# Lochiel Park: Shaping the future of housing

University of South Australia

LOW CARBON LIVING CRC

## WHAT WE'VE LEARNT FROM AUSTRALIA'S LOCHIEL PARK GREEN VILLAGE

Lochiel Park is arguably Australia's most environmentally sustainable residential estate. Started from a vision to create the nation's model green village, Lochiel Park has been a showcase of environmentally sustainable technologies and practices. Since the estate's inception, the University of South Australia has been involved in shaping the environmental targets, monitoring performance, and undertaking an extensive research program.

This multidisciplinary living laboratory located in suburban Adelaide, South Australia has helped create a detailed understanding of low carbon homes and their impact, informing sustainable housing decisions throughout the world.

**Key research findings at unisa.edu.au/lochiel-park**

# THE FUTURE OF HOUSING

Housing is a dynamic reflection of cultural values and national economic strength, but as these change so does our housing. Australian housing is a unique response to the landscape, the climate, the cultural mix, the abundance of natural resources, and to our connection to the natural environment.

Recently our housing and lifestyle is more strongly influenced by awareness of environmental impact, and the growing costs of operating relatively high energy and water use dwellings. Housing policy is echoing this growing consciousness, with governments establishing minimum energy and water performance standards.

But where is the evidence base that can support and shape housing policy change?

Niche urban developments representing new environmental aspirations, relatively free from the norms of typical commercial constraints, can test new building forms, construction systems, technologies, systems and processes, creating places that provide new experiences for residents. Lochiel Park Green Village is one such niche, shaped by a policy response, constructed by an industry committed to trying new ideas, and resided by a community of households representing all stages of the family lifecycle.

Lochiel Park has and will continue to shape the future of housing. Researchers from the University of South Australia monitor the energy and water use of all homes at Lochiel Park, plus monitor the performance of renewable energy technologies, and supplement one of the world's best residential data sets with regular surveys and stakeholder interviews. Lochiel Park provides a unique window into the future of low carbon housing.

## COLLABORATIVE RESEARCH WITH IMPACT

The University of South Australia's research program at Lochiel Park uniquely integrates multiple academic disciplines working together to understand not only what has happened, but why it has happened and most importantly, what the residents think about living in near zero energy homes in a near zero carbon estate.

The research at Lochiel Park is designed to draw on a wide range of perspectives with experts from engineering, architecture, planning, economics, behavioural science and other disciplines. This approach allows the University of South Australia to go beyond just reporting on the monitored performance of homes, but instead explore the interaction between people, technologies and place that result in energy, water and carbon impacts.

Most importantly the research is designed to provide the evidence base to shape housing policy, provide feedback to industry on the performance of building systems, technologies and house designs, and provide the solutions that will shape the transition to affordable low carbon housing.

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## EXCEPTIONAL SPACES

The Lochiel Park Green Village is an exceptional living laboratory for many reasons, such as the size of the household sample being monitored, the environmental aspiration of a creating near zero energy homes in a near zero carbon estate, the broad social mix of residents, and the unique blend of different housing types and sizes.

Lochiel Park was transformed into model green village by incorporating the best of sustainable technologies within a natural parklands setting. Within the estate there are just over 100 dwellings including social housing, low income housing, rental properties and owner occupied homes. There's even a specially designed zero carbon house competition winner. Importantly, each dwelling was designed to meet a minimum 7.5 star energy efficiency rating, and include solar photovoltaic cells, solar hot water, double glazing, high levels of thermal insulation, rainwater harvesting, water efficient appliances and fittings. These homes have achieved significant energy and greenhouse gas emissions reductions compared to typical homes built to local and Australian standards, and have established a benchmark for creating a low carbon community.

Lochiel Park is special because sustainability strategies go beyond the individual home designs. Lochiel Park has been designed to be socially as well as environmentally sustainable,

with a high quality public realm and communal facilities that encourage an active and supportive community spirit.

The higher density small lot development, which values public space over private space, and facilities such as the community garden help facilitate greater social interaction and an enhanced sense of belonging.

The collaborative approach to Lochiel Park, with close relationships fostered between state government, researchers, industry, and the residents of Lochiel Park, has enabled this model green village to be at the forefront of innovative sustainable residential developments. Lochiel Park is a special place not only for its residents, but as a living laboratory that is helping to shape the future of housing.

## KEY RESEARCH OUTCOMES

The University of South Australia's Lochiel Park research covers a wide range of research fields, with an amazing array of findings published in journals and conference proceedings throughout the world, including:

- Environmental impacts: Overall energy, water and carbon performance
- Value proposition: Economic viability of technologies, zero energy housing standards, and low carbon precincts
- Policy implications: Lessons learnt from mandating particular technologies and housing standards
- End-use experience: Thermal comfort, health and wellbeing impacts, creating a sense of community
- Transformational impacts: How green villages can transform the construction industry, design practices, policy makers
- Product performance: Rooftop PV, solar water heaters, energy efficient lighting systems, in-home energy feedback systems
- And many more research activities.

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# PARTNERS

Conducting Lochiel Park research has involved a variety of partnerships. The University of South Australia acknowledges the important role these partners have played, including: the State Government of South Australia's land development agency, Renewal SA, for their ongoing, continuing partnership as stewards of this residential estate; the Cooperative Research Centre for Low Carbon Living recognising Lochiel Park as a national living laboratory; CSIRO and their involvement in national research projects; and, most importantly, to the residents of Lochiel Park for their continued participation, allowing the research to happen!

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