Sustainable Living with Bricks

Bricks for Living

Bricks, the all round sustainable solution

Comfort, style and affordable living.

When planning to build a sustainable home and a comfortable life, you have a lot to consider. With their complete range of cost, comfort and style benefits, bricks are the one and only choice.

10 reasons why Bricks are better.

1

Bricks last forever

2

Bricks can be reused or recycled

3

Bricks are maintenance free, they don't fade, rot or rust

4

Bricks are fireproof, unlike glass & fibre cement that shatter and fail

5

Bricks are known for their outstanding durability and colourfastness for life

6

Bricks are a thermal battery keeping your home cooler in summer and warmer in winter

7

Brick homes are more energy efficient than those constructed with lightweight materials

8

Bricks have excellent sound reducing qualities

9

Bricks are the natural healthy choice as they breathe and allow moisture to escape. Bricks emit no VOC's

10

Only Austral Bricks are guaranteed for 100 years

100 Year
PRODUCT WARRANTY

Resilience

Bricks are resilient.
Bricks are weather and age-proof, able to withstand even the harshest conditions, from severe marine environments and cyclones, to bush fire prone areas. This makes Bricks the perfect solution for Australia's harsh climatic conditions.

Bricks are also termite resistant because termites can't eat bricks. If you build a full brick home, with a steel roof frame, on a concrete slab, your home will be termite resistant for all structural elements.

Fireproof

Bricks are fireproof.
Bricks are non-combustible and don't assist the spread of fire, making them ideal for building in bushfire-prone areas. Clay bricks normally don't suffer any structural damage after a fire and can be re-used even as load bearing walls.

Bricks alone don't fire proof a building but are not like timber and plastic which are flammable, and glass that shatters in the heat. Building in brick ensures a strong foundation for protecting your investment.

Low Maintenance

Bricks are maintenance free.
Bricks do not require any painting, coating or varnishing in order to maintain their aesthetics and durability, unlike other building materials. Long-lasting brick is completely weather-proof, even in extreme conditions such as storms, and because bricks do not contain plant matter they are resistant to pests and won't decay in hot or humid conditions.

Design Flexibility

Bricks come in styles to suit any building project.
Time and time again, brick has continued to be a popular building material choice among architects and designers because of its design flexibility, strong structural capabilities, and intricate detailing.

Whether you intend to build a contemporary cliff-top retreat, inner-city living/work terrace, school, art gallery or heritage restoration project, there are bricks to suit any building style. There are now over 800 brick colours to choose from and many different finishes from sleek glossy blacks and metallics to rough-hewn rustic bricks with a hand-crafted appearance.

Unbeatable benefits

Noise Cancelling

Bricks act as a sound barrier.
Whether between rooms within a home or from outside noise, brick provides superior sound insulation. So, whether it's the garbage truck outside at 5am or your teenager's drum kit at 11pm, you can enjoy more peace and quiet in your own home.

Energy Efficient

Bricks help save energy.
Bricks provide human thermal comfort. Bricks are high density materials, meaning they have an ability to effectively absorb and store heat energy keeping your home cooler in summer and warmer in winter. This is something lightweight materials can not do.

Correct use of thermal mass moderates internal temperatures, averaging out day and night temperature extremes, which makes a massive difference to your comfort, and reduces energy bills.

Durable

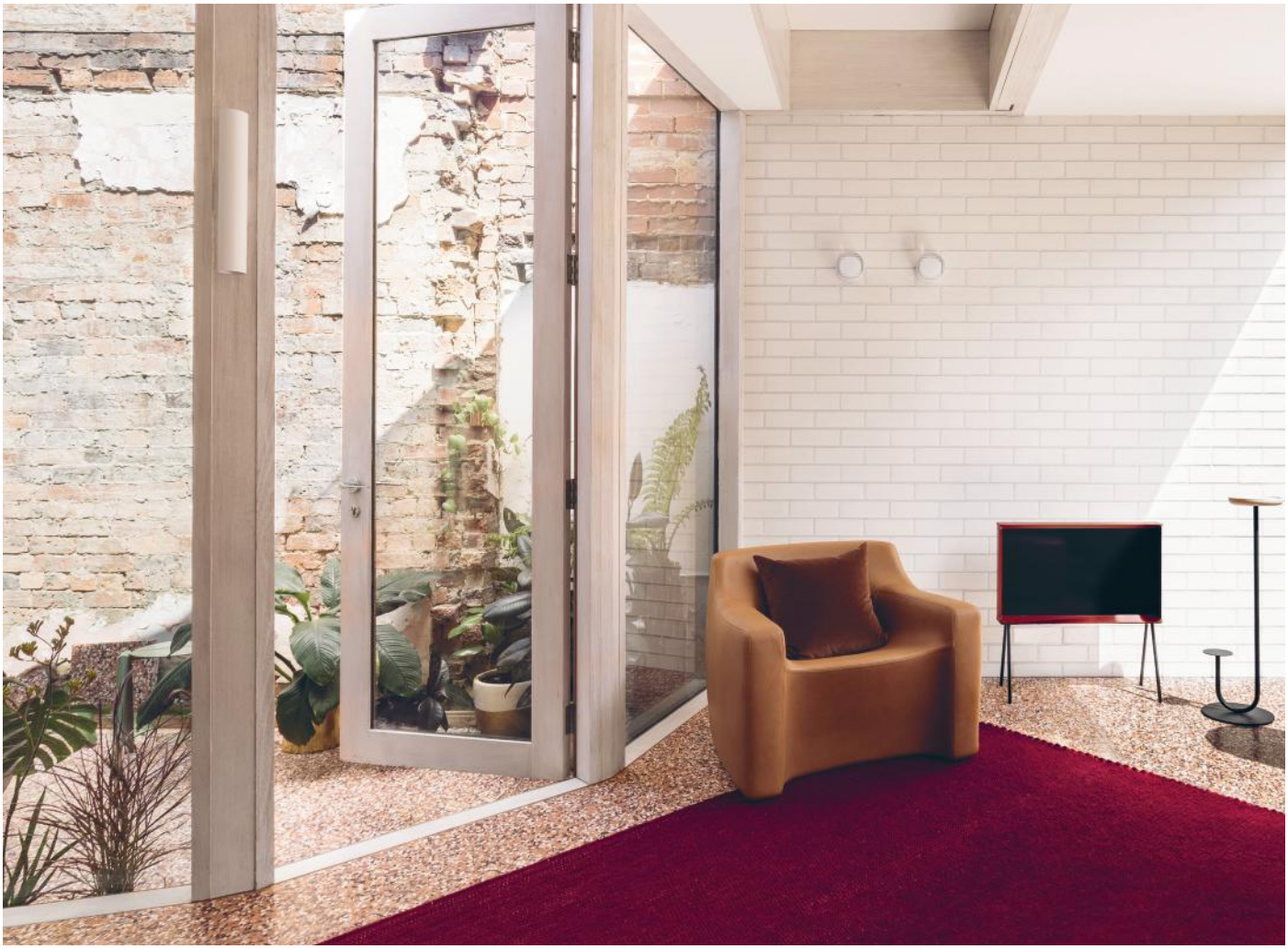
Bricks are long-lasting.
Once it's built, your brick home remains weatherproof and age proof, with minimal upkeep. Brick doesn't get tired like other man- made materials, giving you both a sound mind and a sound home.

Natural

Brick is the healthy, natural building material.
Brick is manufactured from naturally occurring materials and do not emit volatile organic compounds as many lightweight products can.

With virtually no emissions and high thermal mass, brick is the right choice for the health conscious as it caters for those with acute allergies or sensitivity to weather.

Not only is brick better for your health, but it's also better for our planet. The shale and clay that bricks are made from is naturally abundant, so brick is an environmentally sensitive option. They can be reused, keeping their original properties and features intact, or even recycled. And, because bricks do not contain harsh chemicals, plastics or artificial compounds, brick homes are healthy environments to live in.



Create an energy efficient and comfortable home with bricks.

Reduce your energy consumption and live comfortably year after year.
By combining bricks and insulation in your home, you can reduce your heating and cooling bills by up to 40%, when choosing cavity brick over lightweight construction.*

1. Source: "Energy and Colling", Your Home. Retrived from www.yourhome.gov.au/energy/heating-and-cooling
* Calculated comparing cavity brick to lightweight construction of a typical 4 bedroom home as detailed on page 19.

Design checklist

1

Design
Design and build your home to suit your local conditions.

2

Build
Build with bricks to take advantage of their thermal mass to minimise diurnal heat fluctuation.

3

Control
Incorporate bricks within the internal walls of your home to help control internal temperatures.

4

Save
Save on the cost of running and maintaining your home.

Save up to

40%

on your heating and cooling bills with cavity brick each year.*

Did you know

40%

of your energy bills goes into heating and cooling your home.[1]

★★★★★★★

7 Stars

Creating a 7 Star energy efficient home is easy and affordable with bricks.

Reduce your maintenance bills.

Independent research has shown that the longer a brick house stands, with reduced maintenance bills, bricks can save you thousands of dollars.

Building your home with brick ensures it remains weatherproof, durable and attractive for years to come. Brickwork doesn't need painting, rendering or any other coating, unlike other building materials such as weatherboard.

Increase the value of your home by

10%

when you build with bricks.

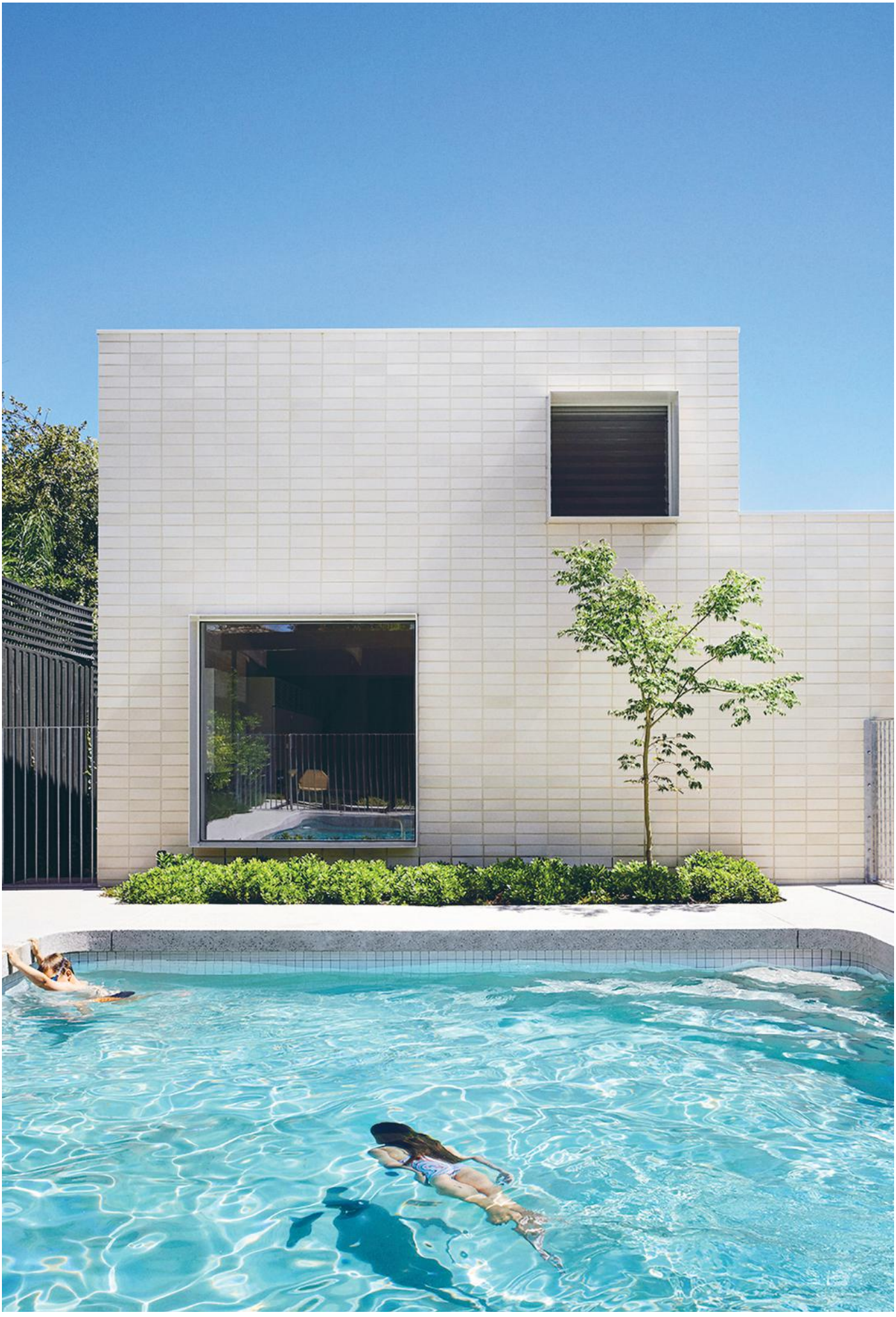
Save up to

$500

every year on energy bills and maintenance of your home with the efficient performance of bricks.[1]

Affordable for life

1. Based on average annual Australian household spend on energy bills of $2,000



Bricks are Fireproof

Bricks are fireproof and a bushfire durable material.

Clay bricks are not flammable, not combustible and do not burn. A home built with brick is fire resistant. The process to manufacture clay bricks consists of firing in a kiln to temperatures between 1000 and 1200 degrees Celsius. Firing to such high temperatures imparts beneficial properties including durability, longevity and fire resistance.

Clay bricks have proven their resistance to fire and repeated high temperatures through their ongoing use in fire places, BBQ's and for chimney construction. Bricks do not suffer structural damage and will also maintain their original properties following a fire.

When building in a bushfire prone area external walls must be constructed using non-combustible materials. The Australian Standard AS 3959–2018 Construction of Buildings in Bushfire Prone Areas provides guidance to improve protection of building elements from bushfire depending on the severity of the potential exposure to ember attack, radiant heat and direct flame contact. For all Bushfire Attack Levels (BAL) clay bricks satisfy the requirements of the Standard and can be used for the construction of external walls. With concerns about combustible cladding materials many lightweight building products are simply not suitable to be used where a fire rating or non-combustible material is required. Polystyrene cladding panels and fibre cement boards fail the Australian Standard test AS 1530.1 and are deemed combustible.

If you desire your home to be resilient to fire and extreme weather events then clay bricks are the perfect product choice.

Bricks are non combustible unlike other building materials.

Reducing Austral Bricks and Daniel Robertson's carbon footprint.

More than 70 types of Austral Bricks, including the Tasmanian Metallix range and the Tasmanian made Daniel Robertson bricks are carbon neutral. The carbon neutral certification of the Austral Bricks (Tasmania) products was achieved by reducing emissions through efficiency improvements and by offsetting the remaining emissions. This breakthrough has been assessed and certified against the Australian Government's National Carbon Offset Standard.

Zero net Emissions

Australia's first certified carbon neutral bricks.

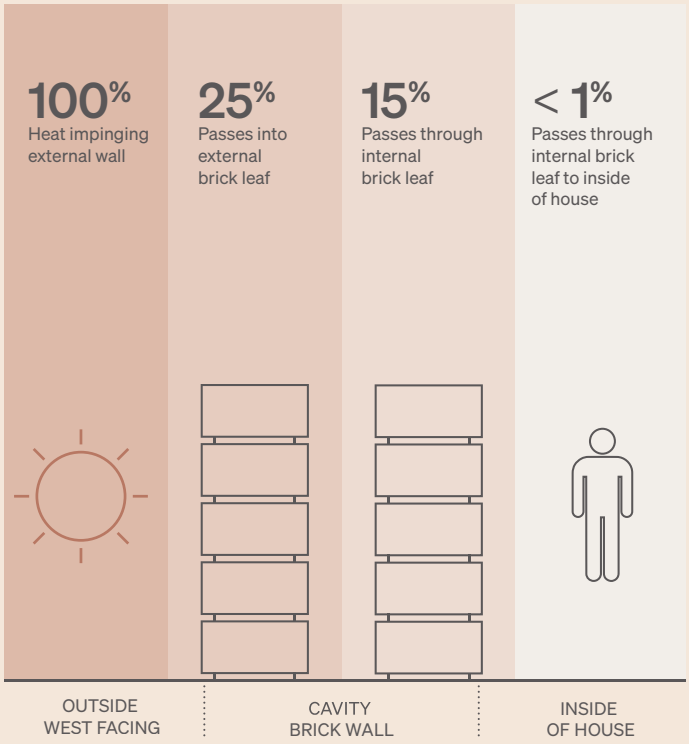
Using sustainable practices and protecting our environment are major concerns for Brickworks Building Products. That's why Austral Bricks (Tasmania) are the first in Australia to have certified Carbon Neutral bricks. That means we have significantly reduced our carbon footprint and offset the remaining emissions.

Better temperature control

Bricks play a big part in controlling internal temperatures and reducing energy consumption.
An energy efficient home is one that provides a high level of thermal comfort and stable internal air temperature.

How do bricks help save energy?
Bricks help reduce the amount of artificial heating and cooling required to maintain comfortable temperatures through their thermal mass.

Thermal mass is the ability of a material to absorb and retain solar heat energy. The high thermal mass of brick helps to significantly reduce heating and cooling bills in a way lightweight materials simply can't compete with.



Bricks outperform lightweight every time

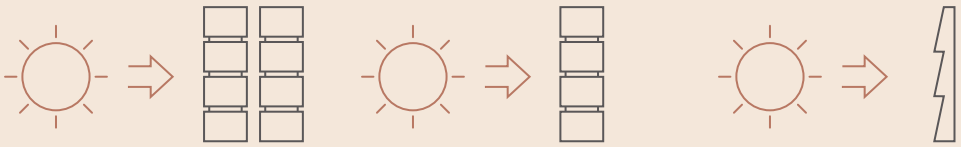
Data derived from tests conducted by The University of Newcastle into the Thermal Performance of Australian Housing. Testing was conducted on a west facing wall in summer.

Better energy efficiency

Bricks are more energy efficient than lightweight materials.
Results from eight years of independent research conducted by the University of Newcastle into energy efficient housing proves:

- Insulated cavity brick (full brick) construction performs the best for energy efficiency
- Lightweight construction was the worst performing building in all seasons

The following diagram illustrates how energy moves through your home, with cavity brick as the best performer in delaying the transfer of heat, then brick veneer, with lightweight materials ineffective. The thermal mass of brick absorbs heat and slows down its transfer. The higher the thermal mass the longer the lag time.



Cavity brick
8 hours

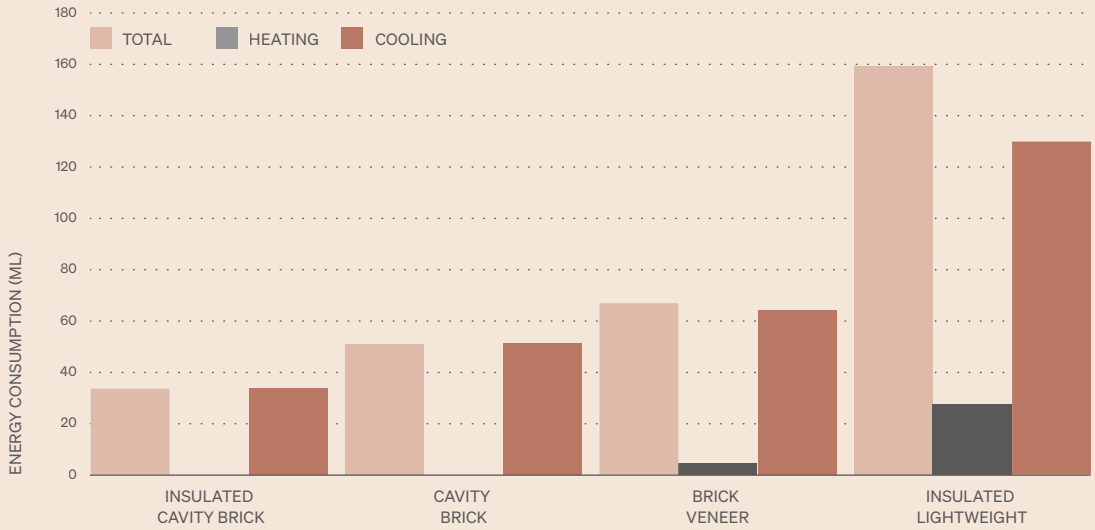
Brick veneer
4 hours

Lightweight
0 hours

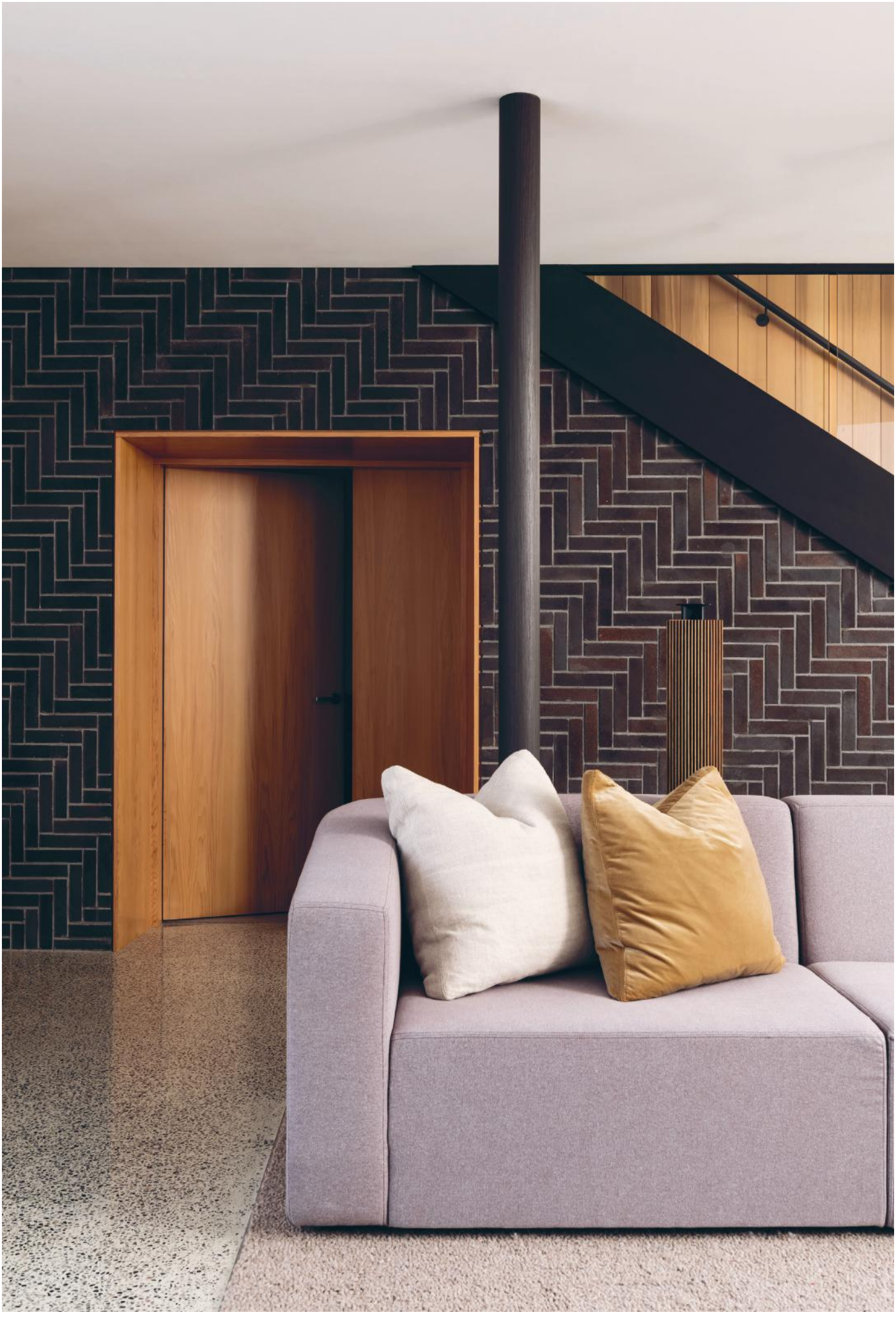
Better performance

A building material's energy efficiency is measured on more than just the manufacturing process, it's how it performs in a lived-in home.
The energy consumption for spring conditions demonstrated that the insulated lightweight building required a greater amount of heating and cooling compared to insulated cavity brick*.

The insulated lightweight (R 1.51) with over three times the R-value of cavity brick (R 0.44) used more energy to maintain the temperature in the comfort zone.



* Source: Think Brick Australia, 'Energy efficiency and the environment. The case for clay brick.', Edition 4, 2011.



What is embodied energy?

The Australian Government's Australian Greenhouse Office defines embodied energy as "the energy consumed by all of the processes associated with the production of a building, from the acquisition of natural resources to product delivery."

All building materials require energy for their manufacture. The CSIRO chart on the following page shows that brick is well down the scale of embodied energy (by weight) in popular building materials. Aluminium, polystyrene, glass, paint, particleboard, steel and even Oregon have higher levels of embodied energy than bricks. The embodied energy in hardwood is only slightly lower.

Unlike less durable materials, the energy embodied in bricks does not need to be continually topped up with repairs, refinishing or even replacement. "Renovation and maintenance also add to the embodied energy over a building's life," says Your Home. Not only the initial materials should be considered but also the materials consumed over the life of the building during maintenance, repair and replacement. (www.yourhome.gov.au/materials/embodied-energy)

The energy embodied in bricks is a one-off investment that pays dividends now, and in the future.

Bricks are a thermal battery

A better life cycle

Life cycle analysis highlights energy use.

The Australian Greenhouse Office acknowledges the importance of these ongoing costs (environmental and otherwise) and recommends a more comprehensive approach called life cycle analysis (LCA).

"LCA examines the total environmental impact of a material or product through every step of its life – from obtaining raw materials (for example, through mining or logging) all the way through manufacture, transport to a store, using it in the home and disposal or recycling." (www.yourhome.gov.au/materials/embodied-energy)

A life cycle analysis of five popular forms of housing construction was conducted by the Centre for Sustainable Technology at The University of Newcastle. It concluded that, "The materials of construction have only a small impact on the overall energy and greenhouse emissions."

The study also showed that the greatest environmental impact in a typical house was in day-to-day living, which accounted for over 90 percent of energy consumed and greenhouse gases emitted over a 60-year life cycle. Brick houses that have functioned well for many more years than this are all around us and would produce even greater savings.

According to the Australian Greenhouse Office, in an average household a massive 40 percent of energy is consumed in heating and cooling. More recently there has been a marked increase in the use of air-conditioners. Therefore designing and building to improve household energy efficiency will pay major dividends, both financially and environmentally.

The thermal mass inherent in clay bricks is ideal as part of passive design, a well established system that allows a high level of natural thermal comfort, while reducing our growing dependence on artificial heating and cooling.

Emissions in perspective

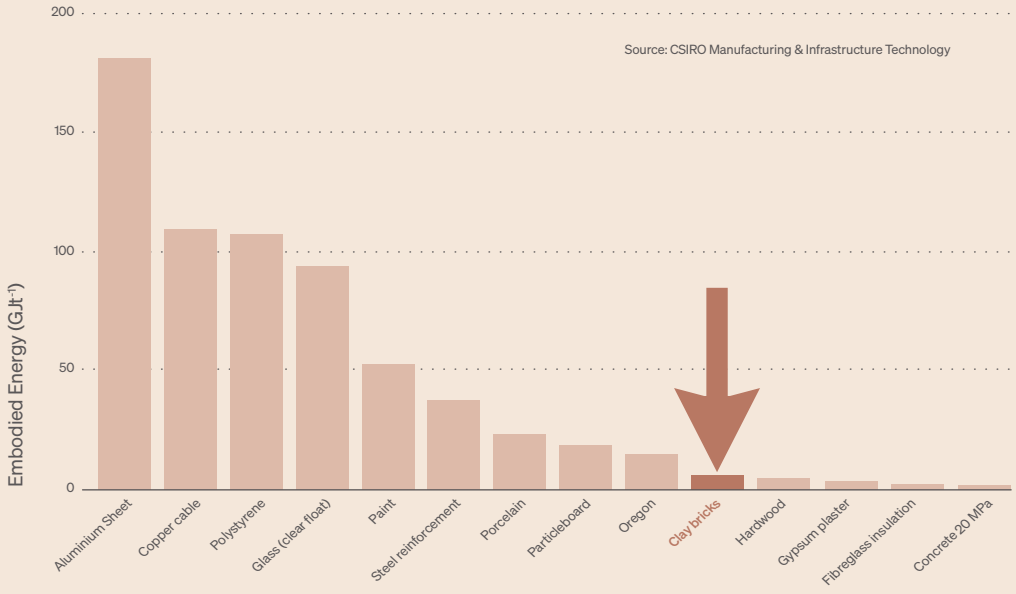
- How much greenhouse gas is created making 8000 bricks (average brick veneer house) to last a lifetime?[1] — 5.1 tonnes
- How much greenhouse gas is created in day-to-day living in an average household over 50 years?[2] — 400 tonnes

How much greenhouse gas could the average household save with these simple changes?†	Each year	Over 50 years
Replace electric hot water service with gas	3 tonnes	150 tonnes
Replace five 100-watt standard light globes with 20-watt compact fluorescents	650 kg	3.25 tonnes
Install a AAA rated showerhead (with electric hot water service)	500 kg	25 tonnes
Provide adequate air circulation around refrigerator coils	150 kg	7.5 tonnes

1. Source: LCA Fact Sheet, Centre for Sustainable Technology, The University of Newcastle
2. Source: Australian Greenhouse Office, Your Home Technical Manual and Global Warming Cool It!

Embodied energy comparison

The graph below shows the low amount of embodied energy for bricks compared to other common building materials. To produce 8,000 bricks, 5.1 tonnes carbon emissions are generated. Building with brick generates the same carbon emissions as operating the house for only 8 months. This highlights that the energy used to build the home is only a small percentage compared to the energy used over the life time of a home.



Temperature Control

Cooler in Summer and Warmer in Winter.

Very little energy is needed to make a well-designed home comfortable. Appropriate insulation combined with thermal mass is essential for a comfortable home. Passive solar design and a draught-proofed building, can create low or even no energy requirements for heating and cooling.

Bricks have demonstrated superior levels of thermal comfort for energy efficient and sustainable design, without resorting to artificial heating and cooling. Results prove that the use of thermal mass levels out the temperature swings during the heat of summer and the cold of winter.

This is important as the building does not need the same level of artificial cooling during the peak electricity demands of summer as other forms of construction. This results in greater comfort for the building occupants and less frequent use of air conditioning.

Less reliance on artificial heating and cooling.

You won't have the over reliance on air conditioning when you build a well designed home with brick.

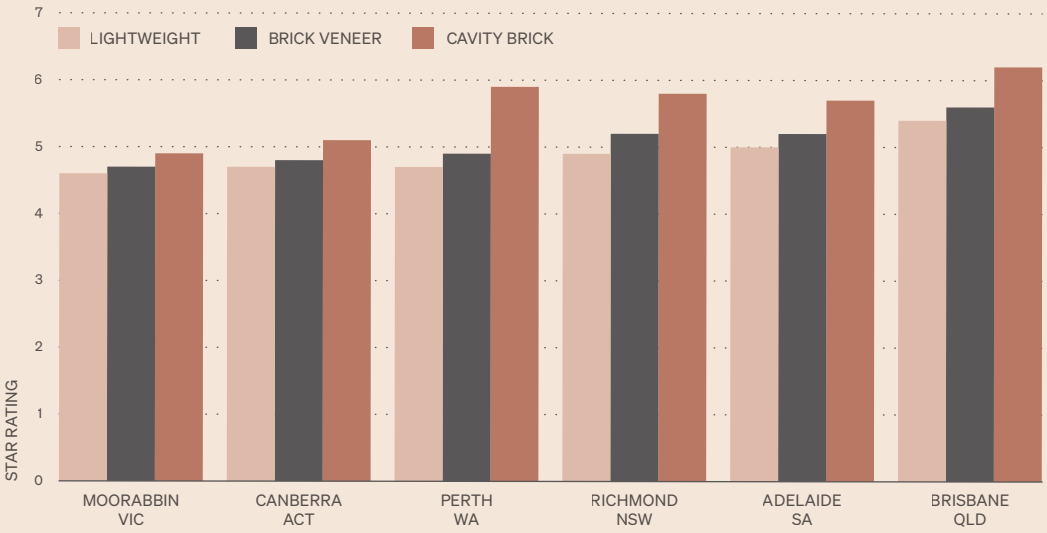
A Better Material

The graph below shows the results of thermal modeling of a typical family home (as shown below) comparing bricks to other common building materials in a range of Australian climates. The results are shown using a star rating, with bricks outperforming lightweight materials every time.

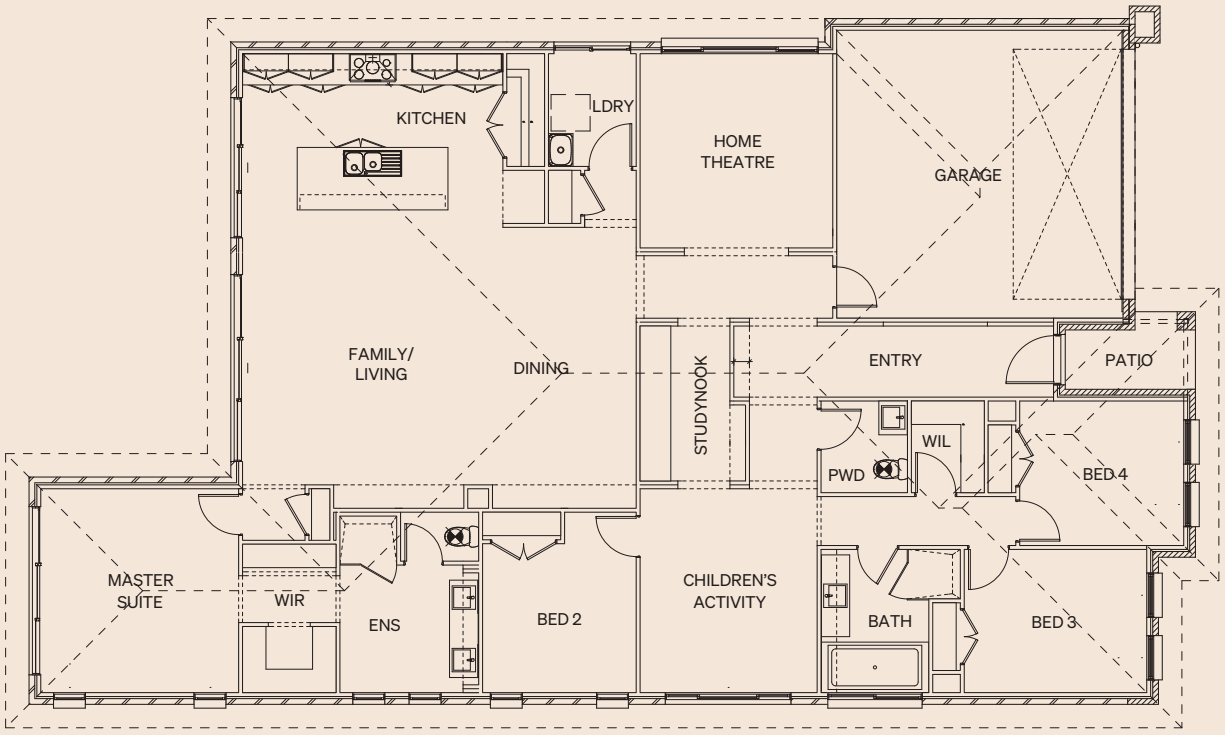
The plan below is the house that is modelled in this graph.

Assumptions

Wall Insulation = R1.5
Ceiling Insulation =R3.5
Wall Colour = Med
Roof Colour = Med
Orientation - 0° is North to rear
Internal Wall = Stud



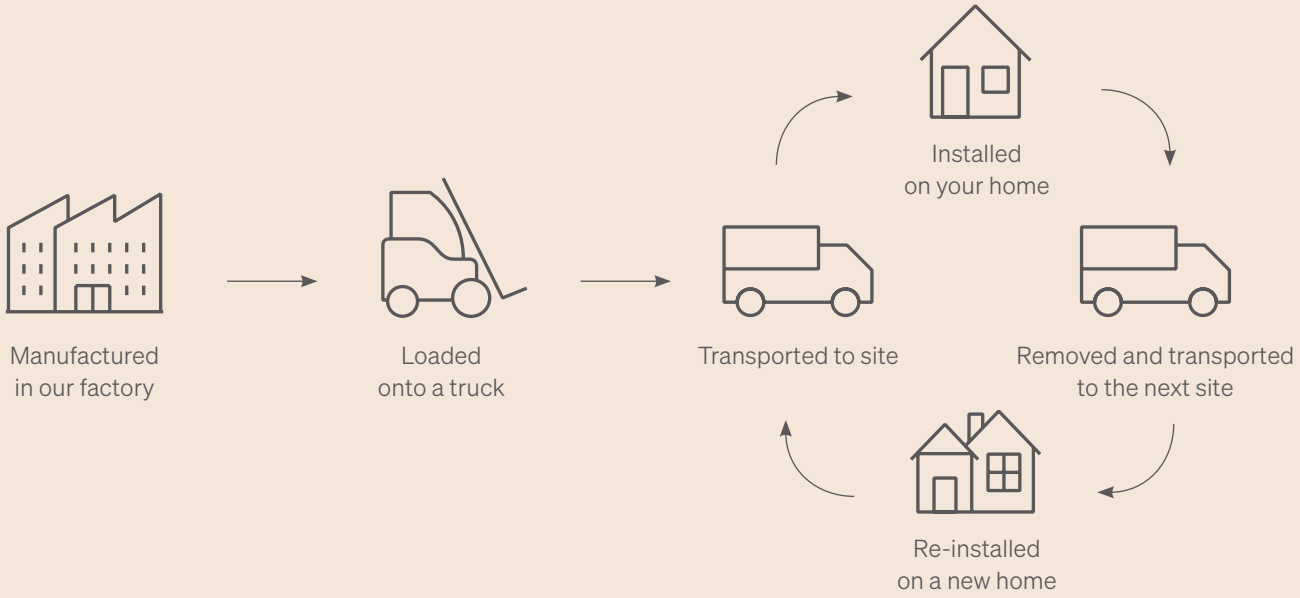
The floorplan below is McDonald Jones *Miami* house which served as the basis for a typical Australian home.



The brick life cycle

Bricks recycle well, unlike other building materials.
The ability to reuse a product lengthens its lifespan and ensures the energy used in its manufacture is spread over a longer time period, thereby taking advantage of its longer life cycle to achieve greater efficiency in energy use.

Bricks can be reused with their original properties and structural capacity intact. Building with bricks is the first step to sustainability. Not only does brick last a very long time but it requires little to no maintenance and can be easily reused or recycled.



Reuse of building materials commonly saves about

95%

of embodied energy that would otherwise be wasted

Easily recycled

Build with bricks to help reduce your household emissions.

By building with bricks you are not only taking advantage of their energy efficiency benefits, you are also having an impact on the amount of carbon pollution that your household emits.

Building with bricks can save you up to 2 tonnes of carbon pollution per year by using less energy.*

Lower emissions

* Based on the average NSW Household energy usage. www.savepower.nsw.gov.au

9 Star House
Western Australia

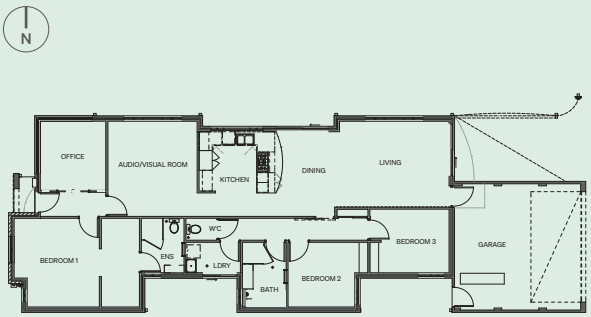
★★★★★★★★★

$0 energy bill

+ energy credits

76% less water

Includes 4 well-positioned internal brick walls



The Jade 909 House utilises the four well-established passive design principles: Orientation, Insulation, Ventilation and Thermal mass.
Coined as "beyond carbon neutral", it has no air-conditioning, just ceiling fans to assist ventilation and the three kilowatt photovoltaic cells exceed the home's power requirements. The result is a water saving of 76 percent over a standard house and a remarkable 119 percent energy saving.

The use of clay bricks and terracotta roof tiles is a feature of the home as both are materials that have a very long life expectancy.

A grey water recycling system and rainwater tanks makes for a highly water efficient home. With the bathroom and laundry cleverly integrating rainwater tanks which then recycle onto the garden after use via the grey water system.

The design and construction of the home meets not only high levels of sustainability but it's also affordable. How affordable is it? The base model is around $200,000 rising to about $285,000 as with photovoltaic cells, grey water system and rainwater tanks.

Not surprisingly, the home won numerous awards at the WA GreenSmart Awards, including the coveted Home of the Year and Water Efficiency Award.

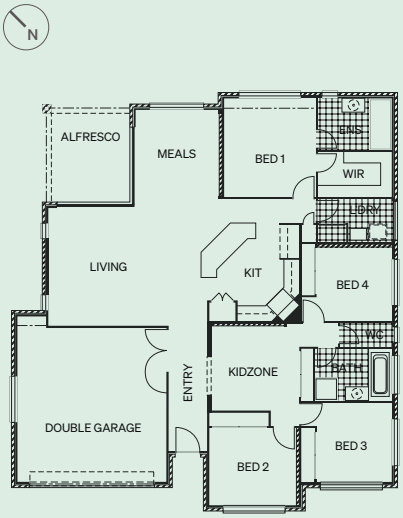
Highly Efficient Housing

8 Star House Queensland

★★★★★★★★

Natural heating,
airflow and lighting

25% less energy



One of Queensland's major project builders has developed in conjunction with Austral Bricks® and Bristile Roofing™ an 8 Star House at the Eprapah Estate in Victoria Point, Queensland. The 8 Star House demonstrates how heavyweight materials in conjunction with clever design can reach unprecedented energy efficiency levels while still achieving a pleasing aesthetic and contemporary style.

From the positioning of the windows, to the choice of building materials, the 8 Star House has been designed to be cool in the hot summer months and warm in the cold season. The rooms are light and airy because the home is oriented to make the most of winter sun and summer airflows, and the exterior has deeper roof eaves to provide shade. The classic brick exterior, roof tiling, striking internal brick walls and beautiful ceramic flooring are not only distinctive design elements of the home, but they also combine to store energy from the sun and replace the need for artificial heating and cooling.

The 8 Star House is an impressive example of sustainable design with real world application, developed in conjunction with Austral Bricks® and Bristile Roofing™.

Timeless style

Bricks offer you style and choice.

With over 100 years of manufacturing experience to our name, Austral Bricks® is transforming the humble brick into a versatile and creative design material.

We've combined style, form and function with an extensive range of colours, shapes and textures so you can opt for a home that's modern and contemporary or elegant and classic. It's your choice with brick.

Individuality and design.

The new generation of brick design and manufacturing means you can take advantage of its unrivalled strength and natural character while creating a look that's more versatile than ever before.

Today's brick selection offers a range of sizes, shapes, colours and textures to give you endless options for a unique and creative home design for both internal and external walls. Plus, brick blends beautifully with other materials like timber, steel, pavers and tiles to create a striking and stylish look.

While innovation and variety is always available, you can also choose a more traditional look with brick – one that harmonises well with your local environment

We are Brickworks.

Brickworks Building Products is one of the world's largest and most diverse building material manufacturers. Our company has built an enduring reputation with our customers – we are loved for our innovation, professionalism and ever-dependable products and services.

As Brickworks Building Products expands internationally, we continually foster and advance our products and our brands. We continue to lead the way though design, style, innovation, sustainability and collaboration. Our commitment is to inspire, support, create and build better environments and places for our customers and communities. All integral to our clear vision to become the world's best building product company.

BRICKWORKS

AUSTRALIA

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Austral Bricks®
is a name you can trust.

Founded in 1908, Austral Bricks is Australia's largest, best-known and most efficient clay brick and paver manufacturer. The company has a well-established national presence with manufacturing and sales facilities in every state. It has long been at the forefront of product innovation and efficient, sustainable production. The introduction of robotic brick handling equipment and the ongoing pursuit of energy and resource efficiencies has enabled Austral Bricks to maintain its competitive edge.

australbricks.com.au

Our Commitment.
We are committed to social and environmental responsibility and sustainability, and are proud of our record of community support.

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Paper from responsible sources
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100 Year
PRODUCT WARRANTY

A BRAND OF
BRICKWORKS

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