

CLAY BRICK AND ROOF TILE

Industry Sustainability Snapshot 2024

INDUSTRY INTRODUCTION

Think Brick Australia (TBA) and the Australian Roofing Tile Association (ARTA) are committed to a more sustainable future. We know that change won't happen overnight. Our members have started taking positive steps to reduce their impacts and contribute towards a more sustainable future for our industry.

Together we discussed how far we have come and looked forward to what we need to do next. We will work together to drive positive change in our industry.

WHO WE ARE



Think Brick Australia is the voice of the Australian clay brick and paver industry. We inspire contemporary architecture and sustainable design using our products through research, technical resources and industry advocacy.



The Australian Roofing Tile Association represents roof tile manufacturers nationally and our members include the major industry leaders. We strive to push for sustainable and innovative roofing solutions that Australians can be proud of. We assist our members with technical resources and research whilst advocating for industry collaboration.

CLAY BRICK AND ROOF TILE FACTS

Bricks and roof tiles are crafted by blending clay and shale with water, harnessing their distinctive natural attributes and colours reflective of the diverse clay deposits found across Australia.

Various regions of Australia have clays and shales with distinct characteristics and colours, contributing to the rich diversity of bricks and roof tiles available on the market. The proximity of clay pits to manufacturing facilities enables local production, ensuring accessibility of these products throughout the country.

Clay bricks are formed by two main methods: pressing and extrusion. Pressing produces solid bricks, whilst extrusion allows for bricks with various core patterns to be manufactured. Roof tiles are pressed onto mould plates that vary in shape based on the finished profile.

Bricks and roof tiles are unrivalled in the construction industry, renowned for their exceptional durability and versatility. Beyond this, bricks are celebrated for their timeless aesthetic appeal, longevity, and low maintenance. Similarly, terracotta roof tiles are known to be able to withstand the harsh and varied climatic conditions of Australia, from ocean spray and hail storms to cyclonic winds. It's no surprise that bricks and roof tiles have remained the choice for homes throughout Australia for centuries.

According to industry researcher IBISWorld, about 60% of clay bricks manufactured in Australia are face bricks and the remaining 40% of common bricks.

OUR INDUSTRY

Australia's clay brick and roof tile industry is worth over \$2.8 billion and employs over 30,000 people.¹ The basic process of how we make bricks and roof tiles has not changed in thousands of years. However, modern technology allows us to produce higher-quality products through more efficient manufacturing.

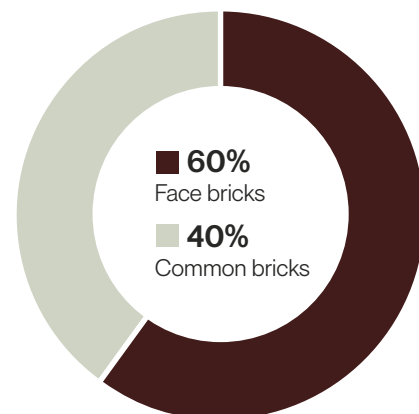


Worth over
\$2.8B



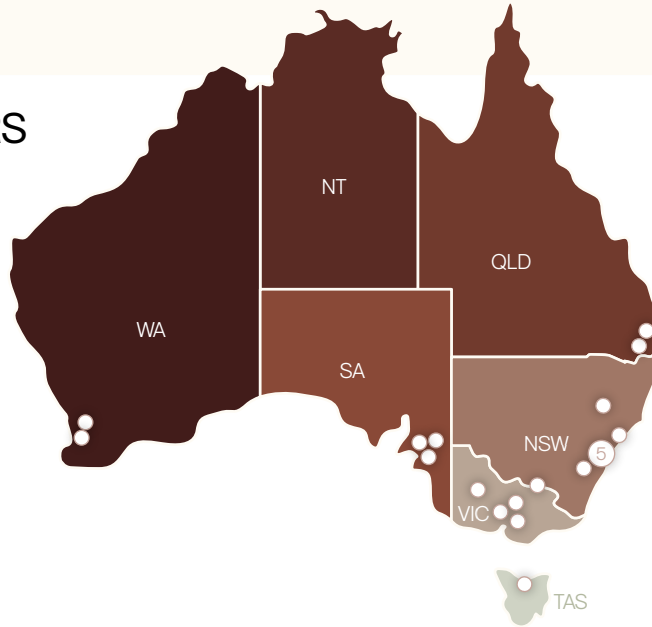
Employs over
30,000
people

INDUSTRY REVENUE BY KEY PRODUCT AND SERVICE LINES



¹ Think Brick

OUR MEMBERS



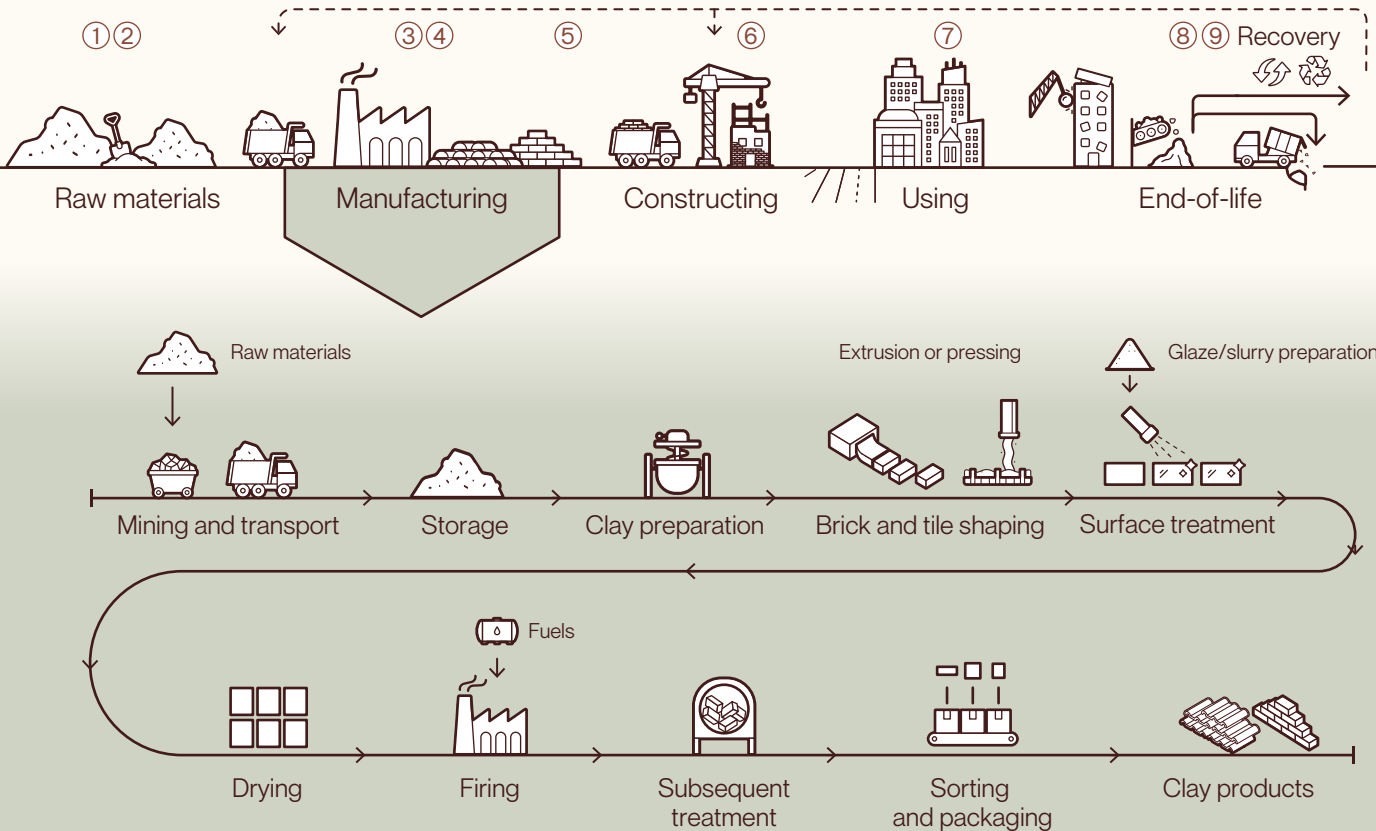
A SNAPSHOT OF OUR MEMBERS

- 11 members
- 20+ factories
- 100% Australian-owned
- 50% family-owned

- ⑤ multiple manufacturing locations
- single manufacturing location

OUR PROCESSES

How our processes are helping us be more sustainable.



LOCAL AND SUSTAINABLE MANUFACTURING

- 95% of our materials are locally sourced.
- Clay is an abundant and readily available material.
- We employ locally.
- We use scrubbers to reduce emissions.
- We use recyclable packaging.
- We comply with Australian laws and legislation.
- Our members' products have desirable thermal characteristics that can reduce operational energy in a well designed building.
- Clay pits are repurposed after use and given back to the community.
- Our members support the circular economy through schemes to reduce, reuse and recycle clay bricks, pavers, roof tiles and associated products.

MOVING TOWARDS A LOWER EMISSIONS FUTURE

We are committed to reducing greenhouse gas emissions in our operations. Our members are taking steps to reduce operational emissions, including:

- using alternative fuel sources like biofuels for kilns
- investigating additional alternative fuels including biofuels and hydrogen
- using more solar power for our operations
- using scrubbers to reduce emissions
- using more efficient manufacturing processes and equipment
- sourcing our raw materials from clay pits close to our factories, significantly decreasing transport emissions in our operations
- sourcing recovered raw materials from excavation and building sites to use in brick and tile manufacturing
- modifying core patterns to reduce material usage and produce lightweight bricks.



Daniel Robertson Bricks Toorak Road

MEMBER SPOTLIGHTS

BRICKWORKS

Brickworks are undertaking a viability study investigating whether a renewable gas facility can be installed onsite, with the potential to produce approximately 210,000 GJ p.a. of renewable gas.

PGH BRICKS AND PAVERS

PGH have installed a 377 kW solar system in their Cecil Park NSW facility. The 400 m² panel area is expected to produce 510,000 kWh of electricity annually and reduce carbon emissions by 347 tonnes of CO₂e per year.

DANIEL ROBERTSON

In 2023 Daniel Robertson bricks celebrated 10 years of Climate Active Carbon Neutral certification achieved through firing using waste biomass, improving manufacturing efficiencies and offsetting.

Daniel Robertson fire their Tasmanian kiln using local waste sawdust. This switch to an alternative fuel source has led to annual savings of 7,077 tonnes CO₂.

CASE STUDY

MAITLAND HOSPITAL

The new Maitland Hospital was built on the site of the decommissioned East Maitland Brickworks which operated for over 120 years.

The site was owned by four generations of the Turton family before being sold to PGH in 1969. After its closure in 2006, the site became the location for the new Maitland Hospital.

The hospital has been designed to reflect both its place on Wonnarua land and its connection to the former brick quarry.

BVN Architects who designed the hospital said, 'The statement red screen and the red brick and steel facade is a nod to the former brick quarry and vernacular architecture, which for much of the community resonates with their personal and family history.'

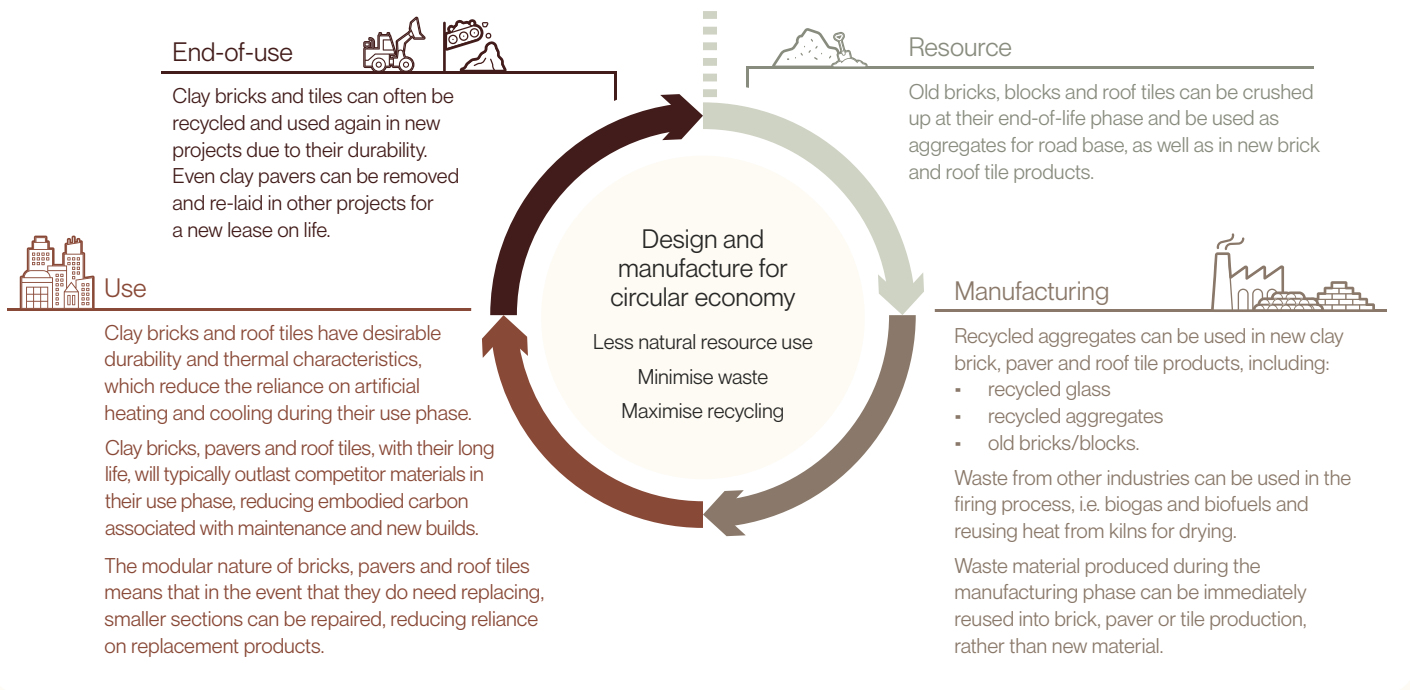


Left: Workers at Turton's Brickyard, East Maitland, NSW (Ca. 1900). Source: [Flickr](#)

Below: Maitland Hospital. Source: [bvn.com](#)



CIRCULAR ECONOMY



Littlehampton Bricks and Pavers

MEMBER HIGHLIGHTS

Our members have designed their machinery so they can reuse the unfired bricks and offcuts back into manufacturing. Any products that are below quality are crushed and repurposed, diverting bricks and roof tiles from landfills. Crushed clay product known as 'grog' is combined back into the manufacturing process, constituting up to 10% of the final product composition.

The majority of Australian manufactured bricks are delivered in strapped packs, minimising packaging material and reducing waste on-site. Those manufacturers that do deliver bricks on pallets offer pallet pickup schemes. These schemes encourage users to return pallets for reuse, rather than sending them to landfill. Midland Brick (WA), Bowral Bricks (NSW), Krause Bricks (VIC) and Littlehampton Bricks and Pavers (SA) are some manufacturers who offer these schemes across Australia.

Lutum Roofing has their terracotta roof tile factory in Wyee, NSW. They extract their clays from a clay pit directly next door. This lowers their environmental footprint from transporting resources to site.



WHERE ARE WE NOW?

WATER

Our members continue to look for opportunities to reduce the water needed in their manufacturing processes.

This includes:

- making our manufacturing plants more efficient and using more recycled water in our operations
- using water retention pits to collect run-off and repurpose stormwater.

One of our members uses a completely closed-loop system with the entire manufacturing facility operated on rainwater.

LOCAL MANUFACTURING

Our members are Australian-owned and operated and we manufacture and supply products locally. This ensures:

- a more sustainable supply chain that complies with Australia's health and safety and employment laws
- low transport emissions from sourcing our raw materials to selling the final product.

MATERIAL USAGE

We aim to use recycled and repurposed materials over raw materials in our mixtures where possible.

Examples include:

- spoil from construction projects such as the Cross River Rail Project in South East Queensland and the Circular Quay city clay project in Western Australia
- green waste from factories
- grain dust by-products
- fly ash – a by-product from coal-fired plants
- recycled glass, cement, and concrete waste for use as aggregates
- organic waste.

DURABILITY

- Bricks are extremely durable and can last hundreds of years.
- Bricks can be re-purposed with their structural properties intact.
- Bricks classified as exposure grade are salt resistant and can be used in severe marine and corrosive environments where other materials may disintegrate. Similarly, roof

tiles can be used in coastal areas without the risk of rust.

- Broken and damaged bricks can be crushed and reintroduced into new bricks or repurposed for other projects (e.g. resurfacing tennis courts and for baseball pitch mounds).

PROTECTING BIODIVERSITY

When clay is extracted from the ground, we avoid using harmful chemicals, allowing for the repurposing of clay pits once they are no longer needed for manufacturing purposes. In Australia, old clay pits have been transformed into various facilities such as hospitals, parks, and even frog habitats. Additionally, clay bricks and roof tiles, being inert, can be returned to the earth at the end of their life cycle.

Strict rehabilitation standards implemented nationwide, such as mandating equivalent land offset to restore habitat for every instance of land clearing, guarantee the mitigation of any environmental effects from clay extraction activities. Clay pits can be easily restored to their original landscapes, whether that entails bushland or farm pasture, preserving environmental integrity.



CASE STUDY

BRICKWORKS SYDNEY OLYMPIC PARK

The State Brickworks in Sydney Olympic Park was set up by the NSW Government in 1911 to meet the demand for public housing. After being sold and closed in 1936 the site was reopened following World War II for the second housing boom, before eventually closing for good in 1988.

In 1992 the site was designated to be turned into a tennis centre at the newly created Sydney Olympic Park for the 1992 Sydney Olympics. However, it was discovered that a colony of green and golden bell frogs had made the brick pit their home.

Today the former brick pit is an environmental feature of the Olympic Park, home to the frogs, and features a suspended walkway around the pond.

Top: Brickworks in 1912. Source: [Past/Lives of the Near Future](#).

Bottom: BrickPit today. Source: [sydneyolympicpark.nsw.govt.au](#)



SUPPORTING INDUSTRY



THE AUSTRALIAN BRICK & BLOCKLAYING TRAINING FOUNDATION (ABBTF)

The ABBTF – trading as Brick & Block Careers – aims to promote careers in the brick and blocklaying industry to young Australians and job seekers. Think Brick Australia members contribute to the ABBTF through levies on the sale of clay bricks. Their training activities include school programs, webinars, career expos, trade programs, Youth Ambassador programs, incentive programs, retention programs and training subsidies.

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OUR MEMBERS: THINK BRICK

SPONSORING:



STATE:



REGIONAL:



BOWRAL BRICKS



NAMOI VALLEY BRICKS



ARTA

NATIONAL:



STATE:

