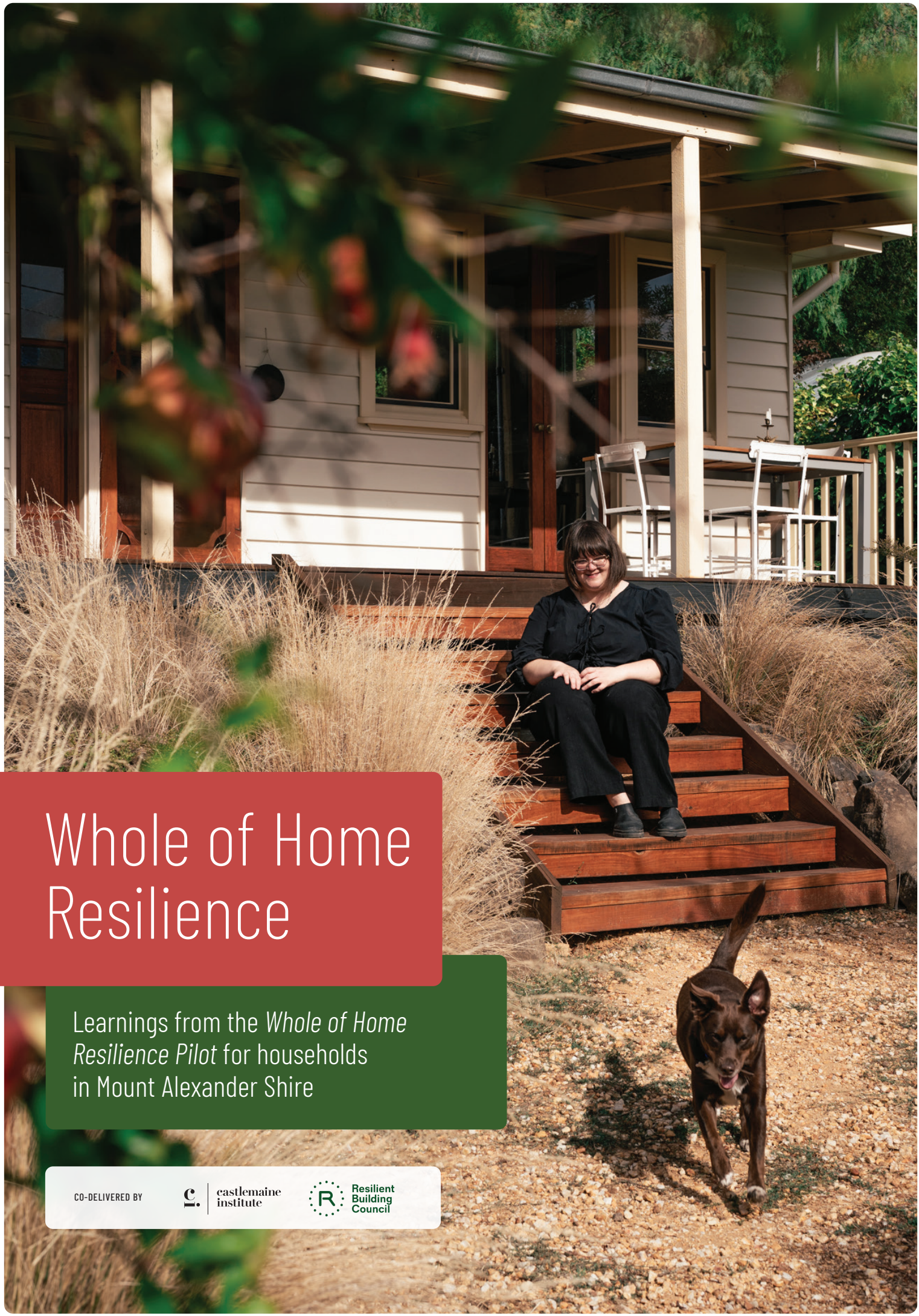

Whole of Home Resilience

Learnings from the *Whole of Home Resilience Pilot* for households in Mount Alexander Shire

CO-DELIVERED BY

castlemaine institute

Resilient Building Council

Whole of Home Resilience

Learnings from the *Whole of Home Resilience Pilot* for households in Mount Alexander Shire

Acknowledgements

Co-delivered by

castlemaine institute

Resilient Building Council

With support from

VICTORIA State Government | Energy, Environment and Climate Action

Residential Efficiency Scorecard STAR RATING

Mount Alexander Shire Council

Prepared for

National Partnership Agreement for Disaster Risk Reduction

The Whole of Home Resilience project is co-delivered by the Castlemaine Institute (CI) and the Resilient Building Council (RBC), with support from Victorian Government Department of Energy, Environment and Climate Action (DEECA) Residential Efficiency Scorecard (Scorecard) and Mount Alexander Shire Council.

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Castlemaine Institute is a research and learning hub for regenerative economics, community and landscapes. We exist to support the ongoing transformation and development of individuals, collectives, landscapes, and systems which are evolving to meet the urgent opportunity of our times. We do this through applying multidisciplinary depth to complex problems, drawing on and developing local wisdom through our work.

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All images by Penny Ryan Photography

Acknowledgement of Country

We acknowledge that we live and work on the unceded lands of the Dja Dja Wurrung and we acknowledge the vital role Jaara people continue to play as custodians of the region. We respectfully recognise Elders past, present and emerging.

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About this report

The *Whole of Home Resilience* project builds on work the Castlemaine Institute and the Resilient Building Council are undertaking to better understand how households can be encouraged and supported to upgrade or retrofit their homes to improve their resilience and adapt to a changing climate.

We collaborated with the Department of Energy, Environment and Climate Action, Residential Efficiency Scorecard to explore this question through the pilot of a combined Multi-hazard and Residential Efficiency Scorecard assessment for houses in Mount Alexander Shire. This report brings together the findings from the assessments, learnings from the project, analysis of the cost and benefit of this assessment approach, and recommendations to improve household resilience to the changing climate.

This report reviews and evaluates the project delivered in Mount Alexander Shire and will focus on:

1. Lessons for rolling out the home assessment methodology more broadly
2. Cost benefit of assessing homes using this method
3. The expected impact of this project on the long-term resilience of participants

Executive summary

Natural hazards are expected to be more frequent and severe under changing climate conditions, making it more important to reduce household vulnerability. The *Whole of Home Resilience* project focused on climate change adaptation and risk reduction by supporting households to understand their exposure to natural hazard events and conditions, and the specific vulnerabilities of their home.

PROJECT OBJECTIVES

1. **Identify the average Resilience Rating and Scorecard Rating for houses, and how this varies by house typology and risk exposure.**
2. **Understand the aggregated level of vulnerability of houses (building) and households (people), and what this might imply for Mount Alexander Shire as a whole.**
3. **Identify key retrofit requirements for households in relation to different house typologies and risk exposure levels.**
4. **Outline the costs of retrofits for the key requirements in relation to house typology and risk exposure.**
5. **Explore the benefits of offering combined multi-hazard and energy efficiency assessments and ratings.**

Threats to communities were considered based on the risk of natural hazards such as bushfire, storm, flood or extreme temperatures (heat and cold); this was linked to living in energy efficient homes to manage the energy transition. The Whole of Home Resilience project in Mount Alexander Shire (the Shire) piloted a combined resilience and energy performance home assessment methodology in regional Victoria. This was achieved through undertaking assessments using the Resilient Building Council's Multi-Hazard Resilience Ratings tool.

The project sought to understand the exposure of regional homes to natural hazard events and identify actions that can be undertaken to increase resilience of these properties and by extension the community.

PROJECT SCOPE

The Whole of Home Resilience project was a 14 month long project that included the following:

1. **Train five local assessors**
2. **Recruit household participants that represent the demographics of the Shire**
3. **Assess up to 150 homes in Mount Alexander Shire**
4. **Analyse ratings and responses to participant surveys**
5. **Analyse recommended actions and retrofits to improve resilience and energy efficiency.**

Castlemaine Institute recruited 5 local accredited Scorecard Assessors. The Resilient Building Council trained and certified these assessors to undertake Multi-Hazard Resilience Rating assessments. The pilot assessed 140 houses across the Shire for energy performance, thermal comfort and resilience to environmental hazards including bushfire, storm and flood. The home assessments determined the condition of individual properties and their expected performance, providing households with customised recommendations.

Data extracted from the National Residential Efficiency Scorecard, Multi-Hazard Resilience Ratings and participant surveys was analysed by Scorecard, the Resilient Building Council and Castlemaine Institute respectively.

The project increased awareness of risk, resilience and energy performance in Mount Alexander Shire. Scorecard assessors were upskilled and added a climate resilience perspective to their ongoing assessment approach. Following their assessments, participating households better understood their risks and are now in a stronger position to prioritise actions to reduce vulnerability to natural hazards and improve their energy performance and thermal comfort.

Key findings

Learnings and analysis from this project can be used to inform policies, programs and investments that will enable households to undertake retrofits required to improve performance of individual properties and therefore increase the resilience of whole communities.

1. Support households and communities to act: place-based and community-led projects can be a means to improve home performance

This project demonstrates that place-based and community-led projects are an effective mechanism to support improved home performance. In partnership with the Resilient Building Council and Department of Energy, Environment and Climate Action (Scorecard), the project was embedded in the local community through leadership from the Castlemaine Institute, with support from Mount Alexander Shire Council and regionally-based reference group members. This model leveraged trust and connected with existing local networks.

The Mount Alexander Shire community is highly engaged in sustainability with a range of successful current and previous community-based projects. Scorecard found the homes in this study were significantly higher performing than the average Victorian home. Only six homes in this project rated below the Victorian average of 3 Stars, and 111 homes rated from 6-10 Stars, indicating a significantly higher level of performance than the average.

Development of national systems and tools can be complemented by funded direct community support services, including local assessor and building-industry training and capacity building, community information workshops, and resources for local governments to support residents, promote and connect businesses and service providers.

Community organisations are wellplaced to identify needs, understand community sentiment and tailor information, resources and responses accordingly.

The analysis shows a 5-to-1 benefit-to-cost ratio for a next stage regional scale, community based assessment roll-out supported by new resources, services, and incentives of direct benefit to the community (see Next Steps).

This project makes the case to empower neighbours to work together and prepare for the changing climate, and to support inclusive programs that connect and foster thriving communities.

Resourcing place-based projects can provide locally relevant, trusted advice and resources to households. It can foster shared learning through education programs that support communities to understand their risk, resilience and energy efficiency. Local peer to peer platforms allow for discussion and recommendations between householders.

Improving the energy performance and resilience of homes reduces the cost of living for households and collective risk minimising the broader impact of energy infrastructure and natural hazards on the community.

2. Recognise on-site assessments as an effective way to identify home performance and appropriate upgrades

No two homes received the same combination of retrofit recommendations, demonstrating that professional on-site assessments correctly identify vulnerabilities and provide actions that will be effective for each home.

Scorecard analysis found no relationship between home typology or general category of the home, and upgrade recommendations or costs. Many homes had been renovated over time, such that home typologies were not indicative of performance or required upgrades. For example, the age of the home or the construction type showed widely varying ratings and upgrade recommendations*. Each home had individual strengths and weaknesses depending on a wide range of features, maintenance and upgrades.

Likewise, the detailed building assessments confirm that the type and extent of vulnerabilities to bushfire, flood and storm hazards existed relatively equally across all building typologies. There is some correlation between the age of the building and Resilience Ratings (existing and potential), where newer buildings constructed in the last 20 years have slightly higher existing and potential improved rating levels‡.

Whilst typologies can be a starting point for households to understand the different factors that affect the performance of their homes and types of improvements to consider, this pilot demonstrates that individual home assessments are required to accurately assess home performance and recommend appropriate upgrades.

The Castlemaine Institute's analysis of participant surveys found participants valued professional advice that was specific to their home.

> *"An impartial assessor can/will point out items that can easily be fixed, as well as discuss longer term actions. Whilst one can read about such things, the immediateness of a person discussing actions helps clarify and focus those actions."*
>
> - Participant

> *"Having an assessor visit my home was beneficial in assisting me how to improve any deficits in my home in both a financially viable way and to reaffirm my ideas and concepts regarding my home improvements."*
>
> - Participant

> *"The assessors felt the hands-on, personalised approach helped translate knowledge into something tangible and actionable, tailored to each household's unique context. The combination of energy and resilience assessments made sense to participants and often sparked new motivation to take informed action."*
>
> – Assessor reflection round table

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

3. Consider combined benefits of Whole of Home Resilience improvements

Improving resilience and energy performance of homes generates a variety of benefits for households making homes more cost-efficient, healthy and safe in the current and future climate. These benefits extend to government by reducing costs across health, safety, insurance affordability, cost of living savings, productivity, housing supply, emissions reduction and emergency recovery services. To support delivery of resilience and energy upgrades, government departments, agencies, service providers and stakeholders need to work collaboratively to establish and align supports and standards.

> *"A holistic approach to assessments maximises health and wellbeing benefits for residents, avoiding missed opportunities and duplication of effort by considering energy efficiency and climate resilience co-benefits of recommended actions."*
> - Reference group member reflection

Scorecard assessors provided a strong foundation for resilience assessments, having a sound knowledge base that can be used for future assessments after further training. Home visits are costly and inconvenient for householders, so a single assessment visit provided considerable benefits. There was also some overlap in data collection. Scorecard upgrade suggestions commonly identified a range of gaps in the building shell. These can also impact on the Resilience Rating. Considering upgrade suggestions across ratings has potential benefits for householders to make the right choices for their situation, and not waste money by later finding out actions had unrecognised downsides.

> *"The process of having a trained assessor provide a fresh set of eyes often brought new awareness to risks or opportunities that hadn't been previously considered."*
> – Assessor reflections

> *"Being able to talk through the specifics of my house and retrofit options with an expert was really helpful to inform my thinking about what to focus on/prioritise. I was pleasantly surprised how simple/low cost some of the recommended actions for my home are to enhance bushfire resilience, and the meaningful impact these actions would have on the Resilience Rating of my home. This information is motivating, and while I am yet to take action, I now have a clearer plan, and I am inspired to take the next steps."*
> – Participant

Being on site allowed assessors to build trust with the householder, tailor their approach, and help translate technical information into something practical and relevant for each household. Many assessors described a shift in their own practice, with this holistic lens shaping how they approach their work.

> *"The assessors felt the hands-on, personalised approach helped translate knowledge into something tangible and actionable, tailored to each household's unique context. The combination of energy and resilience assessments made sense to participants and often sparked new motivation to take informed action."*
> – Assessor reflection round table

> *"I've learned a great deal thank you; it's helped us understand our position much better, have enjoyed the interactions and professionalism of the assessors and research team."*
> – Participant

4. Improve both energy efficiency and resilience performance through combined action plans

Energy efficiency, thermal comfort and resilience considerations overlap at the building shell. Commonly recommended upgrades that offer combined performance improvements include draught and gap sealing, installing high performance glazing, installing window shutters and managing vegetation.

Action plans that consider both resilience and energy performance help households identify the most efficient and effective actions to achieve multiple benefits, and reduce maladaptation risks. Combined action plans enable single retrofits for resilience and energy, reducing costs and inefficiencies, compared to separate approaches. A holistic approach produces multiple benefits for households and society, including energy and insurance savings, safer, healthier people, reduced risks and emissions.

The consistency and accuracy of assessment data and results indicates that a broad cohort of service providers could undertake training to become Multi-Hazard Resilience Rating assessors, including builders, energy assessors, bushfire consultants, building surveyors, architects, building designers, pest inspectors and perhaps real estate agents and other service providers that already visit households for other services.

> *"It was useful to have an experienced and independent person give advice to help prioritise what steps to take to make my home more energy efficient and safe."*
> - Participant

> *"The benefit of a single assessment is that I don't have to source and combine two separate assessments into a single set of actions. I only want to rebuild my roof once."*
> – Participant

> *"It is interesting to see a mix of recommendations that can easily be implemented by the home occupant and others that require a builder/contractor. As a cooperative housing provider, this has implications for our planned maintenance programs and the work specifications that contractors are given."*
> – Participant property manager

> *"Assessors are unable to go back to just energy efficiency recommendations - the holistic lens is there now and they notice the ways it impacts their work."*
> – Assessor reflection

"The holistic approach maximises health and wellbeing benefits for residents, avoiding missed opportunities and duplication of effort by considering energy efficiency and climate resilience co-benefits of recommended actions."

– Reference group member reflection

Project snapshot

BUSHFIRE

Average bushfire resilience rating

2 out of 5

(140 homes)

STORM

Average storm resilience rating

2 out of 5

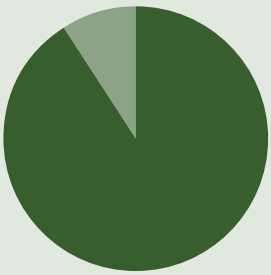
(140 homes)

FLOOD

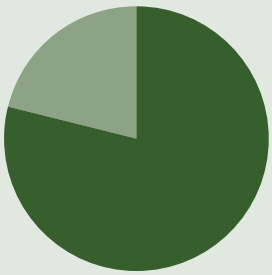
Average flood resilience rating

3 out of 5

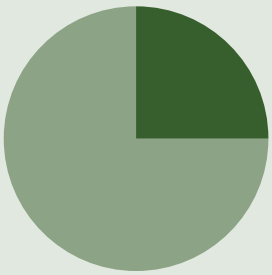
(9 homes)



91% of participants have a Scorecard rating above state average



79% of participants have a hot weather rating of 1 out of 5



25% have a cold weather rating of 1 out of 5

The comprehensive analyses that inform this snapshot are:

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

§ Castlemaine Institute, Participant Survey Analysis, April 2025

140
households assessed

93%
of participants use only English at home

5
National Scorecard accredited assessors trained and certified in the Multi-Hazard Resilience Rating tool

96%
of participants own their home

4%
of participants rent their home

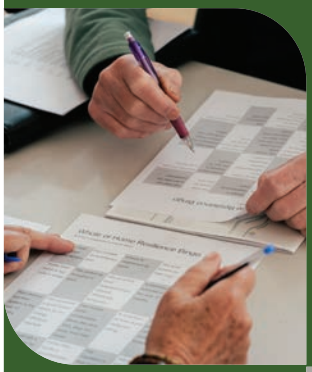
91%
of participants have a Scorecard rating above state average

79%
have a hot weather comfort rating of 1 out of 5

25%
of households have residents aged over 65

25%
have a cold weather comfort rating of 1 out of 5

$23k
Average resilience retrofit cost for the dominant hazard



$4.8k
Average energy performance retrofit cost

68%
of participants with Bushfire as the dominant hazard

26%
of participants with storm as the dominant hazard

6%
of participants with flood as the dominant hazard

90%
said energy efficiency is a very important consideration when making decisions

Project overview

01 Project inception

Whilst setting up operations, the Whole of Home Resilience Project Reference Group was established to provide an agency, industry and / or community perspective for adaptation relating to resilience of the built environment and health and safety from natural hazards. The group provided guidance and supported the project team to recruit households for assessment, with a meaningful representation of target cohorts within the community.

During this phase, accredited Scorecard assessors from within the region were recruited.

02 Assessor training

The Resilient Building Council trained 5 accredited Scorecard assessors in the Multi-Hazard Resilience Rating Tool.

Training involved:

- 15 hours of online training modules
- 1.5 days in person training — this included a half-day group session and an in-home session, as well as a half-day product and tool training
- 2 test assessments
- One-on-one reviews.

Following the training and review of their test assessments, the assessors were accredited by the Resilient Building Council.

03 Community outreach and onboarding

Whilst assessor training was underway, households were encouraged to register their interest in a free home assessment on Mount Alexander Shire Council's engagement platform. The Shire promoted the assessments through their social media, and traditional media channels. The project was also promoted through posters on community notice boards in towns across the Shire, community newsletters, and at aligned community events.

The households responded to a questionnaire to describe their hazard exposure, house type, and household demographics to check the representation across the project. These were compared to data from the Victorian housing Stock Model (Victorian Government) and the Australian Bureau of Statistics. All households that applied were offered an assessment.

04 Home assessment delivery

Home assessments

Assessments were conducted by accredited Scorecard and Multi-Hazard Resilience Rating assessors. The assessors completed 140 home assessments in Mount Alexander Shire between October 2024 and January 2025.

Households were requested to complete a survey about their household and home, risk, energy efficiency, retrofitting and renovating and their neighbourhood.

Excluding travel time, the assessments took 1.5-3 hours on-site and a further 2-4 hours at the desk afterwards to complete. The time per assessment depended on the complexity and size of the house and number of associated structures. Over the course of the pilot, the assessment time was reduced as the assessors became more experienced and the Multi-Hazard Resilience Rating tool application was streamlined.

The assessors were paid $600 per assessment and received 2 Victorian Energy Efficiency (VEEC) Certificates per assessment, valued at $80 each.

During the assessment period, weekly optional drop-in sessions were provided for the assessors to ask questions of Resilient Building Council and Scorecard, share learnings and troubleshoot issues.

The Resilient Building Council worked with the assessors to improve and streamline the tool over this period.

Results delivery

Resilient Building Council's Technical Working Group supervised the assessments and certified the results.

Following their assessment, households were provided with a *Whole of Home Resilience Report* that included:

- A cover letter with a summary of highest impact actions to prioritise
- Multi-Hazard Resilience Ratings Report
- Residential Efficiency Scorecard Certificate.

Households were invited to complete a post assessment survey asking them to reflect on their experience of the project, their current understanding of risks, resilience, energy efficiency and thermal comfort, renovating and retrofitting and what would motivate them to act.

05 Evaluation and reporting

Workshops

Participants were invited to attend one of two post-assessment workshops. These were held after the majority of the *Whole of Home Resilience Reports* were issued so attendees could engage with the project, their recommendations and with each other.

Attendees shared insights from their lived experience of navigating home resilience and energy upgrades and in some cases, professional experience from related sectors, roles and community groups.

Surveys and reflections

Participants were asked to complete a survey at three points during the program.

- Sign-up survey was required upon registering interest, information about location, house, household and risk exposure were included.
- Pre-assessment survey was sent to households prior to being contacted by the assessor. Assessors were asked to remind participants to fill out the survey.
- Post-assessment survey was sent out after the reports were issued, as the project timelines were narrowing, this survey was only open for two weeks.

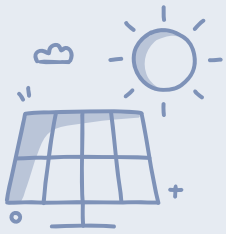
Assessors were invited to a roundtable discussion to reflect on the project and their experience in undertaking combined resilience and energy assessments. Reference group members were asked to reflect on the project and provide suggestions to identify benefits of the combined assessment methodology, further resources, and how to raise awareness of this approach.

The surveys, workshops and reflections provided insights that informed the key learnings from the project, including the impact of the assessment and report, and understanding household priorities and supports required for them to take action.

Data analysis

Data extracted from Residential Efficiency Scorecard and Multi-Hazard Resilience Ratings, as well as participant surveys, was analysed by Scorecard*, the Resilient Building Council‡ and Castlemaine Institute§, respectively.

The average resilience retrofit cost is estimated at $23K for the dominant hazard.



* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

§ Castlemaine Institute, Participant Survey Analysis, April 2025

Reflections & lessons

Reflecting on the experience of delivering the *Whole of Home Resilience Pilot*, the following learnings can inform an extension or future application of the combined assessment approach. The experience of the assessors and households demonstrate the benefits of delivering combined energy and resilience assessments. An assessment approach that builds on the learnings and successes of this pilot is proposed later in this report in Recommendations.

Field piloting is essential for a new community service, such as ratings programs designed to support householders

Whole of Home Resilience piloted home assessments with 5 different assessors assessing 140 different homes. The pilot tested community sentiment, assessor training and assessment delivery across these variables. The pilot informed the design of enhancements to the Multi-Hazard Resilience Ratings tool and assessment training and delivery that will improve efficiency and cost effectiveness of assessments.

KEY LEARNINGS

Assessor training

Whole of Home Resilience assessments used existing skilled Scorecard assessors, leveraging their knowledge and experience. Reflections from the training included:

- Increasing the number of practice assessments prior to accreditation would give assessors more confidence and experience for early assessments.
- Designing different training approaches and resources is important to respond to different learning styles.

> ***In order to test knowledge and build confidence, the assessors felt it would have been beneficial to shadow an accredited assessor and undertake more practice resilience assessments.***
> – Assessor reflection round table

Home assessment delivery

During the pilot the Resilient Building Council quickly responded to field learnings which involved feedback into training and tool development, reducing the cost and time to deliver an effective resilience rating.

- Skilled home assessors used their experience of Scorecard assessments to provide implementable feedback on the Multi-Hazard Resilience Ratings tool to reduce unnecessary questions and streamline data entry. This reduced assessment time and complexity by as much as 50% during the pilot period, whilst ensuring quality was maintained or improved.
- Processing customised actions for each household involved significant time contribution from the technical team. Future release of Resilient Building Council's assessment tools will include automated classification of recommended actions by order of impact on Resilience Ratings, as well as icons to identify cost bands.
- In delivering assessments, the pilot identified the need for, property-level risk information for all citizens, for all hazards. Inconsistencies in the availability and quality of accessible flood hazard information currently hinders both assessors and householders from mitigating risks. The lack of flood information for properties exposed to flood risk in Newstead and surrounds meant 11 households could not receive a flood rating.
- The consistency and accuracy of assessment data and results indicates a broad cohort of professionals could be trained to be Multi-Hazard Resilience Ratings assessors.

Delivering pilots through place-based partnerships leverages community connections and resources

Place-based partnerships provided local accountability and insights that expedited recruitment of assessors and households. This provided diverse conditions for tool testing and a reasonable data set for comprehensive analysis.

KEY LEARNINGS

The team established positive working relationships and aligned values amongst project partners and assessors.

- Local leadership from the Castlemaine Institute resulted in successful recruitment of excellent regional assessors, setting the project on a successful trajectory from initiation.
- Partnership with Mount Alexander Shire Council leveraged community connections and used a trusted local 'brand' for community subscription and support resulting in recruitment of 140 households in time for the commencement of home assessment delivery.
- The Whole of Home Resilience pilot built on earlier small pilots of the Resilient Building Council's Multi-Hazard Resilience Ratings tool in a new context and across a larger data set. The Resilient Building Council shared learnings and experience from earlier pilots to enhance the Mount Alexander pilot.
- Scorecard leveraged their experience piloting the Scorecard tool and supporting other assessment projects. Their advice and guidance made a significant contribution to delivering the project to schedule, scope and quality.
- The pilot leveraged the experience of Scorecard assessors, the 5 assessors brought their regional knowledge, years of experience and familiarity with Scorecard to the pilot.

Household recruitment
Establishing trust to encourage households to participate was essential to recruit the number of participants in a short timeframe, this was achieved through:

- Using place-based leadership with a positive reputation within the community
- Leveraging connections with trusted local organisations
- Partnering with Council demonstrated support for the project through a trusted entity
- Communicating the project through Council, which leant on existing community channels.

Participant workshops
A workshop following the home assessments was an opportunity to reflect and seek feedback on the program and develop the next steps as well as a chance for participants to form connections.

- The workshops highlighted where support is needed and created space for new conversations and considerations.
- Participants appreciated the chance to gather and learn from each other with the assessors in the room moderating.
- Participants and the project team begin to explore what action could look like in a local context.

Good project design and management are essential for pilots to be delivered on time and budget under tight constraints

Field pilots can be seen as challenging to deliver on time and within scope and budget, due to the uncertainties that can impact delivery. Despite a range of unpredictable events that contributed to learning, this project delivered to budget and scope, requiring only a small extension of time to manage unexpected unavailability of key technical staff.

Project management
The pilot was delivered successfully through careful and responsive project management. Collaborative project design and initiation streamlined assessor and household recruitment and enabled the project to meet tight timelines.

- Regular project management meetings, involving all partners, facilitated clear reporting on progress against milestones
- Project leadership focused on effective coordination, with homes recruited for assessment by the date assessors were accredited so assessments could begin immediately.
- Regular technical delivery meetings with the development team ensured issues were identified and addressed where possible within the project.
- All participants focused on outcomes rather than outputs. Project partners and assessors shared resources, knowledge and connections to enhance project experience and delivery, and shifted the approach to delivering results to households when unexpected delays arose.
- Responsive updates to the Multi-Hazard Resilience Ratings tool allowed major improvements to cost and time of assessments during the project.

1 Scorecard Star improvement in home performance saves an estimated $702 in energy costs per annum and 1t CO_2e per annum on average.

SHIRE PROFILE

Home energy performance, risk and resilience in Mount Alexander Shire

The pilot assessed 140 houses across the Shire for energy efficiency, thermal comfort and resilience to environmental hazards including bushfire, storm and flood. The home assessments determined the condition of individual properties and their expected performance, providing households with customised recommendations.

Data extracted from the National Residential Efficiency Scorecard, Multi-Hazard Resilience Ratings and participant surveys was analysed by Scorecard*, the Resilient Building Council‡, and Castlemaine Institute§.

This data provides the following profile of energy efficiency, risk and resilience for Mount Alexander Shire.

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

§ Castlemaine Institute, Participant Survey Analysis, April 2025

Understanding the rating tools

Energy Efficiency Scorecard Ratings

Scorecard rating

The Star rating of a home reflects the energy costs over a year. Just like the star rating for a washing machine, the higher the Stars, the lower the cost to run the home.

Comfort ratings

The hot and cold weather ratings show how comfortable the home is in summer and winter without any cooling or heating. Some of the key drivers of this rating are insulation, draughtiness and window performance.

Comfort ratings are shown on a bar scale of 1-5. A low comfort bar rating means that heat can move relatively easily from outside the home to inside and vice versa. A low rating means that more heating and cooling will be needed to keep the home within a comfortable temperature range, and the energy bills will be higher than for higher rating homes.

In hot and cold conditions when power systems are under stress, the home will need more power than other homes with higher ratings. In power outages, the home will become uncomfortable faster in hot or cold weather.

Analysis and insights are from the Whole of Home Resilience Project National Scorecard Analysis and Results.*

Example of a Residential Efficiency Scorcard certificate

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

Resilience rating

Every home is unique, and every location faces different types and levels of hazards. The Resilience Ratings measure *residual* risk – the combination of local hazard intensity and individual building performance.

Building performance considers how well the building can withstand a range of natural hazard and disaster impacts, estimating the likely degree of damage and recoverability time.

A resilient building (high Resilience Rating) is likely to experience minimal damage, based on local hazard factors, and is likely to be able to return to normal operations within days of natural hazards or disaster impacts.

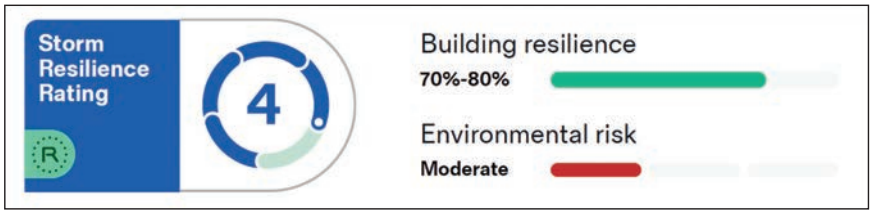
A poor performing building (low Resilience Rating) is likely to suffer extreme damage or total loss and will take many months or years to repair or rebuild.

The Rating Scale measures residual risk, which is translated into reduced damage and loss likely for a given property, for insurance repricing of risk. The residual risk bands can be categorised as per below:

Resilience ratings – Residual risk bands

Star rating	Residual risk
1	50 – 80%+
2	19 - 49%
3	8 - 18%
4	1.6 -7%
5	Less than 1.5%

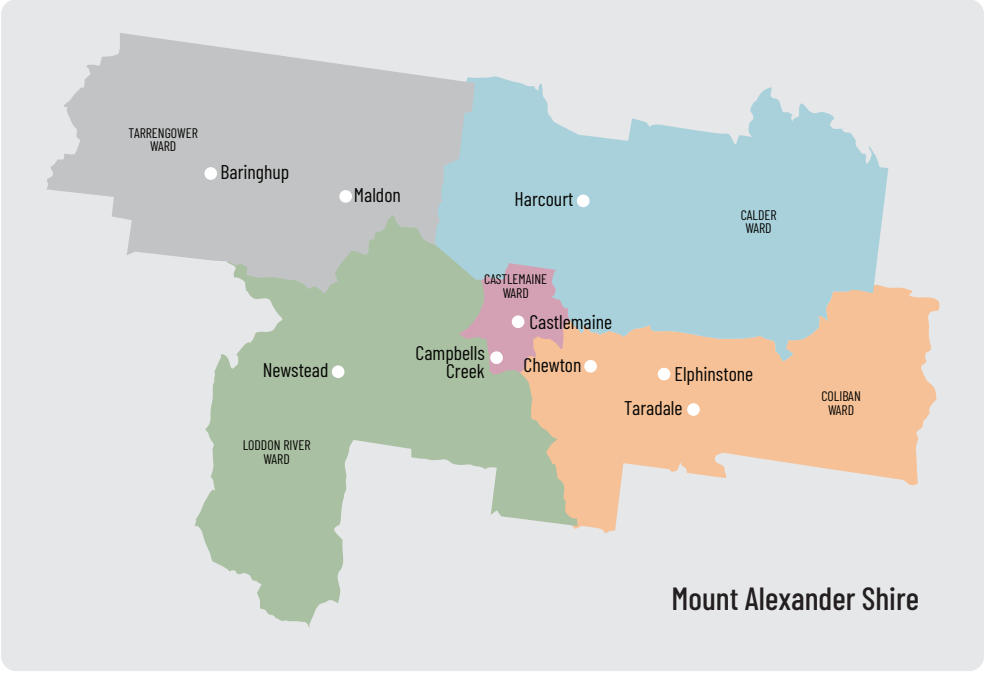
Resilience Ratings are communicated to households as an overall rating for each hazard, including the level of environmental risk (hazard level/intensity) and building performance, so consumers can understand what is driving their overall Resilience Rating:



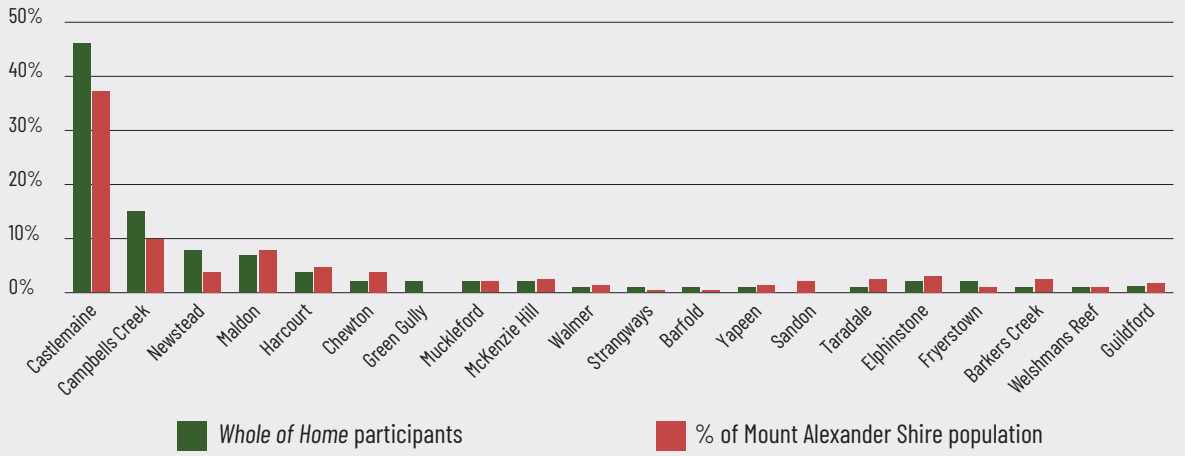
House, household and hazard profile

Location

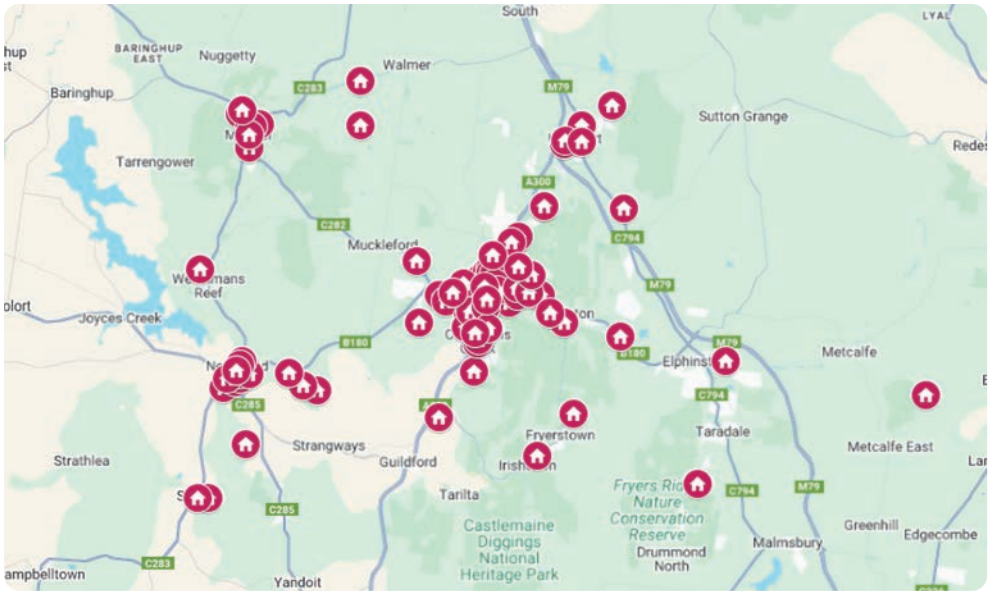
Mount Alexander Shire is located in central Victoria, at the south eastern end of the Loddon Malle region. It covers an area of 1,530 square kilometres and, in August 2021, had a population of 20,253. The traditional owners are the Dja Dja Wurrung.



Participant locality overview



The majority of assessed households were in Castlemaine, the main town of Mount Alexander Shire. A number of homes were located in the towns of Campbells Creek, Maldon, Newstead and Harcourt, then distributed across more rural areas in Shire.



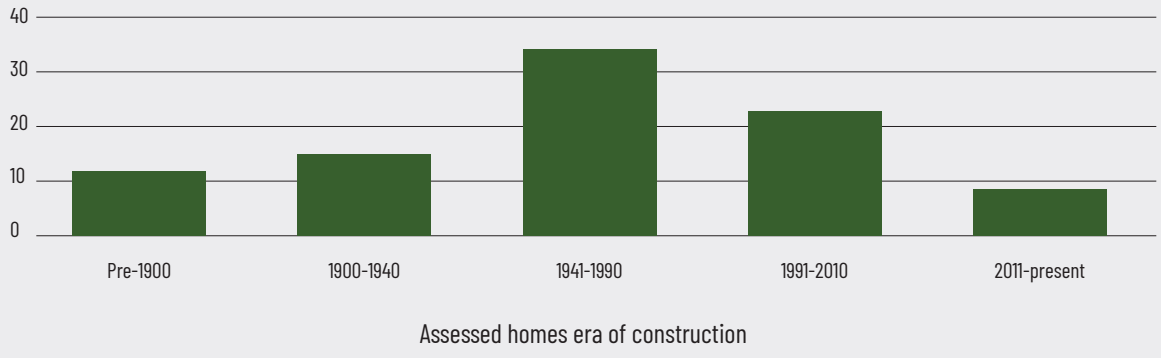
House type and construction

Most homes in Mount Alexander Shire are freestanding homes. Of the assessed homes, 137 were freestanding homes, detached units or secondary dwellings. Two homes were semi-detached and one home was a townhouse (attached on both sides).

Wall type		Floor type		Roof type	
Timber framed e.g. weatherboard	60	Timber enclosed	60	Tiles	32
Brick veneer	41	Timber open	46	Metal sheet	108
Double brick	18	Concrete slab	33		
Fibro cement	8	Suspended slab with enclosed sub-floor	1		
Metal cladding	6				
Other	3				
Mud brick	2				
Rammed earth	1				
Concrete block	1				

Wall type and floor type are from Scorecard data*. Roof type and construction era are from Resilient Building Council data‡. Participant data is from Castlemaine Institute data§.

Construction era



Assessed homes era of construction

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

§ Castlemaine Institute, Participant Survey Analysis, April 2025

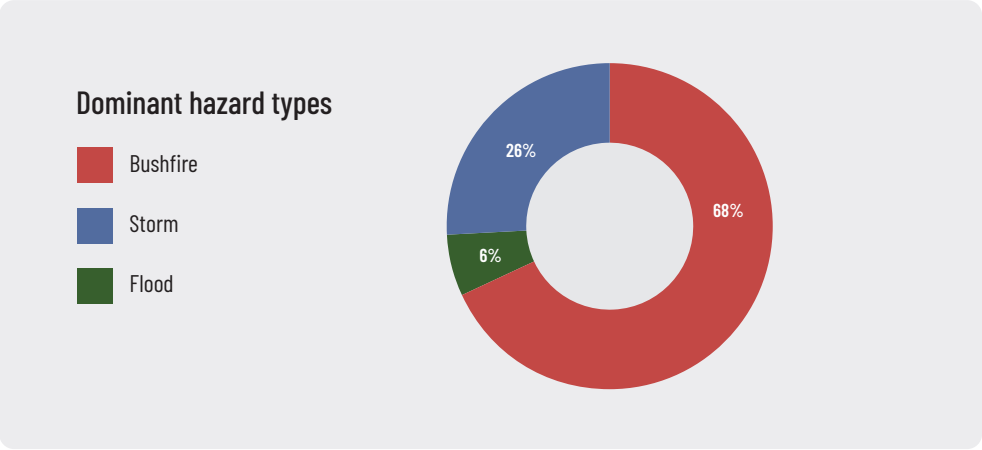
Hazard exposure

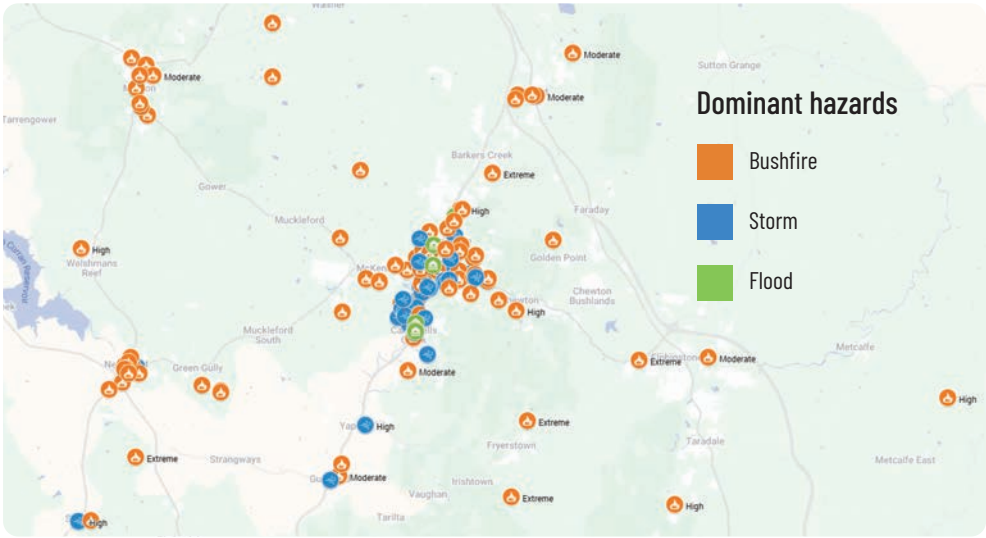
The Resilient Building Council determined the assessed homes are exposed to multiple hazards, where 14% (20) are exposed to all three of bushfire, storm and flood hazards. All 140 homes are exposed to at least two hazards - bushfire and storm. The dominant (highest level) hazard was also determined for the 140 assessed homes: bushfire was the dominant hazard for 68% (95), storm 26% (36) and flood 6% (9).

20 of the 140 homes are at flood risk, but only 9 homes were able to be assessed for a Flood Resilience Rating due to households and assessors being unable to access council flood studies and Property Flood Reports for the 11 participating households from the Newstead area.

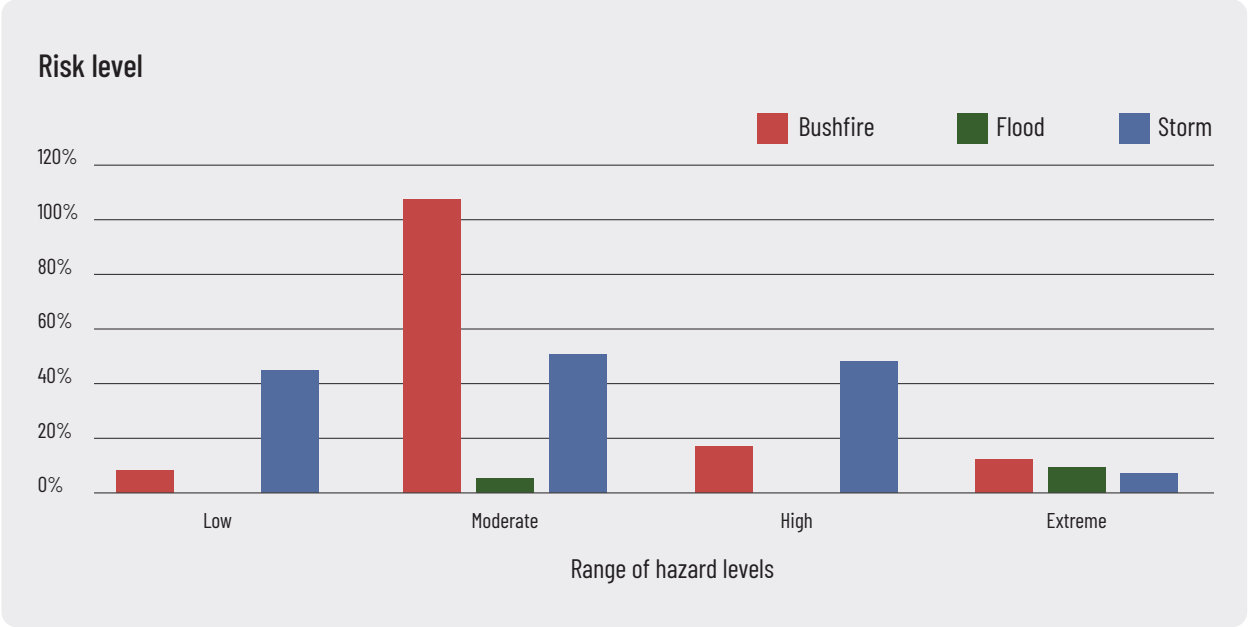
Prior to their assessment, most survey respondents said they were concerned about bushfire risk. Households in flood-prone areas were aware of risk of flood.

The average hazard level was "moderate" for bushfire and storm. Some remotely located properties in heavily forested areas were assessed at extreme bushfire risk. Some homes on elevated, exposed sites were assessed at extreme storm risk. Three of the nine homes at risk of flooding were at moderate flood risk, and six of the nine homes were assessed at extreme flood risk, with potential flood depths greater than 0.6m‡.





‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

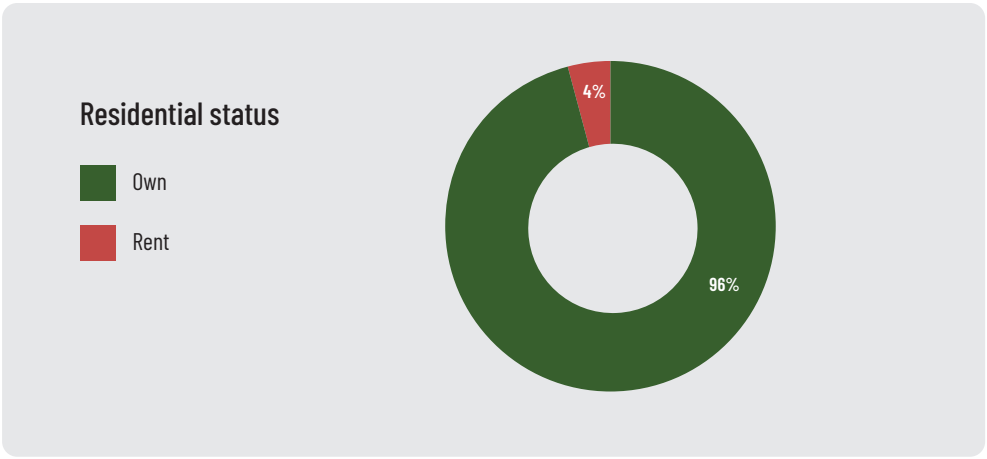


Household profile

Most participants own their home. In the Shire 15% of properties are rentals according to the Australian Bureau of Statistics 2021. Although we encouraged tenants to participate, renters were underrepresented in the pilot. We had 6 applicants who said they live in a rental property. This is likely reflective of the limited rights tenants have to upgrade or request upgrades to their homes.

In the pre-assessment survey, 41% of surveyed participants said they have a mortgage.

Of the 140 households, 25% include residents aged over 65, 6% of households require assistance for daily activities, and 93% of participants use only English at home. When compared to the 2021 ABS census, this is representative of Shire's population (28.5% over 65, 5.3% require assistance and 87% speak only English at home).

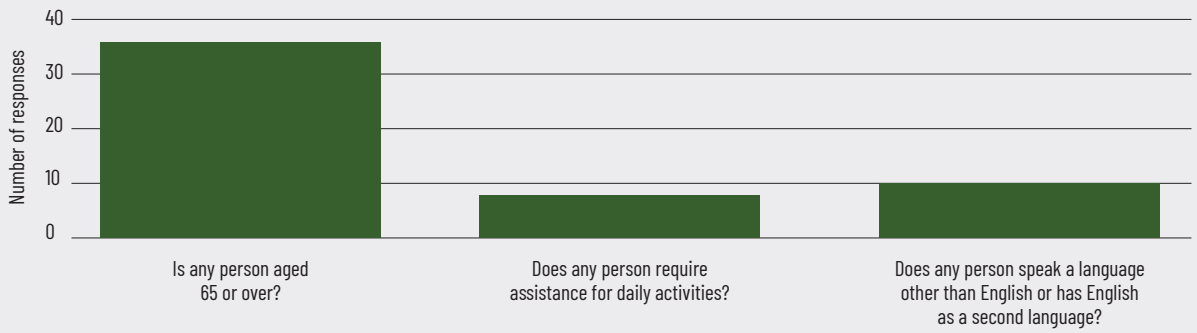


Most participants identified that they have lived in their home for over 10 years, and most surveyed participants (42%) have also lived in the locality for over 10 years.

Household sizes are reflective of the average, with most homes being 1-3 people households.

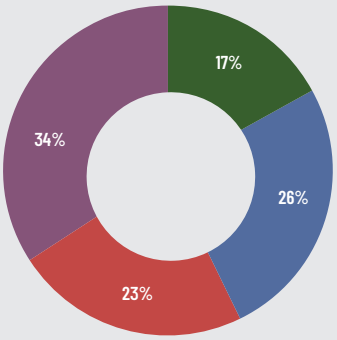
A range of household incomes were represented.

Resident profile



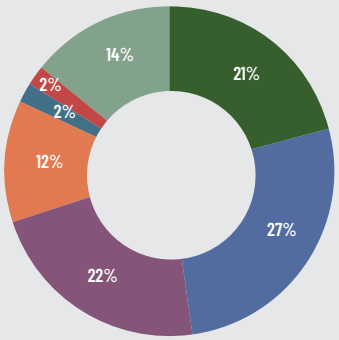
How long have you lived in this home?

- 0-1 years – 17%
- 2-4 years – 26%
- 5-10 years – 23%
- 10+ years – 34%



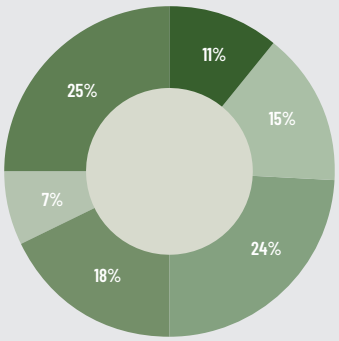
How many people in your household?

- 1 person – 21%
- 2 people – 27%
- 3 people – 22%
- 4 people – 12%
- 5 people – 2%
- 6 people – 2%
- No response – 14%



What is your household income per year (before tax)?

- $0-$31,199 – 11%
- $31,200-$51,999 – 15%
- $52,000-$103,199 – 24%
- $104,000-$156,599 – 18%
- $156,000+ – 7%
- No response – 25%



Performance of houses

Energy efficiency

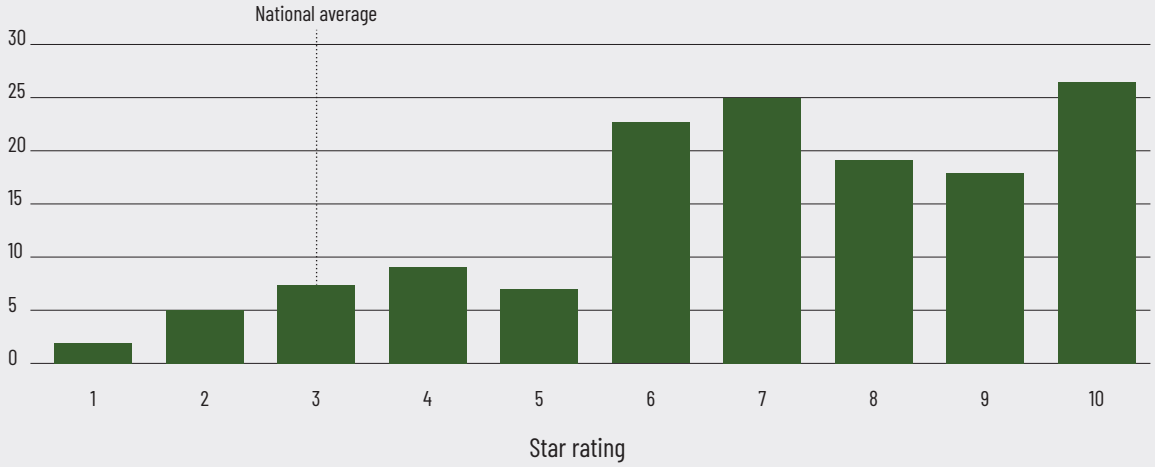
Prior to their assessment, 94% of survey respondents said they were concerned about the energy efficiency of their home.

Over 64% of respondents said they were most concerned with both expensive energy bills and their carbon footprint. Only seven (7%) respondents noted being concerned with energy bills alone. Respondents also added concerns such as the transition off gas, resource use, home comfort, draughts and thermal comfort.§

The Scorecard star rating of a home reflects the energy costs over a year. Just like the star rating for a washing machine, the higher the Stars, the lower the cost to run the home. Features like being smaller or not having a pool or central heating will influence energy costs and hence the rating.

Scorecard analysis* found the homes rated in this project were higher performing, as seen below, so cost less to run than the state average, which is 3 Stars. This may be because the Castlemaine area has been a focus for community engagement on home energy upgrades in the past, including the Castlemaine 500 project. Also, it is likely that those participating in this study were already engaged on the topic as the householder survey found 17% of respondents had undertaken an energy assessment in the past, and of those, 75% had undertaken some of the recommended changes. This is significantly higher than average engagement in energy performance in houses.

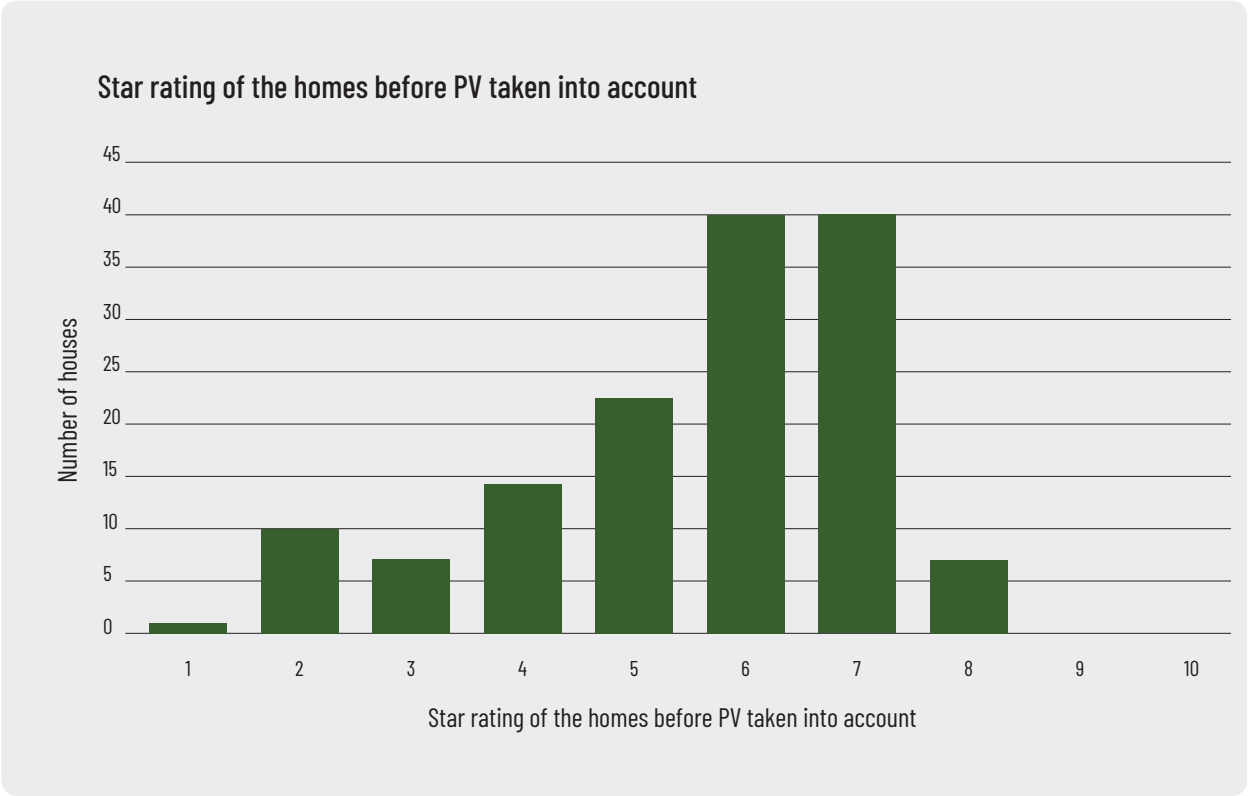
Star rating of the homes



§ Castlemaine Institute, Participant Survey Analysis, April 2025

* Victorian Government, Department of Energy, Environment and Climate Action, Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results, May 2025

The star rating is a cost-based rating (the energy costs for the year for fixed appliances). Based on this definition, it is useful to look at the star ratings for the house before on site solar generation (PV) is added. The spread of star ratings without PV (solar energy generation onsite) is seen below.



Eight is the highest star rating a home can rate without PV and indicates a well-designed home with efficient appliances. Again, these homes are performing significantly better than the average home, with a high number of homes gaining 6 and 7 Stars. This may partly be due to a significant proportion of these households having previously assessed and/or upgraded their home energy performance. This may be an indicator that previous projects with aligned objectives have positively benefited the community.

Energy costs

Energy costs from the fixed appliances in the home are important to consider as generally they are the biggest drivers of costs and need the most consideration to upgrade.
The Scorecard assessment considers all fixed appliances in the home — it does not include portable appliances like panel heaters on wheels. The drivers of energy cost can be divided into heating, cooling, hot water, lighting, pools/ spas and PV. These areas are examined in more detail in the sections below.

In this project, as for most of Victoria, heating was clearly the most significant cost driver for most homes, followed by hot water. For a much smaller number of homes, lighting, pools / spas and cooling were also significant contributors.

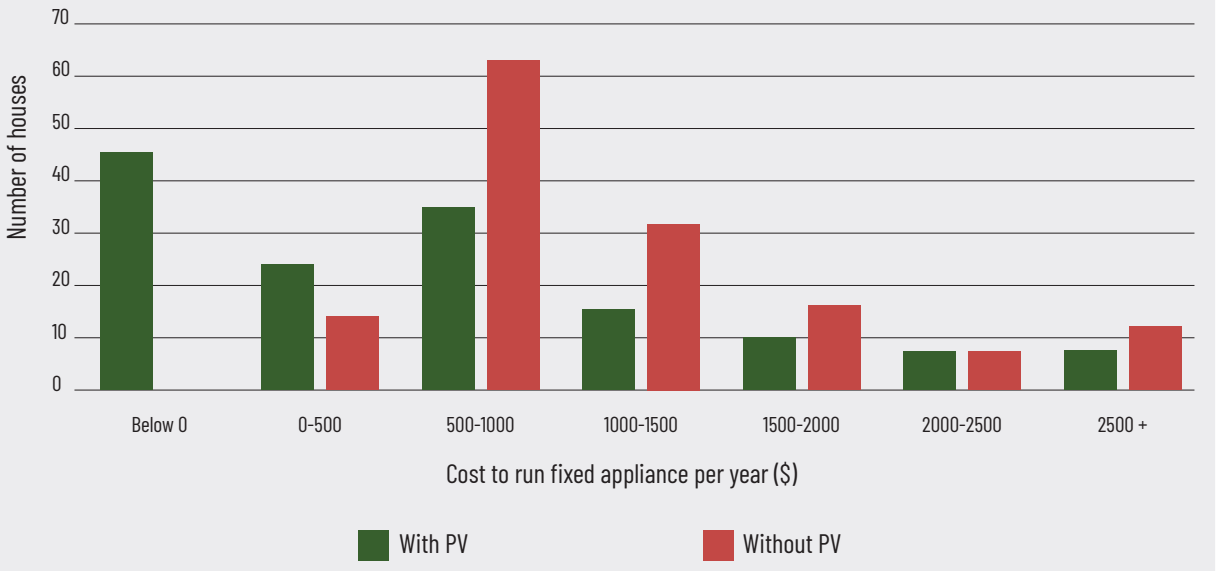
For 97 homes, heating costs drove 50-94% of their annual energy bills, showing the importance of considering both heater efficiency and the performance of the building (such as insulation, draught sealing and windows). The average contribution of heating was 57% of the energy bill.

For hot water the average contribution was 26% of the energy bill. The variation was large; for two homes it was 70% of the bill, for 15 homes it was 5% or less of the bill.

It is important to recognise that home energy ratings are very specific to each home and are carefully explained by the Scorecard assessor to the householder. An assessor needs to understand the drivers of an energy bill and be able to apply that to the house and explain it clearly and concisely. This will facilitate the most suitable response, such as a household choosing to install a low-flow shower and fix dripping taps because they have a high cost hot water system, rather than turning off their highly efficient lights and making no bill impact.

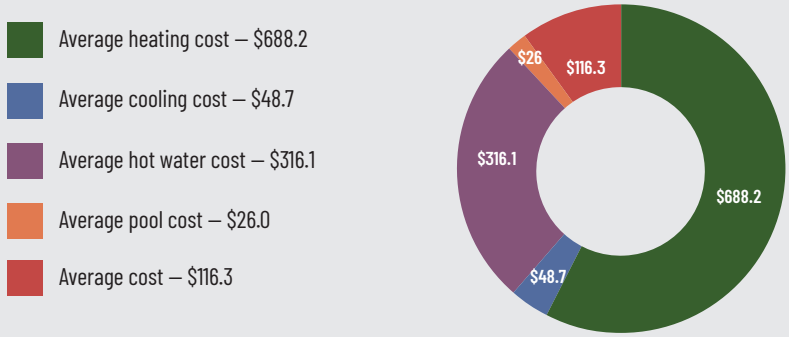
The following graph shows the cost to run the houses with and without PV (grid-supplied energy plus PV-supplied energy plus feed in tariff).

Annual running costs of the homes in the project, with and without PV



The following graph shows how much heating, cooling, hot water, lighting and pools cost per year. This is the average for all participating houses.

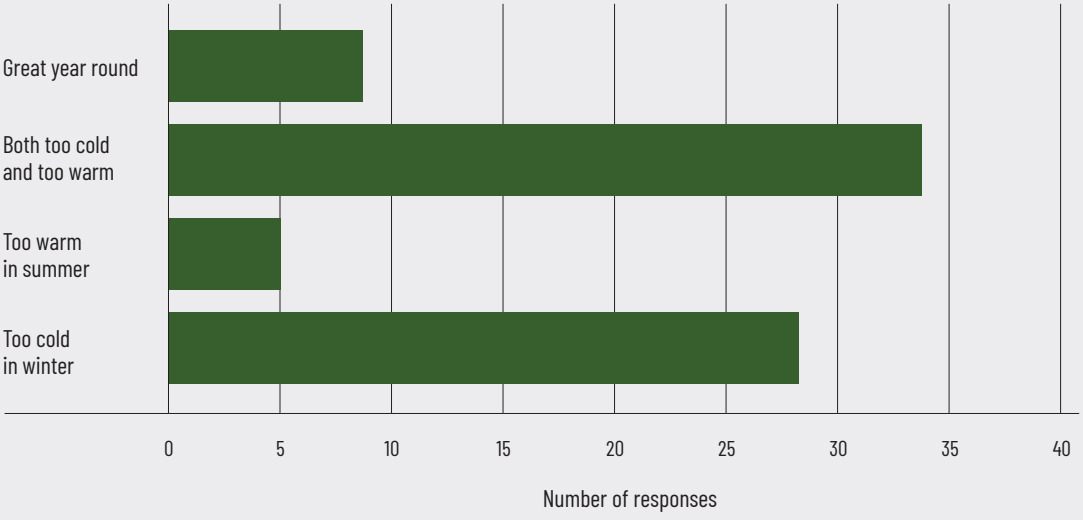
Average breakdown of annual cost to run the houses in the project (in dollars)



Thermal comfort

Prior to their assessment, 28 (30%) survey respondents noted their home felt too cold in winter and 5 (5%) noted their home was too warm in summer; 34 (36%) responded their home was both too hot in summer and too cold in winter.

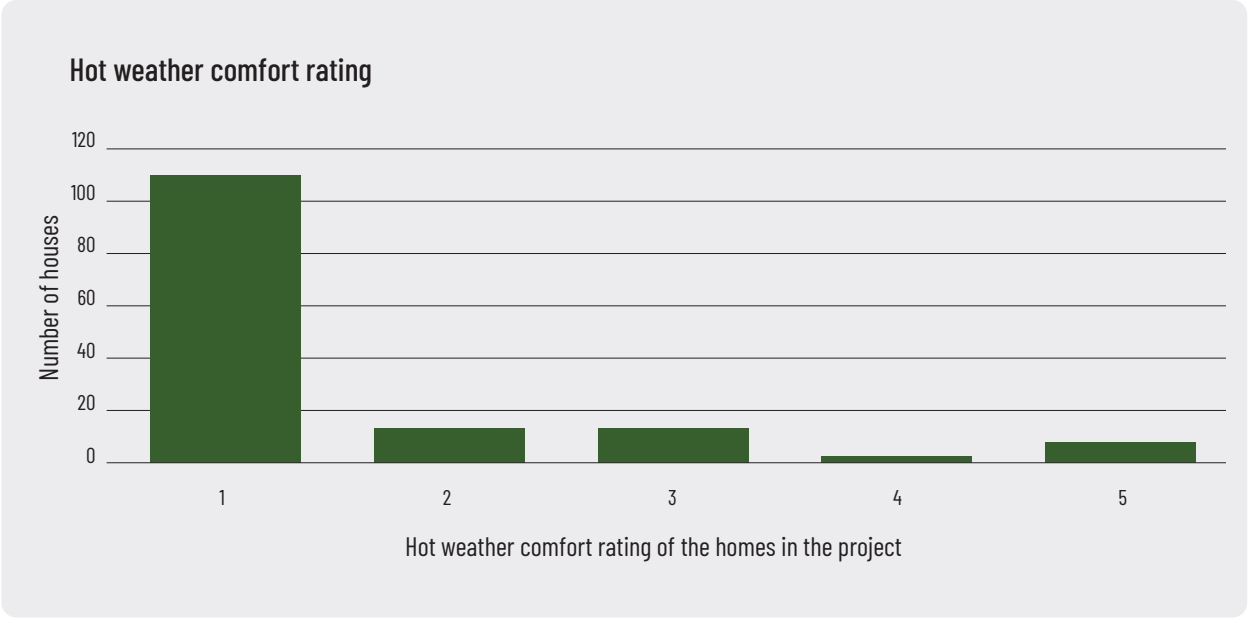
Does your home feel

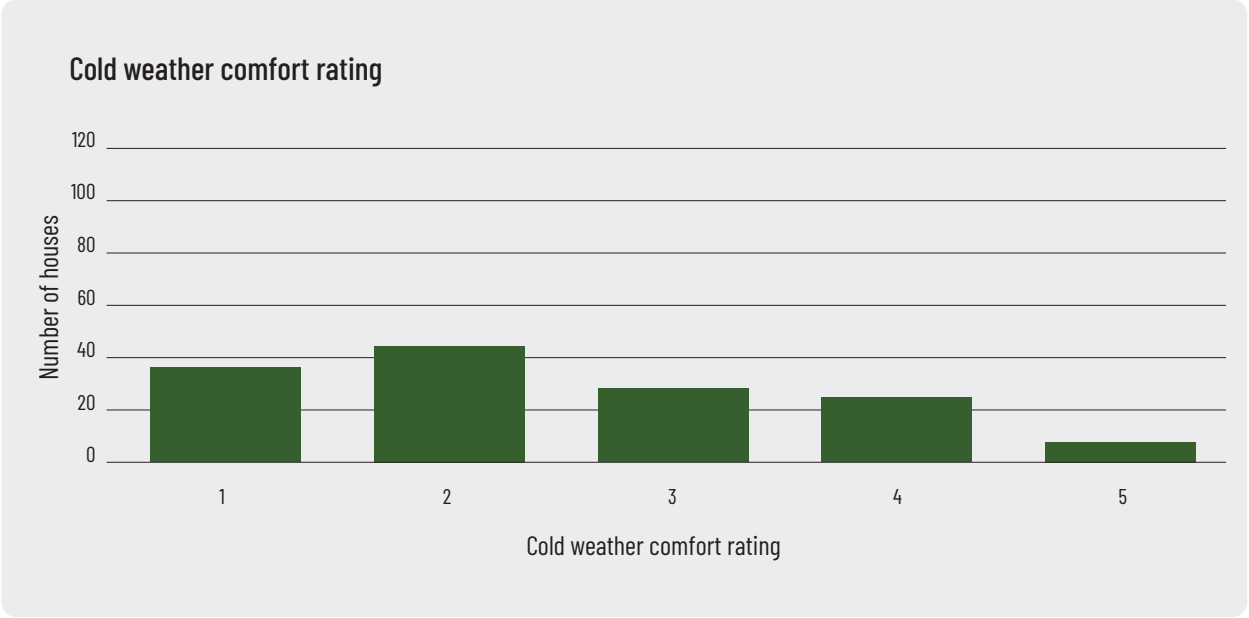


The Scorecard hot and cold weather (comfort) ratings show how comfortable the home is in summer and winter without any cooling or heating. Some of the key drivers of this rating are insulation, draughtiness and window performance.

Comfort ratings are shown on a bar scale of 1-5. A low comfort bar rating means that heat can move relatively easily from outside the home to inside and vice versa. A low rating means that more heating and cooling will be needed to keep the home within a comfortable temperature range, and the energy bills will be higher than for higher rating homes. In hot and cold conditions when power systems are under stress, the home will need more power than other homes with higher ratings. In power outages, the home will become uncomfortable faster in hot or cold weather.

The hot weather rating seeks to show the home performance in heat wave conditions. Most homes in Victoria perform poorly against this rating. The homes rated in this project show a similar distribution of ratings as the Victorian average- that is, a poor level of performance in heat waves.



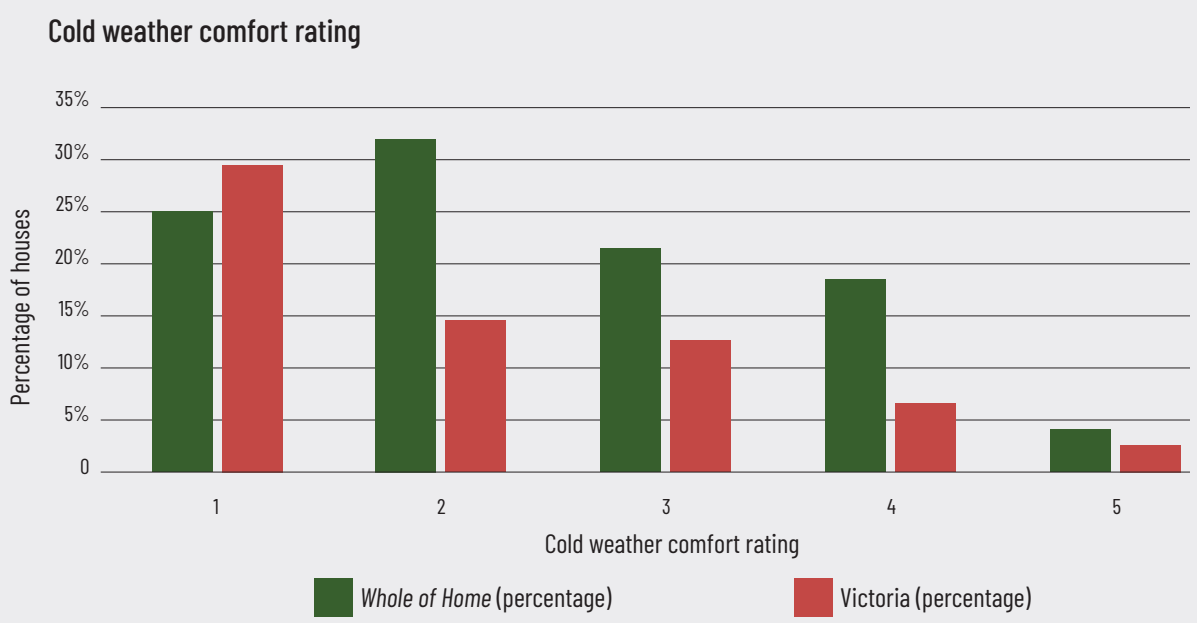


The cold weather rating looks at the comfort of a home in cold conditions. The homes rated in this project achieve a consistently better rating than the average of homes in the Scorecard Victorian dataset#. This means the homes will perform much better than the average Victorian home in winter.

This project shows that most homes in the study are unlikely to be comfortable in a hot spell, which is similar to other Scorecard studies of homes in Victoria. Also, despite evidence that the homes' cold weather performance was better than average (likely due to previous upgrade projects) most homes had significant opportunity for improvements.

This was also a finding in the householder survey with 88% of survey respondents saying their homes were uncomfortable in hot or cold weather, or both.

Scorecard's dataset of Victorian homes includes 9427 assessments and includes assessments performed between May 2017 and February 2025. These have not been selected as a representative dataset, however they do represent the largest dataset of site collected home energy performance data in Victoria, and Australia, and hence provide the most useful comparison.



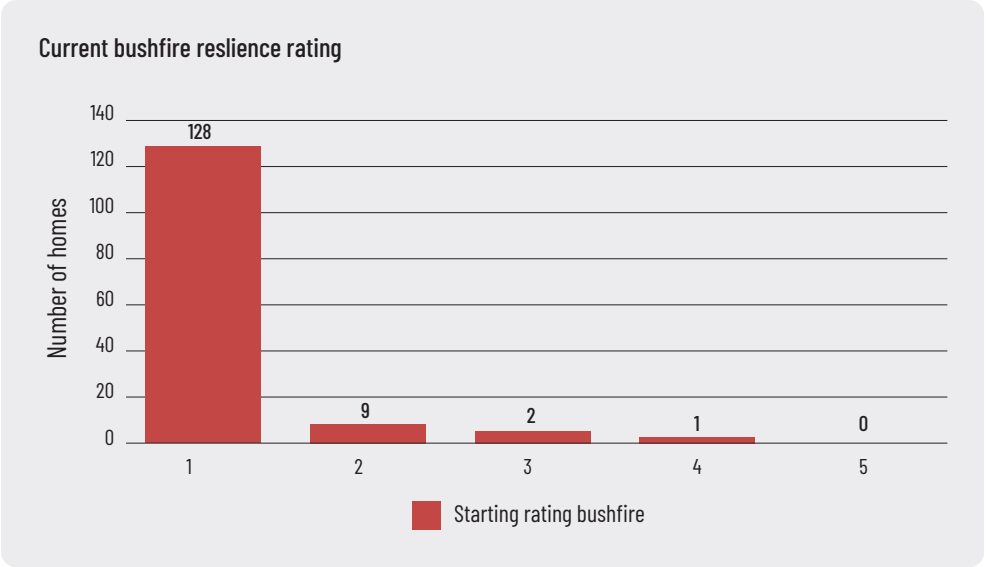
Cold weather comfort rating of the homes in the project compared to Victorian homes in the Scorecard dataset.
A rating of 1 indicates the home is very hard to keep warm in winter without heaters.

Resilience

The vulnerability of homes to local hazards was measured through the *Multi-Hazard Resilience Ratings* assessment process. Homes were most vulnerable to bushfire, with moderate to high existing resilience to storm hazards. The number of flood assessments is too small to make inferences from across the population. Analysis and insights are from the Resilient Building Council's Mount Alexander Shire Resilience Ratings Final Analysis‡.

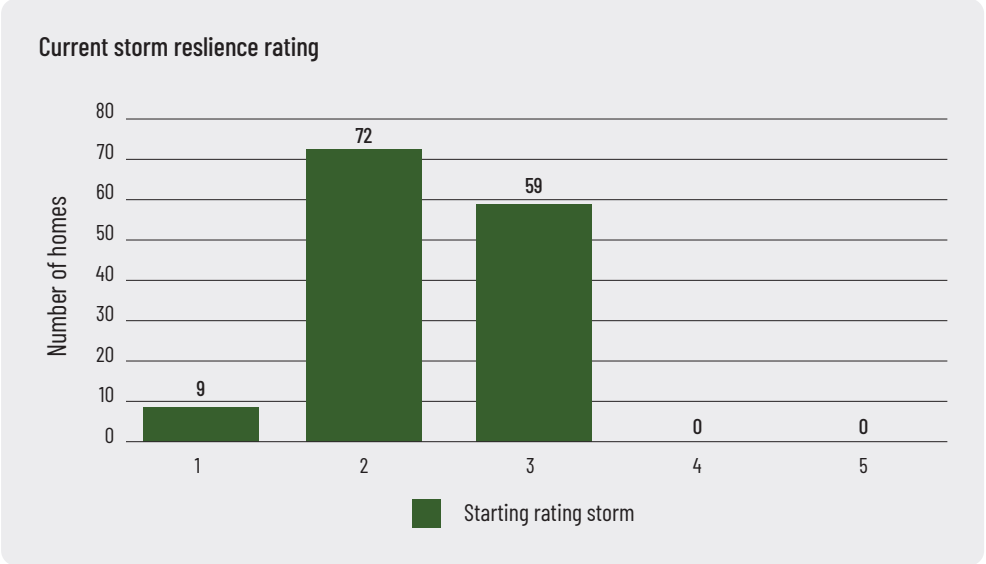
Bushfire ratings

All homes were considered to have some exposure to bushfire risk, 90% received a 1-Star Bushfire Resilience Rating, demonstrating a generally very poor level of bushfire resilience.



Storm ratings

All homes are at some level of storm risk, with all 140 participating households assessed for storm resilience. All homes performed moderately well, with most achieving 2-3 Stars.



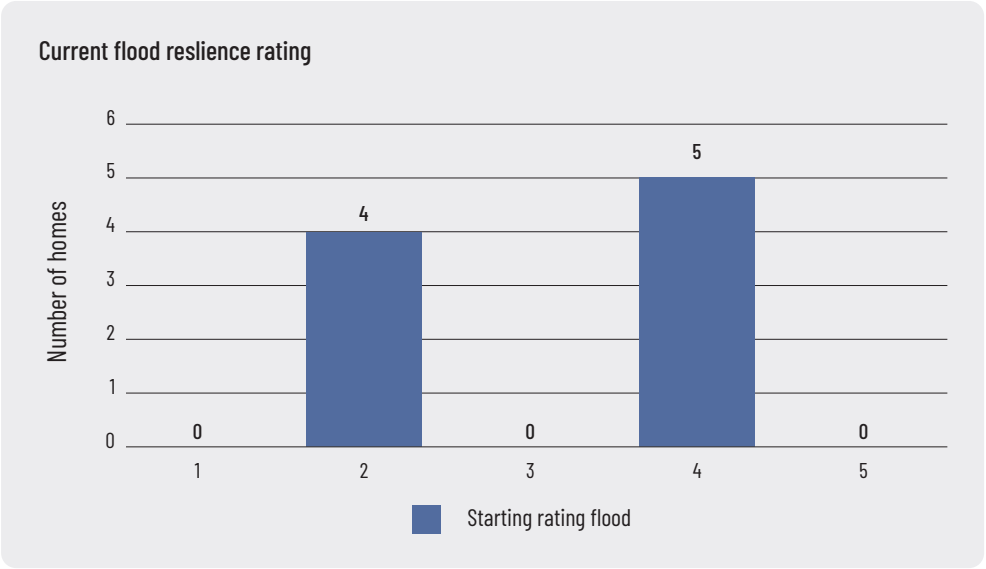
‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

Flood ratings

14% (20) homes in the project were subject to waterway flooding (rivers and creeks) and overland flooding (flash flooding) risks. All assessed homes are located inland and are not subject to coastal/tidal flood risks.

Council or water authority flood data could only be accessed for nine homes; which the Flood Resilience Rating assessment relies on this data for accurate, local flood hazards likely at the property. At present, Resilient Building Council does not conduct Flood Resilience Rating assessments without this data. This is to ensure alignment with construction regulations, which are based on council-determined flood depths.

These nine homes achieved Flood Resilience Ratings of 2-4 Stars. The remainder of homes will receive their ratings for flood resilience when the local flood study is complete.



Improving resilience and energy efficiency

The resilience and energy performance of homes can be improved through upgrades to the home and garden.

Ratings empower householders to make the right decision for their circumstances. Other programs such as Energy Savy Upgrades[2] and Victorian Healthy Homes[3] have demonstrated household benefits such as improved wellbeing, reduced health care costs and reduced energy costs, and broader benefits such as reduced energy network peak loads. The Resilient Building Council have provided a Benefit-Cost-Ratio[‡] which demonstrates improved resilience to natural hazards can reduce insurance premiums and post-disaster recovery costs as well as offer broader social benefits such as reducing disaster impact on individuals.

$4,800

Average energy efficiency retrofit cost is estimated at $4,800K for a 1 Star improvement.

$702

1 Scorecard Star improvement in home performance saves an estimated $702 in energy costs per annum and 1t CO_2e per annum on average.

$23,000

Average resilience retrofit cost is estimated at $23K for the dominant hazard.

47%

The average Resilience Rating improvement would be 2 Stars, which on average would reduce residual risk by up to 47%.

Up to 1:10

The cost benefit ratio RBC have calculated examining the capital cost of home upgrades compared to the value of reduced future damage and loss.

Resilience retrofits provide a substantial benefit to households and communities, through reduced insurance premiums and reduced likelihood of future damage and loss.

2. https://www.homescorecard.gov.au/__data/assets/pdf_file/0031/675742/Energy-Savvy-Upgrades-evaluation-report-final-0323.pdf

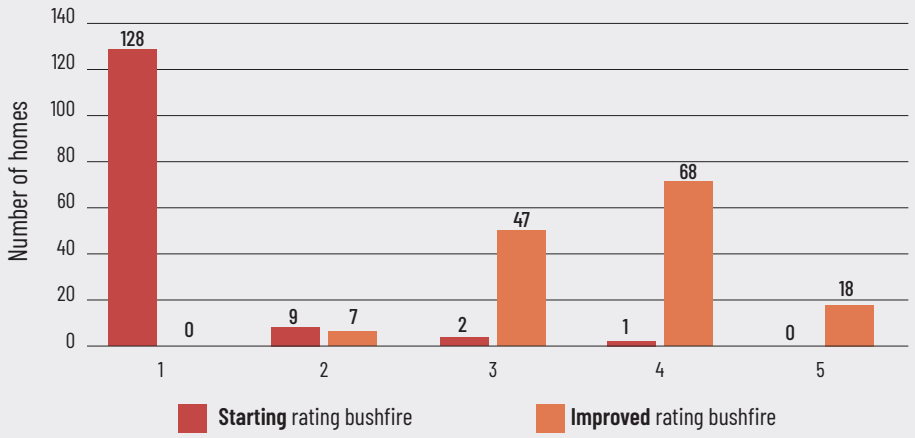
3. https://www.sustainability.vic.gov.au/research-data-and-insights/research/research-reports/the-victorian-healthy-homes-program-research-findings

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

Improving bushfire resilience

With recommended retrofits, 95% of homes could improve to 3–5 Stars, substantially reducing future damage and loss from bushfire.

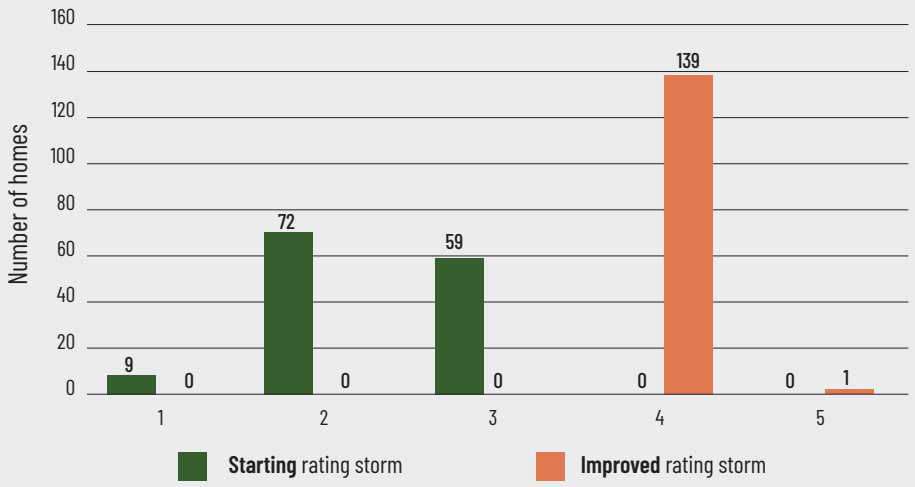
Current vs potential bushfire resilience ratings



Improving storm resilience

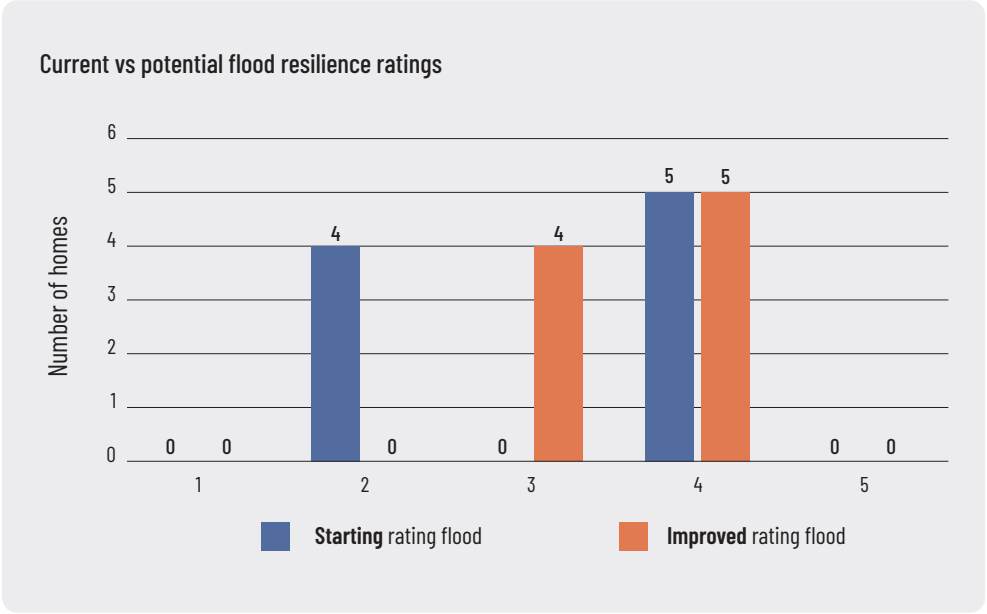
Recommended retrofits could lift all homes to 4–5 Stars, demonstrating the value of targeted storm-related improvements.

Current vs potential storm resilience ratings



Improving flood resilience

These homes could be improved to 3 or 4 Stars after applying recommended retrofit actions. The homes could achieve 5 Stars through house raising.



Impact of the in-home assessment

Following the assessment, 80% of survey respondents said the assessment improved their understanding about energy efficiency and performance. Several people commented that they were surprised by their high score.

'How did your assessment change your understanding about the energy efficiency of your home?'

Several respondents indicated the assessment offered practical information and improved their understanding of their building fabric relevant to thermal comfort and energy efficiency. A few respondents felt the assessment confirmed what they knew.

"The assessment changed my understanding of the energy efficiency of our home to the extent that we were not aware how much energy we were using to keep the house comfortable in hot/cold weather, but also how these losses could be easily remedied through simply changes to the floor, ceilings, doors and windows."

"I was surprised about how highly it rated, as I don't think that in practice is the case."

"There were things that I thought I had tackled already that I discovered were still issues - like draughts - and how I might overcome limitations that have restricted installation of insulation in some locations."

Following the assessment 68% of respondents said the assessment improved their understanding of how their home performs in hot and cold temperatures.

'How did the assessment change your concern about the resilience of your home?'

In the post assessment survey, most respondents found the assessment improved their understanding of natural hazards. 51% stated the assessment changed their concern about the resilience of their home.

Several respondents indicated the assessment increased their awareness of risk and increased their understanding of resilience. A few respondents felt the assessment confirmed what they already knew.

"While the assessment gave me some initial shock regarding the amount of potential changes required, we now have a clear idea of what to prioritise in terms of changes to our home."

"Realised we have good knowledge already which we can build upon."

"It highlighted how damage might occur through storm or fire and how to mitigate the risk. Although there are some things I might find hard to change such as trees being close to the house.'

"We were already working on house renovations to build resilience. The assessment helped us to prioritise our next steps."

Retrofit recommendations

Scorecard thermal shell upgrades

The thermal shell has a significant impact on both energy costs and comfort. The Scorecard Certificate provides up to 3 upgrade options for the hot and cold weather comfort ratings. The most impactful upgrade for each category is shown on the certificate. The upgrade options fall into the categories of 1. insulation, 2. windows and 3.draught proofing.

Scorecard most recommended actions for hot weather

Considering the full list of upgrades (up to 3 for each home), for 112 homes some form of draught proofing was suggested, 124 suggested improved insulation and internal window treatments and external shading were common suggestions.

Recommended action	Number of times recommendation issued
Upgrading window treatments to lined curtains with pelmets where not already in place	114
Installing weather strip seals to unsealed windows	74
Upgrading the insulation in your ceilings and walls	66
Upgrading the insulation in your ceilings	37
Blocking unused chimneys	22
Upgrading the insulation in your walls	21
Installing external blinds to east and west facing windows	14
Sealing any holes or gaps that allow air to leak into or out of your house	7
Installing external blinds to west facing windows	6
Installing weather strip sealing to all external doors	4
Sealing gaps between skirting boards, wall or the floor, and gaps between floor boards	4
Installing external blinds to east facing windows	4
Installing a fixed eave to north windows, or a deeper eave if eave is already present	1
Installing a sealing strip to vented skylights	1

Scorecard most recommended actions for cold weather

Considering the full list of upgrades (up to 3 for each home), for 103 homes some form of draught proofing was suggested, 123 homes could improve their insulation and for 111 homes double glazing was recommended.

Recommended action	Number of times recommendation issued
Installing double glazed windows	111
Upgrading the insulation in your ceilings and walls	84
Installing weather strip seals to unsealed windows	68
Upgrading window treatments to lined curtains with pelmets where not already in place	28
Blocking unused chimneys	22
Upgrading the insulation in your walls	22
Upgrading the insulation in your ceilings	16
Sealing any holes or gaps that allow air to leak into or out of your house	7
Installing weather strip sealing to all external doors	3
Sealing gaps between skirting boards, wall or floor, and gaps between floor boards	2
Installing a sealing strip to vented skylights	1
Upgrading the insulation in your walls, floors and ceilings	1
Installing a sealing strip to vented skylights	1

Scorecard appliance upgrades

Appliance upgrade options are mainly based on the efficiency of the appliances modelled. For example, an appliance that gives 3 bar efficiency will show an upgrade recommendation, but a 4 or 5 bar appliance will not.

For 51 homes the suggestion was a higher performance heater.

For 43 homes the suggestion was a higher performance hot water system

For a small number of homes, specific features had a significant impact on the rating and would benefit from upgrading, such as more efficient lighting or shower rose.

Resilience upgrades

Recommendations are specific and tailored to the individual building. The most issued recommendations provide an understanding of the existing vulnerabilities of the assessed homes and how they may be addressed to improve resilience.

Resilience rating top 5 actions for bushfire

For bushfire, the main contributors to potential building loss were ember entry into the building through gaps in the roof, vents and around doors, ignition of combustible materials adjacent to the walls and glazing and debris impact from large adjacent trees.

Recommended action	Number of times recommendation issued
Install tight fitting, bushfire rated gutter guard on gutters and valleys.	137
External vents should be fitted with ember screens.	126
Create a fire resilient, managed landscape around the home.	117
Install fire rated door seals and draught stoppers to the bottom and sides of the doors.	103
Remove trees that could impact the home if fallen.	102

Resilience rating top 5 actions for storm

For storm, the main contributors to potential building damage were old roof structures that are unlikely to withstand severe winds, wind-driven rain entry into the roof space due to a lack of gutter overflows and blocked gutters and downpipes, wind-borne debris impact from attached structures in poor condition, wind-driven rain entry into the home due to poor seals around doors, and poorly fixed roof fixtures that can open up roof spaces in high winds.

Recommended action	Number of times recommendation issued
Discuss and check and potential structural upgrade of the roof with a builder as it has been some time since the last work on the roof structure.	74
Install overflows in all eaves (perimeter) gutters, clear blockages.	66
The condition of some of the attachments (verandas, carports or roofed patios) is poor. Consult a builder to arrange repairs or replacement.	57
The external glass doors on the building do not have appropriate seals. Fit appropriate seals to external glass doors.	53
Some roof-mounted items are connected to only the roof material. Fix items to roof structural members.	46

Resilience rating top 3 actions for flood

The number of flood assessments is too low (9) to make inferences about the key vulnerabilities of homes in Mount Alexander Shire, however these are the recommendations issued more than once for the nine home assessments.

Recommended action	Number of times recommendation issued
Repair or replace stumps/piers in poor condition.	7
Prioritise installation of removeable access panels at the base of cavity walls to enable quick drying and access for cleaning inside walls after a flood.	4
Get a licensed plumber to inspect pipes, valves and drainage systems, including backcharge prevention. Check all plumbing joints and seals.	2

Common recommendations between energy efficiency and resilience

Energy efficiency, thermal comfort and resilience considerations overlap at the building shell. Rather than conducting separate retrofits for energy and resilience, households can be provided with actions that could be undertaken at the same time.

Commonly recommended upgrades that improve energy efficiency, thermal comfort and resilience include:

- Installing fire-rated, weatherproof seals and draught stoppers around doors and windows
- Installing fire/storm rated window shutters on windows that require shade to prevent heat gain
- Installing high-performance glazing
- Roof repairs, including sealing gaps
- Managing vegetation around the home.

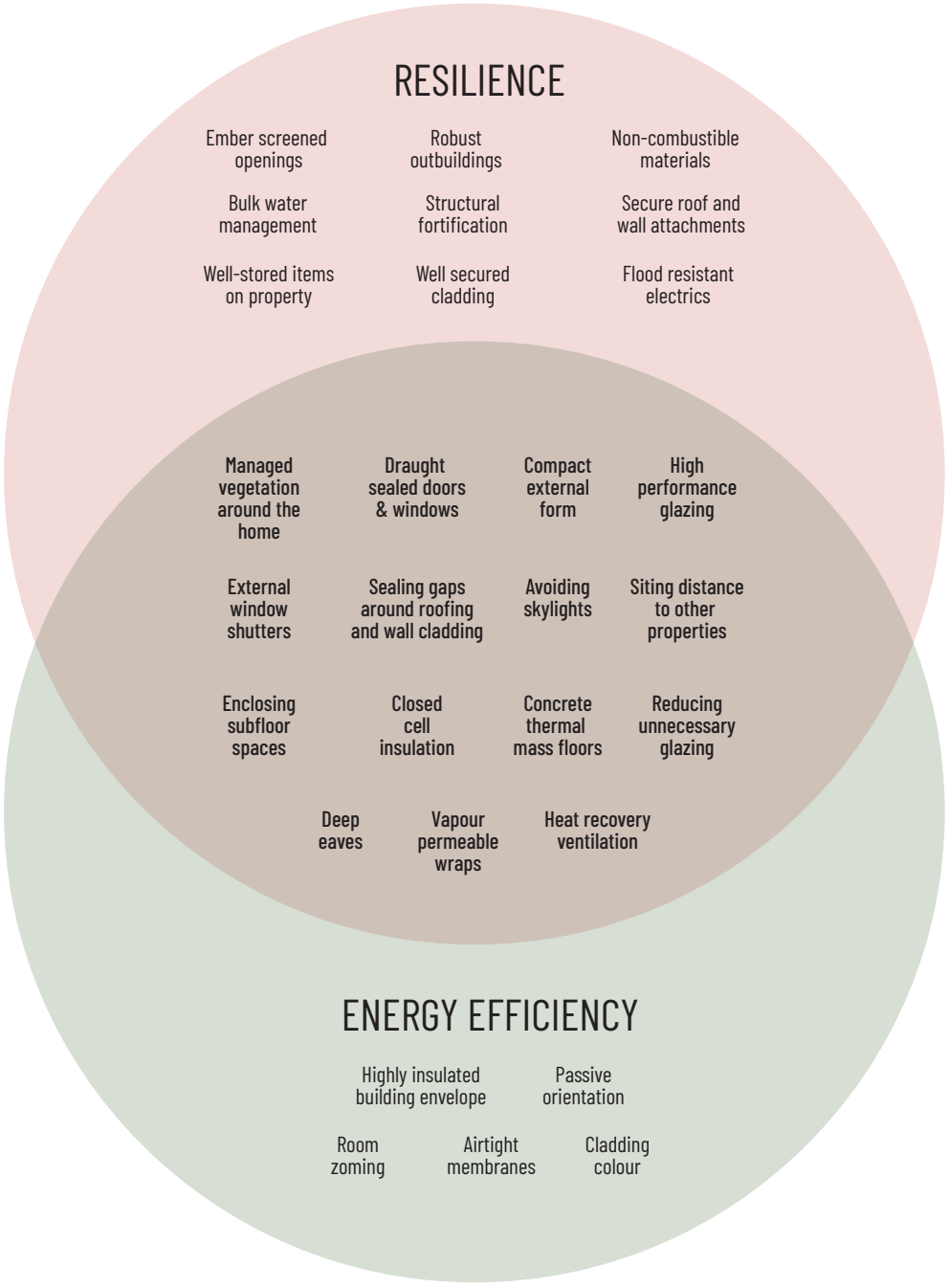
Common recommendations could be undertaken by one trade at the same time, for example:

- Roof repair or replacement to improve storm and bushfire resilience and improving roof and ceiling insulation for thermal comfort and energy efficiency
- Upgrading wall insulation and improving the resilience of external cladding for storm, bushfire and flood resilience
- Detecting and sealing gaps internally and externally using appropriate sealant for bushfire, flood or storm resilience removes draughts improving energy efficiency and thermal comfort
- When installing energy efficient appliances, undertake electrical tasks that improve flood resilience such as raising power points, services and appliances above predicted flood level.

A theoretical conflict identified between improvements for energy efficiency, thermal comfort and resilience was the resilience recommendation to remove trees that could impact the home if fallen. Well-positioned trees provide excellent summer shade to windows and buildings, reducing heat gain in hot weather as well as providing positive amenity to householders.

The Scorecard assessment focuses on fixed features, so does not attempt to assess tree shade impacts, as these are dependent on many variables, such as growth habit, deciduous/evergreen, and ongoing garden management. Householders are encouraged to create summer shading though external blinds as these can be managed to ensure shading is provided only when it is needed. Recommendations for energy efficiency and thermal comfort improvements could be modified to ensure disaster resilience is not reduced. For example, by specifying the type of insulation, vegetation, screens and shading solutions that are suitable for relevant hazard resilience.

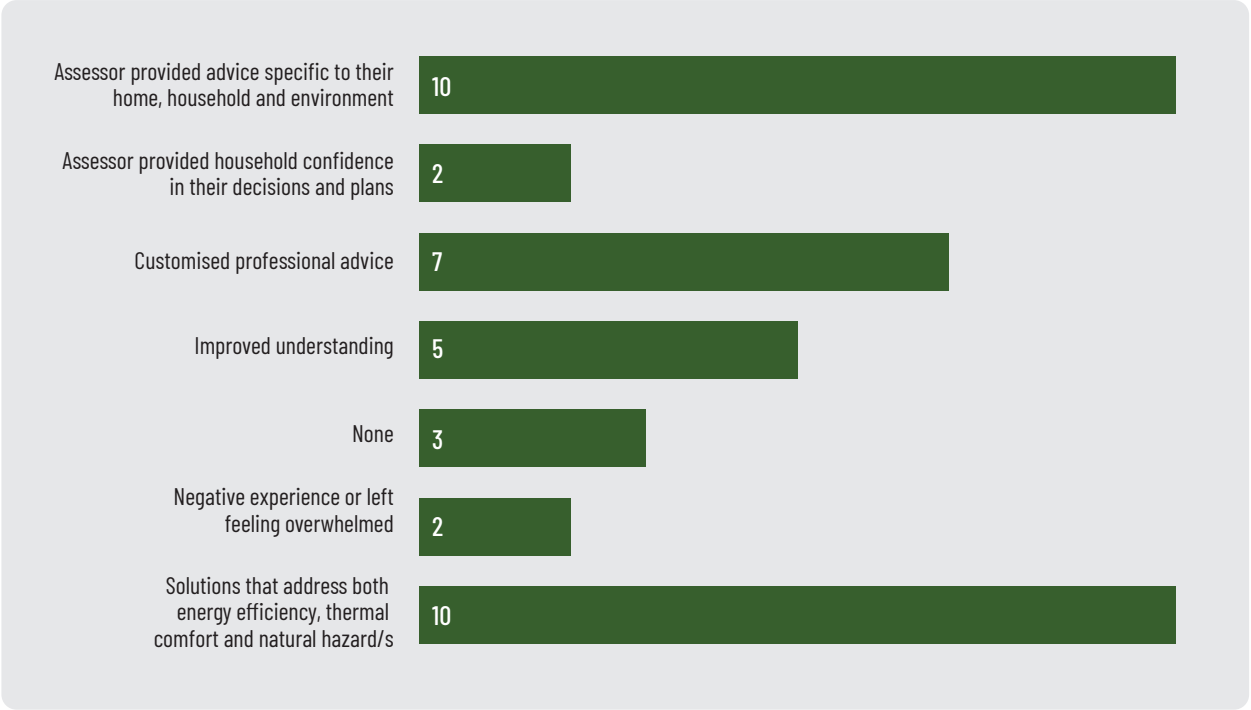
Resilience and energy efficiency co-benefits



Refer to Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

Household reflections

'What benefits do you see in having an assessor visit your home and consider both energy efficiency and natural hazards in their assessment and reporting?'
Several respondents appreciated the professional advice that was specific to their home, household and environment as well as the solutions that address both energy efficiency, thermal comfort and natural hazards.



"'An impartial assessor can/will point out items that can easily be fixed, as well as discuss longer term actions. Whilst one can read about such things, the immediateness of a person discussing actions helps clarify and focus those actions."

"Having an assessor visit my home was beneficial in assisting me how to improve any deficits in my home in both a financially viable way and to reaffirm my ideas and concepts regarding my home improvements."

"Getting customised advice for your home, from people with knowledge and experience."

"Benefits may include highlighting actions that address multiple issues i.e. thermal seals could also address smoke/ dust infiltration."

When making decisions for their home 90% of respondents said energy efficiency and functionality were very important considerations for them. Climate resilience was also considered a very important consideration by 85% of respondents.

'What else do you consider when making decisions for your home?'
Responses included practical considerations such as:

- affordability
- product lifecycle and environmental impact
- longevity and durability of materials and products
- available financial assistance
- effort and time required to arrange or undertake actions
- availability of trades
- can it be DIY (do it yourself)
- accessibility and suitable for ageing in place
- replacing products when they are at the end of their life
- approval from the property owner for rentals
- energy savings
- heritage.

Respondents considered cost versus benefit to the environment, resilience to a changing climate and how the benefit measures over time.

One respondent who has begun investigating their actions has struggled to source accurate and reliable information; trades have left them feeling overwhelmed and unable to make decisions.

Case studies

"Knowledge is power."

Catherine

HOUSE	
Type	Brick veneer
Era	Post war
Location	Castlemaine

HOUSEHOLD	
Residential status	Owned
Lived here	17 years
Number of people	2 adults and Mavis the dog

Catherine is a visual artist and arts educator who works from home, her son is studying. Catherine aims for a richness of lifestyle, rather than consumption.

Catherine has made several upgrades progressively over time to improve the energy efficiency of her home. Changes in our environment have led to her growing interest in climate resilience. Catherine had a general understanding of bushfire risk for the Shire, however she was not aware of the level of risk for her own property. Through thinking about resilience, energy efficiency and sustainability, Catherine is trying to do the right thing for her property and neighbourhood.

Cost guide
$ 0-5K
$$ 10-15K
$$$ 20-30K
$$$$ 30K+

Performance and key recommendations

(R) Recommendations that can be undertaken by tenants

Hazard	Rating	Key recommendations	Cost
BUSHFIRE Rating out of 5	1 	Install fire rated door seals and draught stoppers to the bottom and sides of the doors. Remove combustible materials from the underfloor space and/or enclose with ember mesh. (R) External vents, chimneys, flues, lights, roof fixtures, walls, window frames, and services should use non-combustible materials and be sealed with fire-rated silicone and protected with ember mesh. Seal any gaps that are greater than 2mm. Maintain a fire resilient, managed landscape around the home. Move any combustible items more than 5 metres away from the home. (R)	$$
STORM Rating out of 5	3 	Seal any gaps around walls, windows and gable ends. Have the roof condition, flashings, fixings, gutters/downpipe and roof attached items assessed for structural integrity and make repairs as needed. Seal off any gaps >2mm.	$
ENERGY EFFICIENCY Rating out of 10	10 	Install weatherstrips to any unsealed windows. Upgrade the window furnishings to lined curtains with pelmets where not already in place.	$
THERMAL COMFORT Hot weather Rating out of 5	1 	Upgrade window treatments to curtains with pelmets or honeycomb blinds. Install weather strips to unsealed windows. Consider installing external shading to prevent the sun hitting windows.	$
THERMAL COMFORT Cold weather Rating out of 5	2 	Install weather strips to unsealed windows. Install double glazed windows. Seal vents, door edges, and unused chimney to prevent heat loss. Replace or top up ceiling insulation to R5.0 rating. Add rugs or carpets over floorboards to improve insulation.	$$$

What will you do with your recommendations?

Following her assessment, Catherine is considering suggestions and intends to work through them over time. The assessment provided good motivation to continue with maintenance, like checking the condition of the roof, and address a recent leak following a severe storm. She is thinking about simple recommendations in the garden, and keeping on top of loose items around the house that may be flammable.

What considerations will you need to make to take action?

- Finding trusted and reliable people to offer packaged services.
- Finding trades that consider the climate and energy efficiency in recommendations and understand Catherine's values, for example, longevity of materials and quality.

What would help you take action to be more resilient/energy efficient?

- Neighbourhood bulk-by and collective action.
- Improving standards of trades for better outcomes.

What value would you place on a combined assessment?

The professional knowledge brought to the assessment is highly valuable in understanding and aligning recommendations to my priorities.

Top priority

Add more insulation to the ceiling.

"It is time to address inequity in housing."

Derry, Patrick, Marlena & Delphine

HOUSE	
Type	**Weatherboard (lightweight)**
Era	**Post war**
Location	**Campbells Creek**
HOUSEHOLD	
Residential status	**Rented**
Lived here	**Up to 14 months**
Number of people	**4 adults**

This is a multi-generational share house with people in their 30s through 50s. Their home is centred around the garden and food. They embrace the 'share' in share house. The household has a good understanding of heat and bushfire risk as well as energy efficiency and thermal performance. They have a direct relationship with their property manager who is approachable, responsive, but not always timely with non-urgent work. As tenants, they are very limited to make or request changes to the property that would make their home safer, more comfortable and energy efficient.

Cost guide
$ 0-5K
$$ 10-15K
$$$ 20-30K
$$$$ 30K +

Hazard	Rating	Key recommendations	Cost
BUSHFIRE Rating out of 5	1 	Move any flammable items away from the home and clear under subfloor during the fire danger period. (R) Remove overhanging tree branches to prevent debris accumulation in gutters, decks and on roofs. Install a metal kick-plate on the timber door. Maintain a fire resilient, managed landscape around the home. Seal any gaps in the vents, roof fixtures, walls, window frames etc that are greater than 2mm. Install metal covers over horizontal timber window sills. Consider upgrading windows to metal framed, toughened glass. Consider replacing combustible decking and fascia boards with non-combustible materials Consider replacing combustible materials with non-combustible to cladding, decking fascia boards.	$$$
STORM Rating out of 5	3 	Remove any loose items from the yard that could impact the home in heavy winds. (R) Repair any cladding that is damaged. Have the roof condition, flashings, fixings, gutters/downpipe and roof attached items assessed for structural integrity and make repairs as needed. Seal any gaps >2mm. Check that downpipes are discharging to stormwater systems and not allowing water to accumulate near the home	$
ENERGY EFFICIENCY Rating out of 10	3 	Install seals on all windows and doors. Install external shading devices to west facing windows. Consider installing solar panels. Replace shower head with min Star WELS rated head (R) Replace the hot water system with a heat pump	$$
THERMAL COMFORT: **Hot weather** Rating out of 5	1 	Upgrade insulation in ceilings and walls Upgrade window treatments to lined curtains with pelmets.(R) Seal any holes or gaps that allow air to leak into or out of the house.	$$
THERMAL COMFORT: **Cold weather** Rating out of 5	3 	Upgrade insulation in ceilings and walls Install double glazed windows or Install temporary film (R) or secondary glazing to all windows. Seal any holes or gaps that allow air to leak into or out of the house.	$$$

What will you do with your recommendations?

The household already adjust their behaviour to improve thermal comfort like wearing long pants, slippers and jumpers. The assessment has drawn their attention to the need to stop draughts, and may make curtains which they can take with them when they move.

What considerations will you need to make to take action?

- Aside from having limited rights to make physical changes to a property, they would weigh up what is the investment required verses the benefit to them. Are there upgrades that would improve their comfort and safety now, but could be taken with them when they leave.
- They are in the hands of the property owner as to what is upgraded and imagine that cost and effort would be their main considerations.
- As tenants they can only change what they have control of and this introduces conflict. For example they could move their planters off the deck to reduce bushfire risk, but the deck itself is a hazard, and would need to be upgraded by the property owner.

What would help you take action to be more resilient/energy efficient?

- Compulsory ratings when properties are sold or rented
- Rebates and free, cheap, or low effort actions
- Improving mandatory standards
- Collective action - bulk buys
- Financial assistance, that could be tied to energy bill savings.

What value would you place on a combined assessment?

The assessment was empowering. There is enormous value in considering the context.

An assessment specific to a house should lead to least cost and most effective recommendations.

Top priority

Make curtains and provide the report to the property owner.

"It is so important to start thinking about resilience."

Sophie & Matthew

HOUSE	
Type	Weatherboard (lightweight)
Era	Post war
Location	Maldon

HOUSEHOLD	
Residential status	Owned
Lived here	8 months
Number of people	2 adults, Paris the dog and a cat

Sophie and Matthew are professionals working locally. They like to spend time at home and entertain. Sophie and Matthew moved from a very high bushfire risk property to this home in Maldon which has a lower risk. They are well educated in sustainability and climate resilience with experience working on solar projects, with the CFA, and through prior leadership of a community emergency resilience group. They have renovated before and are quite handy.

Cost guide
$ 0-5K
$$ 10-15K
$$$ 20-30K
$$$$ 30K +

Hazard	Rating	Key recommendations	Cost
BUSHFIRE Rating out of 5	1 	Install 40cm high steel guards around the base of the softwood vertical posts. Install fire rated door seals and draught stoppers to the bottom and sides of the doors. Consider a metal kick plate to timber doors. External vents, chimneys, flues, lights, roof fixtures, walls, window frames, and services should use non-combustible materials and be sealed with fire-rated silicone and protected with ember mesh. Seal any gaps that are greater than 2mm. Remove any combustible items from the roof space. (R) Maintain a fire resilient, managed landscape around the home. Move any combustible items more than 5 metres away from the home. (R) Remove timber fencing, gates, trellis and lattice that are connected to your home, or within 5 metres of the home. Replace with non-combustible materials. Consider replacing combustible materials with non-combustible to cladding, decking, fascia boards.	$$$
STORM Rating out of 5	3 	Seal gaps and check doors and windows seal appropriately against wind driven rain. Repair any outbuildings that may be in need of repair. Have the roof condition, flashings, fixings, gutters/downpipe and roof attached items assessed for structural integrity and make repairs as needed. Seal off any gaps >2mm. Install overflows in box gutters at the opposite end to the downpipe.	$
ENERGY EFFICIENCY Rating out of 10	6.5 	Install weatherstrips to any unsealed windows. Upgrade the insulation in the ceilings and walls. Upgrade the window furnishings to lined curtains with pelmets where not already in place. (R) Upgrade heating and cooling systems to high efficiency air conditioners. Upgrade hot water system to high efficiency electric heat pump and replace shower heads with wells 3 Star heads.	$$$
THERMAL COMFORT: Hot weather Rating out of 5	1 	Upgrade insulation in ceilings and walls. Upgrade window treatments to lined curtains with pelmets where not already in place. Install weatherstrips to any unsealed windows.	$$
THERMAL COMFORT: Cold weather Rating out of 5	2 	Upgrade insulation in ceilings and walls. Install double glazed windows Install weather strips to unsealed windows	$$$

What will you do with your recommendations?
Sophie has already taken on advice from the home assessment, closing off the hot back room to keep the rest of the house cool and getting draught seals for the doors. The house requires drainage and structural works as a priority, some recommendations could be actioned at the same time, such as inspecting and doing necessary gap sealing, and repairs to the roof, gutters and down pipes.

What considerations will you need to make to take action?

- How to tie recommendations into other work that is being undertaken
- Budget
- What items can be completed ourselves
- How much research is required.

What would help you take action to be more resilient/energy efficient?

- Clear and reliable information to complete recommendations without much research
- Neighbourhood bulk-by and collective action.

What value would you place on a combined assessment?
The assessment was fantastic and so important, sustainability and resilience solutions need to be seen holistically. It would be great if this were combined with a pre-purchase building inspection to provide confidence when considering a house purchase.

Top priority
Installing draught seals on the doors, making curtains, installing a watering system to keep plants watered where close to the house.

"Connect with and strengthen your relationship with your neighbours ."

Pauline

HOUSE	
Type	**Fibre cement boards - lightweight**
Era	**Contemporary**
Location	**Campbells Creek**
HOUSEHOLD	
Residential status	**Owned**
Lived here	**15 years**
Number of people	**1 adult, with extended family in a second dwelling out the back**

Pauline has lived in the community for 35 years, with her kids and now grandchildren growing up here. Pauline's connection with her community make Campbells Creek feel like home. Pauline has experienced flood twice in this house. She sees a connected community as less vulnerable, particularly when faced with extreme events.

Cost guide
$ 0-5K
$$ 10-15K
$$$ 20-30K
$$$$ 30K +

Following the 2022 flood, Pauline and her neighbours formed a resident's group who can lean on each other through the lasting effects of the traumatic event. These relationships were the silver lining of the flood for Pauline. The group continue to advocate for improvements that will reduce the impact of flood and extreme events by advising and working along-side council on anything from improving communications through to assessing drainage and building a levee.

Hazard	Rating	Key recommendations	Cost
BUSHFIRE Rating out of 5	1 	Install 40cm high steel guards around the base of the softwood vertical posts. Remove combustible materials from the underfloor space and/or enclose with ember mesh. External vents, chimneys, flues, lights, roof fixtures, walls, window frames, and services should use non-combustible materials and be sealed with fire-rated silicone and protected with ember mesh. Seal any gaps that are greater than 2mm. Trim or remove overhanging tree branches to prevent debris accumulation on decks, gutters and on roofs. Maintain a fire resilient, managed landscape around the home. Ensure that any further plantings near the house are species that are fire resilient. Move any combustible items more than 5 metres away from the home. (R) Remove timber fencing, gates, trellis and lattice that are connected to your home, or within 5 metres of the home. Replace with non-combustible materials.	$$$
STORM Rating out of 5	3 	Some of the gutters and downpipes are blocked, keep gutters clear. Consider overflows to existing gutters. Seal any gaps around doors and windows. Repair any cladding that is damaged and any outbuildings that may be in need of repair. Have the roof condition, flashings, fixings, gutters/downpipe and roof attached items assessed for structural integrity and make repairs as needed. Seal off any gaps >2mm. Remove trees that could impact the home if fallen. Remove any loose items from the yard that could impact the home in heavy winds.	$$
FLOOD Rating out of 5 Environmental risk: Extreme	2 	Prioritise installing vents and flaps (such as pet doors) to enable automatic two-way water flow to balance internal and external water pressures during a flood. This can help reduce structural damage to the home. Prioritise installation of removeable access panels at the base of cavity walls to enable quick drying and access for cleaning inside walls after a flood. Prioritise retrofitting cavity wall systems below potential flood levels with water resilient materials and as few layers as possible.	$$$$
ENERGY EFFICIENCY Rating out of 5	6.8 	Install weatherstrips to any unsealed windows. Upgrade the insulation in the ceilings and walls. Upgrade the window furnishings to lined curtains with pelmets where not already in place Upgrade old air condition systems to high efficiency modern air conditioners. Replace shower heads with wells 3 Star heads.	$$$
THERMAL COMFORT: Hot weather Rating out of 5	1	Upgrade the insulation in the ceilings and walls Upgrade window treatments to curtains with pelmets or honeycomb blinds. Install weather strips to unsealed windows	$$
THERMAL COMFORT: Cold weather		Upgrade the insulation in the ceilings and walls Install double glazed windows	$$

Cost guide
$ 0-5K
$$ 10-15K
$$$ 20-30K
$$$$ 30K +

What will you do with your recommendations?
Pauline has installed roof ventilation which has helped to reduce heat in summer. Pauline has plans to chip away at the recommendations with a focus on improving thermal comfort and improving bushfire resilience, while balancing the need to consider flood.

What considerations will you need to make to take action?
- Finding trusted and reliable trades who could undertake the recommendations including small jobs
- Finding time and energy to seek quotes and chat to people to find good and capable trades
- Understand what items can work in with the household budget

What would help you take action to be more resilient/energy efficient?
- Making it easy to engage good people to complete small jobs
- Neighbourhood bulk-by and collective action
- Contacting her assessor to offer guidance when necessary

What value would you place on a combined assessment?
It was very valuable to have the expertise of the assessor to identify previously unnoticed issues and provide solutions for things that were accepted as just needing to be lived with. It was an opportunity to learn how to make the home more resilient, information that can be shared with neighbours and the community. The assessment was a very positive experience and has helped to prioritise actions.

Top priorities
- Install ember mesh around subfloor, replace timber with fire resistant decking and install a solid front door with seals
- Add insulation to the ceiling

Conclusion

Bringing resilience and energy efficiency together in the Whole of Home Resilience project increased participants' awareness of risk, resilience, thermal performance and energy efficiency. Households valued professional, customised recommendations that prioritized actions to improve their resilience to the changing climate.

There are public and private benefits delivered through ratings programs. Ratings empower householders to make the right decision for their circumstances. These generate community benefits such as improved wellbeing, reduced health care costs, reduced energy and insurance costs, and broader benefits such as reduced energy network peak loads, and reduced post disaster recovery costs.

The project upskilled and provided assessors with tools to understand how resilient a home is to natural hazards. Adding a risk and resilience perspective to their assessment approach will benefit households undergoing assessment across the region.

Home assessments determined the condition of individual properties and their expected performance, improving our understanding of the variety and condition of homes in Mount Alexander Shire. The pilot revealed the complexity and variability of properties and confirmed that home assessments are required to understand vulnerabilities and recommend performance improving retrofits suitable for each home.

This project contributed 140 Victorian case studies to the national dataset Resilient Building Council is producing for insurance and finance pricing integration, in partnership with NEMA and ICA. The objective is to set a nationally consistent ratings-based pricing system to enable industry to reduce insurance and mortgage costs for verified home upgrades.

This project and the broader ratings-based insurance and pricing integration work, enables both public and private investment in home upgrades to produce tangible, ongoing, financial benefits. Additional, quantifiable, resilience benefits to life safety, health, livelihoods, productivity, sustainable regions and the economy, strengthen an already compelling business case for Victoria to scale resilience assessments and retrofitting programs.

The Whole of Home Resilience project created an important dataset to clarify the most effective next step. The main objective of the next stage is to ensure all interested households can similarly benefit from lower energy costs, more comfortable and resilient homes, with a project design that is cost effective and can be successfully delivered.

We recommend a broad scale assessment rollout to improve the long-term resilience of communities across Victoria. The program can learn from the successes of the Whole of Home Resilient pilot, particularly the advantages of place-based and community led programs, the value of providing householders with a home assessment and tailored action plan, and the benefits of upskilling assessors to consider resilience in their assessments. This program and associated costs and benefits are outlined in detail below.

Recommendation

Next step: delivery in central Victoria

The next step is for roll out of combined energy efficiency and resilience assessments at a larger scale, across Central Victoria, to improve the energy efficiency and climate resilience of all buildings at risk of bushfire, flood, storm and/or heatwave.

Central Victoria has around 207,000 homes. The next step aims to reach 70,000 of these homes with an assessment over 5 years using regional delivery of Scorecard assessments and support to access Resilience assessments.

The program leverages community-based outreach and support to assist householders to access existing rebate and incentives for energy and resilience upgrades. This approach has been demonstrated successfully through this project, and at a larger scale, costs are significantly less. The materials, capacities, resources, stakeholders, networks and learnings can be shared, rather than requiring redevelopment for each project or area. This also provides an equitable outcome as it allows all interested households to participate, delivering real change at scale, rather than pilot projects that reach a small number of households.

The data from this project, and previous Scorecard data and reports, has been analysed outlining a cost benefit analysis (CBA) business case to support future policy and investment in holistic home retrofits at scale, detailed below. Savings due to energy efficiency are used for this CBA, however there are multiple benefits of resilience upgrades demonstrated in the Resilient Building Council's CBA‡.

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

Success criteria 1: Community based and led

The first success criteria is to ensure the project is community based. Mount Alexander Shire has supported a range of projects that raise awareness, provide advice and incentivise action on energy efficiency and sustainability measures over the years. Data from this project suggests that place based and community led projects are an effective mechanism to support improved home performance, with the homes in this study rating significantly better than the Victorian average for thermal performance, energy efficiency and other metrics discussed in the Whole of Home Resilience Project National Scorecard Analysis and Results (Appendix A).

Community led projects are very cost effective, a modest level of base funding provides multiplier benefits as other projects or programs, as they leverage effective organisational capacity to achieve their goals. This community-based program partnered with councils, state and national projects to generate a bigger impact at no greater cost.

A place based community leader can:

- leverage existing organisations and networks to be recognised as trusted source of independent information
- enable training of assessors who are connected to the community
- connect consumers with trained and accredited home assessors and retrofitting services
- establish community-based resources, workshops, events, and information sharing platforms
- identify or respond to vulnerable households and scaffold support accordingly
- make recommendations that bolster the local economy

Community partners for Central Victoria could include the Resilient Building Council, Victorian State and Local Governments, Central Victorian Greenhouse Alliance, Castlemaine Institute, local Sustainability Groups, Councils' home care programs, and community health providers.

Success criteria 2: Broad access to trusted home ratings

If you can measure it, you can manage it. This critical insight has been demonstrated in this project where homes were significantly more likely to have been rated previously for energy efficiency and rated significantly higher than the Victorian average for energy performance. Resilience ratings have not been available in this area previously. All homes were freshly rated in this project generating an intention to upgrade, as householders trusted the assessor and the rating. By combining risk, resilience and energy efficiency advice into a single assessment householders understood the best upgrades for their home, addressing two key barriers to upgrade; knowing what to do and trusting it will work.

The Mount Alexander Shire community is highly engaged with sustainability and climate action and have been engaged with successful, locally led and targeted projects, such as the MASH Solar Bulk Buy and Castlemaine 500, an energy efficiency ratings program. Households in the Whole of Home Resilience pilot have higher than average energy performance indicating the community are engaged and early adopters in the energy transition, have learned from and acted on previous assessments. 11 homes rated from 6-10 Stars for energy efficiency, indicating a significantly higher level of performance than the average. Just over 60% of houses have a Solar PV system, double the Victorian average and over 30% of homes were fully electric.

Most homes in the pilot received low resilience ratings for bushfire and flood and medium storm resilience ratings. Undertaking recommended upgrades can drastically improve the resilience of these properties. Alerting households to their risk during an assessment and considering resilience to hazards in advance raises household risk awareness and directs households to pathways for improved household preparedness and resilience.

An additional approach to support householders equitably is requiring home ratings at point of sale or lease. This makes home performance transparent and valued[5], and was suggested by some households as a next step. Trusted ratings provided at the two key points of sale and lease generate an incentive for upgrades, rather than subsidising or requiring upgrades, as homes demonstrably cost less to run. Trusted ratings build a social licence and a conversation about home performances and resilience; higher ratings are valued by renters or purchasers. Community based outreach would be a good runway for such a change, ensuring that key requirements are tested and effective, such as the availability, efficacy and cost of ratings, justified benefits, and a supportive community.

Ratings can also be used as a minimum standard for rental properties, as occurs in Europe. Only 6 homes in this project rated below the Victorian average of 3 Stars for energy performance, meaning that a minimum standard of 3 Stars is achievable at scale. This project found that each home is unique and the most effective upgrades are different for each home. Using ratings as a minimum standard is a flexible approach allowing each home to reach a minimum performance at the least cost, with strong flexibility to address individual circumstances.

Success criteria 3: Build home assessors' capacity and understanding of resilience

Householders value assessors providing advice covering energy performance and resilience so they can make the best decisions for their home. This reduces costs of gaining the right advice leveraging a single home visit. Ratings quantify resilience and energy performance, which markets require for investment, disclosure and directing capital towards adaptation. This supports householders making the right decision, avoiding poor investments, and can also incentivise action. For example, draught proofing often has multiple energy and resilience benefits, understanding this can drive action.

Scorecard assessors are an existing accredited network across rural, regional and metropolitan Victoria and Australia. Scorecard training is required and available across regional Victoria, tight quality controls and auditing underpin the quality of assessments. This project found that it was straightforward to access this network of assessors and upskill them with RBC training and accreditation, and assessors were eager to upskill and provide services.

Regional and rural areas can lack such services. Where a project provides a clear income it has been found that there is strong interest in completing assessor training and accreditation. A five year project is considered sufficient time to build assessor capacity in central Victoria and provide enough market certainty to establish a market. The current lack of a clear market is a significant reason why some areas lack assessors. When projects are established assessor numbers rapidly rise.

5. Green Homes Go Mainstream, Domain Group, May 2025
https://www.domain.com.au/group/media-releases/green-homes-go-mainstream-energy-efficiency-now-a-top-priority-for-australians/

Success criteria 4: Systems integration to improve resilience

Future policy development and following stages can consider the case for integrated assessments, action plans, government subsidies and market incentives for consumers to improve the disaster resilience and energy performance of their homes. A holistic approach would increase the efficiency and effectiveness of both public and private investment in building upgrades. Nationally consistent, trusted, cost-effective, independent, ratings systems (resilience + energy) could be scaled through integrated assessment tools, to enable every household to access tailored action plans to reduce risk, insurance premiums, mortgage costs, energy costs, emissions and recovery costs. Support will be needed to ensure the essential property-level risk information is available for all households.

Increase access to resilience home assessments and building upgrades through integration with existing programs and funding streams, by supporting integration of:

- Multi-Hazard Resilience Rating assessments with DRFA funded damage assessments and recovery grants to enable property owners to access resilient repairs and re-building information at the earliest opportunity, to build back better and reduce future risks
- Multi-Hazard Resilience Rating assessments with Victorian Energy Upgrade (VEU) Scorecard Assessment rebate programs to reduce the cost of resilience home assessments, or create a resilience-specific subsidy program
- Resilience assessments into Business as Usual (BAU) home assessments, such as real estate valuations, building and pest inspections, insurance claims assessments, energy efficiency assessments, builder and trade on-site inspections and quotes, local government planning and building permit inquiries, for example
- Resilience assessments and incentives into government-backed housing and finance programs, such as the Victorian Homebuyer Fund (shared equity), , Affordable Housing Investment Partnership, Building Financial Capacity of Housing Agencies, Regional Housing Fund, for example.
- Resilience-based tax or other state-controlled incentives for property developers to increase the resilience of new builds, and tax incentives for property owners to increase the resilience of existing builds (benefitting both property owners and renters), such as integration with existing stamp duty reduction programs for first home buyers, off-the-plan buyers.

Success criteria 5: Build-in evaluation to drive the following phase

The project design is built on evidence that home ratings lead to action, based on analysis

of this and previous projects, detailed below. The next stage is designed to not simply benefit Central Victoria, but to generate a statistically valid case for subsequent delivery at scale across the state and nationally. It is critical that projects avoid operating as a once-off pilot, but clearly articulate the broader strategy.

Project design specifies low delivery overheads for several reasons:

- Funding requirements are modest but drive real progress, ensuring that funding bids are easy to support by a variety of funding sources.
- Budgets and deliverables are set at a level that is manageable by community organisations.
- Project design allows add-ons to fulfil broader policy needs, and does not aim to solve all issues. Locking in foundational benefit, whilst enabling flexibility to respond to changing priorities. For example, incentives for solar panels, batteries, energy efficiency or resilience, equipment bulk buys or low income targeted programs can easily leverage the program design, as occurred in the Energy Savvy Upgrades program.

- The project can be replicated at scale in a following phase without requiring major project budgets.

The project can be evaluated through comparing the project area with a similar regional location without a community-based project. Scorecard and Resilience assessment uptake and retrofit actions can be compared between the two locations, providing strong, statistically significant evidence of impacts. This provides a robust evaluation framework that can indicate if the project design is suitable for state and national rollout.

Success criteria 6: Support complementary programs such as Victorian Energy Upgrades (VEU)

The main complementary programs are funding or incentives for home upgrades, which are identified in the home assessments. By avoiding duplication and facilitating the uptake of these complementary programs, there are significantly improved community outcomes and lower delivery costs. By providing a trusted community-based project structure there is the opportunity to extend incentives and make them easier to access, in a controlled and low risk environment.

For many households, especially for cost constrained households, the cost of upgrades can be a major barrier. The main incentive for home upgrades in Victoria is the Victorian Energy Upgrades program (VEU), and there are also time limited rebates for certain upgrades such as heat pumps, solar panels and batteries.

This project found that there was low awareness of VEU and this led to difficulty for households benefiting from incentives. Scorecard assessments are incentivised through VEU and this has led to a substantial increase in awareness and uptake of home assessments. However deeper upgrades requiring the ability to access multiple incentives are less attractive due to the complexity of understanding and accessing the incentives.

There are opportunities to overcome this barrier. VEU incentives are based on proven emissions reduction outcomes[6], they are a flexible incentive that can be extended to cover deeper upgrades.

Forward options for VEU, or other similar incentives, can be tested or introduced including:

1) **Integrate Multi-Hazard Resilience Rating assessments** with Victorian Energy Upgrade (VEU) Scorecard Assessment rebate programs to reduce the cost of resilience home assessments, or create a resilience-specific subsidy program
2) **Including an incentive for Resilience assessments** based on emissions savings from avoided losses, from the advice from an assessment.
3) **Introduce an incentive for upgrading a Scorecard and Resilience home rating**, based on the reduced emissions from a higher performing home, validated by a before/after assessment. This provides a single incentive for several upgrades that achieve a measurable benefit, with households able to undertake the most effective improvements for their home.
4) **Introduce an increased incentive uplift for upgrading a Scorecard or Resilience rating for vulnerable households**, ensuring these homes are not left behind, validated by a before / after assessment

6. Victorian Energy Upgrades https://www.energy.vic.gov.au/victorian-energy-upgrades/about

These options can be provided through the existing VEU mechanism, at no additional budgetary cost.

Access to VEU incentives can be simplified to a before and after Scorecard rating demonstrating the upgrades have been installed, and measured benefits created. This reduces the overhead costs and complexity of accessing VEU. Upgrades will be demonstrated of benefit in the home assessed through a rating, a more precise incentive than the existing approach that assumes an 'average' energy saving.

Assessments give households actions to improve the energy efficiency and thermal performance of their homes, they also measure a base line for home performance across the region, providing a major resource for future decision making.

Other programs that could be leveraged or supported include:

- State government rebate programs such as those provided by Solar Victoria
- Electrification programs – such as these delivered by the State Electricity Commission of Victoria
- Energy efficiency upgrades program - such as Solar Savers, a community bulk buy or retrofit program designed for roll out across LGAs
- Net zero retrofit programs - such as Mount Alexander Shire Sustainability Group
- Resilience projects, preparing for or responding to events
- Green financing.

Benefits of next step

Central Victoria has around 207,000 homes. Scale rollout aims to reach over 30% of these homes with an assessment over a 5 year project.

As Scorecard assessors visit the home, they are well placed to improve awareness of Resilience Rating tools at no additional cost. Householders then can make the right decision for their circumstances, such as undertaking self-assessment, or an assessor supported assessment, and any subsequent upgrades or actions to reduce their risks and their insurance premiums. The Resilient Building Council's Whole of Home Resilience Cost Benefit Analysis[i] indicates clear benefits from assessor based resilience ratings. There is scope to greatly reduce disaster recovery expenditure for the region.

There are both public and private benefits delivered. Ratings empower householders to make the right decision for their circumstances. These generate community benefits such as improved wellbeing, reduced health care costs, reduced energy costs, and broader benefits such as reduced energy network peak loads, and reduced post disaster recovery costs.

Benefits from a Scorecard assessment include when a householder undertakes a behavioural action (such as turning down a thermostat or using a draught snake) or a more substantive upgrade. These actions save on energy bills, reduce energy system loads and have health benefits.

It is assumed that 85% of homes assessed would undertake low cost/free upgrades. For low cost or free behavioural actions, an overall 9% energy bill saving from an assessment has been found in the literature. This has been conservatively reduced to a 7.5% saving for this analysis[7]. An average energy bill is $2,700/ annum, hence generating a $202/annum saving.

All householders who have had Scorecard assessments are surveyed since the program was released in 2017. Across 643 households reached through seven survey campaigns found 85% of households consistently stated they had or would shortly undertake upgrades.

As a conservative assumption it is assumed that 20% of assessed homes would undertake more substantive upgrades. More substantive upgrades of 1 Star generate an average of 26% saving on energy costs[8]. Providing assessments across the region would create an economy of scale that could incentivise trades to offer upgrades and rebates through the VEU.

A 1 Star upgrade is a modest assumption of likely household upgrades based on the Energy Savvy Upgrades Program which achieved an average 1 Star upgrade and 26% saving on energy costs, whilst targeting vulnerable households[9]. This suggests for a more diverse income range, 1 Star upgrades are conservative.

The average rating of homes in this project was 7 Stars (with PV) or 5.5 Stars (excluding PV benefits), the average rating of Victorian homes is 3 Stars. This indicates that with some interest and information/support, householders can significantly upgrade their rating.

This supports the approach that assuming an upgrade of 1 Star is a conservative assumption, a 2-4 star upgrade from the average is the norm for this population.

The Mount Alexander Shire Sustainability Group project detailed in this report provides complementary analysis of the costs and benefits of upgrades. This provides further assurance of the robustness of this analysis.

7. Victorian Energy Upgrades: Home energy rating assessment, Response to Consultation, December 2022 https://www.energy.vic.gov.au/__data/assets/pdf_file/0027/614745/VEU-Home-energy-rating-assessment-response-to-consultation.pdf

8. Learnings from the Energy Savvy Upgrades program for vulnerable householders, January 2023 https://www.homescorecard.gov.au/__data/assets/pdf_file/0031/675742/Energy-Savvy-Upgrades-evaluation-report-final-0323.pdf

9. Learnings from the Energy Savvy Upgrades program for vulnerable householders, January 2023 https://www.homescorecard.gov.au/__data/assets/pdf_file/0031/675742/Energy-Savvy-Upgrades-evaluation-report-final-0323.pdf

Each Scorecard Star improvement in home performance saves an estimated $702 in energy costs per annum and 1t CO2e per annum on average. Energy and carbon savings have an assumed lifespan of 12 years. Carbon savings are valued at $123/ tonne[10].

Health benefits of a 1 Star upgrade are $887 per winter per person with a health vulnerability[11]. These savings are for the health system, so are a community benefit. It is assumed retrofits have a life of 12 yrs and 75% homes upgraded have one vulnerable person in residence, likely a conservative assumption as there are broad range of situations where people are vulnerable to poor internal temperature. Health benefits in heatwaves are additional and have not been costed in as a benefit.

Costs of next step

Project costs are primarily a modest cost to ensure community organisations can support households with assessments and upgrades. The costs to support assessments and community outreach is estimated at $1m per annum, which would create the place-based community leadership model, delivered by a lead or co-lead community organisation with experience of successfully delivering previous programs in the field, in collaboration with other organisations. A conservative estimate of $50 subsidy per assessment has been costed into the budget to support project delivery to ensure assessments are broadly available. National Scorecard cost recovery of around $30 per assessment is assumed, to acknowledge that home rating systems cost-recover for projects that deliver at scale.

The project would not provide incentives or funding for upgrades and would seek to connect households to existing incentives. This ensures project costs are low, and the project can leverage other projects with specific objectives to reach target audiences. Average upgrade cost for improving a home by 1 star is $4,800. For low cost/ free upgrades it was assumed that households spend $100 on simple upgrades such as draught proofing, door snakes, and free actions like changing how heating and cooling is used, thermostat settings, and other behaviour changes.

The cost of a Scorecard assessment alone with no subsidies is currently $415[12]. In Victoria the Victorian Energy Upgrade (VEU) program offers support for assessments. Scorecard assessors are offering assessments for $0 to $300, depending on the different delivery models.

10. Opportunities to reduce greenhouse gas emissions of infrastructure, Infrastructure Victoria, 2024 https://www.infrastructurevictoria.com.au/resources/opportunities-to-reduce-greenhouse-gas-emissions-of-infrastructure-2

11.Victorian Healthy Homes Research Findings, August 2022 https://www.sustainability.vic.gov.au/research-data-and-insights/research/research-reports/the-victorian-healthy-homes-program-research-findings

12. National Scorecard Evaluation 2024

Cost benefit analysis

In this 5 year project with an annual cost of $2.2m, and total cost of $11m, costs are more than offset through public benefits, with a 5 to 1 overall benefit cost ratio.

The data from this project, and previous Scorecard data and reports, has been analysed outlining a cost benefit analysis (CBA) business case to support a large scale assessment roll out. This CBA calculates costs and savings with a focus on energy efficiency, however there are multiple benefits of resilience upgrades demonstrated in the Resilient Building Council's CBA[2].

Overall householders save $262m. Energy bill savings are $4.3m/ annum, with slightly more than half of these savings from simple low-cost upgrades, and the remainder from a 1 Star upgrade. Householders would be supported with existing upgrade incentives and choose whether they want to act to upgrade.

The project is designed so that the annual public benefits from health system and carbon savings more than offset the annual project delivery costs. Since the benefits of home upgrades have a 12 year lifetime, the overall project public benefits are significantly more positive than the annual benefits, continuing for a further 11 years.

Resilient Building Council's CBA‡ examines the capital cost of home upgrades compared to the value of reduced future damage and loss. 124 homes of the 140 assessed, achieve a Benefit-Cost Ratio (BCR) of >1. This indicates that the majority of retrofits return benefits greater than the cost to retrofit them.

The costs of damage and loss to property are borne by insurers, governments and property owners. The Actuaries Institute (August 2024) estimates 15% of Australian households can't afford insurancev, an increase of 30% from the previous year. This widening protection gap means that households and governments are carrying the costs of increasing disaster impacts.

Significant additional private and public benefits have not been included, such as the benefits of Resilience ratings and avoided losses from upgraded homes. Increased uptake of Resilience ratings and upgrades is expected through project design to support Scorecard assessors to communicate the benefits of Resilience ratings and to facilitate ratings. Additional benefits include health benefits in heat waves, reduced energy peak load, increased awareness of government programs to support home upgrades and the development of the regional retrofit sector, due to a firm market for a 5 year period.

‡ Resilient Building Council, Mount Alexander Shire Resilience Ratings Final Analysis, June 2025

TOTAL PROJECT COSTS AND BENEFITS	
BENEFITS	
Private (energy bill savings)	$262,521,000
Public (health system savings & carbon)	$132,426,000
TOTAL	**$394,947,000**

COSTS	
Public (project costs)	$11,000,000
Private (upgrade costs)	$73,150,000
TOTAL	**$84,150,000**

BENEFIT TO COST RATIO	**5 to 1**

ANNUAL PUBLIC COSTS AND BENEFITS	
ANNUAL COSTS	
Project costs /annum	$2,200,000
Public benefits (only health system savings & carbon) benefits for one year*	$2,207,100

*Benefits continue for a further 12 years; costs are offset by public benefits in the first year

How this could work in practice

In partnership with Castlemaine Institute and local community groups, Central Victorian Greenhouse Alliance (CVGA) could deliver the assessment program across 13 local government areas that make up Central Victoria.

CVGA lead and support collaborative action to decrease greenhouse gas emissions and increase the resilience of the region's communities through innovative projects, advocacy and knowledge sharing. This project aligns with their vision for a region prepared for the impacts of climate change with a view to have a climate positive region by 2035.

The program scope may include:

- Program design
- Development of referral platform to connect assessors and households
- Development of resources, events and workshops to support households to act on recommendations
- Program promotion
- Supporting training for local scorecard assessors, including a local component
- Support for households to access rebates
- Advocacy to suppliers, installers, financers, funders
- Program evaluation and analysis.

Local project profile

Projects in the region that support the resilience-building objectives of the Whole of Home Resilience project.

Central Victorian Greenhouse Alliance: collaborating for climate resilience

The Central Victorian Greenhouse Alliance (CVGA) is a formal partnership of 13 local governments across the Loddon Mallee and Grampians regions of Victoria working together to drive regional climate change solutions. Formed in 2001, CVGA plays a key role in facilitating practical, on-the-ground action with and on behalf of its member councils, to reduce regional emissions, mitigate climate risk, and enhance council and community resilience to the impacts of climate change.

In 2024, CVGA led the Retrofitting for Resilience project in partnership with the Castlemaine Institute (CI) and the Department of Energy, Environment and Climate Action's Loddon Mallee Adapt Program, a precursor to CI's Whole of Home Resilience project. This 12-month research project explored local barriers and practical options for households in the Loddon Mallee region to upgrade their homes and properties to be more resilient to climate-related extreme events, with a case study focused on Mount Alexnader Shire. This project delivered a practical Home Upgrades for Climate Resilience Workbook providing households with general guidance.

A flagship program of CVGA was the More Australian Solar Homes (MASH) initiative, a long-running place-based outreach and facilitation program launched in Mount Alexander Shire in 2014 with support from councils across the CVGA region. By leveraging the role of councils as trusted intermediaries, the MASH program has helped over 900 households and businesses across Central Victoria to access reliable information and connect with vetted suppliers for the installation of solar and home battery systems, cutting energy bills and reducing emissions. With 1% of every sale going towards the MASH Community Fund, the program has also provided grants to local schools, neighbourhood houses, and emergency services for the installation of solar and battery systems on community facilities.

CVGA has also supported small businesses to access the Victorian Energy Upgrades Program for energy efficiency upgrades, through delivery of regional outreach and facilitation services as part of Sustainability Victoria's Small Business Energy Saver Program.

CVGA continues to advocate for and support the expansion of place-based, council and community-led energy upgrade programs, and is working with a wider network of regional Greenhouse Alliances across Victoria to explore and unlock the potential of property-based finance mechanisms to support low-income and vulnerable households to electrify.

Through partnerships with member councils, the wider local government sector, and state agencies, CVGA plays a key role in leading, coordinating, facilitating and advocating for energy efficiency and electrification schemes and climate-smart planning across the region. CVGA's strength lies in its ability to coordinate across multiple municipalities, share knowledge, and scale successful initiatives. By working together, member councils are building momentum for a low-carbon, climate-resilient future for the regions' communities.

Annika Kearton
CEO CVGA
June 2025

Local project profile

Projects in the region that support the resilience-building objectives of the Whole of Home Resilience project.

Mount Alexander Shire Sustainability Group: home retrofits for comfort, climate and community

Mount Alexander Sustainability Group (MASG) is the peak sustainability organisation for the Mount Alexander Shire, delivering education, research, advocacy, endorsement and action for Shire wide sustainability and clean energy initiatives.

MASG was established in 2006, by a passionate group of locals who wanted to see coordinated action on climate change and support the Mount Alexander Shire Community to work towards a sustainable future. It has a focus on projects and programmes that can achieve significant advances towards zero net emissions by 2030.

Over the past 20 years, MASG has established itself as a trusted source of information on sustainability in the community and local region through programs such as MASH Community solar Bulk Buy, the Repair Café and Wash Against Waste. These have shown that big gains are achievable in Waste Reduction, Renewable Energy, Agriculture and Energy Efficiency.

Aging regional housing stock must be brought up to a low emissions standard to enable us to achieve zero net emissions by 2030. The Home Retrofits for Comfort, Climate and Community (HRCCC) project aims to support households to achieve a high level of energy efficiency and to move away from gas. This project applies the knowledge already documented by Sustainability Victoria to the task of raising the standard of the Shire's existing housing stock. The focus will be on houses constructed before the NatHERS standards introduction in 2005.

Raising the performance of a home offers a range of community and broader benefits including:

- emissions reduction
- energy cost savings
- improved comfort, health and safety
- reduced electric peaks and a stable grid
- getting off gas and thus advancing the reduction of fossil fuel use and infrastructure
- economic stimulus to the local economy.

MASG has identified a population of houses, and the retrofits required to achieve a 9 or 10 Residential Scorecard energy efficiency rating. To test this, in 2023 MASG undertook a pilot to retrofit 10 houses owned by a cooperative housing provider. The results were documented over a 12 month period. The results were improving an average 6 Star rating to a 10 star Residential Energy Efficiency Scorecard rating, net energy consumption reduction by 87%, $10 per day energy cost savings, and improved wellbeing of householders. This represents an emissions saving of approximately 6.5 tonnes per household per annum.

To compliment this work, MASG is investigating financing options for low and middle income households, using savings on energy bills to fund retrofits. The *Home Retrofits for Comfort, Climate and Community* program will improve the health and wellbeing of occupants, while saving households money. This project will position Mount Alexander Shire as a leader of retrofits in the region, and lead to broad scale benefits, such as the enhanced capacity of the local work force to deliver a retrofit program, electrifying households, and improving the stability of the grid and reducing emissions.

Mick Lewin
May 2025

Local project profile

Projects in the region that support the resilience-building objectives of the Whole of Home Resilience project.

West End Resilience Network: building resilience through connection

The West End Resilience group was formed in early 2020 after the severe bushfire season. The network covers the west area of Castlemaine, including approximately 440 houses, with a focus on building community resilience and addressing local needs. The aim of the group is to connect locally, support one other, and together adapt, survive and thrive in the face of acute shocks, like coronavirus, bush fires, and chronic stresses such as climate change.

This grassroots community group operates in the western area of Castlemaine, centered around West End Hall. They utilise various communication channels such as a website, Facebook, WhatsApp, Instagram, letterbox drops, and email to connect approximately 288 members. These channels facilitate both the West End Resilience projects and initiatives as well as informal activity and connections, such as sharing garden tips, lending tools, meals trains for people in need, coordinating transport, organising a bulk buy, veggie swaps and giving away free unwanted stuff.

Projects and initiatives

The network has Working Groups for each project or initiative which currently include:

Coordination Group
Work together to keep the web page, emails, seasonal gatherings and social media ticking over.

Energy Group
Works to accelerate the adoption of equitable, clean and efficient energy solutions in our neighbourhood. Activities of the group include a community survey, home energy saving workshops, expert speakers and researching renewable energy activities of other communities.

Emergency Planning Working Group
Coordinates with Council and Emergency Services to plan and prepare our neighbourhood for chronic stresses and acute shocks that may impact us, inclusive of but also beyond fires, heatwaves, floods and pandemics.

Wilderhoods
Explores ways of working with our neighbourhood to create a climate resilient and biodiverse environment. Its current focus is improving the natural habitats of our nature strip verges, running workshops, hands-on working bees and mapping exercises.

The network's success lies in its flexibility, responsiveness, and ability to adapt to changing circumstances. It has built trust over time through being a supportive mechanism during challenges and crises and ongoing community engagement, creating a sense of belonging and collective purpose.

Mel Chan
May 2024

Local project profile

Projects in the region that support the resilience-building objectives of the Whole of Home Resilience project.

Mount Alexander Shire Council: flood resilience program

Mount Alexander Shire Council has been working with flood affected community groups to build community resilience in the wake of the October 2022 flood event. Council received funding from the State Government's Emergency Recovery Victoria to establish a Flood Recovery and Resilience Program.

Two Council officers worked with impacted and affected people and communities to ensure community recovery needs were understood, and recovery resources were tailored to meet local needs.

In 2024, Council consultation culminated in community workshops in Castlemaine West, Campbells Creek and Newstead. Around 100 flood-affected and other residents, emergency management/services, and community organisations designed four projects to help the community help each other in recovery and build resilience against disasters.

Council are helping the community to deliver four projects:

1. Piloting **Street Coordinators** who are locals representing affected streets, that link residents to planning information, provide information about vulnerability to Emergency Management, and help residents get community support in recovery.
2. Establishing **Community Emergency Hubs** that any member of the community (or a community resilience group) could activate to match needs and offers in, after and between events. Different to an Evacuation Centre, Hubs link Street Coordinators to non-affected residents who can organise and coordinate support, while Emergency Services deal with evacuation, life and property threatening issues.

3. A significant proportion of residents in flood affected communities are new residents. **New Resident Kits**, delivered by Street Coordinators to all and then new households, to ensure everyone has key information. Kits will include a fridge magnet with QR code to information and videos.
4. The resident's groups in each town will determine the best method to build **awareness** of the above community emergency system and **activate** it through community networks.

The program will deliver projects designed in partnership with the community that support preparedness, recovery and resilience specific to emergencies.

Mount Alexander Shire Council
Shape 2025

Appendices

Appendix A

Victorian Government, Department of Energy, Environment and Climate Action, *Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results*, May 2025

Appendix B

Resilient Building Council, *Mount Alexander Shire Resilience Ratings Final Analysis*, June 2025

Appendix C

Castlemaine Institute, *Participant Survey Analysis*, April 2025

Appendix D

Castlemaine Institute, *Participant resources: VEU guide and Green Financing*

Appendix E

Central Victoria Assessment Program summary

Appendix A

Castlemaine Institute Whole of Home Resilience Project National Scorecard Analysis and Results

Appendix B

Mount Alexander Shire Resilience Ratings Final Analysis June 2025

Appendix C

Castlemaine Institute Whole of Home Resilience Participant Survey Analysis

Appendix D

Castlemaine Institute Whole of Home Resilience Participant Resources: VEU guide and Green Financing

Appendix E

Central Victoria Assessment Program summary

Central Victoria Assessment Program

Central Victoria has around 207,000 homes. The next step aims to reach 70,000 of these homes with an assessment over a 5 year project.

Central Victorian Greenhouse Alliance (CVGA) in partnership with Castlemaine Institute and local community organisations, will deliver an assessment program across 13 local government areas that make up Central Victoria. This includes Scorecard assessments and support to access Resilience assessments.

This Central Victoria Assessment program will leverage regional delivery and community-based outreach to assess and support households to access existing rebate and incentives for energy and resilience upgrades.

Cost benefit

In this 5 year project with an annual cost of $2.2m, costs are more than offset through public benefits, with a 5 to 1 overall benefit cost ratio.

Overall householders save $262m. Energy bill savings are $4.3m per annum, with slightly more than half of these savings from simple low-cost upgrades, and the remainder from a 1 Star upgrade. Householders would be supported with existing upgrade incentives and choose whether they want to act to upgrade.

The project is designed so that the annual public benefits from health system and carbon savings more than offset the annual project delivery costs. Since the benefits of home upgrades have a 12 year lifetime, the overall project public benefits are significantly more positive than the annual benefits, continuing for a further 11 years.

TOTAL PROJECT COSTS AND BENEFITS	
BENEFITS	
Private (energy bill savings)	$262,521,000
Public (health system savings & carbon)	$132,426,000
TOTAL	$394,947,000

COSTS	
Public (project costs)	$11,000,000
Private (upgrade costs)	$73,150,000
TOTAL	$84,150,000

BENEFIT TO COST RATIO	**5 to 1**

Assessments give households actions to improve the energy efficiency and thermal performance of their homes, they also measure a base line for home performance across the region, providing a major resource for future decision making.

This program can support other programs such as, State government rebate programs such as those provided by Solar Victoria, Electrification programs – such as these delivered by the State Electricity Commission of Victoria, Energy efficiency upgrades program - such as Solar Savers, a community bulk buy or retrofit program designed for roll out across LGAs, Net zero retrofit programs - such as proposed by Mount Alexander Shire Sustainability Group, Resilience projects, preparing for or responding to events and green financing.

$702

1 Scorecard Star improvement saves an estimated $702 in energy costs per year.

1T CO_2

1 Scorecard Star improvement saves 1t CO_2e per annum on average (valued at $123 / tonne).

$887

Health benefits of a 1 Star upgrade are $887 per winter per person with a health vulnerability.

Low cost or free behavioural actions can save each home $202 per year