Where we build. What we build.

Planners

The Where We Build, What We Build Project

As natural hazards intensify, living expenses like energy, mortgages and insurance will get more expensive for climate vulnerable homes – that is, homes that are in high-risk areas and have not been built to mitigate those risks. This project aims to encourage building or retrofitting of homes that are climate-ready, by demonstrating that the benefits of doing so outweigh the costs.

The Where We Build, What We Build project was undertaken in the Adelaide Hills and Fleurieu Peninsula region. One of the goals of the region is to remain liveable, affordable and resilient in the changing climate, by better managing climate risks.

To help achieve this, the project explored:

1. Where We Build – the exposure of the region's existing housing to flood, heat and bushfire risks
2. What We Build – the sensitivity of the region's existing housing to those risks
3. Climate-Ready Home – the ideal specification for a climate-ready home in the region
4. Economic Analysis – the costs and benefits of building or retrofitting to climate-ready specifications, compared with existing housing stock and standards.

The project is an initiative of Resilient Hills & Coasts, delivered by Edge Environment. It was jointly funded by the Commonwealth and South Australian Governments under the South Australian Disaster Resilience Grant Program, and the Insurance Council of Australia. The scope covers Adelaide Hills Council, Alexandrina Council, District Council of Mount Barker, City of Victor Harbor and District Council of Yankalilla.

Why is it important for planners to increase the resilience of homes?

Vulnerable housing imposes major risks on people's livelihoods. For example, vulnerable housing can attract higher insurance premiums and higher energy bills and reduce thermal comfort. The outcome is reduced community resilience, and higher costs for governments, who tend to become the insurer of last resort.

Substantial research on flood, bushfire and heat resilient building materials exists, but an accepted set of standards has not been fully developed and integrated into planning and building codes. Baseline compliance is currently inadequate to ensure climate resilience.

The Where We Build, What We Build project has developed a climate ready home specification that provides increased resilience against flood, bushfire and heat compared with traditional houses.

Economic analysis shows that building a Climate Ready Home instead of a Contemporary Home will save over $36,000. Across the whole Adelaide Hills and Fleurieu Peninsula region, the value of retrofitting all vulnerable housing stock is estimated at over $72 million.

What do we know about insurance?

The insurance industry uses hazard maps, and information on construction materials and design, to judge the probability and size of an insurance claim arising from climate hazards. This information is used to set premiums. We can expect insurance premiums to rise in the future, as hazard exposure increases. Examples of this already exist in South Australia.

In the absence of quality data, insurers assume the worst-case scenario for the likelihood and consequence of natural hazards, and price accordingly. It is estimated that South Australians pay 18 percent too much for home insurance because of uncertainty about natural hazard data. A centrally coordinated, jointly resourced hazard mapping framework in South Australia could help overcome these knowledge gaps.

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What are the benefits to homebuyers?

This project assessed multiple scenarios using benefit cost analysis of retrofitting the main housing archetypes in the region and for building new homes. It found that the benefits of climate ready homes outweigh the costs in all scenarios based on Net Present Value and Benefit Cost Ratio. New builders will save $36,000 if they build climate ready instead of to contemporary standards.

Climate-ready home specification

The Where We Build, What We Build project has developed a climate ready home specification that provides increased resilience against flood, bushfire and heat compared with traditional houses. Refer to the Project Report for the full specification. Items most relevant to planners are provided here.

Recommendations

Siting

Flood hazards should be avoided. A freeboard of 0.5m above the 100 Year ARI level will avoid the 1 in 100-year flood now, but as the climate changes flood heights may increase. Therefore, building with the ground floor as high as possible within other design constraints is recommended. The use of fill should be avoided unless it can be demonstrated that flood impact will not increase elsewhere.

Proximity to vegetation

To minimise bushfire risk, all new dwellings should be sited in areas with low bushfire hazard, set back 20 meters from flammable or combustible vegetation and provide a Building Protection Zone (BPZ) where possible. Trees that would impact the building if they fell over should be removed. Fine fuels should be managed within 20m of the building.

It is recommended to create and maintain a BPZ around buildings. Within the BPZ:

1. No vegetation should be within 10m of a building
2. Beyond 10m of the building, tree crowns are recommended to be separated 5m to provide wind protection during a bushfire
3. Shrubs should not be planted in clumps.

Water supply

Houses should have a dedicated water supply for firefighting purposes with appropriate connections for use by rural fire service. A minimum of 5,000 litres must always be available with adequate pressure and flow (minimum of 10 litres per second at 200kPa).

Structural Soundness

All buildings and structures must be able to withstand floodwater, debris and buoyancy up to and including the 100 Year ARI level + 0.5m. For example, external fuel tanks or water tanks may require anchoring.

Continued function of components

Any components (e.g. electrical system components, HVAC equipment) that could fail to function or may result in contamination (e.g. sewage connections) when inundated during flood events must be located above or protected to the 2050 100 Year ARI level + 0.5m.

Bushfire Attack Level (BAL) 40

A Bushfire Attack Level (BAL) is a measurement of a building's potential exposure to ember attack, radiant heat and direct flame contact. There are six BALs as part of the Australian Standard for the construction of buildings in bushfire prone areas.

BAL measurement and compliance should be considered when designing policies and control development plans.

This project was jointly funded by the Commonwealth and South Australian Governments under the South Australian Disaster Resilience Grant Program, and the Insurance Council of Australia. The views and findings of this project are expressed independently and do not necessarily represent the views of the funding bodies.