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National Housing and Homelessness Plan

Dept of Social Services
Australian Government
Parliament House
Canberra ACT 2600

Submitted via HousingandHomelessnessPlan@dss.gov.au

To Whom It May Concern

Response to National Housing and Homelessness Plan Issues Paper

The Sustainable Buildings Research Centre (SBRC) at the University of Wollongong is pleased to be able to contribute this response to the National Housing and Homelessness Plan Issues Paper. The myriad of challenges facing the Australian housing sector are widely known, and it is encouraging to see consultation and action being taken across multiple levels government. The policy responses that emerge from this consultation process must be grounded in evidence-based research to ensure the delivery of effective and equitable outcomes. The SBRC welcomes the opportunity to contribute our knowledge to this process.

The Sustainable Buildings Research Centre is a multi-disciplinary facility that hosts a wide range of research and industry collaborations to address the challenges of making buildings sustainable. We are pioneering new approaches to building design, construction and retrofitting techniques to create more effective places to live and work. This starts with our own building, which in 2019 became the first building in Australia to receive full certification under the Living Building Challenge, and one of only 24 buildings worldwide to meet the benchmark – regarded as the world's toughest green building test. Together with our industry and academic collaborators from around the world we are developing new products and systems that will not only improve the energy efficiency and sustainability of our buildings today, but which will improve the resilience of our built environment to climate, economic and social change in the future.

The SBRC's themes and areas of research are diverse, all focused on making buildings more liveable, more sustainable, more cost-effective, and kinder to our environment:

- Energy efficiency, generation and storage
- Resilience & climate adaptation
- Human factors
- Water
- Materials, construction and life cycle analysis
- Modelling and decision support systems

Our response the National Housing and Homelessness Plan Issues Paper focuses on section **3.7** ***The impact of climate change and disasters on housing security, sustainability and health.*** This reflects the particular areas of expertise of the SBRC.

3.7 THE IMPACTS OF CLIMATE CHANGE AND DISASTERS ON HOUSING SECURITY, SUSTAINABILITY, AND HEALTH

The housing system is currently facing stresses from many directions, placing multiple, often competing, demands on many policies addressing housing issues. The focus areas outlined in the issues paper illustrate this. Within this context, with multiple drivers to increase the supply and affordability of housing across multiple sectors, it is important to ensure that the housing being delivered, or reconfigured, is of a suitable quality to meet the ongoing challenges of providing comfortable, healthy, sustainable and secure housing for all.

Housing and the built environment – through both housing construction and maintenance, and wider urban design – have a crucial influence on our physical and mental health and wellbeing. We need to have a building stock that is appropriately designed and built to provide safe and sustainable homes in the face of current and future climate. At the same time, the construction and operation of our buildings are key contributors to Australia’s greenhouse gas emissions. In the transition to a low-carbon economy, minimizing the embodied and operational impacts of both new and existing buildings must be a priority.

As part of the Housing and Homelessness Plan Issues Paper, the Australian Government poses a number of key questions for consideration regarding the impacts of climate change and disasters. The SBRC has summarised key, evidence based considerations as detailed below to a selection of those questions.

2. *How can governments support hazard resilient housing and housing modifications for new and existing housing, in particular within rural and remote locations that are more likely to be impacted by extreme weather events?*

- a. The inherent assumption here that rural and remote locations are more likely to be impacted by extreme weather events should be carefully considered and questioned. There is a significant body of research highlighting the growing impacts of urban heat islands, and predicting more frequent heat waves. The challenge of extreme weather events in highly populated urban areas also requires a considered approach to housing resilience¹.
- b. An important consideration from a policy pathway perspective to improve building resilience pathways is to ensure resilience in the face of extreme weather is considered in future updates to the National Construction Code (NCC). Based on the current trajectory, the NCC goals are encouraging/mandating that homes be designed to be comfortably operated with the assistance of air-conditioning. This reliance on active heating and cooling is inherently less resilient than Passive Low Energy homes (e.g. higher thermal mass buildings). Fast tracking the inclusion of a comfort based compliance pathway with the NCC, allowing/encouraging homes to achieve compliance with the NCC without the need for mechanical heating/cooling (including a heat wave/energy disruption resilience test) is a sensible solution to achieve the goal of comfortable homes without prejudicing potentially more resilient designs.
- c. Support (and continue supporting) the development of technical guidance on how to retrofit that is tailored to the specific building and surroundings, including both energy efficiency and resilience to natural hazards. This can be achieved using home assessment apps like those being developed by the Resilient Building Council and associated groups².

¹ Hirsch, Annette L., Jason P. Evans, Christopher Thomas, Brooke Conroy, Melissa A. Hart, Mathew Lipson, and William Ertler. "Resolving the Influence of Local Flows on Urban Heat Amplification during Heatwaves." *Environmental Research Letters* 16, no. 6 (2021). <https://doi.org/10.1088/1748-9326/ac0377>.

² McKinnon S, Green A, Daly M, Boehme T, Cooper P, Eriksen C, 2022. Building Community Resilience to Bushfires: A Case Study of Kangaroo Valley. Final Report

- d. Funding of retrofit programs, which not only impact the houses included in the program, they also raise awareness and help to establish an ecosystem of trades with experience in implementing effective retrofits³. There are various mechanisms shown to be cost effective, including co-funding/grant schemes, and interest-free loans⁴
- e. An effective rating scheme system can then be linked to various other programs to encourage improvements in household resilience, for instance through facilitating insurance premium discounts and/or mortgage discounts for houses that are proven to be resilient
 - i. Once the validity of home resilience ratings are established, voluntary and then mandatory disclosure of the building ratings can be implemented.
- f. Finally, it is important not to discount less commonly considered factors which have a large impact on household health, comfort and well-being – including under-heating of homes in winter periods, and the hazards of mould growth in homes. These hazards are largely absent from consideration in current debates, yet represent a potential slow disaster^{5,6}.

4. How can governments better encourage the uptake of energy efficient housing modifications and design?

- a. This problem requires a two pronged approach to encourage energy efficient new-build housing, along with encouraging renovating and retrofitting of the existing building stock.
- b. When considering new-build, an important first step is to improve compliance with the existing building regulations regarding energy efficiency. This is to ensure existing minimum standards are being met – acting on the recommendations from the National Energy Efficient Building Project⁷ - as well as reducing impediments to exceeding minimum standards⁸.
- c. Future changes to the NCC should be broadened in scope to also consider:
 - i. Thermal performance at a household level (i.e. not just on a per m² basis) to account for the effect of increasing house size,
 - ii. embodied carbon within construction materials, and
 - iii. rapidly moving to net zero standards, factoring in point 1 and 2, with a transition period.
- d. Broad-scale disclosure of environmental performance of existing homes, with sensible advice for modifications and retrofits, represents an acceleration of a pathway the Australian Government is already on with the Residential Efficiency Scorecard tool. The pathway to wide-scale disclosure of building performance was outlined by Daly (2020)⁹:
 - i. define a nationally consistent rating tool for existing homes. This has now occurred with the national roll-out of the Residential Efficiency Scorecard. This voluntary tool provides owners with a star rating for the overall energy performance of their home. It also provides specific information on its performance during hot weather, as well as recommendations on how to improve that performance.

³ McKinnon S, Green A, Daly M, Boehme T, Cooper P, Eriksen C, 2022. Building Community Resilience to Bushfires: A Case Study of Kangaroo Valley. Final Report

⁴ Penman, T.D., Eriksen, C., Horsey, B., Green, A., Lemcke, D., Cooper, P. and Bradstock, R.A., 2017. Retrofitting for wildfire resilience: What is the cost?. International journal of disaster risk reduction, 21

⁵ Mainstreaming Low Carbon Retrofits in Social Housing. Targeted review of evidence of direct and co-benefits of energy efficiency upgrades in low income dwellings in Australia. <https://www.lowcarbonlivingcrc.unsw.edu.au/resources/crc-publications/crclcl-project-reports/rp3044-targeted-review-evidence-direct-and-co>

⁶ Sustainability Victoria, The Victorian Healthy Homes Program Research findings (2022) <https://assets.sustainability.vic.gov.au/susvic/Report-Energy-Victorian-Healthy-Homes-program-research.pdf>

⁷ Pitt & Sherry. "National Energy Efficient Building Project," 2014. http://www.sa.gov.au/_data/assets/pdf_file/0004/135544/NEEBP-final-report-November-2014.pdf.

⁸ Daly, Matthew, Tillmann Böhme, and Alberto Escribano. "Embedding Energy Efficiency in the Apartment Construction System: An Analysis of Decision-Making in NSW, Australia." In Improving Buildings, Cutting Carbon, edited by Libby Grant, Helen Viggers, and Philippa Howden-Chapman, 49–64. Wellington: Steele Roberts Aotearoa, 2021. <https://steeleroberts.co.nz/product/improving-buildings-cutting-carbon/>.

⁹ Daniel Daly. "Homes with Higher Energy Ratings Sell for More. Here's How Australian Owners Could Cash in." The Conversation, 2020, 1–5. <https://theconversation.com/homes-with-higher-energy-ratings-sell-for-more-heres-how-australian-owners-could-cash-in-128548>.

- ii. provide a framework for owners to voluntarily disclose the certified energy performance of their home at the point of sale or lease. Only owners of higher-rating homes will be likely to do this voluntarily.
- iii. legislate for mandatory disclosure of a home's energy rating when it's being sold or leased.
- iv. introduce minimum standards of energy performance for rental properties. Once a property's energy performance is rated and disclosed, the government has a powerful policy lever to drive improvement of the energy efficiency of the existing building stock. For instance, in the UK, owners are obligated to improve the energy performance of any property they wish to offer for rent to at least grade E (on an A-to-G scale).
- v. Once this framework is operating, there is a consistent framework within which to incentivize modifications either through tax incentives or grant programs.

5. What options should be explored for improving the energy efficiency of rental properties?

- a. Research by the University of Wollongong identified the following policies as the priorities for improving energy efficiency of rental properties^{10, 11}, based on expert opinions of the ease of implementation and impacts on energy consumption and CO₂-e emissions:
 - i. Minimum environmental standards for rental properties
 - ii. Tax incentives (min \$5000 to encourage larger upgrades)
 - iii. Environmental performance disclosure – wider roll out of Scorecard for rental properties
 - iv. Rebates and grants (targeted, and linked to professional advice – e.g. Scorecard assessment advice)

The SBRC appreciates the opportunity to contribute to the development of the National Housing and Homelessness Plan. We are committed to collaborating with the government and other stakeholders in future discussions, and will continue to pursue cutting edge research aimed at providing sustainable and resilient housing for all Australians. The transition to a low-carbon economy is a pivotal step to address climate change and ensure a resilient and prosperous future for all. We would be pleased to engage further with the Department of Social Services, should you require more information on any of the above.

If you have any queries or would like to discuss anything further, please don't hesitate to contact us via [REDACTED]

Kind Regards,

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¹⁰ Heffernan, Troy William, Matthew Daly, Emma Elizabeth Heffernan, and Nina Reynolds. "The Carrot and the Stick: Policy Pathways to an Environmentally Sustainable Rental Housing Sector." Energy Policy 148, no. PA (2021): 111939. <https://doi.org/10.1016/j.enpol.2020.111939>.
¹¹ Submission to Treasury - Improving energy efficiency of rental properties – Low Carbon CRC
https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/TreasuryLawsBill/Submissions