TCFD Statement 2023

BRICKWORKS

BRICKWORKS

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A message from the Managing Director

Our approach to a low carbon future

At Brickworks, we understand our long-term responsibilities, and the impact and influence we have on the environment, our customers, employees, communities, and shareholders. We take great pride in manufacturing beautiful products that last forever. We integrate sustainability and innovation into product design, resulting in greater energy and resource efficiency over the operational lifetime of a building.

Customer focused sustainable product portfolio

As enablers of safe, resilient and sustainable buildings, at Brickworks, we see a strong future for bricks and concrete products. Our 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 guarantee.

During FY22, over 6% of product volume in Australia was verified as having leading sustainable attributes by third party labels and is expected to increase to 11% this calendar year. There is significant potential to expand the sustainable product range further, with 57% of product volume in Australia identified for potential for sustainability verification. There is also a range of opportunities across our North American products.

Measured recycled content of Australian building products was 47% higher than the previous year. This is approximately 17% of Australian building products total production by weight.

Energy security

Brickworks continues to invest significant resources to support the transition to renewable energy. This includes our ongoing collaboration with partners in exploring waste to energy initiatives and investing in modern fuel-efficient kilns. However, the gas we use to fire the bricks in our kilns cannot be easily substituted for alternative renewable energy sources. As such, ready access to reliable and affordable gas is essential for our industry.

Energy security has become a critical issue across the world. We are acutely aware of the plight of many manufacturers, particularly in Europe, who have been forced to close operations in response to sharp increases in prices and in some cases, an inability to secure supply. This has included some of our valued suppliers.

Brickworks currently has a wholesale gas supply agreement in place with Santos for 11 years, with the potential for additional extension options beyond that. With no current viable substitute for natural gas broadly available across all our plants, the agreement provides the long-term certainty required to underpin our operations and the significant investments we are making on new facilities.

Santos and Brickworks share an ambition towards decarbonisation and intend to collaborate on exploring net-zero energy transition opportunities, potentially including post-combustion capture, and carbon capture and storage.

Emissions reduction performance

In our Australian operations, carbon emissions have followed a general downward trend, with a 42% decrease compared to the base year 2005/06 (Scope 1 and 2). The decrease is attributed to efficiencies gained from alternate fuels, manufacturing consolidation, equipment upgrades and operational improvements.

Brickworks has long understood the step change carbon emission reductions possible through manufacturing excellence and has a long-term strategic focus in driving our global kiln refurbishment program to improve energy efficiency beyond international benchmarks. This is underpinned by our stretch target for a 10% increase in gas efficiency at Austral Brick plants by 2030.

The Australian business has seen a 7% improvement in gas efficiency since FY18, and the North American business has seen significant energy efficiency improvement since acquisition in FY19. We are currently working closely with reporting advisors to validate these gas efficiency improvements. This year will also see the commissioning of the state-of-the-art new Horsley Park Plant 2, which will set the standard for brick manufacturing with best-in-class fuel efficiency, productivity and product quality.

As an industry leader using 12% bioenergy in manufacturing in Australia, we understand the critical role renewable bioenergy can have in producing low-carbon products.

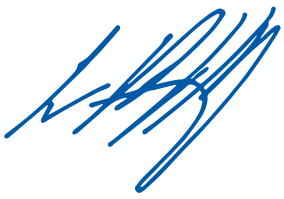
We are assessing the feasibility of renewable bioenergy generation at our brick plants with leading technology provider Delorean Corporation. If successful, each facility has the potential to provide a significant source of renewable energy. A comprehensive feasibility assessment is underway for the Horsley Park NSW location for the potential to produce approximately 210,000 GJ p.a. in Stage 1.

We now have solar installed at two of our masonry factories in Australia. In Victoria, we are progressing with surveys and preparation for 1.7 MW solar power generation capacity at our major Wollert brick facility.

Risk management reporting

Reinforcing our commitment to transparency, we released our first Taskforce for Climate-related Financial Disclosure (TCFD) Statement in February 2022, summarising climate scenario analysis, identifying risks and responses.

We continue to incrementally improve our reporting against the recommendations of the TCFD. This statement updates our progress to date including updated metrics and Scope 3 emissions materiality profiles for our Australian Business and commenced integration of North American operations into our climate risk assessments.



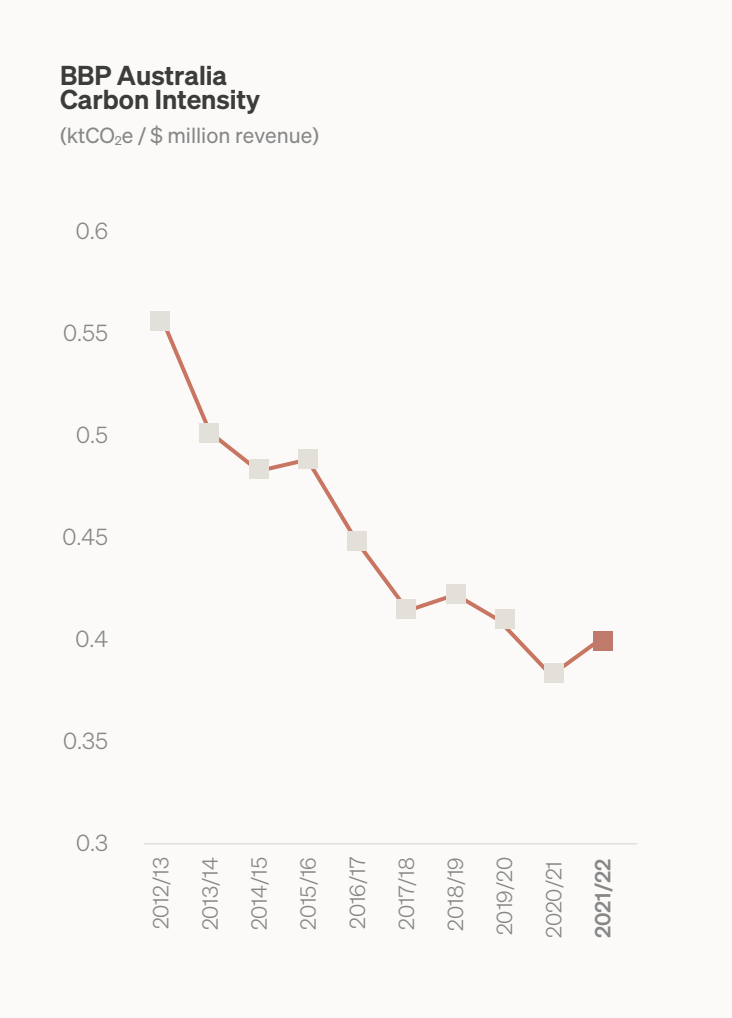
Lindsay Partridge AM
Managing Director

Our Approach

We recognise that as a manufacturer of construction and building products, we are an emitter of carbon, particularly through our brick manufacturing operations, which account for the majority of our total (Scope 1 & 2) emissions of 278,425 tonnes of CO_2e in 2022 for Building Products Australia.

Carbon emissions from our Australian operations have followed a general downward trend, with a 42% decrease compared to the base year 2005/06. The decrease can be attributed to efficiencies gained from alternate fuels such as landfill gas and sawdust, manufacturing consolidation, equipment upgrades and operational improvements.

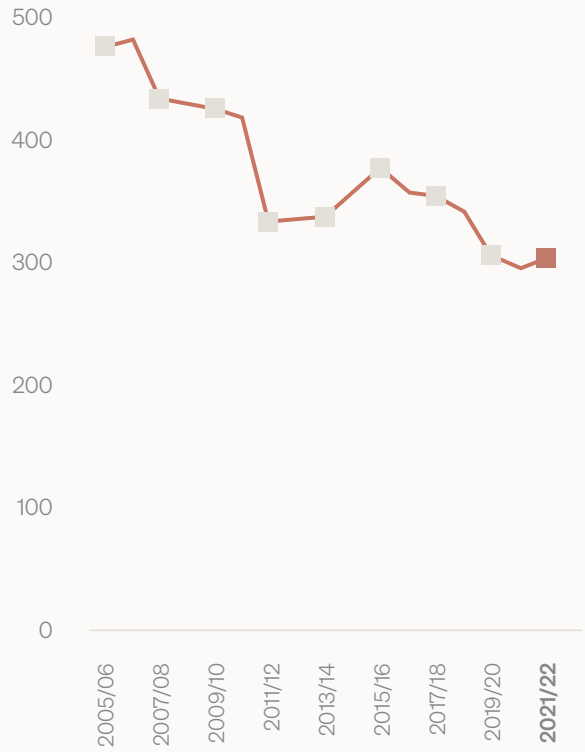
We are committed to the continued development of appropriate strategies to identify, manage and respond to climate-related risks and opportunities across our business. This includes building the resilience of our portfolio to consider climate impacts through adapting and responding to market, policy and technological changes by creating innovative solutions and products that support a smooth transition to a low carbon future. We strive to provide transparent disclosure of those risks and opportunities, and how we manage and respond to climate impacts, to help investors and other stakeholders understand our business. We are progressively adopting the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) to improve both our approach in assessing and managing climate-related risks and opportunities and our related external reporting.



The TCFD recommendations are focused on the financial impact of climate-related risks and opportunities and comprise of four core elements of how organisations operate: governance, strategy, risk management, and metrics and targets. Climate-related risks encompass both physical risks and risks relating to the transition to a lower carbon economy. We have actively monitored and reported our emissions across our international operations since 2008 and in this report, we have outlined how we manage our climate risks, and the metrics and targets we use to monitor performance. We have incorporated key information previously included in our Sustainability Report responses over the following pages, with detailed carbon emissions and energy consumption data available at www.brickworks.com.au/sustainability.

To gain a better understanding of the potential climate-related transition risks and opportunities, Brickworks Building Products Australia has commenced scenario analysis and an internal review, focused on transition risks in building product production and imports. Three climate scenarios have been developed, and these are informing the development of appropriate response strategies to potential climate transition risks. This includes a less than two-degree scenario as recommended by the TCFD and consistent with the Paris Agreement's core temperature target. Further information on the scenario analysis work is provided within this document.

BBP Australia
Carbon Emissions since 2005/06
($ktCO_2e$)



Climate-related Strategy

Brickworks Climate-related Impacts Strategy and Targets

Brickworks acknowledges the potential impact on our business from a global transition to lower carbon energy sources. Such a global transition presents both risks and opportunities for our business through the pricing of energy and carbon policies, construction industry standards and customer preferences for lower carbon solutions. A low carbon transition may result in a need to develop new technologies to remain competitive and increased investor expectations on climate-related disclosure and performance.

The key mitigation response strategies to climate-related transition risks and opportunities faced by Brickworks are outlined in the following table.

	Manufacturing Excellence and Efficiency Strategy	Sustainable Design and Product Strategy	Alternative Energy and Biofuels Strategy	Renewable Electricity and Gas Purchasing Strategy
Strategy Focus Area	Achieve global leadership in leading manufacturing excellence and efficiency.	Responding to an increase in consumer preferences for products with leading sustainability attributes and low carbon options.	Harness circular economy opportunities by investing in technology suppliers and biogas technology partners.	Responding to any uncertainty in the gas and renewables market with leading expert analysis and planning.
Deliverables	Stretch target of 10% increase in gas efficiency at Austral Bricks plants by 2030 (FY18 baseline).	Double volume of products with leading sustainability attributes by 2025 from FY19. Invest in research for thermal design and lifecycle education.	Expand on >12% of energy as biofuels in AU through investment in a pipeline of innovative projects.	Optimise purchasing and partnership opportunities to support manufacturing excellence and efficiency.
			Investigate carbon capture and storage options with our gas suppliers. Invest in the transition to the hydrogen economy through the Brickworks Hydrogen Feasibility Project.	

Climate Related Strategy and Programs

During FY22, we continued our approach to a low carbon future as set out in a Low Emission Technology Statement, which can be downloaded from www.brickworks.com.au/sustainability.

Low Emission Technology Focus Areas

Low Carbon Manufacturing

Manufacturing Excellence powered by low carbon fuels

Energy Efficiency & Recovery

- Local Manufacturing
- Manufacturing Excellence
- Continued Technology Investment
- Global Best Practice Technologies
- Global Best Practice Energy Efficiency

Innovation & Circular Economy

- Optimised design, product mix and firing temperatures
- Increase in recycled material use

Low Carbon Energy Types

- Increasing use of Biofuels and low carbon fuels

Electricity Types

- Investigate renewable electricity options

Further Abatement

- Carbon offsetting for Climate active products
- Investigate Carbon Capture and Storage options with our gas suppliers

Leading Environmental Building Design

Our sustainability strategy focuses on the opportunity to make buildings and cities safe, resilient and sustainable.

- We create beautiful products that last forever
- Our building products play a key role in increasing sustainable home ratings to help our customers achieve their sustainable home design goals

Scenario Analysis

Understanding Carbon Risks and Opportunities

We are incrementally adopting the recommendations of the leading carbon risk framework, Task Force on Climate-Related Financial Disclosures (TCFD), such as using climate scenarios to identify risks and developing climate-related strategy and programs. Our first TCFD Statement was externally validated then published on our website in February 2022 and we will continue to report on progress updates.

In 2020-21 a targeted Climate-related Risks and Opportunities Strategic Review was undertaken across Building Products Australian businesses using the recommended framework set out by the TCFD. This process identified more specific transition climate-related risks and opportunities which are included below. The outcomes of this review were presented to the ARC and the sustainability risks are to be embedded into the Group and business-level strategies.

Scenario Analysis

Scenario analysis includes the identification and assessment of a range of climate-related risks to the business, with deeper investigation into the most material risks. A high-level review identified the most material transition risks as natural gas and carbon prices driven by climate policy, consumer preferences, a need to develop new technologies to remain competitive and increased investor expectations on for climate-related metrics and targets.

At an organisational level, scenario analysis is useful to test the resilience of an organisation's business strategy and operations under different climate trajectories and is an important aspect of risk management. However, scenario outputs must be viewed with an appropriate level of caution given the large number of highly uncertain assumptions required to build and quantify them, and then assess industry, business and investment-level impacts. As hypothetical constructs, scenarios should not be viewed as predictions or forecasts.

Details of Scenarios Considered

Working with climate risk management experts Energetics, three relevant scenarios were considered including:

Scenario 1	Scenario 2	Scenario 3
Sustainable Scenario <2°C SSP1-RCP2.6	**Regional rivalry, security first** 2-3°C SSP3-RCP4.5	**Fossil-fuelled growth** >4°C SSP5-RCP8.5

Three time horizons were selected to review risk exposure over time. These were short term, (present day), medium term (2030) and long term (2050) timeframes.

Physical Risks

As part of its TCFD implementation plan, Brickworks has completed an initial qualitative physical risk assessment to better understand the exposure of our sites to projected climate related hazards.

We engaged a specialist consultancy to understand how climate related physical risks affect our business under the three scenarios from the transition risks analysis; Sustainability (RCP2.6), Security first (RCP4.5) and Fossil-fuelled growth (RCP8.5) for our Australian operations and applied this methodology to our North American operations.

The majority of our sites across our Australian and North American operations (112) were initially screened and assessed for exposure to climate related hazards, including 42 factories and 68 quarries.

Scope

Our sites were assessed against five main physical risks:

- **Extreme high rainfall events** causing production delays, site erosion and sediment discharge and flooding of operations
- **Extreme high temperature events** causing production delays over summer, increased employee heat stress and effect on physical infrastructure
- **Water stress** causing reduced water availability for operations
- **Bushfires** causing production delays in bushfire season, equipment and operations failure and damage to facilities
- **Tropical cyclones or hurricanes** causing production delays and damage to facilities.

Scenarios Selected and Assumptions

Parameter	Scenario 1	Scenario 2	Scenario 3
Likely rise in global temperature	**<2°C**	**2 – 3°C**	**>4°C**
Key Emissions Policy characteristics			
National Emissions Policy	Net zero by 2050	Trajectory based on current 2030 target	No target
Carbon Prices	Rises significantly to $100 by 2030 and $270 by 2050 (SSP1 $55, $150 converted to A$ 2019) SSP Public Database, International Institute for Applied Systems Analysis		

Key Socioeconomic characteristics			
Shared socioeconomic pathway (SSP)	"Sustainable approach"	"Regional rivalry"	"Fossil-fuelled growth"
Social and political characteristics	Sustainable approach, global cooperation	Nationalist, security-focused, fragmented geopolitics	Materialist, highly globalised
Building material regulations	Strong regulation focused on reducing lifecycle impacts and improving resilience	Current regulation	Reduced regulation
Consumer preferences Lifecycle	Widespread desire for sustainable, low carbon/low energy products	Sustainable products grow market shares slightly, cost consciousness predominates	Materialism, conspicuous consumption, status signifiers
Social licence to operate expectations	Widespread expectations and demands for cleaner more sustainable manufacturing	Current expectations	Reduced expectations
Key Economic characteristics			
GDP	Strong growth	Low growth	Very strong growth
Technology	Rapid decarbonisation technological development	Slow technological innovation	Rapid technological innovation
Energy transformation trends	Rapid decarbonisation of electricity, gradual growth of hydrogen in distribution networks Electricity emissions intensity reduced to very low carbon levels, ~15% H_2 in pipeline gas	Slow market-driven replacement of coal-fired generation Electricity emissions intensity reduced to low carbon levels, no H_2 in pipeline gas	Technological development across without an exclusive focus on decarbonisation Electricity emissions intensity reduced in carbon levels, no H_2 in pipeline gas
Energy market trends	Moderate impact on gas prices	Moderate impact on gas prices	Low impact on gas prices
Investor appetite for perceived carbon risk	Actual change in investment pattern	Pressure for disclosure and to improve performance	Focus on innovation

Ref: Energy Market and Transformation Trends = AEMO, Gas Statement of Opportunities 2021, AEMO, Integrated System Plan 2020, IEA, SSP database. Selected With the support of consultant Energetics.

Summary of Transition Risks and Responses

We have outlined Brickworks Building Products Australia key risks and opportunities based on the Climate- related Risks and Opportunities Strategic Review undertaken in 2020–21 based on the scenarios above.

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Transition Risks – Medium and Long-Term

Increased energy costs from changes in carbon or energy policy. The potential introduction of regulatory pricing mechanisms and/or trading systems in Australia would primarily impact our more energy-intensive brick business. The policy environment in which decarbonisation occurs remains unclear, creating uncertainty for business around types and magnitudes of climate-related transition risks and opportunities that it will face. Our strategy is to continue to:

- Achieve global leadership in leading manufacturing excellence and efficiency
- Harness circular economy opportunities by investing in technology, suppliers and partners
- Respond to any uncertainty in the gas and renewables market with leading expert analysis and planning

Changes in construction industry standards on materials efficiency and regulation of existing products in buildings, large construction and infrastructure projects, as well as shifts in consumer preferences may result in demand shifts towards low carbon construction materials. Thermal mass materials may have higher embodied energy than some light weight alternatives, however offer significant lifecycle thermal efficiency benefits. Our strategy is to continue to:

- Respond to an increase in consumer preferences for products with leading sustainability attributes and low carbon options

Need for innovation to develop new technologies to remain competitive. Rapid decarbonisation and technical development with strong economic growth will require investment in innovation to match the rates of technological adoption. Our strategy is to continue to:

- Achieve global leadership in leading manufacturing excellence and efficiency
- Harness circular economy opportunities by investing in technology, suppliers and partners
- Respond to any uncertainty in the gas and renewables market with leading expert analysis and planning

Increased investor expectations on metrics and targets for climate-related financial risks. Expectations include disclosure frameworks such as the TCFD recommendations. Our strategy is to progressively implement the recommendations of the TCFD, and continue to provide detailed sustainability communications aligned with international guidelines such as the TCFD framework to guide the progressive identification of relevant climate-related metrics.

Transition Opportunities – Medium and Long-Term

Reduced energy and waste costs through energy efficiency initiatives and alternative fuels use in manufacturing.

Strong economic growth for resilient products. Changes in construction industry standards to further recognise resilience and life cycle energy efficiency. Our bricks and concrete products are manufactured to provide resilience. They are durable, fire-proof, contain thermal mass for energy efficient design, have excellent acoustic properties and no indoor air emissions (VOCs) and our clay bricks hold a 100-year guarantee.

These product attributes contribute Goal 11 of the United Nations' Sustainable Development : "Make cities and human settlements inclusive, safe, resilient and sustainable".

Build reputation as leader in providing products with leading sustainable attributes. Brickworks is a leader in locally made and sourced products which contribute to the thermal efficiency of leading sustainably designed buildings. Our strategy is to continue to respond to an increase in consumer preferences for products with leading sustainability attributes and low carbon options.

Physical Risk Insights

The findings of this assessment indicated that for all scenarios the majority of our sites, physical risk exposure does not significantly increase until 2050.

In Australia, several sites show a substantial bushfire risk with the potential for unmitigable bushfires under all analysed scenarios, however the majority of these sites are quarries where they are less likely to impact operations severely.

Some plants within Western Australia are most likely to experience prolonged high temperature events under all scenarios by 2050. Queensland plants are also likely to experience these high temperatures under scenario RCP8.5 by 2050.

Our remote Western Australian quarries are likely to experience substantially elevated water stress and some remote Queensland and Victorian sites are also likely to experience elevated severity.

The review found that of Brickworks' sites, 7 of the 68 sites reviewed were exposed to increased flooding potential.

Worker impacts will be most significantly felt at our plants rather than our quarries due to minimal workers located at our quarries. Plants that are affected by acute physical risks may result in operational delays.

In North America, extreme heat events and average temperature increases and potential impacts are also projected to increase with sites in the US-South East and US-Mid-West projected to be most affected. On average, water stress risk for our sites moves from a low to medium level risk. All sites are currently in low flood risk zones (at a catchment scale). US-North East and US-South East are likely to experience increases in extreme rainfall events and there is minimal impact projected to US-Mid-West region. Wildfire risk is not projected to significantly increase in the vicinity of Brickworks facilities. Sites located along the coast in the US-North East may see more impacts of cyclones / hurricanes as these are projected to move further north.

Brickworks' response

The results of this analysis will be used by our operational teams to consider the vulnerability of specific assets to the identified exposures and adjust future capital works programs, if required.

Water stress

- Mapping of sites against the World Resources Institute (WRI) ranks water stress, drought risk and riverine flood risk in the Aqueduct Water Risk Atlas

Water risk area	L	L–M	M–H	H	EH
Risk score	0–1	1–2	2–3	3–4	4–5
Sites in area	39%	51%	9%	1%	0%

- 2025 Sustainability Strategy outlines a key target to reduce potable water use in high water stress areas in Australia
- Reporting and monitoring of water consumption and water intensity. Business KPIs to reduce potable water consumption, implementation of water efficiency programs and increased water recycling
- Company guidelines have been issued for sustainability considerations for new plants or major upgrades including solar PV installations and water collection requirements
- Site water treatment and management programs to ensure compliance with environmental requirements

Bushfire

- Bushfire preparedness plans, risk assessments and training
- Fire break maintenance activities
- Employee fire drills and employee training and incident training

Extreme weather, flooding

- Erosion and sediment plans and upgrading of stormwater management systems
- Emergency preparedness plans for extreme weather events
- Weather monitoring systems at some sites
- Automating water treatment at some sites

High temperatures

- Risk assessments and procedures for working in high temperatures

Future actions

- Further review additional future proofing requirements for sites
- Identify potential controls that may be required to reduce projected impacts
- Monitor assets for potential climate-related impacts
- Further review the impacts to project supply chain security impacts
- Further review the impacts of heat stress on electricity supply, building infrastructure requirements, employee health and safety measures

Manufacturing Excellence and Efficiency

A key strategic focus area is to achieve global leadership in leading manufacturing excellence and efficiency. To achieve this, Brickworks is investing in energy efficiency.

Investing in Energy Efficiency Towards 2030

Since its inception, Brickworks Building Products has invested in the latest kiln, equipment and manufacturing technologies to improve productivity, product quality and energy efficiency.

Energy Efficiency in Australia

FY18 marked the start of a strategic 10-year investment vision to drive energy efficiency across Australia. By 2030, major plant upgrades are expected to improve total gas efficiency across Austral Bricks Australia by stretch target 10%, based on FY18 levels.

During FY19, the Austral Bricks Horsley Park Plant 22 kiln was shut down in preparation for an upgrade to a state-of-the-art brick manufacturing facility. Plant 22 is expected to commence commissioning in FY23. The graph below depicts Austral Bricks Gas efficiency trend. Total gas efficiency (including landfill gas at Horsley Park and sawdust at Longford) has improved by 4.18% since FY18. Natural gas efficiency has improved by 7.05% since FY18.

Continued investment into energy efficiency and recovery has improved many Austral Bricks kilns to exceed international leading energy efficiency benchmarks. Strategic focus areas include opportunities to upgrade remaining kilns.

Efficiency upgrades Horsley Park, NSW, Plant 22

FY23 will see the commissioning of the state-of-the- art new Horsley Park Plant 22, which will set the standard for brick manufacturing with best-in-class fuel efficiency, productivity, and product quality.

Brickworks has a long history of investing in the latest kiln and manufacturing technologies which is a key approach in how Brickworks has driven a general downward trend in carbon emissions.

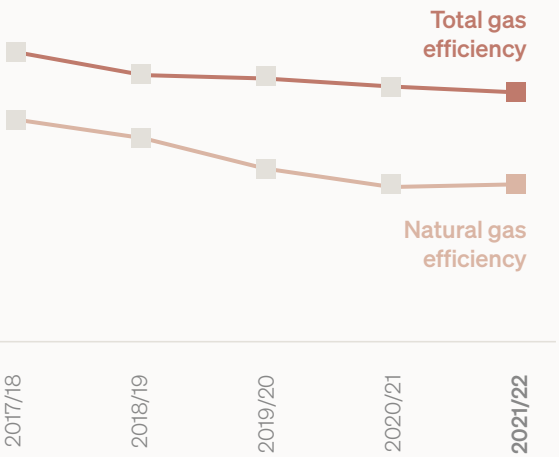
Energy Efficiency in North America

Site consolidations in North America moves production to more efficient factories. Pre-rationalisation, Glen-Gery, Redland and Sioux City operated 15 factories at less than 50% of capacity with an average kiln age of 42 years.

ENERGY EFFICIENCY

Stretch target:
10% increase in gas efficiency at Austral Bricks plant by 2030
Baseline FY18

Austral Bricks Gas Efficiency
(GJ/'000 Standard Brick Equivalent)



Plant 22 kiln
State-of-the-art brick making facility

Closure and consolidations of the much older and less fuel-efficient factories has resulted in eight factories operating at 84% of capacity with an average kiln age of approximately 24 years.

The North American business has seen significant energy efficiency improvement since acquisition in FY19. We are currently working closely with reporting advisors to validate gas efficiency improvements.

Plant consolidation has extended the run time of the existing factories and reduced the number of factories with seasonal closures from seven factories to four.

The closure of two extremely old, unreliable, and inefficient facilities (York 1950s, Caledonia 1950s) will allow for consolidation of similar processes. York moulded handmade product will be moved to the much more fuel efficient Mid-Atlantic Plant in Pennsylvania and the Caledonia full size and thin brick products will be moved to the much newer, fuel-efficient Pittsburgh, Pennsylvania facility.

Further investment into energy efficiency and recovery will drive North American kilns towards international leading energy efficiency benchmarks. Further kiln efficiency projects are flagged for our Iberia, Adel and Pittsburgh plants.

Our Iberia, Ohio Plant is scheduled for upgrades to the dryers and adjustments to the kiln burners.

The Adel Plant in Iowa is modifying a petcoke fuelled kiln to allow for natural gas fuelling. While Brickworks has not operated this kiln since its acquisition, this upgrade will allow for a much cleaner burning fuel and eliminate the petcoke fuel waste.

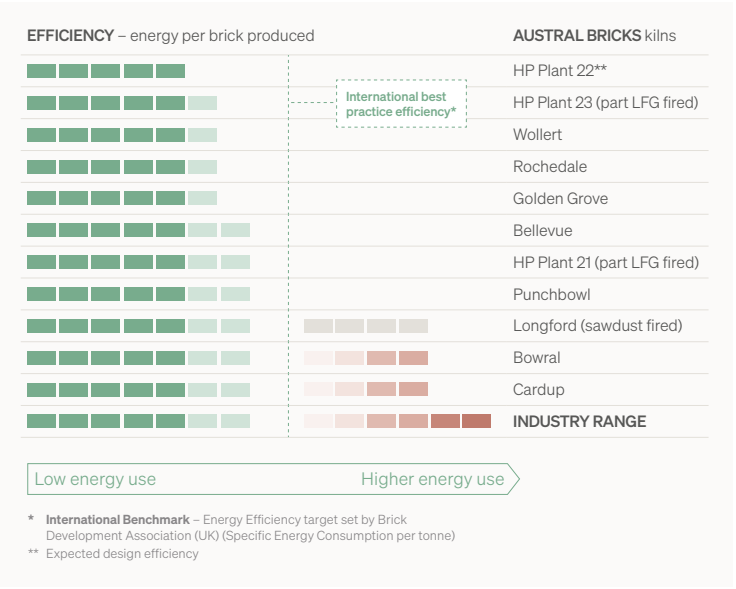
Improvements to existing equipment, optimising the kiln firing curve and changes to raw materials to increase firing efficiency are scheduled for the Pittsburgh, PA Plant.

Upgrades will provide improvements in productivity, product quality and energy efficiency.

Vehicle and Logistics Efficiency

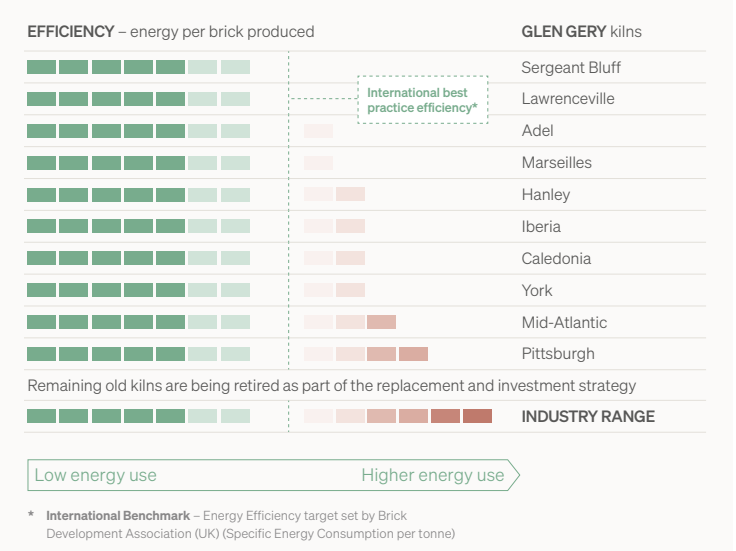
Brickworks continuously modernises its trucks after five years to provide up to date safety features for the community and public and improved fuel efficiency. In FY22, nine trucks were ordered for replacement with Euro V specification. In NSW and WA, drivers have received fuel efficiency training.

Brickworks Building Products – Australia Natural Gas and Electricity Usage



* **International Benchmark** – Energy Efficiency target set by Brick Development Association (UK) (Specific Energy Consumption per tonne)
** Expected design efficiency

Brickworks Building Products – North American Natural Gas and Electricity Usage



* **International Benchmark** – Energy Efficiency target set by Brick Development Association (UK) (Specific Energy Consumption per tonne)

Alternative Energy and Biofuels

Harness circular economy opportunities by investing in technology suppliers and biogas technology partners.

Biofuels

Brickworks has long-since used biogas and sawdust for renewable energy generation. The Alternative Fuels Program saw Brickworks Australia achieve 12% energy use composition of biofuels in FY22.

Austral Bricks Horsley Park, NSW, Plant 21 has used landfill gas since 2013, and Plant 23 since 2014. The combustion of landfill gas emits 10 times less carbon than natural gas. Horsley Park used 220,073 GJ of landfill gas throughout the year, offsetting approximately 9,925 tCO_2e, equivalent to the energy used in over 1,700 homes for one year[1].

Sawdust is the main fuel source at Austral Bricks Longford, Tas. The site used 13,521 tonnes or 140,626 GJ of sawdust throughout the year. While the use of sawdust is less energy efficient than natural gas, its renewable component means that net carbon emissions from the combustion of sawdust is 40 times lower than natural gas, offsetting 7,077 tCO_2e, equivalent to removing approximately 2,300 cars from the road each year[2].

We continue to investigate ways to increase our biofuels content. Austral Bricks has partnered with Western Sydney University, Macquarie University and Global Renewables to repurpose recovered organic materials as alternative raw materials for brick production. Pending EPA approval, composted municipal organic waste will be used as recycled content within our bricks, reducing waste sent to landfills and associated greenhouse gas emissions. The project will reduce fuel and raw materials used in brick production increasing the sustainable attributes and producing a durable and economically viable brick product. This project has received a grant under the NSW Circular Challenge Funding Scheme.

Exploring additional biofuels opportunities

Brickworks is assessing the feasibility of a renewable bioenergy facility to be located next to a brick plant in Horsley Park, NSW. We have partnered with Delorean Corporation to undertake a comprehensive feasibility assessment on the development of an anaerobic digestion facility that converts organic waste into renewable gas. Stage 1 of the feasibility study has shown that, if developed, the facility has the potential to produce approximately 210,000 GJ p.a. of renewable gas. If the project receives approval to proceed, the facility could reduce Brickworks Scope 1 emissions by approximately 10,794 tCO_2e p.a. through the displacement of natural gas. Renewable bioenergy facilities provide a pathway to begin the transition to decarbonising natural gas consumption.

As an industry leader using over 12% bioenergy in manufacturing in Australia, we understand the critical role renewable bioenergy can have in producing low-carbon products. For this reason, Brickworks has also launched the Bioenergy Innovation Challenge, to explore even more bioenergy solutions by connecting with over 100,000 innovators, 600 Universities across 120 countries.

1 Based on 125GJ per Household https://www.abs.gov.au/statistics/industry/energy/energy-account-australia/latest-release

2 Assuming a less fuel efficient car that emits around 3 tCO_2e per year. https://www.energy.gov.au/households/transport

Bioenergy Innovation Challenge

Driving the supply of renewable bioenergy capacity

Bioenergy has so much potential for Australia and US manufacturing. Did you know that the Australian Renewable Energy Agency estimates bioenergy could make up 33% of industrial heat processing requirements, (244 PJ of energy worth), or through renewable gas grid injection?

Driving the supply of renewable bioenergy generation will provide greener options for manufacturing, and provide circular economy benefits for waste sources.

As an industry leader in using over 12% bioenergy in manufacturing, we understand the critical role renewable bioenergy can have in producing low carbon products.

Brickworks Bioenergy Challenge Elements

Element Type	Details
Partnership	Recently we were also pleased to announce a collaboration agreement with Delorean, whereby we will work together to investigate the feasibility of developing green synthetic natural gas facilities at our brick plants. If successful, each facility has the potential to displace up to 100,000 gigajoules per annum of fossil fuel gas with renewable biomethane.
Innovation Challenge	Supporting the Global Innovation Marketplace LEO. Connecting with over 100,000 innovators, 600 Universities across 120 countries. Sourcing innovative ways to incorporate bioenergy into the manufacture of bricks, masonry, precast and rooftiles.
Case Studies	Sharing case studies of our successful bioenergy projects, resulting in 12% of our energy being sourced from bioenergy.
Specifying bioenergy and circular economy sources	Sharing details on the type of bioenergy and circular economy reuse opportunities at Brickworks with potential sources.

Renewable Electricity and Gas Purchasing

Responding to any uncertainty in the gas and renewables market with leading expert analysis and planning.

Energy security

Brickworks is a large industrial user of natural gas. Although gas cannot be easily substituted in the brick manufacturing process, Brickworks has led the industry in reducing gas consumption and carbon emissions through significant capital investments to drive market leading fuel efficiency, product redesign and use of renewable energy sources where possible.

Brickworks continues to invest significant resources to support the transition to renewable energy, and we are leading the industry in reducing energy consumption and carbon emissions. This includes our ongoing collaboration with partners in exploring waste to energy initiatives and investing in modern fuel-efficient kilns.

However, the gas we use to fire the bricks in our kilns cannot be easily substituted for alternative renewable energy sources. As such, ready access to reliable and affordable gas is essential for our industry.

Energy security has become a critical issue across the world. We are acutely aware of the plight of many manufacturers, particularly in Europe, who have been forced to close down operations in response to sharp increases in prices and in some cases, an inability to secure supply. This has included some of our valued suppliers.

In order to avoid a similar situation in Australia, it is critical that additional sources of reliable and affordable gas supplies that are committed for domestic use are brought online as quickly as possible.

Brickworks is a wholesale gas market participant in each of the Short-Term Trading Markets in Sydney, Brisbane and Adelaide and the Declared Wholesale Gas Market in Victoria. Transitioning to wholesale gas arrangements has allowed Brickworks to control sourcing and manage its gas needs.

Brickworks currently has a wholesale gas supply agreement in place with Santos that extends to December 2024. A new agreement will commence in January 2025 and will cover supply to Brickworks' east coast operations for an additional 11 years, with the potential for additional extensions options beyond that.

With no current viable substitute for natural gas broadly available across all our plants, the agreement provides the long-term certainty required to underpin our operations and the significant investments we are making on new facilities.

Santos and Brickworks share an ambition towards decarbonisation and intend to collaborate on exploring net-zero energy transition opportunities, potentially including post-combustion capture, and carbon capture and storage.

Energy management

Brickworks undertakes energy management activities as business-as-usual, including weekly senior management energy efficiency reviews and annual identification of energy management opportunities. Wholesale gas arrangements have allowed Brickworks to manage its gas costs better and improve its energy efficiency monitoring.

Brickworks utilises internally generated daily gas consumption forecasts to manage wholesale gas market costs, identify kiln and dryer issues, and manage the variability of landfill gas supplies. Kiln gas efficiency across different products is quantified and acts as a feedback loop into operational improvement activities.

Renewable Electricity

Our Rockhampton and Sydney Oakdale masonry sites now have solar generation capacity. 55.5kV of solar was installed and commissioned at our Rockhampton plant in February 2022, reducing our Scope 2 emissions for this site by 14%. The 113kV and 240kV solar systems for Oakdale were installed prior to commencing manufacturing, reducing our Scope 2 emissions by 16% from the outset.

In Victoria, we are now progressing with surveys and preparation for 1.7MW solar power generation capacity at our major Wollert brick facility.

Hydrogen

There remain technical and commercial challenges in the short to medium term for the conversion to zero-emission fuels such as hydrogen. However, hydrogen remains a technology that is a potential future fuel source. In the long term, as a large gas user, this fuel may help Brickworks to reduce its greenhouse gas emissions.

Brickworks is investing in the transition to a hydrogen fuel economy through desktop and lab-scale trials, in partnership with Murdoch University. In FY22 a preliminary desktop study was completed by Murdoch University to understand the effect of and ability to use hydrogen in the brickmaking process. This study identified plant infrastructure considerations under multiple scenarios for hydrogen use.

Brickworks Partners with AGL in Hydrogen Study

Brickworks has joined with AGL Energy and other South Australian and major natural gas buyers such to examine a potential green hydrogen plant in South Australia that could serve domestic and export markets with hydrogen fuel. The study is one of several early-stage proposals AGL Energy are completing for large-scale green hydrogen production around Australia.

The feasibility study, being carried out by independent advisory firm GHD Advisory, will map key operational and commercial plans for the project, outline the development of a production timeline and is expected to be completed by the end of the year.


Austral Masonry
Oakdale Plant

CARBON
Invest in the transition
to the hydrogen fuel economy

Sustainable Design and Products

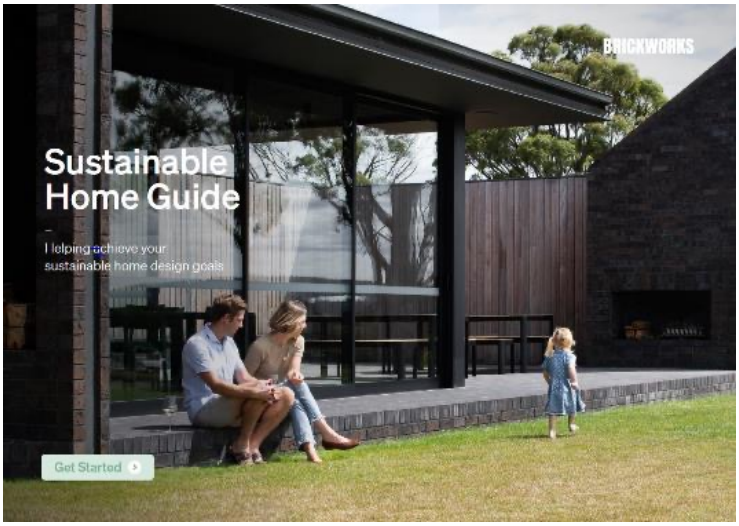
Responding to an increase in consumer preferences for products with leading sustainability attributes and low carbon options.

Meeting Customer Expectations

Today, the world is changing more rapidly than ever before. Architects, builders and customers are increasingly working to address the challenges associated with developing sustainable buildings, reusing waste products, reducing carbon emissions and developing smart, resilient cities.

Brickworks' product development process is customer driven, responding to consumer preferences. Our deep manufacturing capabilities and product knowledge combine with strong architects, builders and customer relationships to identify and optimise new product development.

Our 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.



Sustainable Product Portfolio

Our Sustainable Home Guide outlines how our products contribute to GreenStar Homes and LEED for Homes. Brickworks offers a range of products that help designers achieve sustainable design ratings, including National Home Energy Rating (NatHERS), Green Star Homes and LEED for Homes.

Lower Carbon Products

Brickworks' commitment to manufacturing excellence means our products are produced in some of the world's leading energy efficient kilns. In FY22, Brickworks invested $3 million into research and development for kiln efficiencies, light weight products and different fuel types. Brickworks continues to make incremental improvements to our clay bricks through ongoing research to increase the core percentage volume to lower the weight of bricks. Development of new core patterns will reduce the amount of clay, the energy needed to fire the bricks, the fuel required for delivery and will make the bricks lighter for bricklayers.

The addition of reclaimed or recycled materials into our clay bricks has lowered the energy demand during manufacture, reduced product weight and minimised the amount of virgin raw materials required. Substitution of cementitious materials in our concrete products minimises the amount of virgin raw materials and embodied carbon.

Lightweight Bricks – Increased Void

Increasing voids reduces raw material requirements and supports energy efficiency. During FY22 focus has continued on increased voids across a range of bricks and factories. Four of our brick factories have increased the voids in their bricks with maintained or improved product quality. We have another high volume plant that completed trials in FY22 and expect to progress to implementation in FY23.

Working towards Lightweight Lower Carbon Masonry Products

We are working with our key customers to increase sustainable products provided. Light weight and lower carbon masonry products are a considerable focus for Brickworks. These products will be verified through an


Product innovation

Environmental Product Declaration (EPD) process that will report and demonstrate lower carbon.

Made with Renewables Masonry

In FY22, our Rockhampton and Sydney Oakdale masonry manufacturing sites had solar generation capacity installed. Solar Energy (Renewable Energy) makes up to 10–20% of the total energy used for producing masonry products at Rockhampton, Qld and Oakdale, NSW sites. The products from these sites are new entrants to our Made with Renewable Energy Product Portfolio, a growing list of products using over 10% of renewable energy in manufacturing.

These sustainable products claims are being verified by the Good Environmental Choice Australia (GECA) ecolabel certification process, supporting quality product information. Moving forward, EPDs can be added to demonstrate the lower carbon impact of using renewable electricity.

Climate Active Carbon Neutral

Brickworks is proud to be Australia's first brick and paver manufacturer to achieve important Climate Active Product Certifications.

The first certification was achieved in 2014, for Austral Bricks Longford in Tasmania. All of our and pavers manufactured here are made using low emissions biofuel.

Brickworks has extended its carbon neutral offer, launching a second Climate Active product in August 2021. A carbon neutral calculator was developed with the assistance of Energetics to calculate life cycle emissions (cradle to grave) for all Brickworks Australian made clay bricks and pavers.

The new Climate Active certification enables any brick or paver made in Australia to be carbon neutral. The focus of this product option is to reward leading environmental design with complementary carbon offsets for carbon neutral bricks on selected projects.

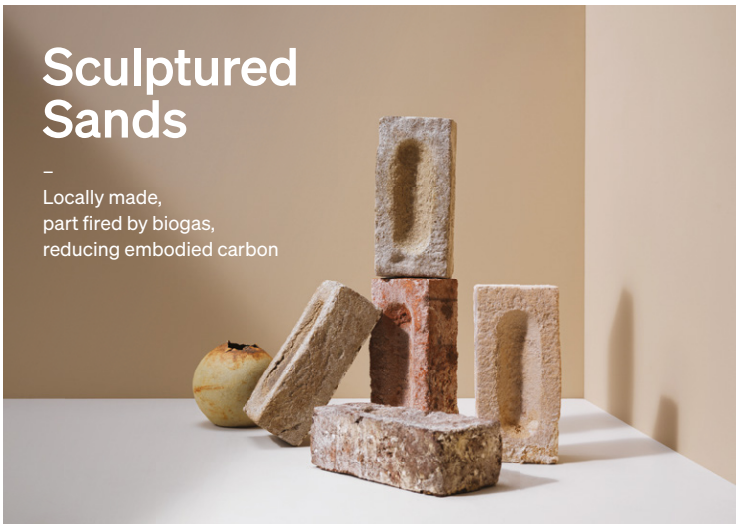

Climate Active Carbon Neutral
Campaign Hero Image

Providing Carbon Neutral for Masonry Products

An Environmental Product Declaration (EPD) is has been completed for masonry produced at Gympie, Qld. We are investigating Climate Active certification for the Aura Block, manufactured with high recycled concrete and low cement at Gympie, Qld.

Lower Carbon Roof Tile Research and Development

Bristile Roofing partnered with Swinburne University of Technology in Melbourne, Vic, to optimise the mix design of concrete roof tiles with a focus on reducing cement requirements.



Biogas and Biomass Fired Products

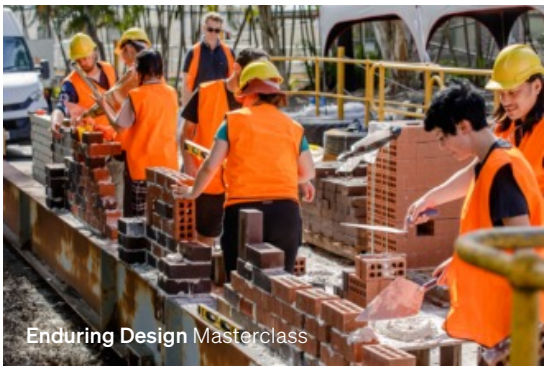
In addition to Brickworks' expanding range of carbon neutral bricks, we continue to develop lower embodied carbon products. During FY21 we expanded our Sculptured Sands range, producing multi-hued soft colours, part fired with biogas from our Horsley Park Plant 21 facility in NSW, reducing embodied carbon.

All products from our Longford plant, TAS including the Daniel Robertson range, are part fired by biomass with the kiln's main fuel source being sawdust. Many products from our Horsley Park Plant 23, NSW are part fired by biogas.

Life Cycle Education

Brickworks Australia hosted 35 Continuous Professional Development (CPD's) and seminars, with a total of 465 attendees during FY22. Brickworks North America hosted 32 seminars and training sessions. Brickworks CPDs and seminars cover a range of topics, including Energy Efficiency and Code Compliance, Sustainable and life cycle design. Some examples of these events are presented below.

- Enduring Design Masterclass – a partnership between Prince's Trust Australia and the University of Queensland, supported by Brickworks, designed to equip participants with a strong, hands-on grounding in the diverse traditional building cultures of Australia and reconnect them with enduring design principles that have stood the test of time.
- Green Magazine's 'Green TALKS series' – Hosted by Melbourne design studio encouraging the broader public to consider lifecycle design in the delivery of new housing.


Enduring Design Masterclass


Philadelphia design studio

Strategic Partnerships

Sustainable building materials are more important than ever before, as we look to meet present and future demand. Brickworks collaborates across the design and construction value chain to promote leading environmental building design and to share expert insights gained from research. Our strategic partnerships allow us to monitor trends and to keep pace with changes in regulatory frameworks. This enables our focus on meeting the requirement for a more sustainable built environment.

In FY22 we collaborated with the following organisations in leading lifecycle education, sustainable manufacturing, gender equity in architecture, and environmentally sustainable design:

- The Materials and Embodied Carbon Leaders' Alliance bringing together the drive to reduce embodied carbon in the building and construction industry.
- Green Building Council of Australia demonstrating our commitment to the sustainable transformation of the built environment.

- Australian Institute of Architects including the Climate Action and Sustainability Taskforce (CAST) working group.
- Australian Institute of Landscape Architects, who leads a dynamic and respected profession, creating great places to support healthy communities and a sustainable planet.
- Enduring design education via Robin Boyd Foundation.
- Engineers Australia including providing continuous professional development and seminars promoting enduring design across civil and construction sectors.
- Housing Industry Association and supporting sustainable homes.

Longer Term Sustainable Product Innovation: Phase Change Material Project

Western Sydney Partnership

During FY21, Brickworks and research partner Western Sydney University investigated innovation to improve the thermal performance of building products with Heat Storage Phase Change Materials (PCMs).

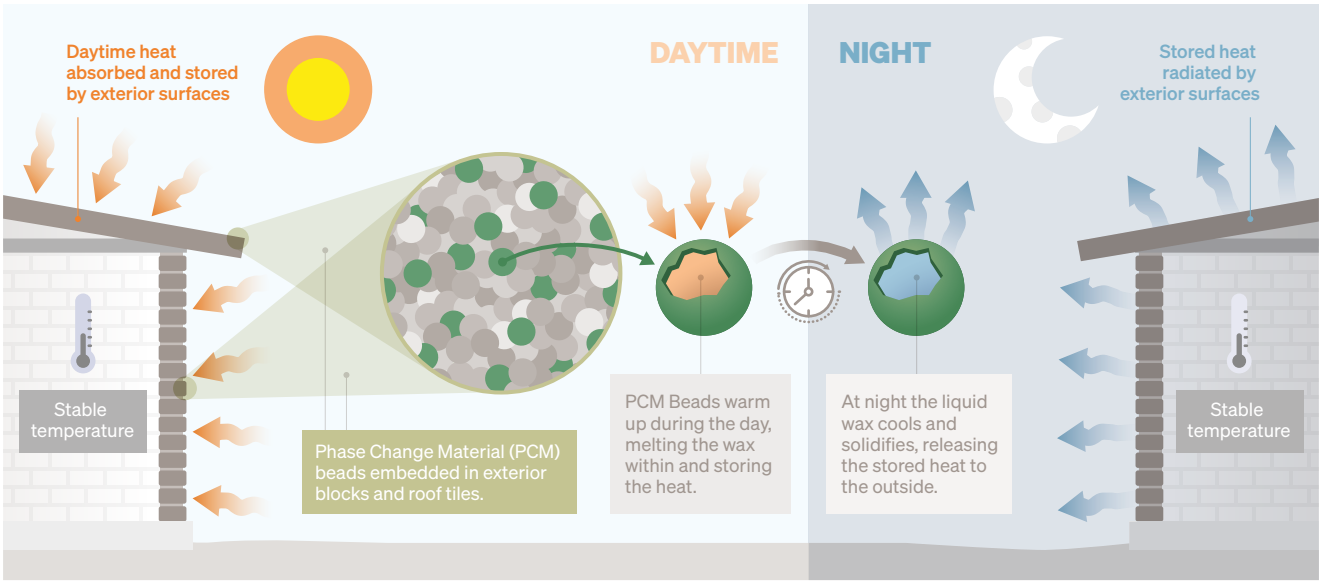
PCMs are materials capable of storing and releasing energy based on the temperature of the environment in which they are situated. PCMs possess the ability to change their state, solid to liquid and liquid to solid, with a certain temperature range. These materials absorb energy during the heating process as phase change takes place, and this energy can be transferred to the environment in the phase change range during a reverse cooling process.

Research to support 7-star thermal ratings

With the increasing emphasis on the thermal efficiency of Australian house construction, new building regulations for 7-star thermal performance for all new construction are being introduced. Since most current forms of house construction would not comply with this performance requirement, there is a need to establish suitable techniques for this to be achieved.

To address this problem, Brickworks has partnered with the University of Newcastle with a commitment of $250,000 to further progress thermal research to support these future building regulations.

This new project involves the re-commissioning of the four experimental housing modules on the University of Newcastle campus developed in a previous housing thermal performance study. For each module walling system (insulated brick veneer, insulated cavity brick and lightweight), modifications and adjustments will be made to the building fabric (slab, walls, ceiling and roof where appropriate) to achieve the necessary 7-star performance. The thermal performance of each of the modified modules will be monitored and analysed in a manner similar to the previous investigation for a 12-month period.



Targets and Metrics

Brickworks' climate strategy discusses the key mitigation response strategies to climate-related transition risks and opportunities faced by Brickworks. Metrics and targets discussed below directly relate to our key mitigation response strategies to climate related transitional risks and opportunities faced by Brickworks. Additional relevant targets and metrics relating to physical risk such as water and safety metrics are discuss in our FY22 Sustainability report which is available on our website.

Progress against our climate strategy deliverables

Target	Our Progress	Status
Energy Efficiency Stretch target: 10% increase in gas efficiency at Austral Bricks plant by 2030.	Total gas efficiency at Austral Bricks plant has improved by 4.2% and natural gas efficiency has improved by 7.0% since 2018.	✓✓
Sustainable Products By 2025 we will double our volume of products sold in Australia that hold leading sustainable qualities.	Currently over 20% of product volume in Australia has been verified as holding leading sustainable qualities.	✓✓
Thermal Design We will provide leading research on passive solar thermal design, enabling reduced lifetime energy use.	$250,000 committed to new thermal research with University of Newcastle.	✓✓
Life Cycle Education We will support design tools, guidance, and information to incorporate life cycle thinking into building design.	Provided 67 continuous professional development sessions resulting in over 808 in person attendees and 18,000 online views.	✓✓
Carbon Invest in the transition to the hydrogen fuel economy and bioenergy options..	A downward trend in carbon emissions, with a 42% decrease compared to the base year 2006. Hydrogen feasibility preliminary desktop study completed by Murdoch University. Ongoing assessment of the feasibility of a renewable bioenergy facility to be located next to a brick plant in Horsley Park NSW.	✓✓

KEY: ✓✓✓ Achieved ✓✓ Materially Progressed ✓ Progressed

Energy

In FY22, Brickworks Building Products total energy consumption was 6.46PJ including 8.2% of renewable energy. This is further broken down by region below.

Brickworks Building Products Australia

Brickworks continues to reduce energy intensity across the business. Since FY13, energy intensity (energy consumption vs revenue) has improved by 17.6% in Brickworks Building Products (BBP) Australia to 6.4 TJ per million dollars (A$) of revenue. Energy intensity increased by 6.4% from FY21, reflecting revenue fluctuations in between FY21 and FY22 due to factors such as product mix.

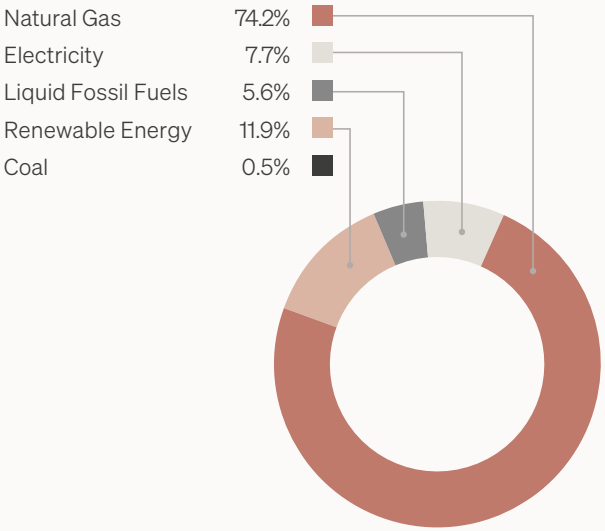
In FY22, BBP Australia's total energy usage was 4.4PJ, a 7% increase from 4.1PJ the previous year, reflecting increased production volumes.

The majority (74%, 3.3 PJ) of the company's Australian energy requirements comes from natural gas, largely used at Austral Bricks' manufacturing facilities. Gas efficiency is measured at a factory level and results are reported to the Managing Director weekly.

In FY22, alternative biofuels made up 12% of Brickworks' Australian energy mix, similar to FY21. Biofuel sources include landfill gas and sawdust. Austral Bricks Horsley Park Plant 21 and 23 both continue to substitute natural gas with landfill gas, sourced from neighbouring landfills.

Sawdust is the primary fuel used to fire the kiln at Austral Bricks Longford, TAS, and is acquired from various Tasmanian sawmills. We continue to investigate ways to increase our biofuels content.

BBP Australia FY22 Energy Mix



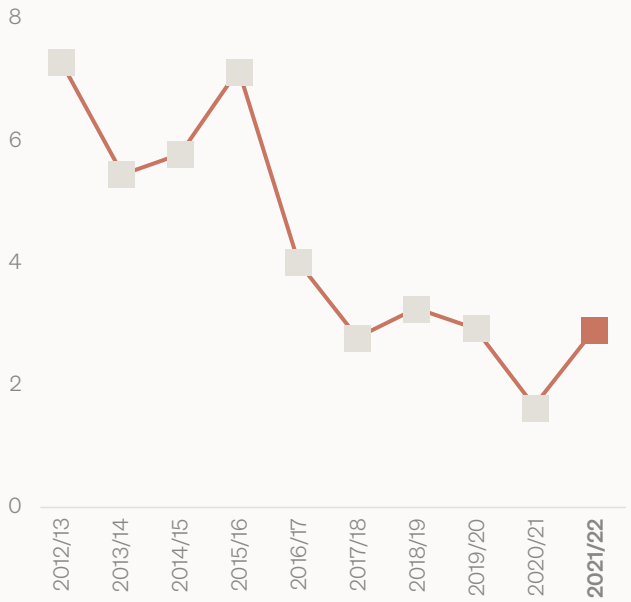
Energy Brickworks North America

Brickworks North America has now developed energy reporting for natural gas, electricity, liquid fuels and lubricants used in mining and manufacturing. During FY23 this will be expanded to also include all fleet fuels to cover all Scope 1 and Scope 2 energy sources. This will enable year on year energy intensity trend reporting.

During FY22, energy usage was 2.02PJ across factories owned by Brickworks North America in operation with two factories being retired (York and Caledonia). All North American factories are fuelled by natural gas and contributes to 89% (1.79PJ) of the operation's energy consumption.

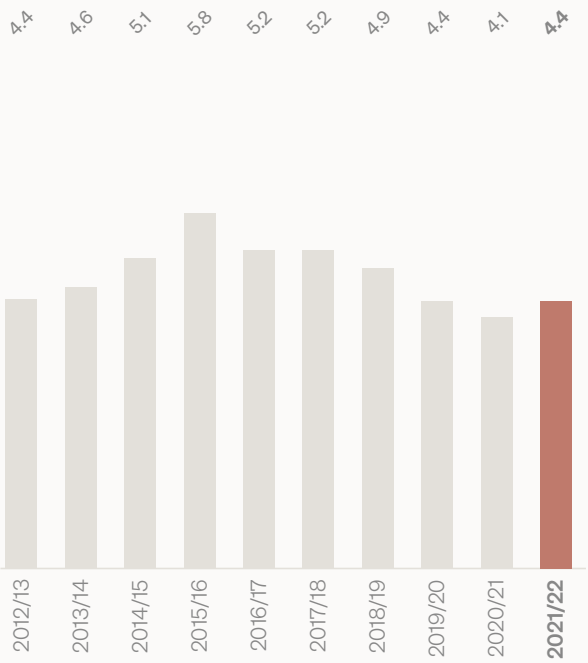
BBP Australia Energy Intensity

(TJ/$M Revenue)



BBP Australia Total Energy Consumption

(PJ)[2]



Ongoing Energy Efficiency

Energy efficiency is a focal point, managed using audits, regular maintenance and upgrades. Heat recovery systems are used in all Australian brick manufacturing facilities. Gas efficiency opportunities KPIs are reviewed on a regular basis. The KPI trend reporting will continue to trigger additional energy efficiency actions to maintain efficiency.

Carbon

In FY22, Brickworks Building Products total Scope 1 and 2 greenhouse gas emissions was 417 kilotonnes of carbon dioxide equivalent ($ktCO_2e$) for both Australian and North American operations. 97% of these emissions are attributed to our brick manufacturing operations. This is further broken down by region below.

Carbon Brickworks Building Products Australia

Australian greenhouse gas emissions are reported and audited for the Australian National Greenhouse and Energy Reporting Scheme (NGERS). Scope 1 and Scope 2 carbon emissions are determined using the methodology and factors outlined within NGERS. Reported carbon emissions are for the reporting period 1 July 2021 to 30 June 2022.

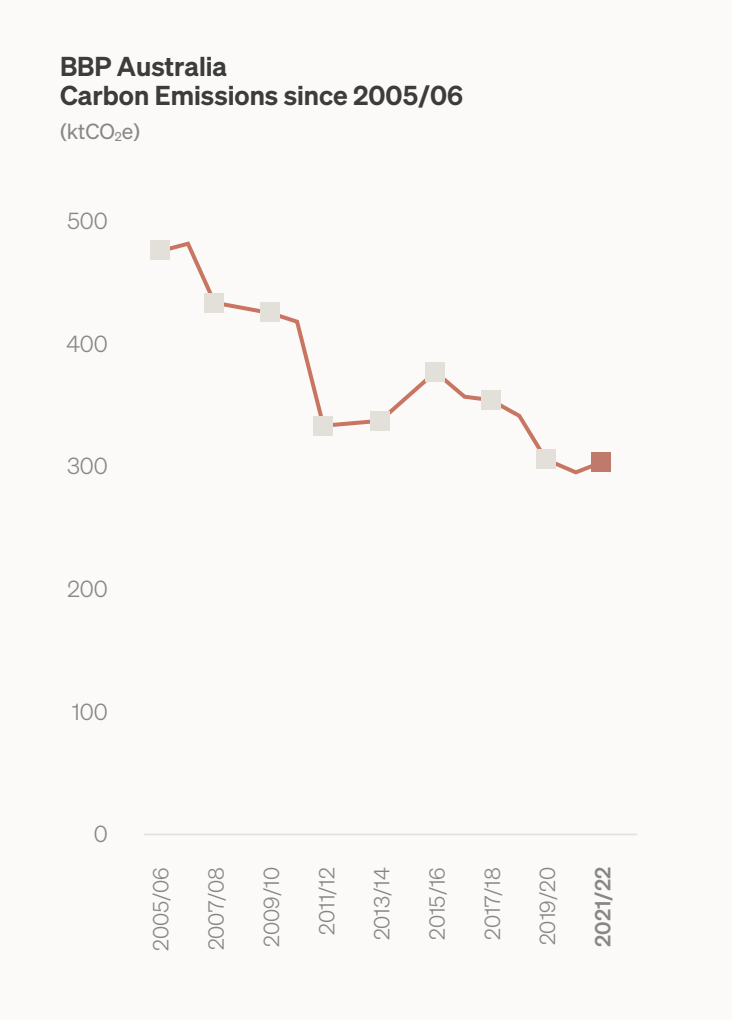
Carbon emissions have followed a general downward trend, with a 42% decrease compared to the base year 2005/06 (Scope 1 and 2). The decrease is attributed to efficiencies gained from alternate fuels, manufacturing consolidation, equipment upgrades and operational improvements.

In FY22, our Australian operations emissions were 206,043 tonne CO_2e (Scope 1) and 72,285 tonne CO_2e (Scope 2), a 5.7% increase on the previous year due to an increase in production.

Brickworks continues to reduce energy intensity by revenue across the business. Since FY13, greenhouse gas intensity (greenhouse gas emissions vs revenue) has improved by 28% in BBP Australia to 0.40 ktonne CO_2e per million dollars (A$) of revenue.

Carbon intensity for Australia was slightly higher (4.6%) than the previous year, reflecting revenue fluctuations in between FY21 and FY22 due to factors such as product mix.

As Austral Bricks and Glen Gery make up >97% of Brickworks' Scope 1 and Scope 2 emissions, the proposed greenhouse gas intensity metrics are these emissions per brick production volumes. Emissions from concrete products Austral Masonry and Bristile, are made up of >88% as Scope 3 emissions largely from the production of cement. Scope 3 emission reporting is in progress with expected publication in FY24, at which point concrete products greenhouse intensity metrics may be considered.



The following table sets out Austral Bricks' greenhouse gas emissions intensity per tonne in FY22 has remained constant compared to FY21 intensities, even with an increase in production and slight increase in total carbon emissions.

Austral Brick (Australia) Greenhouse gas emissions intensity for brick production (Scope 1 and 2)

Metric	FY21	FY22
GHG intensity per tonne of brick	0.17	0.16

Carbon Brickworks North America

Although Brickworks' North American operations are not required to report carbon emissions to the U.S. regulator, the greenhouse gas inventory for our North America operations has been reported and audited for the first time in FY22 using the US EPA Emission Factors for Greenhouse Gas Inventories.

Brickworks North America has now developed greenhouse reporting for natural gas, electricity, liquid fuels and lubricants used in mining and manufacturing. During FY23 this will be expanded to also include all fleet fuels to cover all Scope 1 and Scope 2 greenhouse gas sources. This will enable year on year greenhouse gas intensity trend reporting.

Our North American emissions were 119,743[1] tonne CO_2e (Scope 1) and 23,550[1] tonne CO_2e (Scope 2) for FY22. Total greenhouse gas emissions have increased since FY21 by 3% due to the acquisition of Illinois Brick Company (IBC), a brick distribution company which includes fleet of delivery vehicles and a network of retail centres.

Our North American Greenhouse gas emissions intensity per tonne has decreased slightly from FY21 to FY22 (2%). This is due to a reduction in Scope 2 emissions as a result of our site consolidation projects (See section: Manufacturing Excellence and Efficiency for more details).

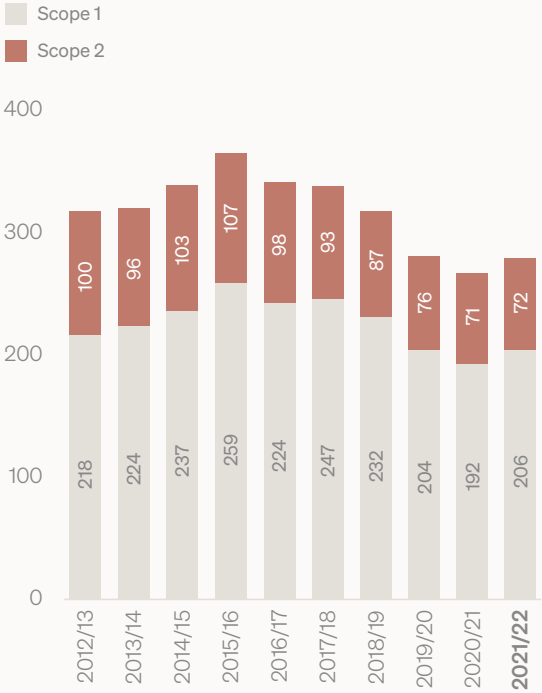
Glen Gery (North America) Greenhouse gas emissions intensity for brick production (Scope 1 and 2)

Metric	FY21	FY22
GHG intensity per tonne of brick	0.23	0.23

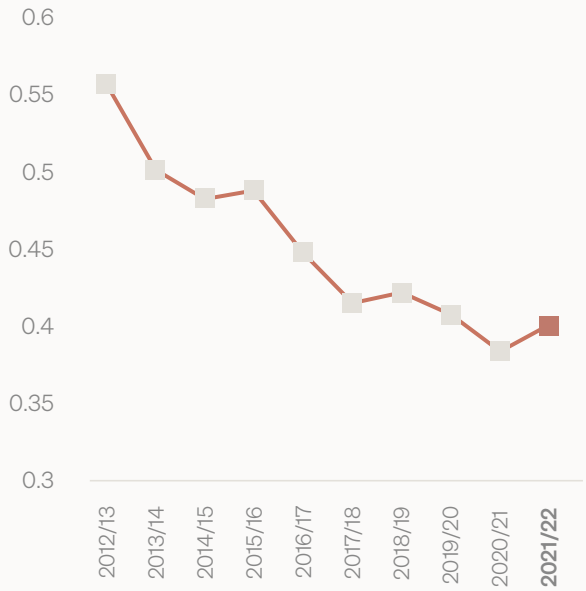
Limited assurance completed

A copy of the Limited Assurance report for energy and Scope 1 and 2 greenhouse gas emissions data is contained within Appendix 1.

BBP Australia Total Carbon Emissions
(Carbon Emissions ($ktCO_2e$))



BBP Australia Carbon Intensity
($ktCO_2e$ / $ million revenue)



1 Since the FY22 Sustainability report was released, Brickworks has engaged an external consultancy to review our North American greenhouse gas inventory to include the acquisition of Illinois Brick Company which has increased the total greenhouse gas emissions reported.

Governance

The Audit and Risk Committee of the Board maintains oversight of Brickwork's response to climate-related risks and opportunities, including risk identification and management, strategy and external reporting.

Brickworks Audit & Risk Committee (ARC) is responsible for satisfying itself that a sound system of risk oversight and management exists and that internal controls are effective. It receives an annual report on our organisation-wide risks, which include climate-related risks and opportunities. Further details of the roles and responsibilities of the ARC are in the Corporate Governance Statement and the Annual Report.

Annually, key management personnel make presentations to the Board on safety, human resources, risk, environment and sustainability issues and targets. In FY20, sustainability was formally incorporated into the charter of the ARC.

Brickworks' TCFD Working Group was formed in FY20, consisting of representatives from Brickworks Executive Management Team. The Working Group represents key areas including energy, operations, research and development, strategy, risk and governance, and sponsored by the Company Secretary. The purpose of the working group is to support the execution of Brickworks TCFD implementation plan and its objectives are to:

- Ensure a common understanding of key climate risk-related concepts, including the TCFD recommendations, across the represented business functions;
- Inform analysis and operationalise the TCFD Strategy through cross-functional representation;
- Ensure that the TCFD recommendations and climate risk-related analysis undertaken by Brickworks are understood at an appropriate level of detail to support decision-making by Brickworks' senior management team and oversight by the Audit and Risk Committee and Brickworks' Board of Directors.

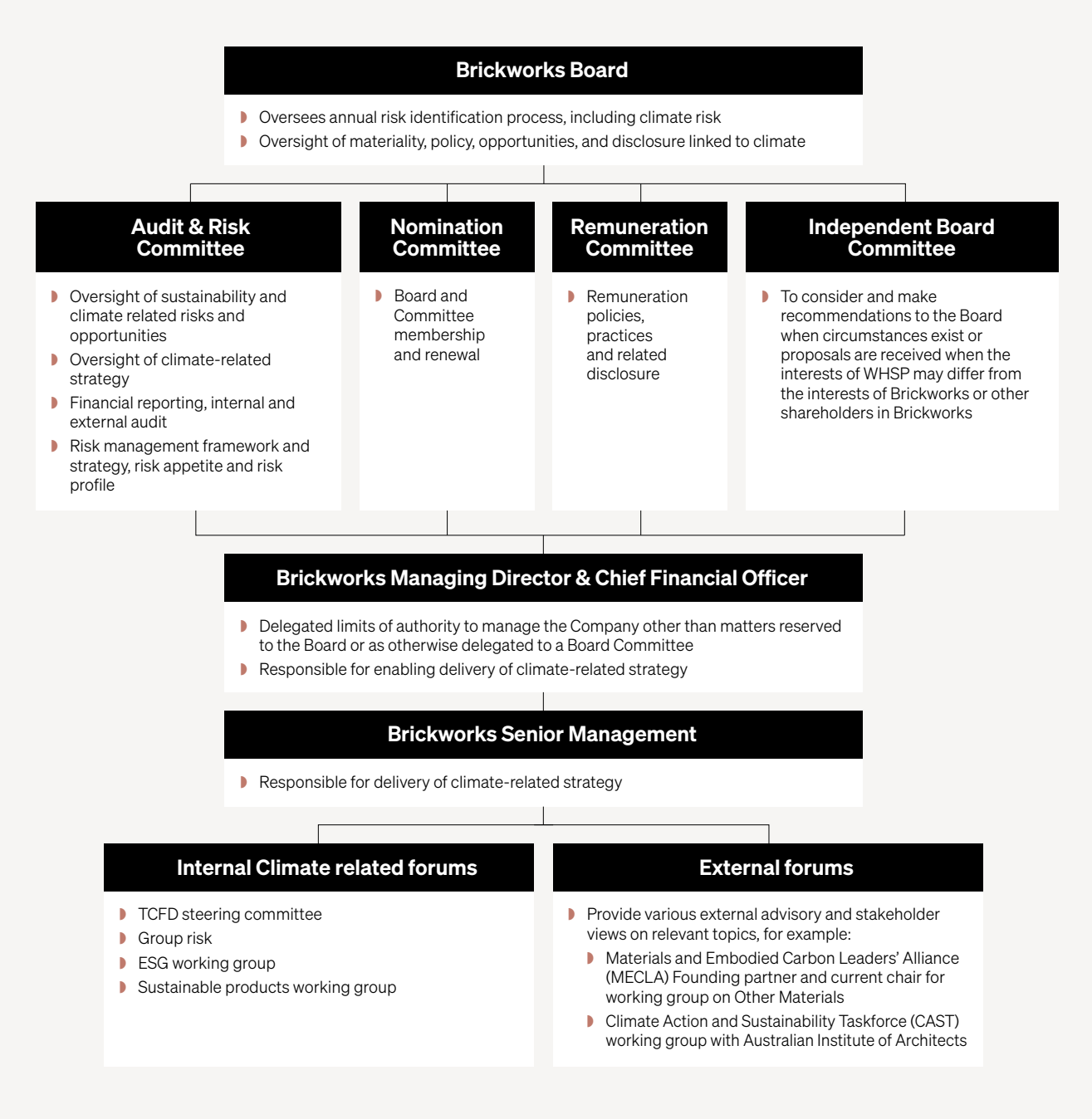
Board and Executive Climate Risk Education and Skills

Brickworks is currently developing a tailored Board and Executive education and training program to further build leadership capability on climate-related risks and opportunities. The program will commence in the first half of 2023 and will also ensure the Board and Executive are regularly updated on emerging external developments.

Low Carbon Transition Competencies

We will work with corporate governance advisors to review the skills matrix in relation to low carbon transition competencies.

Brickworks governance framework



Risk Management

The risk management process is managed by Group Risk & Internal Audit. Climate-related risks are incorporated into Brickworks Building Products risk identification and management process, which includes a formal bottom-up, organisation-wide risk management process undertaken on a yearly basis.

To ensure robust and effective risk management systems are in place and operating effectively, the Board, through the Audit and Risk Committee (ARC), determines the risk profile for the company. It ensures that business initiatives are consistent with its risk appetite, reviews the controls and systems in place to continually mitigate risk, and oversees reporting and compliance requirements.

A Risk Management Framework has been implemented, consistent with each element of the Australian Risk Management Standard AS/NZS31000:2018. Key elements of the framework development include integration, design, implementation, evaluation and improvement.

Brickworks' Board has adopted a Risk Management Framework that identifies risk appetite for the Group across six different categories (Legal, Health & Safety, Customer Service, Financial, Reputation and Environment/ Sustainability), and then considers how each identified risk is placed within that framework.

That framework involves assessment of the likelihood of an event occurring, the potential impact of each event, and the controls and processes in place to continually mitigate each risk.

Climate related risks have been identified in this framework since FY20 and to supplement the annual risk review process, in 2020– 21 a targeted Climate-related Risks and Opportunities Strategic Review was undertaken across Building Products Australian businesses using the recommended framework set out by the TCFD. This process identified more specific transition climate-related risks and opportunities which are included below. The outcomes of this review were presented to the ARC and the sustainability risks are to be embedded into the Group and business-level strategies.

Risk management is a priority for senior management. Details of risk management and the significant risks that may impact the achievement of the Group's business strategies and financial prospects are included in the Brickworks FY22 Annual Report and the Corporate Governance Statement which can be downloaded from www.brickworks.com.au/investors/group-overview#corporate-governance

Risk identification and management process

Brickworks Board

Determines risk profile for the company

Audit and Risk Committee

Recommends risk profile to the Board

Risk Management Framework (Group Risk & Internal Audit)

(consistent with the Australian Risk Management Standard AS/NZS3100:2018)

Building Products | Group | Land and Development | Investments

Annual risk management framework review and update

Risk appetite categories

Customer Services | Environment/Sustainability | Health & Safety | Financial | Legal | Reputation

Conclusions
and next steps

Brickworks recognises the seriousness of the risks present and is providing disclosure in a way that covers these issues.

The process was beneficial to identify key risk drivers and mitigation options:

- Climate policy is the most significant driver of transition risk yet the policy environment in which decarbonisation occurs remains unclear, creating uncertainty for business
- Energy efficiency, renewable energy and alternative energy such as biogas reduce projected greenhouse gas liabilities

Outcomes of this work will be included in annual strategic, capital and business planning.

Brickworks will continue to monitor and report on management of climate risks. Our roadmap to improve our TCFD disclosure is presented in table below.

Brickworks 2025 TCFD Roadmap

	2023	2024	2025
Governance	• Disclose a clear structure of accountabilities at Board level with respect to oversight of climate-related risk and progress towards goals and targets. • Disclose a clear structure of management's accountabilities with respect to assessing and managing climate-related risks, issues and opportunities including information on reporting processes, committees, management of climate strategy and target setting. • Disclose processes by which climate-related issues are monitored, assessed and reported internally including frequency of discussions, Board, committee and strategy meetings.	• Disclose climate competencies, skills and expertise across Board and management-level including how often training and capacity-building is carried out.	• Disclose any changes or updates to climate- governance as required. Keep website up to date with publicly available climate policies, Board charters and relevant documentation for suppliers, business partners and customers.

	2023	2024	2025
Strategy	◗ A more detailed description of the scenario analysis process completed including the methodology, time periods, risk criteria and prioritisation process. ◗ Detail on the risks and opportunities identified and how the organisation has responded or plans to respond. ◗ A description of how climate-related risks and opportunities affect the business and how these are linked to overall business strategy, vision and the core business model. ◗ Progress against key management responses particularly in relation to the key opportunities, and how Brickworks has engaged with stakeholders across its value chain to share learnings and explore opportunities.	◗ Disclose strategic performance implications under the various scenarios considered, such as potential qualitative or directional implications for Brickworks' value chain, capital allocation decisions, research and development focus, and potential material financial implications for operating results and/or financial position. ◗ Explain how specific risks and opportunities may have resulted in mitigation measures and operational strategies or adjustments over time. ◗ Update on progress with new initiatives and progress against opportunities including stakeholder engagement across the value chain.	◗ Disclose cost quantification of key climate risks, alongside the methodology, assumptions used and any limitations.
Risk management	◗ Integration of North American operations into our climate risk assessments. ◗ A detailed articulation of the risk management processes specific to the identification, assessment and management of climate-related risks and opportunities. This should include how materiality is determined, how risks are prioritised, process ownership, database management, responsibilities across business units, risk monitoring and internal reporting structures.	◗ Disclosure that reflects adequate maturity of the integration of climate risk identification, assessment and management into Brickworks' overall risk management process.	◗ Disclose any updates as required.
Metrics & Targets	◗ Disclose all climate-related datasets and metrics. ◗ Disclose detail behind calculation and methodology of climate-related datasets and metrics, e.g. international reporting frameworks where applicable. ◗ Investigate potential 2030 and 2050 net zero targets, and more comprehensive analysis of expected capital and operating costs (feasibility). ◗ Robust testing of potential emission reduction plan, "stress test" the grounds on which statements are being made, to reduce the risk of misleading disclosures. ◗ Consider external third-party assurance over reported metrics and disclosures.	◗ Disclose year on year progress against all metrics and targets with historical data for comparison. ◗ Disclose any climate-related metrics that have been incorporated into the company remuneration and/or performance scorecards, as well as progress against them.	◗ Disclose an internal carbon price and explain how this is applied to strategic and financial decisions.

Appendix 1: Auditor Assurance Statement

Independent Limited Assurance Statement (FY22)
to the Management and Directors of Brickworks Limited

CarbonIntel

Our Conclusion:

Carbon Intelligence Pty Ltd ('Carbon Intel', 'we') was engaged by Brickworks Limited ('Brickworks') to undertake 'limited assurance' as defined by Australian Auditing Standards (hereafter referred to as a 'review' or the 'engagement'), over selected sustainability performance data within Brickworks Sustainability Report for the year ended 31 July 2022. Based on our review and evidence obtained, nothing came to our attention that caused us to believe that the selected sustainability data has not been prepared and presented fairly, in all material respects, in accordance with the criteria defined below.

Scope of our Engagement

We conducted a review over selected sustainability performance data within the Sustainability Report for the year ended 31 July 2022.

Engagement Subject Matter

The Subject Matter for our limited assurance engagement included selected sustainability performance data, limited to those aspects listed below, for the year ended 31 July 2022:

Australian Operations

- Total Scope 1 & Scope 2 greenhouse gas (GHG) emissions (in tonnes of carbon dioxide equivalent (tCO_2-e)) *
- Total energy consumed (in petajoules (PJ)) *
- Total number and cost (in Australian dollars (AUD$)) of significant environmental fines and penalties
- Lost Time Injury Frequency Rate (LTIFR)
- Total Recordable Injury Frequency Rate (TRIFR)

*Reported for the year ended 30 June 2022, to align with the reporting period for the *National Greenhouse and Energy Reporting (NGER)* scheme.

US Operations

- Total Scope 1 & Scope 2 GHG emissions (tCO_2-e)) *
- Total natural gas consumed (in petajoules (PJ)) *
- Total electricity consumed (in MWh) *
- Natural gas efficiency 12 month rolling average
- Total number and cost (in US dollars (US$)) of significant environmental fines and penalties
- Lost Time Injury Frequency Rate (LTIFR) ^
- Total Recordable Injury Frequency Rate (TRIFR) ^

*Reported for the year ended 30 June 2022, to align with Australian Operations.

The Subject Matter is historical information and does not include Management's forward-looking statements.

Criteria

In preparing the Sustainability Report, Brickworks were informed by the following criteria:

- Global Reporting Initiative (GRI) Standards
- Brickworks' own publicly disclosed criteria as established in the Sustainability Report.

Our Responsibilities

Our responsibility is to express a conclusion on the selected sustainability performance data, based on our review and evidence provided by Brickworks. We were also responsible for following the assurance standards, maintaining our independence and confirm that we have met the requirements of the APES 110 Code of Ethics for Professional Accountants and we have the required competencies and experience to conduct this assurance engagement.

Brickworks' Responsibilities

Brickworks' management is responsible for selecting the Criteria, and for preparing and fairly presenting the Sustainability Report in accordance with that Criteria. This responsibility includes establishing and maintaining internal controls, adequate records, making estimates that are reasonable in the circumstances, and providing the evidence required to support the engagement subject matter.

Our Approach to Conducting the Engagement

We conducted this review in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other Than Audits or Reviews of Historical Financial Information' and 'Australian Standard on Assurance Engagements (ASAE) 3410 on Greenhouse Gas Statements' and the terms of engagement as agreed with Brickworks.

Summary of Assurance Procedures Performed

Our review consisted of obtaining the engagement subject matter, making enquiries of persons responsible for preparing the selected sustainability performance data, and applying detailed testing, analytical and other review procedures.

Our procedures included:

- Planning the engagement, assessing the risks of misstatement, and designing assurance procedures
- Conducting site reviews and interviews with site and corporate personnel to understand the business, data management systems, and reporting processes
- Conducting interviews with key personnel to understand the process for collecting, collating, calculating, and reporting the selected sustainability performance data
- Checking that the calculation criteria have been appropriately applied in accordance with the methodologies outlined in Brickworks' Criteria
- Undertaking detailed testing and analytical review procedures to support the reasonableness of the data
- Identifying and testing assumptions, source data, and methodologies supporting calculations
- Testing, on a sample basis, to underlying source information to check the accuracy of the data.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Limited Assurance

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. While we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Furthermore, our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within or extraction from Financial or IT systems.

Use of our Assurance Statement

We disclaim any assumption of responsibility for any reliance on this assurance statement to any persons other than management and the Directors of Brickworks, or for any purpose other than that for which it was prepared.

PAdams

Dr Paul Adams
Audit Team Leader, Carbon Intelligence Pty Ltd

5 September 2022