2050. Origin's climate ambitions and targets outlined in the CTAP include:

- ambition to achieve net zero Scope 1, 2 and 3 emissions across the value chain by 2050
- medium-term target to reduce Scope 1, 2 and 3 equity emissions intensity by 40 per cent by 2030, from a FY2019 baseline
- medium-term target to reduce absolute Scope 1, 2 and 3 equity emissions by 20 million tonnes by 2030, from a FY2019 baseline[1]

We believe our medium-term emissions intensity target and our long-term net zero emissions ambition are consistent with the goals of the Paris Agreement to limit the increase in the average global temperature to 1.5°C above pre-industrial levels[2]

Our CTAP also outlined an updated short-term target to reduce cumulative Scope 1 equity emissions by eight million tonnes CO2-e between FY2021 and FY2023, from a FY2017 baseline. We achieved this target with a cumulative reduction of 9.1 million tonnes CO2-e between FY2021 and FY2023.

Our latest Sustainability Report outlines our progress against our plan and targets.

[1] Excluded from the medium-term targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor is Origin close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with Origin's net zero emissions by 2050 ambition.
[2] Pursuant to the methodology set out in the CTAP

Emissions reduction actions

At a product level, Origin is exploring opportunities to reduce the emissions associated with the installation of our solar PV product.

5.EMISSIONS SUMMARY

Emissions over time

Emissions since base year			
		Total tCO_2-e	Emissions intensity of the functional unit
Base year/Year 1:	2022	0	0 kg CO2-e per kW installed

Significant changes in emissions

Market testing feedback revealed customers are not willing to pay a premium for this product, as customer perceive Solar as offsetting grid electricity emissions.

Use of Climate Active carbon neutral products and services

N/A

Emissions summary

Emission Category	Sum of Scope 1 (t CO2-e)	Sum of Scope 2 (t CO2-e)	Sum of Scope 3 (t CO2-e)	Sum of Total Emissions (t CO2-e)
Construction Materials and Services	0.0000	0.0000	0.0000	0.0000
Contractor travel for maintenance	0.0000	0.0000	0.0000	0.0000
Contractor travel for installations	0.0000	0.0000	0.0000	0.0000
Electricity	0.0000	0.0000	0.0000	0.0000
Solar PV equipment & installation	0.0000	0.0000	0.0000	0.0000
Freighting goods - purchased solar PV and inverters	0.0000	0.0000	0.0000	0.0000
ICT services and equipment	0.0000	0.0000	0.0000	0.0000
Office equipment & supplies	0.0000	0.0000	0.0000	0.0000
Postage, courier and freight	0.0000	0.0000	0.0000	0.0000
Professional Services	0.0000	0.0000	0.0000	0.0000
Stationary Energy (gaseous fuels)	0.0000	0.0000	0.0000	0.0000
Transport (Air)	0.0000	0.0000	0.0000	0.0000
Transport (Land and Sea)	0.0000	0.0000	0.0000	0.0000
Waste	0.0000	0.0000	0.0000	0.0000
Waste from installations: cardboard recycling	0.0000	0.0000	0.0000	0.0000
Waste from installations: plastic film recycling	0.0000	0.0000	0.0000	0.0000
Waste from installations: plastic film to landfill	0.0000	0.0000	0.0000	0.0000
Working from home	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**

No uplift factors were included in the emissions total.

Emissions intensity per functional unit	0 kg CO2-e per kW installed
Number of functional units to be offset	0 kW installed
Total emissions to be offset	0 tCO2-e

6. CARBON OFFSETS

Offsets retirement approach

This certification has taken a forward offsetting approach. The total emission to offset is 0 t CO_2-e. The total number of eligible offsets used in this report is 1,272. Of the total eligible offsets used, 1,272 were previously banked and 0 were newly purchased and retired. 1,272 eligible offsets are remaining and have been banked for future use.

Co-benefits

Origin has purchased Australian offsets which have been used in this report in the form of Australian Carbon Credit Units (ACCU's) generated under the Emission Reduction Fund (ERF) from **Boonora Downs Human-Induced Regeneration Project** in NSW.

Origin has also purchased offsets which have been used in this report in the form of Verified Carbon Units (VCU's) from an international project accredited under the VERRA being the **Rimba Raya Biodiversity Reserve project.**

Eligible offsets retirement summary

Offsets retired for Climate Active Carbon Neutral Certification											
Project description	**Type of offset units**	**Registry**	**Date retired**	**Serial number (and hyperlink to registry transaction record)**	**Vintage**	**Stapled quantity**	**Eligible quantity retired (tCO_2-e)**	**Eligible quantity used for previous reporting periods**	**Eligible quantity banked for future reporting periods**	**Eligible quantity used for this reporting period**	**Percentage of total (%)**
Rimba Raya Biodiversity Reserve Project	VCUs	Verra	23 Mar 2022	9900-157763767-157764784-VCS-VCU-263-VER-ID-14-674-01012018-31122018-1	2018	0	1,018	0	1,018	0	0
Boonora Downs Human-Induced Regeneration Project	ACCUs	ANREU	23 Mar 2022	3,806,228,396 - 3,806,228,649	2020-21	0	254	0	254	0	0
									Total offsets retired this report and used in this report	0	
									Total offsets retired this report and banked for future reports	1,272	

Type of offset units	Eligible quantity (used for this reporting period)	Percentage of total
Australian Carbon Credit Units (ACCUs)	0	0
Verified Carbon Units (VCUs)	0	0

7. RENEWABLE ENERGY CERTIFICATE (REC) SUMMARY

Renewable Energy Certificate (REC) Summary

N/A

The following RECs have been surrendered to reduce electricity emissions under the market-based reporting method.

1. Large-scale Generation certificates (LGCs)*	N/A

* LGCs in this table only include those surrendered voluntarily (including through PPA arrangements),and does not include those surrendered in relation to the LRET, GreenPower, and jurisdictional renewables.

Project supported by LGC purchase	Project location	Eligible unit type	Registry	Surrender date	Accreditation code	Certificate serial number	Generation year	Fuel source	Quantity (MWh)
Total LGCs surrendered this report and used in this report									

APPENDIX A: ADDITIONAL INFORMATION

N/A

APPENDIX B: ELECTRICITY SUMMARY

There are two international best-practice methods for calculating electricity emissions – the location-based method and the market-based method. Reporting electricity emissions under both methods is called dual reporting.

Dual reporting of electricity emissions is useful, as it provides different perspectives of the emissions associated with a business's electricity usage.

Location-based method

The location-based method provides a picture of a business's electricity emissions in the context of its location, and the emissions intensity of the electricity grid it relies on. It reflects the average emissions intensity of the electricity grid in the location (State) in which energy consumption occurs. The location-based method does not allow for any claims of renewable electricity from grid-imported electricity usage.

Market-based method

The market-based method provides a picture of a business's electricity emissions in the context of its renewable energy investments. It reflects the emissions intensity of different electricity products, markets and investments. It uses a residual mix factor (RMF) to allow for unique claims on the zero emissions attribute of renewables without double-counting.

For this certification, electricity emissions have been set by using the market-based approach.

Market Based Approach Summary

Market Based Approach	Activity Data (kWh)	Emissions (kg CO2-e)	Renewable Percentage of total
Behind the meter consumption of electricity generated	0	0	0%
Total non-grid electricity	**0**	**0**	**0%**
LGC Purchased and retired (kWh) (including PPAs)	0	0	0%
GreenPower	0	0	0%
Climate Active precinct/building (voluntary renewables)	0	0	0%
Precinct/Building (LRET)	0	0	0%
Precinct/Building jurisdictional renewables (LGCs surrendered)	0	0	0%
Electricity products (voluntary renewables)	0	0	0%
Electricity products (LRET)	0	0	0%
Electricity products jurisdictional renewables (LGCs surrendered)	0	0	0%
Jurisdictional renewables (LGCs surrendered)	0	0	0%
Jurisdictional renewables (LRET) (applied to ACT grid electricity)	0	0	0%
Large Scale Renewable Energy Target (applied to grid electricity only)	0	0	0%
Residual Electricity	0	0	0%
Total renewable electricity (grid + non grid)	**0**	**0**	**0%**
Total grid electricity	**0**	**0**	**0%**
Total electricity (grid + non grid)	**0**	**0**	**0%**
Percentage of residual electricity consumption under operational control	100%		
Residual electricity consumption under operational control	**0**	**0**	
Scope 2	0	0	
Scope 3 (includes T&D emissions from consumption under operational control)	0	0	
Residual electricity consumption not under operational control	**0**	**0**	
Scope 3	0	0	.

Total renewables (grid and non-grid)	**0.00%**
Mandatory	**0.00%**
Voluntary	**0.00%**
Behind the meter	**0.00%**
Residual scope 2 emissions (t CO2-e)	**0.00**
Residual scope 3 emissions (t CO2-e)	**0.00**
Scope 2 emissions liability (adjusted for already offset carbon neutral electricity) (t CO2-e)	**0.00**
Scope 3 emissions liability (adjusted for already offset carbon neutral electricity) (t CO2-e)	**0.00**
Total emissions liability (t CO2-e)	**0.00**
Figures may not sum due to rounding. Renewable percentage can be above 100%	

Location Based Approach Summary

Location Based Approach	Activity Data (kWh) total	Under operational control			Not under operational control	
Percentage of grid electricity consumption under operational control	**100%**	**(kWh)**	**Scope 2 Emissions (kg CO2-e)**	**Scope 3 Emissions (kg CO2-e)**	**(kWh)**	**Scope 3 Emissions (kg CO2-e)**
ACT	0	0	0	0	0	0
NSW	0	0	0	0	0	0
SA	0	0	0	0	0	0
VIC	0	0	0	0	0	0
QLD	0	0	0	0	0	0
NT	0	0	0	0	0	0
WA	0	0	0	0	0	0
TAS	0	0	0	0	0	0
Grid electricity (scope 2 and 3)	**0**	**0**	**0**	**0**	**0**	**0**
ACT	0	0	0	0		
NSW	0	0	0	0		
SA	0	0	0	0		
VIC	0	0	0	0		
QLD	0	0	0	0		
NT	0	0	0	0		
WA	0	0	0	0		
TAS	0	0	0	0		
Non-grid electricity (behind the meter)	**0**	**0**	**0**	**0**		
Total electricity (grid + non grid)	**0**					

Residual scope 2 emissions (t CO2-e)	**0.00**
Residual scope 3 emissions (t CO2-e)	**0.00**
Scope 2 emissions liability (adjusted for already offset carbon neutral electricity) (t CO2-e)	**0.00**
Scope 3 emissions liability (adjusted for already offset carbon neutral electricity) (t CO2-e)	**0.00**
Total emissions liability (t CO2-e)	**0.00**

Operations in Climate Active buildings and precincts

Operations in Climate Active buildings and precincts	Electricity consumed in Climate Active certified building/precinct (kWh)	Emissions (kg CO_2-e)
100 Barangaroo Avenue NSW	**0**	**0**

Climate Active carbon neutral electricity is not renewable electricity. These electricity emissions have been offset by another Climate Active member through their building or precinct certification. This electricity consumption is also included in the market based and location-based summary tables. Any electricity that has been sourced as renewable electricity by the building/precinct under the market-based method is outlined as such in the market based summary table.

APPENDIX C: INSIDE EMISSIONS BOUNDARY

Non-quantified emission sources

The following emissions sources have been assessed as attributable, are captured within the emissions boundary, but are not measured (quantified) in the carbon inventory. These emissions are accounted for through an uplift factor. They have been non-quantified due to one of the following reasons:

1. **Immaterial** <1% for individual items and no more than 5% collectively
2. **Cost effective** Quantification is not cost effective relative to the size of the emission but uplift applied.
3. **Data unavailable** Data is unavailable but uplift applied. A data management plan must be put in place to provide data within 5 years.
4. **Maintenance** Initial emissions non-quantified but repairs and replacements quantified.

Relevant non-quantified emission sources	Justification reason
N/A	

Excluded emission sources

Attributable emissions sources can be excluded from the carbon inventory, but still considered as part of the emissions boundary if they meet **all three of the below criteria**. An uplift factor may not necessarily be applied.

1. A data gap exists because primary or secondary data cannot be collected **(no actual data).**
2. Extrapolated and proxy data cannot be determined to fill the data gap (**no projected data**).
3. An estimation determines the emissions from the process to be **immaterial**).

	No actual data	No projected data	Immaterial
N/A			

Data management plan for non-quantified sources

There are no non-quantified sources in the emission boundary that require a data management plan.

APPENDIX D: OUTSIDE EMISSION BOUNDARY

Non-attributable emissions have been assessed as not attributable to a product or service (do not carry, make or become the product/service) and are therefore not part of the carbon neutral claim. To be deemed attributable, an emission must meet two of the five relevance criteria. Emissions which only meet one condition of the relevance test can be assessed as non-attributable and therefore are outside the carbon neutral claim. Non-attributable emissions are detailed below.

1. **Size** The emissions from a particular source are likely to be large relative to other attributable emissions.

2. **Influence** The responsible entity could influence emissions reduction from a particular source.

3. **Risk** The emissions from a particular source contribute to the responsible entity's greenhouse gas risk exposure.

4. **Stakeholders** The emissions from a particular source are deemed relevant by key stakeholders.

5. **Outsourcing** The emissions are from outsourced activities that were previously undertaken by the responsible entity or from outsourced activities that are typically undertaken within the boundary for comparable products or services.

Non-attributable emissions sources summary

Emission sources tested for relevance	Size	Influence	Risk	Stakeholders	Outsourcing	Justification
Corporate activities not related to Solar PV installations or sales	Y	N	N	N	N	**Size:** The emissions source is likely to be significantly higher compared to Solar PV installation and sales, as Solar PV sales and installation are a relatively small component of the overall organisation.
Batteries for solar PV systems	N	N	N	Y	N	**Stakeholders:** This includes embodied carbon involved in the extraction of raw materials, material processing, manufacturing and transport of batteries for solar PV systems.
Decommissioning of solar PV sites	N	Y	N	N	N	**Influence:** Due to the long life of the solar PV product ~10 years, the highly valuable materials in the product and inert nature of materials, emissions associated with the end of life of these products is not commonly accounted.
Disposal/recycling of solar PV cells	N	Y	N	N	N	**Influence:** Due to the long life of the solar PV product ~10 years, the highly valuable materials in the product and inert nature of materials, emissions associated with the end of life of these products is not commonly accounted.

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