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PUBLIC DISCLOSURE STATEMENT

AUSTRAL BRICKS (TAS) PTY LTD

PRODUCT CERTIFICATION

FY2022-23

Australian Government

Climate Active
Public Disclosure Statement

An Australian Government Initiative

NAME OF CERTIFIED ENTITY	Austral Bricks (TAS) Pty Ltd
REPORTING PERIOD	1 July 2022 – 30 June 2023 Arrears report
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.*  Matthew Gordon Business Unit Manager Tasmania 21 December 2023

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

Version: August 2023

1. CERTIFICATION SUMMARY

TOTAL EMISSIONS OFFSET	5334 tCO_2-e
THE OFFSETS USED	30% ACCUs, 70% VCUs
RENEWABLE ELECTRICITY	N/A
CARBON ACCOUNT	Prepared by: Brickworks Building Products
TECHNICAL ASSESSMENT	21 December 2023 Energetics Next technical assessment due: FY 2026

Contents

2. CARBON NEUTRAL INFORMATION

Description of certification

This Climate Active certification concerns bricks and pavers manufactured at Austral Bricks (Tas) Pty Ltd's Longford site (Figure 1). At this site Austral Bricks produces a range of bricks and pavers for the Tasmanian, other Australian markets and overseas markets. The functional unit for this certification is 1,000 Standard Brick Equivalents (SBEs) of bricks or pavers.

This PDS has been prepared and verified based on the Climate Active, the ISO14040:2006 and ISO14044:2006 standard and emissions are offset in accordance with Climate Active Technical Guidance.

Product description

The functional unit for this certification is t CO2-e/ 1,000 Standard Brick Equivalents (SBEs) of bricks or pavers manufactured in Longford and used in various applications throughout Tasmania, interstate and overseas.

The certification is cradle-to-grave and full coverage.

3.EMISSIONS BOUNDARY

Inside the emissions boundary

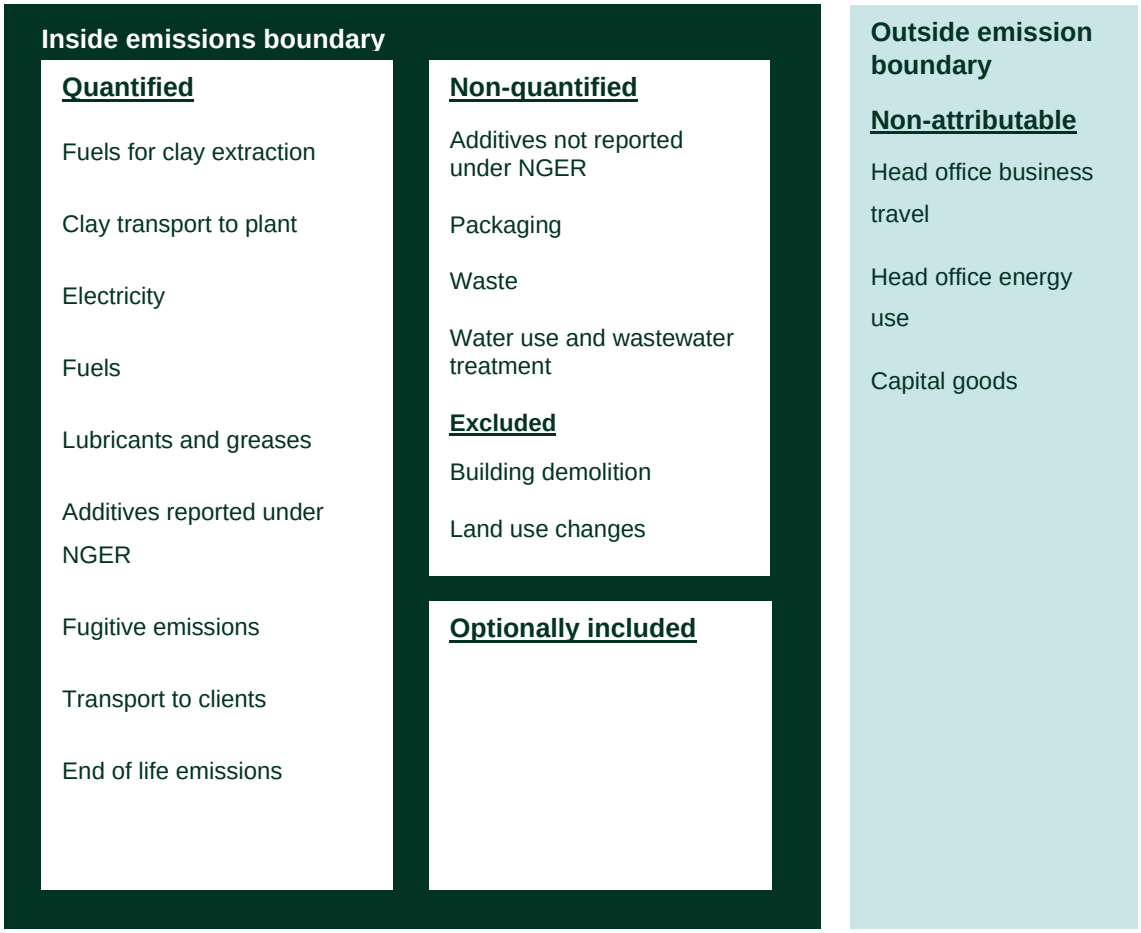
All emission sources listed in the emissions boundary are part of the carbon neutral claim.

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.

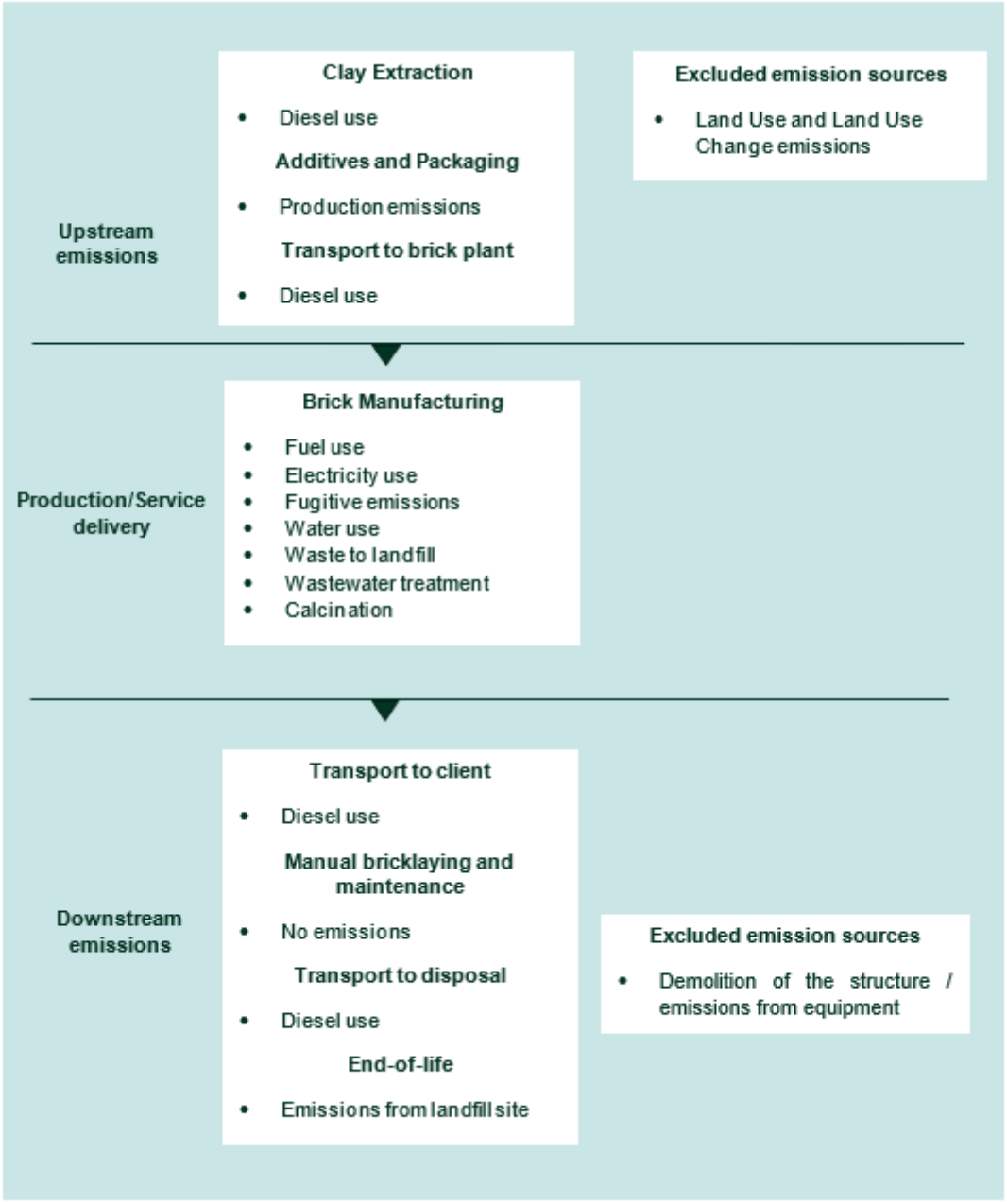
Outside the emissions boundary

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.



Product process diagram

The product process diagram for this PDS is cradle to grave.



4.EMISSIONS REDUCTIONS

Emissions reduction strategy

Brickworks is committed to social and environmental responsibility. As a large and diverse building products manufacturer, we believe we have a responsibility to our shareholders, employees, industry, environment and the wider community. Brickworks accepts responsibility for environmental protection which is integral to the conduct of its commercial operations. Brickworks' key objective is to comply with environmental laws and regulations which relate to its environmental aspects and minimise environmental harm by operating in a manner that reaches an appropriate balance between environmental, technical, economic and social objectives. We recognise that all employees have a major role to play in protecting the environment. To achieve our environmental policy commitments, the company will actively provide for, encourage, and support training in environmental issues and sustainability.

As a subsidiary of Brickworks Limited, Austral Bricks Tasmania has the backing professional teams in environment, sustainability and research and development. Brickworks' sustainability strategy, 'Build for Living: Towards 2025', recognises the substantial environmental and social impacts of the built environment. The strategy focuses on the opportunity to make buildings and cities safe, resilient and sustainable through reducing carbon emissions. The strategies are available on Brickworks' website: https://www.brickworks.com.au/sustainability/ and https://www.brickworks.com.au/climate-related-impacts-and-responses/. During FY2023, we have completed a mid-strategy target enhancement to include carbon and product innovation targets.

New Carbon Target

Brickworks is aligning its greenhouse gas reduction strategy with the recognised standard of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, including risk management disclosures, metrics and targets. Through this process, we have developed a new carbon target: to achieve a 15% reduction in Scope 1 and 2 greenhouse gas emissions by 2030, from a 2022 baseline, across our combined Australian and North American operations.

Enhanced Carbon Transition Target

Brickworks has been delivering progress against our existing carbon transition target, to invest in the transition to the hydrogen fuel economy. Brickworks is enhancing this target, to also include the target for continued investment into developing feasible renewable biomethane opportunities.

As an industry leader using 11% bioenergy in manufacturing in Australia, we understand the critical role renewable bioenergy can have in producing low-carbon products. We are assessing the feasibility of renewable bioenergy generation at our brick plants with leading technology providers. If successful, each facility has the potential to provide a significant source of renewable energy.

Renewable bioenergy generation also offers the potential to generate carbon offsets on-site, from emission reduction activities such as the diversion of organic waste from landfill. Brickworks has 10 years of experience in providing carbon neutral products from our Longford Tasmania facility.

Longford uses 74% bioenergy of the site's energy mix, which has avoided over 70,000 t CO2-e in emissions over 10 years. Residual 50,000 t CO2-e of emissions from the lifecycle of brick manufacture and sales from Longford have been offset over the last 10 years. We seek to replicate the success of this low brick carbon manufacturing process across Brickworks sites through the Brickworks Bioenergy Transformation strategy.

According to estimates by the Australian Renewable Energy Agency, bioenergy could account for 33% of the industrial heat processing needs by 2030. We are actively advancing various feasibility studies for a series of projects designed to significantly boost the utilisation of bioenergy. These opportunities encompass harnessing additional landfill gas resources, integrating alternative organic raw materials, and generating on-site bioenergy through anaerobic digestion.

New Product Innovation Target

Our bricks and concrete products are manufactured to provide resilience. They are durable, fire-proof, contain thermal mass for energy efficient design, excellent acoustic properties and no indoor air emissions (VOCs); and our clay bricks hold a 100-year warranty.

Brickworks will use our product strengths to develop the next generation clay brick and concrete block wall systems. Our sustainable product innovation strategy focus is to provide a wide range of thermal mass product options with high recycled content and lower embodied carbon across roofing and walling products.

By 2030, Brickworks and our partners will invest over $22.6 million into research and development into our sustainable innovation focus areas including: the thermal mass benefit of products, light-weighting, raw material optimisation to reduce embodied carbon and increase recycled content, sustainable design elements and product innovation.

Climate Related Strategy and Programs

In Australia, Brickworks Limited carbon emissions have followed a general downward trend, with a 46% decrease in FY2023 compared to the base year 2005/06 (Scope 1 and 2).

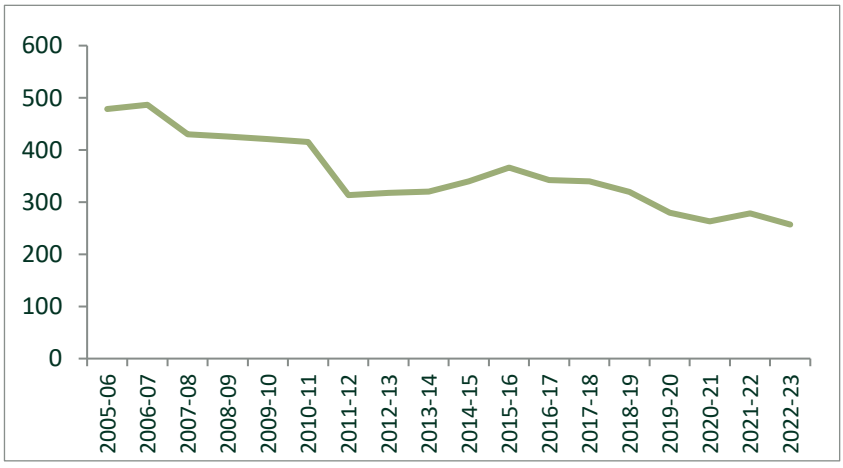


Figure 1. Brickworks Building Products Australia Greenhouse Gas Emissions Since 2005 (ktCO2-e)

The decrease is attributed to efficiencies gained from alternate fuels, manufacturing consolidation, equipment upgrades and operational improvements. Brickworks invested over $400 million dollars since 2006 in equipment upgrades and operational improvements (including new plants) and carbon reduction strategies.

Our climate-related strategy, targets and programs build on these achievements, focusing on 5 key areas, including efficiency, lower carbon energy sources, innovation, the appropriate use of offsets and improving the energy efficiency of homes over lifetime operations. Each focus area has deliverables to drive performance as referenced below.

Brickworks climate related strategic focus areas and deliverables

	Manufacturing energy efficiency strategy	**Lower Carbon Energy Sources**	**Innovation**	**Generation and purchase of offsets to provide Carbon Neutral Product options**	**Improve home energy efficiency over lifetime operations**
Strategy focus area	Achieve global leadership in leading manufacturing excellence and efficiency	Increasing use of bioenergy and low carbon fuels Renewable Electricity and Gas Purchasing Strategy	Develop the next generation clay brick and concrete block wall systems, through light-weighting, on-board fuels, raw material optimisation and product innovation	Responding to an increase in consumer preferences for products with leading sustainability attributes and low carbon options	Provide thermal mass products such as bricks and roof tiles which can reduce heating and cooling bills by up to 40% annually using cavity brick compared to lightweight construction[1].
Deliverables	10% increase in gas efficiency at Austral Bricks plants by 2030 (FY2018 baseline)	15% reduction in Scope 1 and 2 greenhouse gas emissions by 2030, from a 2022 baseline, across our combined Australian and North American operations. Continued investment into developing feasible renewable biomethane opportunities. Complete the Brickworks Hydrogen Project	Year on year increase into R&D investment into the next generation of clay brick and concrete block wall systems. This represents more than $22.6 million invested by 2030 by Brickworks and our partners. Increase the volume of verified sustainable products to 25%.	Expand range of carbon neutral offerings from the existing 12.5 million carbon neutral clay bricks sold in FY2023. Explore generation of offsets from existing land holdings. Ensure purchase of high- quality offsets (defined by Climate Active)	Invest in research for thermal design and lifecycle education (more details in the Responsible Business section).

[1] A Study of the Thermal Performance of Australian Housing, University of Newcastle, 2011-2017

Sawdust is the main fuel source at Austral Bricks Longford, Tas and is a waste acquired from various Tasmanian sawmills. The site used 11,970 tonnes or 124,500 GJ of sawdust throughout the year. While the use of sawdust is less energy efficient than natural gas, its bioenergy component means that net carbon emissions from the combustion of sawdust is 40 times lower than natural gas avoiding 6,260 tonnes of greenhouse gas emissions.

In addition to this during FY2023, 24 research and development projects were successfully completed and embedded into production across the Brickworks Building Product operations including new products and efficiency gains. The relevant projects for Austral Bricks are described below.

Thermal mass

Provide leading research on passive thermal design enabling reduced lifetime energy use. We have invested in updating critical thermal mass research demonstrating benefits from thermal mass with the University of Newcastle

Light-weighting and higher recycled content

Brickworks' dedication to excellence means our products are fired in some of the leading energy-efficient kilns, with ongoing research to reduce brick weight through enhanced core percentage and innovative core patterns, resulting in savings on clay, energy, fuel, and ease for bricklayers.

Using enhanced clay materials, our Queensland and NSW brick factories have increased core content for some products from 27-28% to 41%, reducing material use by 18%, cutting energy consumption, and maintaining/improving product quality while increasing kiln capacity. These gains are being rolled out across selected Austral Brick products.

Raw material optimisation

Optimal raw material mixes can reduce embodied carbon or process heat demands. Brickworks commitment to innovation continues to be rewarded by significant developments in energy savings and premium product development. Ongoing research into traditional clay materials has provided us with a deep understanding of their physical and chemical properties. This knowledge allows us to successfully develop raw material optimised mixes which require less process heat energy, reducing the embodied carbon of bricks. Demonstration of energy-saving raw material mixes for brick manufacturing, being rolled across Austral Brick operations

Emissions reduction actions

Austral Bricks Tasmania has an ongoing maintenance schedule. During 2023 there were some unquantified improvements including LED lighting replacements and recycling sawdust waste through a landscape company who will use the sawdust as a garden mulch rather than sending it to landfill. In FY24 there is a planned maintenance shutdown which includes maintenance on the kiln and sawdust drying facilities.

5.EMISSIONS SUMMARY

Emissions over time

Brickworks has completed a comprehensive life cycle assessment for our Longford Plant. This assessment covers all bricks and pavers made at the Longford plant and covers the emissions boundary as previously described.

Emissions since base year			
		Total tCO_2-e	Emissions intensity of the functional unit
Base year:	2012-13	3402	
Year 1:	2013-14	3668	
Year 2:	2014-15	3381	
Year 3:	2015-16	4832	
Year 4:	2016-17	5088	
Year 5:	2017-18	5932	
Year 6:	2018-19	5054	
Year 7:	2019-20	6656	
Year 8:	2020-21	6188	0.481
Year 9:	2021-22	5467	0.417
Current year:	2022-23	5334	0.448

Significant changes in emissions

Total emissions for Austral Bricks (TAS) Pty Ltd decreased in the reporting year. This was mainly due to reduced production caused by a maintenance shut down in FY2023. This affected both natural gas emissions and the transport of bricks to end of life landfill or recycled.

Emission source name	Current year (tCO_2-e)	Previous year (tCO_2-e)	Detailed reason for change
Kiln fuel (natural gas) use	1607.42	1837.2	Reduction due to decreased production due to a maintenance shut down in FY2023.
Transport of bricks to end of life landfill or recycle	397.36	427.04	Reduction due to decreased production due to a maintenance shut down in FY2023.

Since 2013 the following changes in emissions have occurred:

- There has been an increase in natural gas usage following the introduction of sawdust drying equipment and burners to supplant coal as a fuel source in 2014. While these initiatives led to a rise in natural gas consumption, they concurrently reduced electricity and coal usage.
- Emissions from transportation to customers increased because of increased interstate transfers since 2013.

- Emissions from coal have decreased through the substitution of on board coal with natural gas-fired segments of the kiln.
- Electricity usage emissions decreased with various energy efficiency activities undertaken since 2013. Details of these projects are outlined in each annual PDS.
- A minor increase in emissions due to the inclusion of calcination emissions from the firing of clay.

Use of Climate Active carbon neutral products and services

N/A

Emissions summary

Brickworks has undertaken an LCA for our total brick and paver production in Longford. The table below shows the life cycle emissions per 1000 standard bricks equivalents. These emissions include emissions from transport of bricks to clients by a delivery truck over 50 km. When determining the emissions associated with bricks supplied to a client or project, we use the actual mass of the bricks supplied and actual transport distance from plant to client to get an accurate carbon footprint for the consignment.

Note: in line with our NGER reporting, we have applied a location-based approach for electricity.

Stage	tCO2-e
Extraction of clay (diesel use)	28.51
Transport of clay to Longford (diesel use)	133.27
On-site energy: Longford plant electricity use	512.49
Truck vehicle fleet (diesel); on-site vehicles	154.52
On-site energy: Kiln fuel (natural gas) use	1607.42
On-site energy: Kiln fuel (saw dust) use	149.4
Calcination of clay	142.39
Body additive (char / coal and vegetable oil) use	98.3
Transport of products to customer	1972.85
Manual application and manual maintenance/cleaning	0.00
Transport of bricks to end-of-life landfill	397.3
Bricks in landfill	0.00
Uplift for packaging and other overhead	80.22
Uplift for additives not reported under NGER	56.64
Total t CO2-e	5333.37

Emissions intensity per functional unit (tonne CO2-e per '000SBE)	0.45
Number of functional units to be offset ('000 SBEs)	11,907.7
Total emissions to be offset (tCO2-e)	**5,334**

6.CARBON OFFSETS

Offsets retirement approach

This certification has taken an in-arrears offsetting approach. The total emission to offset is 5334 t CO_2-e. The total number of eligible offsets used in this report is 9,825. Of the total eligible offsets used, 5506 were previously banked and 4319 were purchased and retired in FY22, however only reported in this FY23 PDS. 4491 are remaining and have been banked for future use.

Co-benefits

Tasmanian Native Forest Protection REDD Forests:

The REDD Forests project equates to 30% of Austral Bricks (Tas) offsets for financial year 2023. Tasmania is internationally recognised for its native forest, endemic species and significant biological diversity. However, significant tracts of native forest are still being logged or are scheduled for logging to make way for pasture or other agricultural use.

These projects minimise greenhouse gas emissions by preventing the release of carbon stored in the trees, which would otherwise occur through the logging, processing and use of the timber. The carbon credits provide a means for landholders to pursue a new business model, generating revenue from protecting trees rather than clearing them.

International Units: Indian Solar:

Indian wind and solar VCUs comprise the remaining 70% of carbon offsets. Solar and wind projects provide emission free, affordable energy to the Indian electricity grid. Our procurement of Indian VCUs supports the transition away from India's fossil fueled dominated energy mix, and provides co-benefits including cleaner air, good work opportunities and improved energy equity.

International Units: Siam Cement Biomass Project

Thailand heavily relies on the burning of fossil fuels for its cement industries, even though cement production is an emission-intensive activity – making up an estimated 5% of all global man-made CO_2 emissions. New infrastructure now enables the five cement manufacturing plants involved in this project to use alternative fuels and biomass residue, including rice husks, wood processing residues and other agricultural waste. As a result, they have been able to reduce their dependence on fossil fuels such as the coal and lignite fuel mixes, they previously used in their kilns.

This project funds a range of social and environmental programs including health clinics to service the neighboring communities, over 65,000 check dams for upstream forest conservation, school scholarships, mobile health clinics and the development of small-scale local industries. Farmers also now profit from a supplementary income and additional jobs have been created thanks to the project's efficient supply chains and manufacturing processes for biomass fuels.

International Units: Crow Lake Wind Emissions Reduction Project

Crow Lake Wind is a 162 MW wind farm located near Chamberlain, South Dakota. The project generates emissions reductions by displacing grid connected sources.

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 (%)**
Forests Alive: Protection of Tasmanian Native Forest	ACCU	ANREU	26/07/2021	3,801,767,395 - 3,801,769,296	2020-21		1902	1890	0	12	0.2%
Forests Alive: Protection of Tasmanian Native Forest	ACCU	ANREU	28/06/2022	8,330,227,186 - 8,330,229,285	2021-22		2100	0	512	1588	29.8%
Bundled Solar Power Project by Mahindra Susten Private Limited	VCU	VERRA	26/07/2021	9040-63312258-63317257-VCS-VCU-997-VER-IN-1-1767-01012019-23122019-0	2019		5000	2287	0	2713	51.0%
Siam Cement Biomass Project	VCU	VERRA	29/06/2022	12639-422345561-422346241-VCS-VCU-842-VER-TH-4-403-01012017-30062017-0	2017		681	0	0	681	12.8%
Siam Cement Biomass Project	VCU	VERRA	29/06/2022	10412-212123989-212125817-VCS-VCU-842-VER-TH-4-403-01012014-31122014-0	2014		1829	0	1489	340	6.4%
Crow Lake Wind Emissions Reduction Project	VCU	VERRA	29/06/2022	7609-410719671-410722160-VCU-043-MER-US-1-756-01012018-31122018-0	2018		2490	0	2490	0	0.0%
									Total offsets retired this report and used in this report	5334	
									Total offsets retired this report and banked for future reports	4491	

Type of offset units	Eligible quantity (used for this reporting period)	Percentage of total
Australian Carbon Credit Units (ACCUs)	1600	30%

Verified Carbon Units (VCUs)	3734	70%

7. RENEWABLE ENERGY CERTIFICATE (REC) SUMMARY

Renewable Energy Certificate (REC) Summary

N/A

APPENDIX A: ADDITIONAL INFORMATION

Additional information on Life Cycle Analysis

Product Description

Brickworks Limited (Brickworks) is one of the world's leading providers of building products. Austral Bricks, a subsidiary of Brickworks has been transformed from originally a New South Wales state based operation to a national organisation with manufacturing operations in NSW, Victoria, Tasmania, South Australia, Western Australia and Queensland. Austral Bricks manufactures and markets clay products such as bricks and pavers. The manufacturing process involves mining clay and shale and mechanically processing it prior to shaping and firing the bricks in kilns fuelled predominately by natural gas.

Austral Bricks Longford, Tasmania operates a low carbon operation whereby the kiln is predominately fired by sawdust. It has manufactured carbon neutral bricks since 2013/14 under the Climate Active Standards . This public disclosure statement concerns all bricks manufactured at Austral Bricks Longford which are certified carbon neutral.

Austral Bricks Tasmania certifies all the clay products manufactured at the Longford plant as carbon neutral under the Climate Active program. The products made at Austral Bricks Longford include bricks and pavers:

1. **Bricks**. Clay bricks are a common building material used predominantly for wall systems in residential buildings.

2. **Pavers**. Clay pavers are used for paving and landscaping in residential, commercial and industrial applications.

Bricks are used for a number of reasons:

- load-bearing capacity – this makes bricks suitable for load-bearing walls;
- aesthetics – bricks are available in a large range of colours, tones and textures;
- durability – bricks perform their function for the duration of the service life of the building; and
- bricks require relative little maintenance and cleaning.

Pavers are similar in appearance and characteristics to bricks, although they are used for paving rather than wall applications.

Table 1 and Table 2 present examples of the products included in this certification.

Table 1: Typical brick product configurations (Source: Austral Bricks)

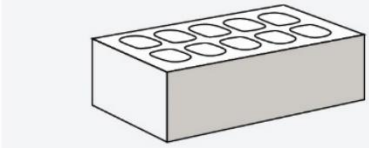
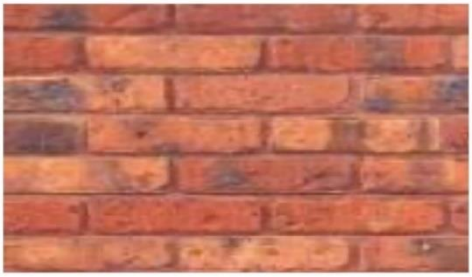
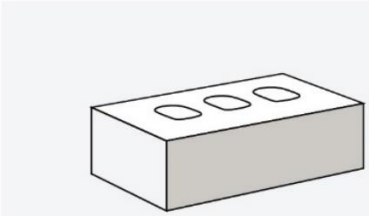
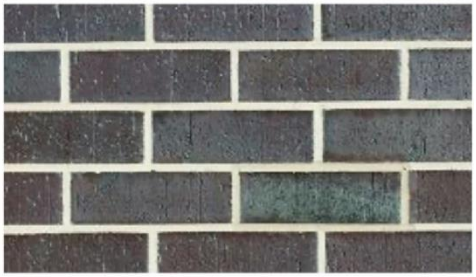
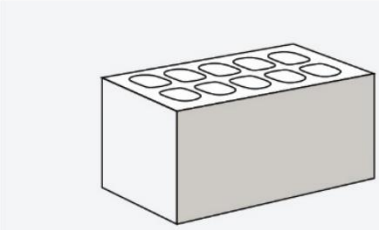
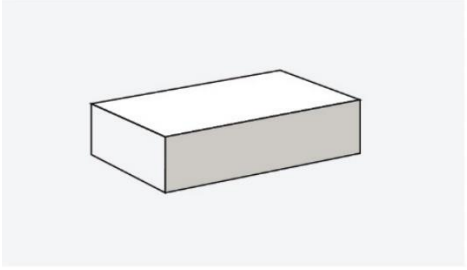
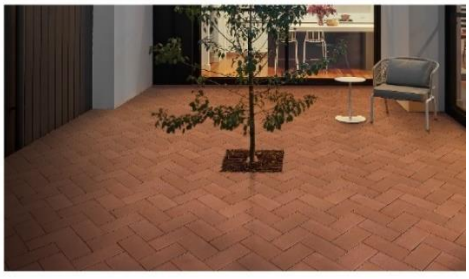
Brick shape and core hole configuration	Examples - bricks in wall application
 Standard brick with 10 core holes	
 Standard brick with 3 core holes	
 Twin brick	

Table 2: Typical paver product configuration (Source: Austral Bricks)

Paver shape	Example - pavers in paving application
 Classic paver (no core holes)	

The functional unit for this certification is *t CO2-e/ 1,000 Standard Brick Equivalents (SBEs) of bricks or pavers*

Standard Brick Equivalent is a common unit of measurement across the clay brick industry for a brick. An SBE refers to the fired product and has the dimensions of 230x110x76mm. The products covered in this PDS come in a range of different sizes, which have been converted to SBEs.

The functional unit of SBE's has been built into the sites carbon calculator, to understand the amount of carbon associated with the lifecycle of each brick. The functional unit is not applicable to the carbon inventory as all products produced at Longford are offset.

Emissions Boundary

For each life cycle stage, attempts have been made to identify and quantify material flows, energy flows and emission sources. The inputs include materials, fuels and energy while the outputs include products, emissions and waste.

For the purposes of this certification, the embodied energy incorporated in the infrastructure (buildings, plant, equipment, roads, vehicles, etc.) associated with manufacturing bricks and pavers is excluded from the product system. Other capital goods (e.g. power lines) are excluded as well. This is due to the long lifetime of capital goods in the brick lifecycle and the expected impact of this exclusion on the footprint is small.

Austral Bricks has applied a cut-off limit for flows smaller than 1% of expected greenhouse gas emissions. This means we have estimated emissions based on past data, instead of collecting detailed information for these smaller emission sources for the current period. These are listed as non-quantified sources in the diagram hereafter.

Note: Mortar and/or other materials used to bond bricks in their application are excluded from the carbon footprint assessment. The reasons for this exclusion are:

- Brickworks does not supply the mortar to clients, and therefore has no control over the composition and quantity of mortar used.
- Furthermore, the bricks and pavers are used in a range of applications that have varying requirements regarding ancillary materials. Any attempt to capture these requirements within the scope of this certification would introduce additional uncertainty.

APPENDIX B: ELECTRICITY SUMMARY

N/A

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
Additives not reported under NGER	Data unavailable (but uplift applied & data plan in place)
Packaging	Data unavailable (but uplift applied & data plan in place)
Waste	Immaterial
Water use and wastewater treatment	Immaterial

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
Land use and land use change emission	Yes	Yes	Yes
Demolition of the structure / emissions from equipment	Yes	Yes	Yes

Data management plan for non-quantified sources

The data management plan below outlines how more rigorous quantification can be achieved for material (greater than 1%) non-quantified emission sources.

The following items meet the condition of ‘attributable’ but are below the cut-off and are considered non-quantified. We have applied uplift factors based on the previous LCA for bricks manufactured in Longford.

- Additives not reported under National Greenhouse and Energy Reporting (NGER) Act 2007: We use a large range of additives to give each brick its unique properties (colour, glaze, etc.). Additives that are energy carriers (e.g. char, sawdust, vegetable oils, starch-based additives) are reported under our NGER obligations and have been included based on actual use and emission factors. The remaining additives are mainly minerals (e.g. iron oxide, manganese oxide) or frits (glass containing colorant). Using conservative literature data applicable to additives used at Longford (Tas), based on Brickworks’ LCA FY19, the weighted average emission factor was established as 214 kg CO2e/t of additives not already reported under NGER. This equates to 1.4 kg CO2e per tonne of bricks. This factor has been applied as the uplift factor across all products.

- Packaging, waste to landfill, water use and wastewater treatment: Based on Brickworks’ LCA FY19, the total of greenhouse gas emissions associated with these sources added up to 2.2 kg CO2e per tonne of bricks. This factor has been applied as the uplift factor across all products.

Cumulatively, the uplift factors account for 2% of the Longford products’ life cycle emissions.

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.

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Non-attributable emissions sources summary

Emission sources tested for relevance	Size	Influence	Risk	Stakeholders	Outsourcing	Justification
Head Office business travel	N	Y	N	N	N	Corporate business travel (at 738-780 Wallgrove Rd, Horsley Park NSW) have been excluded from the boundary, as these emission sources are not attributable to the products.
Head Office energy use	N	Y	N	N	N	Corporate head office energy use (at 738-780 Wallgrove Rd, Horsley Park NSW) have been excluded from the boundary, as these emission sources are not attributable to the products.
Capital goods	N	Y	N	N	N	The embodied emissions of capital goods (plant equipment, buildings, infrastructure) are considered non-attributable to the product. This is consistent with industry standard LCAs for construction products, as outlined in the Product Category Rules (PCR) of the International EPD System and has been verified by the Registered Consultant that has compiled our inventory.

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