

Free best-practice disaster resilient house designs released to help Australians build better

The Bushfire Building Council of Australia (BBCA) today launched free architectural drawings, specifications and handbooks to make it easier and more affordable for Australians to build sustainable houses resilient to bushfires, floods, storms, heatwaves and cyclones.

The resources have been developed as part of the **FORTIS House project**, led by the BBCA in partnership with NRMA Insurance and the Shoalhaven City Council, alongside leading independent bushfire, storm, flood and cyclone resilience experts, engineers and architects. The project includes:

- **Free architectural drawings and construction specifications** of 'FORTIS House' – an adaptable house design that is highly resilient to bushfire, storm, heatwave, flood, cyclone, mould and pests.
- **Free handbooks for community members, designers and builders** outlining how to adapt FORTIS House and its principles to any house design, site and local risks.

The resources were developed through a world-first community-led design process with members of the Shoalhaven community who were impacted by floods and bushfires.

Prefabricated FORTIS Houses will be available¹ to purchase and can be constructed in as little as 12 weeks, providing another fast-track solution for rebuilding.

Bushfire Building Council CEO Kate Cotter said: "We're contacted by thousands of people every year asking for help to build resilient houses. Most disaster impacted families never thought they would have to rebuild and they find the process expensive, complex and stressful. Meanwhile, those considering building a new property want to make sure they are doing all they can to protect themselves, their families and their communities.

"FORTIS House will save time and money, fast-track the building process and help people create an affordable, sustainable, adaptable and highly resilient house. It also has the potential to help improve the resilience of our communities and save lives and properties, so we're very excited to be releasing the drawings and handbooks for free to all Australians."

A cost-effective and flexible solution that sets a new benchmark for resilience

"Australia is exposed to increasing extreme weather and disasters, yet less than 10 per cent of our houses are resilient to local risk. FORTIS House aims to help address this by providing a new benchmark and practical support for resilient building based on scientific research, engineering first principles, community collaboration and practical advice from builders, the insurance industry and house manufacturers," said Ms Cotter.

Climate and resilience experts from the NRMA Insurance team worked closely with the BBCA and the Shoalhaven community to develop the FORTIS House resources.

NRMA Insurance Executive General Manager Luke Gallagher said: "As an insurer, we see the heartbreaking impact extreme weather and disasters have on our customers and communities first-hand, so it has been exciting to see the Shoalhaven community lead the design of FORTIS House.

¹ FORTIS House will be available through prefabricated house suppliers in May. A list of suppliers in each state and territory will be available on the FORTIS House website at www.fortishouse.org where people can also register their interest.

“It’s incredible to be part of a project that empowers people to protect themselves against these climate and disaster risks and gives them practical solutions so they can build back easier, faster and stronger. We’re proud to have been working with the BBCA team over the last three years on projects like this to help communities better understand disaster risk and to help them reduce and mitigate that risk.”

FORTIS House integrates best-practice design principles for disaster resilience and is energy efficient, 100% electric and solar powered. Its robust construction means it is low-maintenance and is designed to last generations. FORTIS House offers flexible specifications that can be adapted to any house design and local risks. It uses cost-effective building solutions and readily available materials, allowing builders and households to adapt the design to any lifestyle and budget.

Developed with the community, for the community

To ensure the FORTIS House designs and handbooks are practical, adaptable and informed by real-life needs and circumstances, the team worked with members of the Shoalhaven community who want to build better houses for themselves and help other Australians avoid the agony of losing their home.

The community developed their own design brief which included the importance of light, connection to nature, indoor-outdoor family living and the need for a house to offer a sense of security and hope for the future, particularly after a disaster.

Ms Cotter said: “The Shoalhaven community has lived through the compounding trauma of bushfire, storms and floods, all in a matter of months over the summer of 2019-20. This experience and their desire to help everyone build stronger, safer, more sustainable houses has been really inspiring.

“There’s significant potential for other benefits too, with the FORTIS House benchmark providing a platform to enable insurers, lenders, governments and property markets to recognise and reward best-practice resilient houses.

“The reality is we need to build better – and we can. FORTIS House provides people with the best available science, innovative new solutions and really practical information to help them do this faster and easier.”

For more information and to download the free FORTIS House design and handbooks, visit www.fortishouse.org.

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About the Bushfire Building Council of Australia (BBCA)

The Bushfire Building Council of Australia is a not-for-profit network of independent experts working to improve resilience and reduce the impacts of disasters on communities. Members of the BBCA include research scientists and architects, civil, structural and fire safety engineers and risk management specialists. BBCA projects, such as the Bushfire Resilience Star Ratings have been funded by the Australian Government and supported by industry. For more information visit www.bbca.org.au.

FORTIS House features and benefits:

- **A protective outer shell** that can be completely closed to provide disaster resilience, energy efficiency, ventilation and security.
- **Designed to last** with non-combustible, robust, quality construction and materials.
- **Save money and time:** FORTIS House has been architecturally designed by JDA Co and engineered by Australia's leading resilience experts, saving design costs, consultant fees and often long design lead times. Optional prefabrication provides a fast build time.
- **Independent expertise:** The FORTIS House team are scientists, engineers, architects, builders and researchers ensuring FORTIS House is trusted, independent and science-based.
- **Flexible:** FORTIS House principles can be applied to any house design to suit people's individual preferences, locations, budgets and lifestyles.
- **Holistic:** FORTIS House is a resilient system which includes the design, construction, landscaping, emergency planning, storage of materials and services.
- **Community-led design** ensures FORTIS House maximises light, connection to nature, views and indoor-outdoor living.
- **Sustainability:**
 - 100% electric house
 - Self sufficient water and solar power
 - Energy efficient design
 - Uses recyclable materials
 - Built to last and withstand extreme weather and disasters, reducing landfill and rebuilding environmental impacts
 - Prefabrication (optional) reduces building waste.
- **Faster recovery:** The protective outer shell and set-back glazing is designed to keep the house functional, even if the outer shell is damaged in a disaster. Optional prefabricated FORTIS Houses can be built in 12 weeks, fast-tracking recovery. Services, vehicles and tools of the trade are protected in a standalone Resilient Shed.
- **Health and wellbeing:** FORTIS House reduces the emotional and financial costs of losing houses in disasters. FORTIS House is designed to be self-defending in a disaster, so people are encouraged to evacuate, stay safe and have a house to return to. FORTIS House resilience features also provide ventilation, thermal comfort in extreme temperatures, security, safety and pest and insect protection.

Comments from contributing experts:

Dr Ian Bennetts, BBKA Chief Engineer: “Incorporating FORTIS House resilience features into new house designs is far cheaper than retrofitting later. The robust construction methods and materials can be integrated into any design to help everyone improve the resilience of their home. Building houses that can withstand extreme weather and disasters avoids the financial costs, environmental impact, and emotional toll of repairing and rebuilding”.

Dr David Henderson, James Cook University Cyclone Testing Station: “FORTIS House is an adaptive design to suit the hazards that we must design for and live with. The cyclone resistance features that can be incorporated into the design are proven to reduce damage and maintain resilience of the house. It’s been exciting collaborating with the BBKA and Australia’s leading resilience experts on a practical application of best-practice design and research.”

Dr James Davidson, JDA Co, resilience specialist architect “The community-led design process produced wonderful insights into how we can design resilience into everyday living. Community preferences for colours and materials, light, function, flexibility and connection to place were central to the FORTIS House design approach. We have always adapted to survive and FORTIS House gives all Australians practical solutions to not just adapt and survive, but to thrive.”

Comments from the Shoalhaven community which helped develop FORTIS House:

Shoalhaven City Council Mayor Amanda Findley: “The Shoalhaven community are strong supporters of the FORTIS House project having experienced so many natural disasters and such catastrophe, they're looking for ways to do things better. I think that a lot of people really had the mindset that I don't want this to happen to me again.”

“All across Australia we've got these beautiful landscapes, and human beings are attracted to beautiful landscapes. People want to live in a beautiful place and want to be with nature. They want to enjoy as much as possible what we have to offer. And the only way that we can do that is to build strong, fire and flood resilient houses.”

Shoalhaven resident and FORTIS House community participant, Greg Webb: “I always thought we'd be okay, I wasn't really concerned about bushfires. And on Friday 31st December 2019, I saw a flash of flames across the lake and that's when my whole life changed. Eighteen minutes later, I was out there trying to save my house from a bushfire. Now, I'm going to build a house that is designed to survive another bushfire attack. Because the fires will come again, but I'm going to be prepared this time. I'm sixty-six and I never imagined I'd be building at my age, and I never want to again.”