

# Powerhaus Engineering

# Information Pack

RESIDENTIAL HOMES

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Optimising light-filled, low-carbon homes  
for a more sustainable future.

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2024



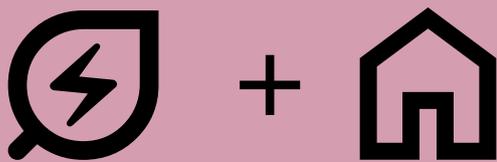


# Welcome!

We're thrilled to have you here.

This guide sets out how we can partner with you to achieve the best outcomes for your design.

Energy efficiency isn't just ticking a box in the building process; we can help you optimise your home design so that it's comfortable and healthy all year round – a joy to live in.



## Power + haus

We believe in creating spaces that are safe, healthy and inspiring; solving climate change and creating happiness.





# The Powerhaus **building principles**

## **Climate solution: zero carbon**

We believe every home can become a climate solution by designing homes that use minimal fossil fuels (and low energy bills).

## **Comfortable**

Warm with winter sun and cool with summer breezes, a comfortable home is a human need.

## **Healthy**

Create a home that breathes — managing moisture, reducing condensation, and ensuring clean, fresh air every day.

## **Climate resilient: safe**

Your home should be built for the future — keeping you and your family safe during climate extremes.



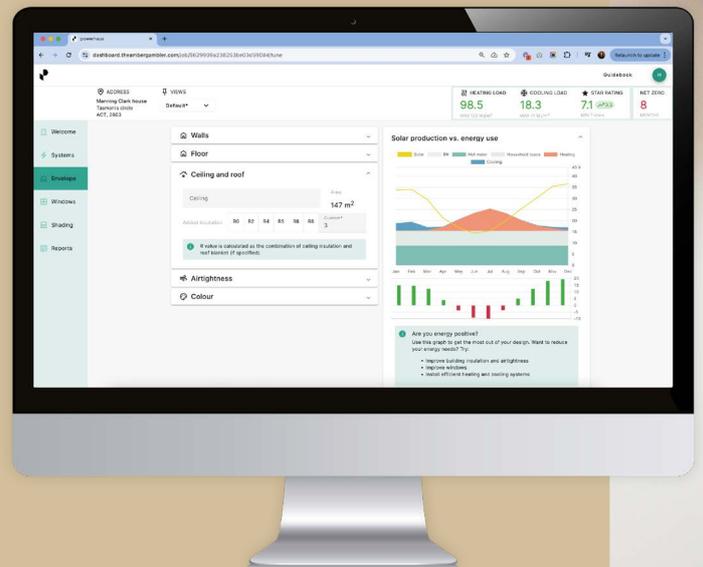


# How we're changing home sustainability for the better

We put energy efficiency back in your hands with the Powerhaus app.

A clear interface with powerful NatHERS data, so that you can drive the star rating outcomes.

Additionally, we combine airtightness, appliance efficiency and solar power to give you full control of operational energy - driving real, daily, zero carbon outcomes.



“ We’ve been waiting for something like this... so we can design something and not be surprised by the rating. We’re just completely blown away by the Powerhaus tool.

– BRUCE TOWNSEND, TOWNSEND + ASSOCIATES ARCHITECTS

“ For the first time we can tune and test various inputs ourselves to see how best to achieve a high performing home.

– JESSICA DE ROME, JESSICA DE ROME ARCHITECTS



## ENERGY EFFICIENCY SERVICES

# How to work with us

We have a number of services, depending on the sort of advice you would like.

### Optimising a home - advice only

When you just want advice on improving a home (renovating or a new build).

### NatHERS star rating *and* optimisation advice

When you need compliance for your building (NatHERS star rating or BASIX), and good advice.





POWERHAUS ENERGY EFFICIENCY PACKAGES

# Optimising a home: advice only

## DESIGN STAGE

- + NatHERS model and **star rating** of your home or design
- + **Powerhaus app** access for your design
- + Optimisation meeting
- + Heating, cooling and comfort strategy & reporting

### App only



### Premium



Get a customised quote to use the Powerhaus app on your next project





## POWERHAUS ENERGY EFFICIENCY PACKAGES

# Optimising homes: advice & compliance packages

	Light	Designer Minimum recommended	Premium
<b>DESIGN STAGE</b>			
+ NatHERS model and <b>star rating</b> of your home or design		✓	✓
+ <b>Powerhaus app</b> access for your design		✓	✓
+ Optimisation meeting			✓
+ Heating, cooling and comfort strategy & reporting			✓
<b>APPROVALS STAGE</b>			
+ Final NatHERS model and <b>star rating</b> of your home or design	✓	✓	✓
+ <b>All final certification and stamped plans</b>	✓	✓	✓



ENERGY EFFICIENCY SERVICES

# We help you solve energy efficiency certification & details

## Residential homes - certification options

- + NatHERS star ratings
- + BASIX (NSW)
- + Glazing calculator or Deemed-To-Satisfy (DTS)
- + Performance solutions

## Detailing and advice

- + Airtightness detailing & consulting, including blower door testing
- + NatHERS star rating optimisation
- + Moisture/condensation construction detailing
- + Indoor air quality management and HRV systems
- + Off-grid energy modelling

Get a customised quote to work with us on your next project 

Image: Architecture Republic



# Why choose us

## + Solution-oriented

We go beyond the numbers. As engineers and assessors, we understand the mechanics of building and the construction process. We tailor our approach to your design, goals, and constraints, offering practical solutions that work.

## + Transparency through data

We believe in clarity and honesty. Our data-driven approach cuts through confusion, giving you straightforward insights and tools to make informed decisions and avoid misinformation.

## + A complete, reliable service partner

From design to build, we offer a complete service that you can count on. We show up when we say we will and deliver on time, so you can trust us to handle our part of the project smoothly.

## What drives us

There's an intellectual challenge to our work: a deep curiosity about the mechanics of heat and energy.

On a bigger-picture level, we want to change how Australians use energy.

By helping people manage energy better, they're saving a lot of money and also living in way that's lighter on our planet.

Source: Ben Walker Architects, copyright Ben Guthrie



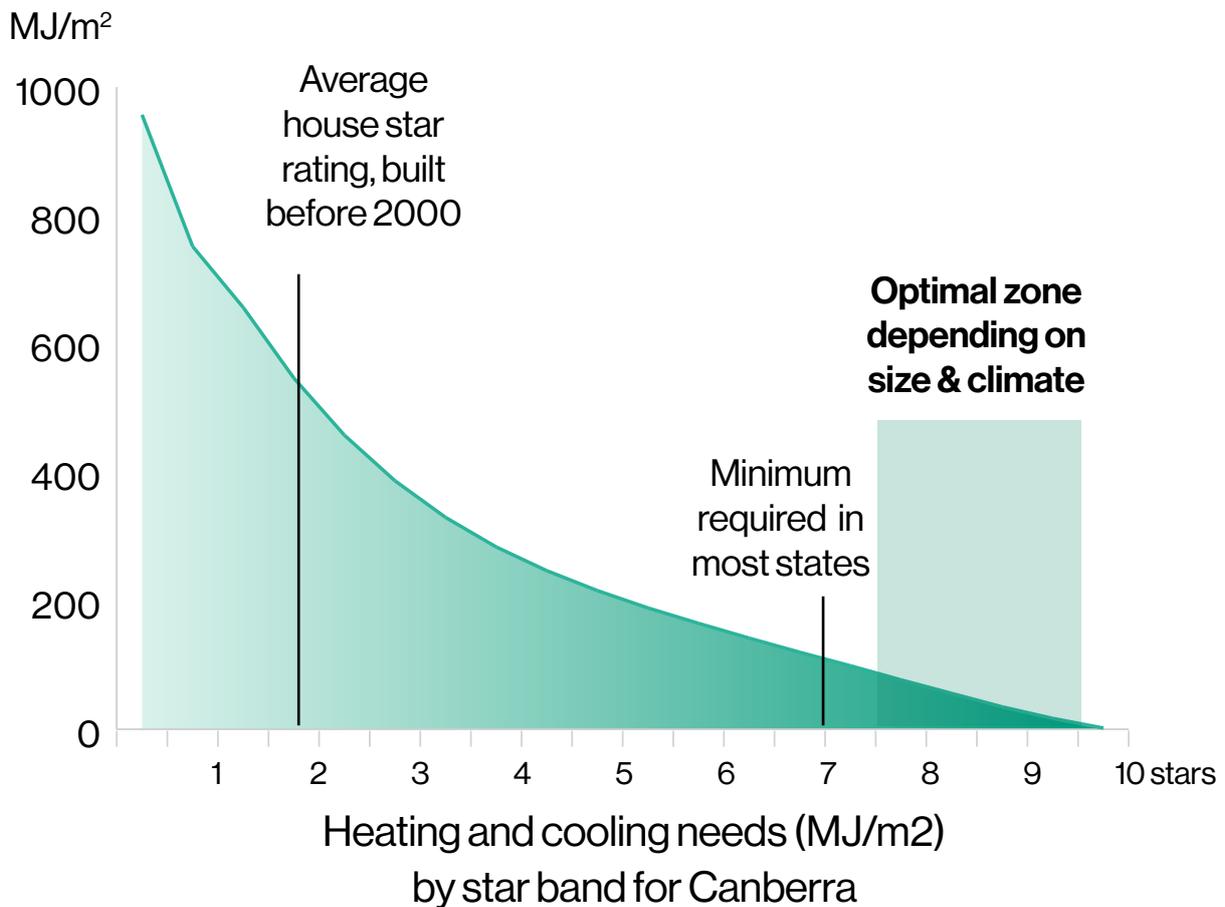


# Understanding star ratings

Star ratings estimate the heating and cooling requirements a house will need for a year, measured in MJ per m<sup>2</sup>. The heating and cooling amounts are set by climate zone - with 10 stars being close to zero.

We recommend two star ratings:

- 1 At design stage, when you can improve & change
- 2 At BA stage, for compliance





# Quick tips on higher star ratings

Star ratings are based on how well a home stays comfortable. Each of these measures are elements that create unwanted heat loss or gain.

- ✦ **Review form.** The more complex the build—wings, U-shaped, pop-outs etc—the more unwanted heat loss and gain. Simpler forms, such as a rectangle, will rate higher.
- ✦ **Review the amount of windows.** A window-to-floor ratio above 25% (i.e. more windows) will start to struggle to reach 7 stars. Less windows will rate higher.
- ✦ **Review the amount of north facing windows.** More north facing windows will rate higher, where there is a winter heating load (this includes Brisbane). North sun will warm the house, reducing the heating needed and increasing the star rating.
- ✦ **Review the amount of shading.** This is an art, and depends on your location. In general, western and eastern windows will benefit from summer shading – fixed or operable. The northern windows will need the right fixed shading to prevent summer sun, but allow winter sun. Covered northern verandas will generally reduce the star rating.



Image: Sarah Trustcott  
Architecture, Mellow Yellow House



# Meet Director Andrew Pickard

Andrew Pickard is a mechanical engineer and thermal performance assessor with a simple mission: to help Australians build better homes.

Over 14 years of consulting with architects, builders, homeowners, and all levels of government, Andrew has turned this mission into a practical approach. He combines smart data, sustainable practices, and a deep understanding of what makes a home truly livable.

As seen at:

- + National Energy Efficiency Conference 2023
- + Sustainable Design Masterclass: Institute of Architects National Conference 2023
- + Sanctuary Magazine 2024
- + Undercover Architect Podcast 2024
- + HIA Future of Housing and Greensmart Awards 2024



- + Bachelor of Mechanical Engineering (Hons)
- + Bachelor of Human Geography
- + ACT Building Assessor (Class A – Energy Efficiency), Lic no 2013432



## Q&A

### Where do you work?

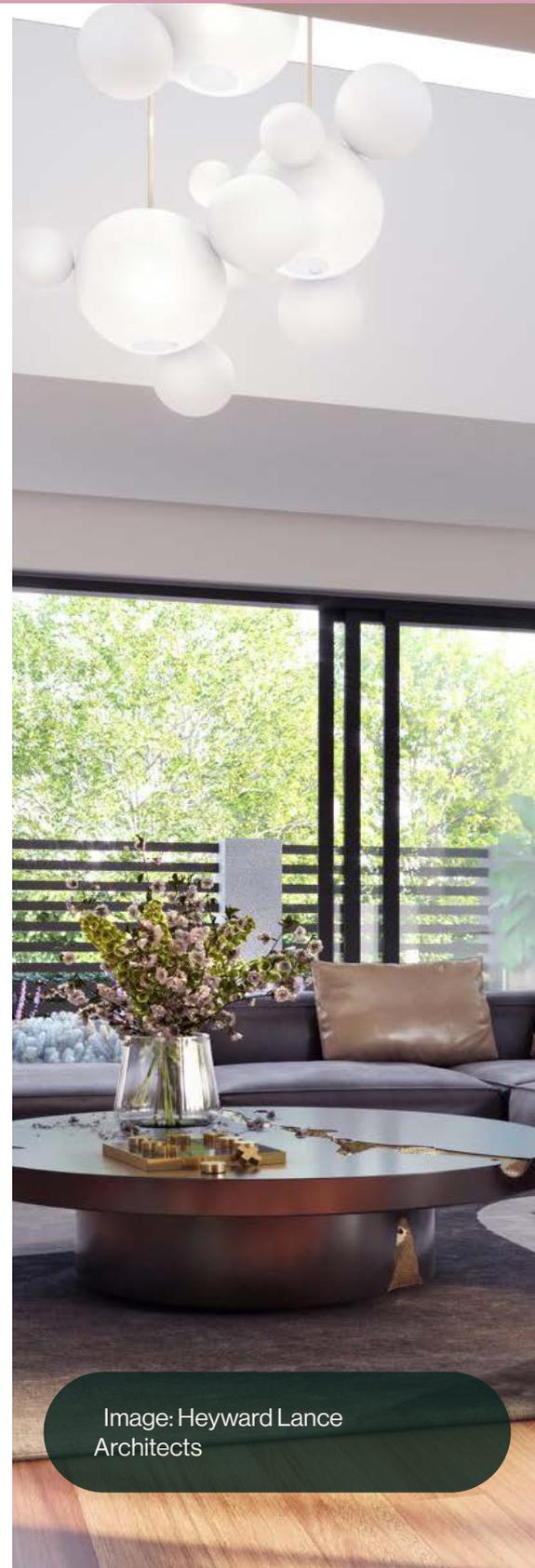
- ✦ We operate Australia-wide. We conduct most of our meetings online to allow the most cost-effective and collaborative solutions possible.

### Will you work with my designer, architect, or builder?

- ✦ Definitely. We believe in teamwork and consider ourselves a partner in your team. The Powerhaus app is designed to help make energy efficiency decisions easier as a group.

### Will you help me reach 8, 9 or 10 stars?

- ✦ Yes please! Helping people reach above minimum standard is one of our favourite things to do – and using the Powerhaus app makes these decisions clearer and straightforward.
- ✦ Going beyond the official NatHERS framework to look at airtightness is one of the best bang-for-buck measures you can implement.
- ✦ We also use a measure called daily net zero, to help you translate star ratings into energy bills.





## Q&A

### Can I use the Powerhaus app by itself?

- + Yes! Our app-only service can be used by anyone.

### How long does the star rating process take?

- + Our thermal modelling usually takes 2–7 days. With our design package and above, you get two thermal models – one during design that you can investigate using our app, and the second when it's time to finalise plans.
- + Generally clients take anywhere from a week to a year to finalise the process; we'll work at your pace. If you need to sort out certification fast, we can help. Or if you'd like to work from concept stage through to final DA to get the best results – that's our specialty.





# What our clients say

“ The app is great, such a good tool for a client to understand the impacts of different decisions in real time. I also like the inclusion of “non-compliance” items, this makes it much more useful than a simple NatHERS certificate.

– AMY SYMONDS

“ Powerhaus are the experts in all things energy. Andrew and the team will guide you through the at-times baffling and contradictory energy efficiency standards (NatHERS, BASIX, etc). They’ll also give you the detailed advice to go beyond star-ratings and compliance to fine tune your home to get the best possible outcome.

– TRISTAN RYALL, ARCHITECTURE REPUBLIC

“ Energy assessments of buildings require a holistic approach, it is not just a case of applying software to numbers and dimensions of rooms etc that are on a plan it is critical that the assessor understand the science of thermal performance of buildings whilst being respectful of the design and clients objectives. Andrew has a real passion for his work and is always willing to find desirable outcomes to suit various design issues and budget outcomes

– GINA CARMODY, CARMODY BY DESIGN



# Our impact

We've completed over 3,200 energy ratings and continue to do more daily. By increasing the performance of homes, we're helping our clients save money and having a real impact on emissions.



7.4  
average star  
rating



4,456  
CO<sub>2</sub>e  
emissions  
savings



\$1.195 million  
energy savings for  
homeowners

Chat with us about optimising  
smart, low carbon homes today

+ team@powerhausengineering.com.au  
+ +61 401 268 558

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<https://powerhausengineering.com.au>



Grant winner

