

# Fire-Ed Up Bushfire-Proof House Design



## Houses today are easy to burn

The typical Australian house was not designed with bushfires in mind as most were built decades ago, before bushfire planning and construction regulations came into force.

This means they incorporate burnable materials, such as wood and plasterboard, and have features such as gutters which can trap embers.

What's more, the gaps between building materials are often too large to keep embers out, which means spot fires can start on the inside of the house. And many houses are situated too close to fire-prone grasses and trees.

Indeed, at least 90% of houses currently in bushfire zones risk being destroyed in a bushfire.



## How a new design can withstand fire

The prototypical bushfire resistant house we designed won first prize in the New Housing Division of the United States Renewable Energy Laboratory's Solar Decathlon.

**The house has three pavilions that can be built at different times to save cost. Deborah Ascher Barnstone**



The house would be made from locally sourced, recycled steel frame. It would be mounted on reinforced concrete pilings to minimise its disturbance on the land, touching the ground only lightly. In this way, we help preserve the site's biodiversity.

The primary building material is rammed earth – natural raw materials such as earth, chalk, lime, or gravel – which is not combustible.

The roof and some cladding are made of fire-resistant corrugated metal. Its glass facades have fire shutters made of fibre cement sheeting, a material that's non-combustible and can be closed to seal the house.

### **Read more: How a bushfire can destroy a home**

Importantly, the gaps between these construction materials are 2 millimetres or less. The sloped roofs tilt inwards to capture rainwater. And as the roofs are made of corrugated metal, which has channels in it, the house does not require gutters.

These channels guide rainwater into two open retention ponds either side of the entry, and into protected tanks beneath the house. This also helps protect the house in a bushfire, as it means the fire can't penetrate from beneath.

When bushfires strike, the risk to life is highest when people stay and defend their homes. A design that can resist fire on its own encourages its owners to leave. But it's worth noting that it's not a bunker for people to shelter in. No matter how well designed a house is, it always will be too dangerous to stay when a fire comes through, and particularly in the catastrophic and extreme fire conditions we're increasingly experiencing.

**Adapted from an article from the conversation.**

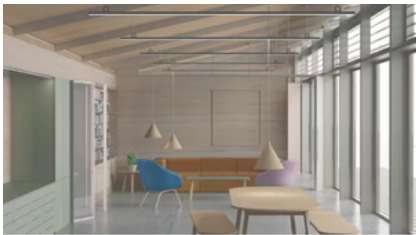


# Fire-EdUp Bushfire-Proof House Design



## Extension Exercise: Design Your Own Bushfire-Proof House Design using Planner 5D

The prototypical bushfire resistant house shown below was designed by 6 UTS Master of Architecture students, Jordan Bamford, Erin Batchelor, Rachel Liang, Georgia Lloyd, Jacob Morris, Annie Tyler, and UTS Engineering students Brittany Edwards, Thomas Herbert, and Li-Ting Tsai, guided by myself and Manasa Marasani from Atelier Ten.



### Activity

**Step 1:** Locate the planner 5d app <https://planner5d.com/>

**Step 2:** Click on Sign up and register for personal use, it is totally free.

**Step 3:** Click Start a Wizard Project

**Step 4:** Start exploring the features and create your own 2D and 3D floor plan

**Step 5:** Copy and paste you design below

**Step 6:** Add annotations about the design features you have included to ensure the house design is Bushfire Proof. Add external features to the build as well.