Bushfire risk perception: a study of the perceived vulnerability of domestic architecture in bushfire prone areas

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Image from: cover of *Fire Australia*, summer 2008-09

Bushfire implications for future building design

➢Improving building resilience to bushfires in new buildings with the goal of them becoming self defendable. Giving fire agencies a greater chance to defend older existing building stock.

➢Creation within new buildings of an inbuilt refuge for occupants to seek shelter in while a fire front passes.

➢New homes designed to maximise onsite energy and water collection while reducing exposure in the direction of anticipated future bushfire attacks.

➢Merging of a number of natural hazards that affect individual buildings. New building stock will need to include protection from a combination of natural hazard events, such as wildfires, cyclones and earthquakes.

➢Redefining of the build form to include new hybrid options, such as earth berming and sections build underground.

➢Reduced or no insurance available for homes in bushfire prone areas will considerably change the standard of fire preparedness in future homes.

Research Questions

➢For residents living in bushfire prone areas, what attributes of domestic architecture and the immediate environs impact on their perception of safety? Do these reflect the risk as assessed by fire authorities and do these perceptions influence behaviour before and during a bushfire attack?

➢Can architectural interventions change resident's perception of risk? Do these changed perceptions reflect the risk as assessed by fire authorities and would these changed perceptions influence behaviour before and during a bushfire attack?

Research Outcome

When future occupants of new homes in bushfire prone areas seek shelter from a bushfire attack the part of their home that they intuitively go to is also likely to be the part built to the highest bushfire safety standards.

Small windows with protective overhang placed at the wall and roof junction, on the side facing a bushfire threat, reduces both potential ember entry and earthquake damage while encouraging greater internal air flow. Image from: Walker, P. (2005). *Rammed earth : design and construction guidelines*

Angled earth covered roof encourages bushfires to move over and away from house. Architects: RB Arkitektur Image from: http*://www.google.com.au/imgres?imgurl=http://www.trendir.com/house-design/underground-home-designs-swiss-mountain-house*

Above Image, Architects : Mark Lee and Sharon Johnston

Curved non combustible walls with recessed windows preferably metal and sliding doors which can be enclosed by protective bushfire shutters. Above Image, Architects : Cracknell & Lonergan

Wall facing anticipated bushfire threat direction constructed of non combustible materials with no or limited glazing. Adjoining wall with recessed door and windows and inbuilt bushfire shutters. Architects: Johnston Marklee & Associates

Underground rooms with courtyard access which can be safeguarded by protective sliding shutters built into the wall cavity. Architects: Deca, Image from: *http://dornob.com/underground-living-buried-secrets-of-a-stone-desert-home/?ref=search*