Project 1.11.3

Scalable Retrofit Strategies for Social Housing Portfolios

Project Steering Group Meeting #1
6th May 2026

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Acknowledgement of Country

- We acknowledge the Traditional Owners and their custodianship of the lands on which we meet.
- We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country.
- We recognise their valuable contributions to Australian and global society.



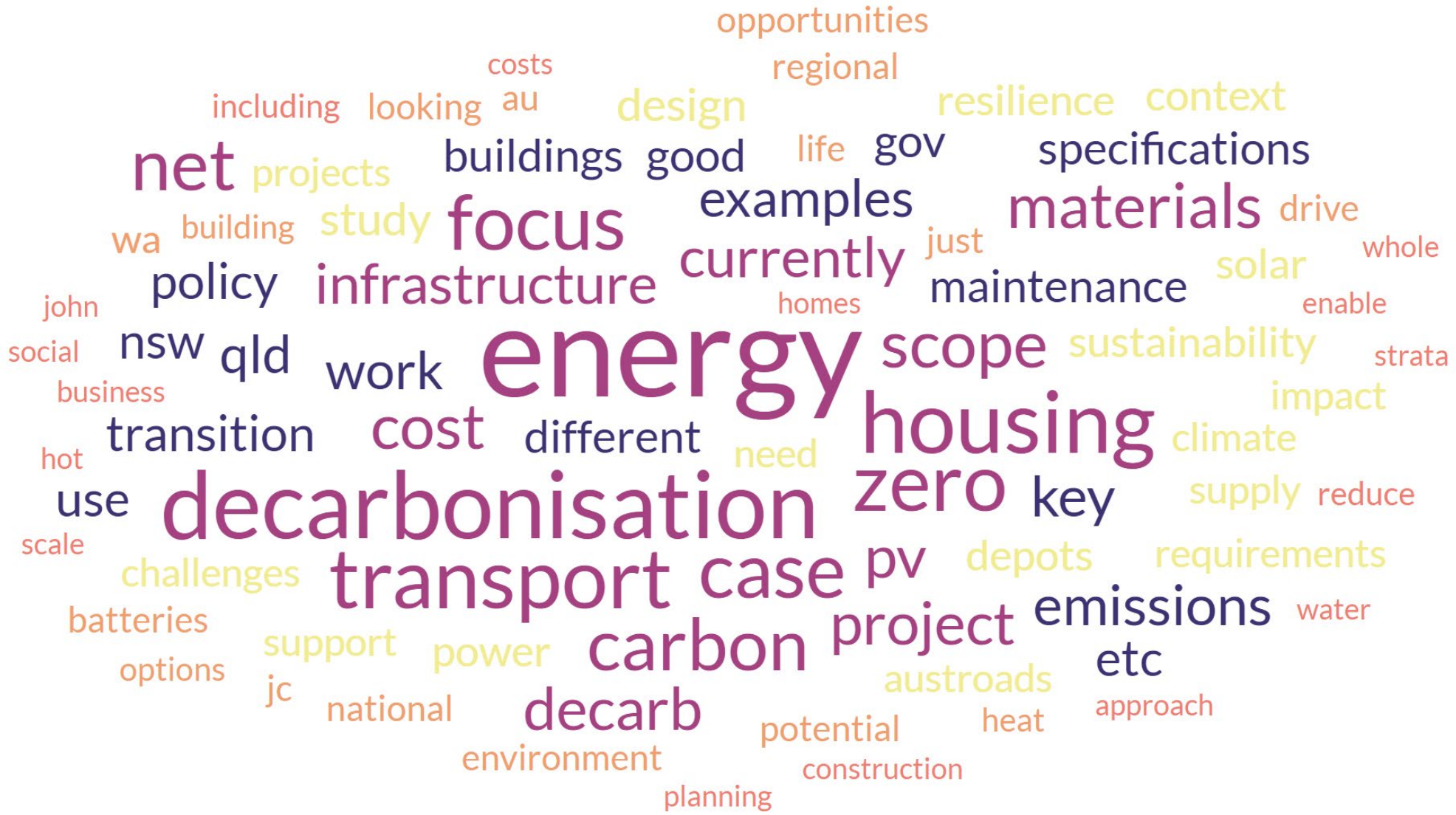
The Brisbane River pattern from *A Guidance Through Time* by Casey Coolwell and Kyra Mancktelow.

Sustainable Built Environment National Research Centre AUSTRALIA

This research would not have been possible without the ongoing support of our core industry, government and research partners:

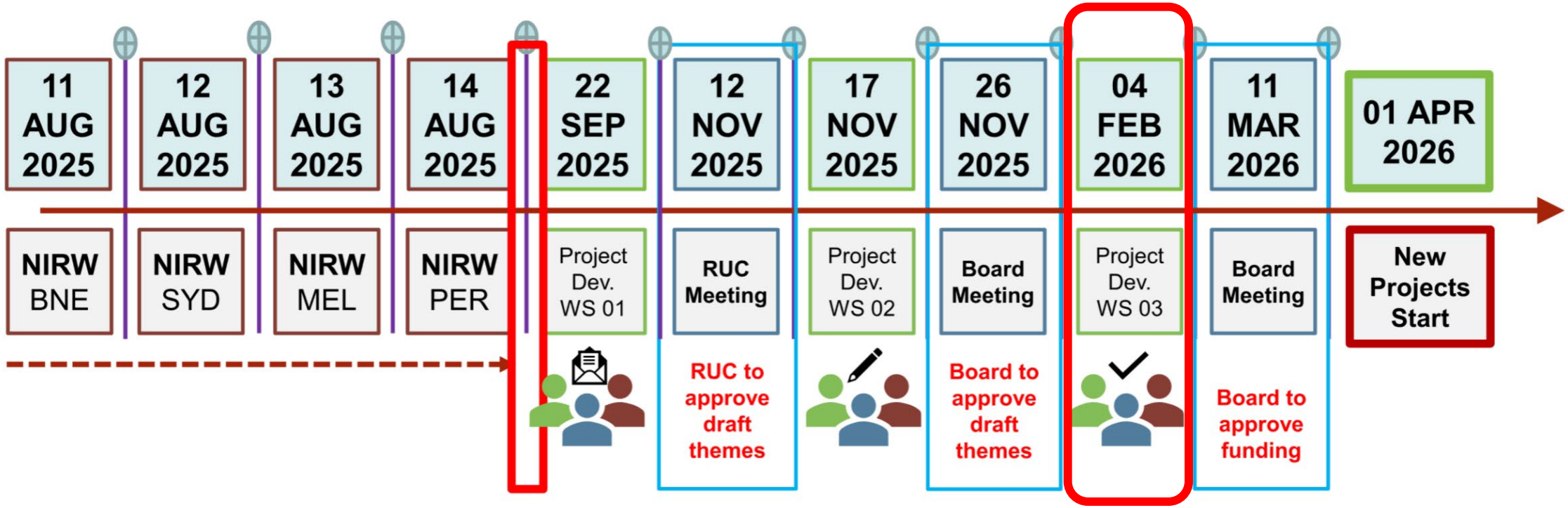
ATCO
BGC
WESTERN AUSTRALIA
Queensland Government
NSW GOVERNMENT Transport for NSW
Sunshine Coast COUNCIL
Curtin University
THE UNIVERSITY OF QUEENSLAND AUSTRALIA
WESTERN SYDNEY UNIVERSITY
RMIT UNIVERSITY

Project development workshops: indicative synthesis



Word cloud providing an indicative synthesis of priorities and opportunities shared by SBEnrc partners during workshops and meetings

Project development timeline



Overview of project context

Challenges for industry, government, and communities

- Government agencies and Community Housing providers collectively manage more than **400,000 social and staff housing dwellings**.
- Most of these dwellings will be occupied when **2035 and 2050 decarbonisation commitments** are due, but there is limited evidence on which retrofit strategies are viable at scale and deliver the greatest carbon reduction and cost benefit.
- These portfolios represent a **large share of public-sector emissions** and ongoing **energy-cost exposure** for tenants, and **drivers of health and wellbeing**.
- Partners emphasised the need for **practical, evidence-based guidance** that links technical options with decision points and policy settings.

Overview of project Objectives

1. Characterise partner housing portfolios	• With support from partners, compile and analyse existing data on building types, construction, age and energy demand to identify a priority building typology in each state.
2. Assess decarbonisation options	• Catalogue and evaluate retrofit options (building fabric, systems, electrification, behavioural) relevant to priority typologies using current evidence and partner input.
3. Model performance and cost impacts	• Quantify approximate energy, emissions and bill savings for shortlisted interventions on a reference building in QLD, NSW and WA.
4. Determine practical feasibility	• Engage technical experts and asset managers to qualitatively assess buildability, cost, maintenance, reliability, and social factors for short-listed interventions.
5. Prioritise scalable interventions	• Apply a transparent matrix balancing decarbonisation impact and ease of implementation for each reference building.

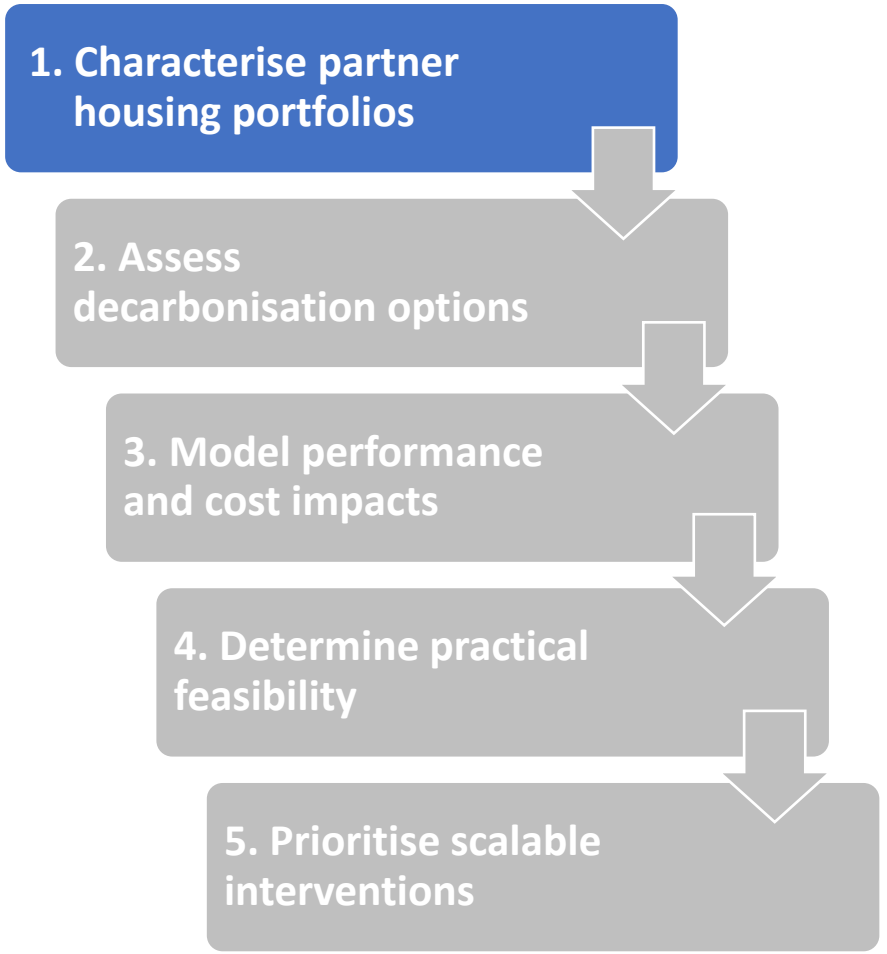
Addressing Partner feedback

PARTNER FEEDBACK	PROJECT DESIGN RESPONSE
Expand project value: Energy efficiency and decarbonising dwellings are priorities beyond core state housing portfolios	Scope can be expanded to include community housing and government staff housing (e.g. DHA) following interest from other partners
Cost and wellbeing framing: Cost reduction and tenant wellbeing must be explicit benefits	Project emphasises operating cost reductions and improved thermal comfort alongside decarbonisation
Case studies to portfolios: Case studies are useful if they inform portfolio-scale decisions	Case studies are used to test a scalable process, with outputs designed for portfolio-wide application
Diverse locations and buildings: Case studies must reflect diverse climate conditions and building types	Three case studies span major Australian climate zones covering most partner locations
Alignment with existing work: Opportunities to align with related initiatives (e.g. Property Standard Index, energy cost reduction programs, CHP priorities)	Project will explore alignment and share lessons without duplicating existing work
Data sharing and consistency: Portfolio data quality varies across states; partners support shared learning	Cross-state analysis to identify priority data needs and enable knowledge sharing as appropriate

Research method / approach

Phase 1. Characterise partner housing portfolios

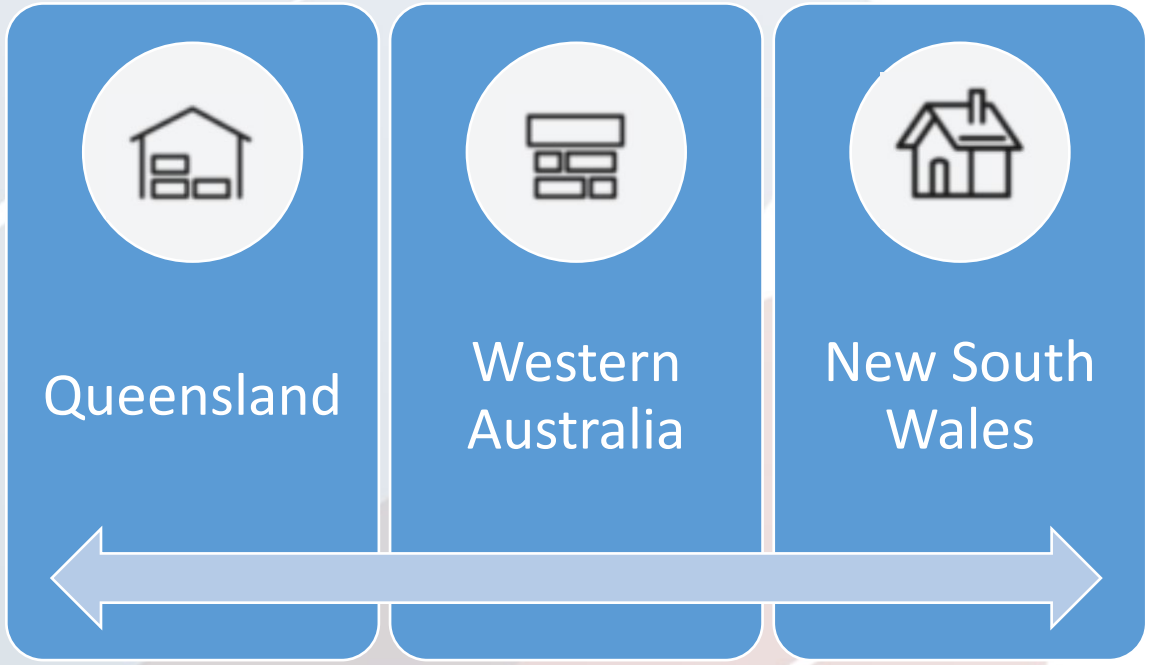
- Analyse portfolio based on data requested from partners.
- Identify priority typologies, selecting one reference building per state for deeper analysis.



Research method: Case studies

Phase 1. Confirm 3 case studies

Representing a majority of Partners' dwelling locations and construction types



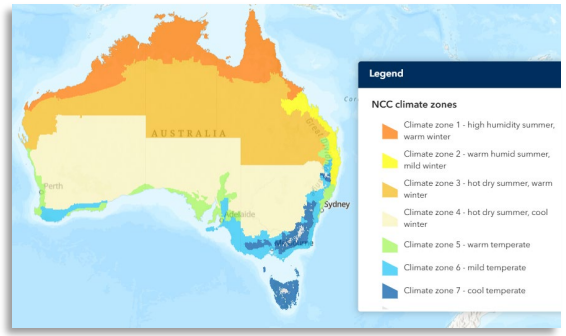
Different building **construction types.** e.g.

1. Detached timber
2. Brick low-rise
3. Concrete mid-rise



Different **climate zones**:

1. Warm-Humid (Climate zone 2, e.g. Brisbane, Rockhampton)
2. Warm temperate (Climate zone 5, e.g. Sydney, Perth)
3. Tropical (Climate zone 1, e.g. Cairns, Townsville, Broome) ***OR***
   Mild temperate (Climate zone 6, e.g. Western Sydney, Melbourne)



Australian Building Codes Board (ABCB) Climate Map,

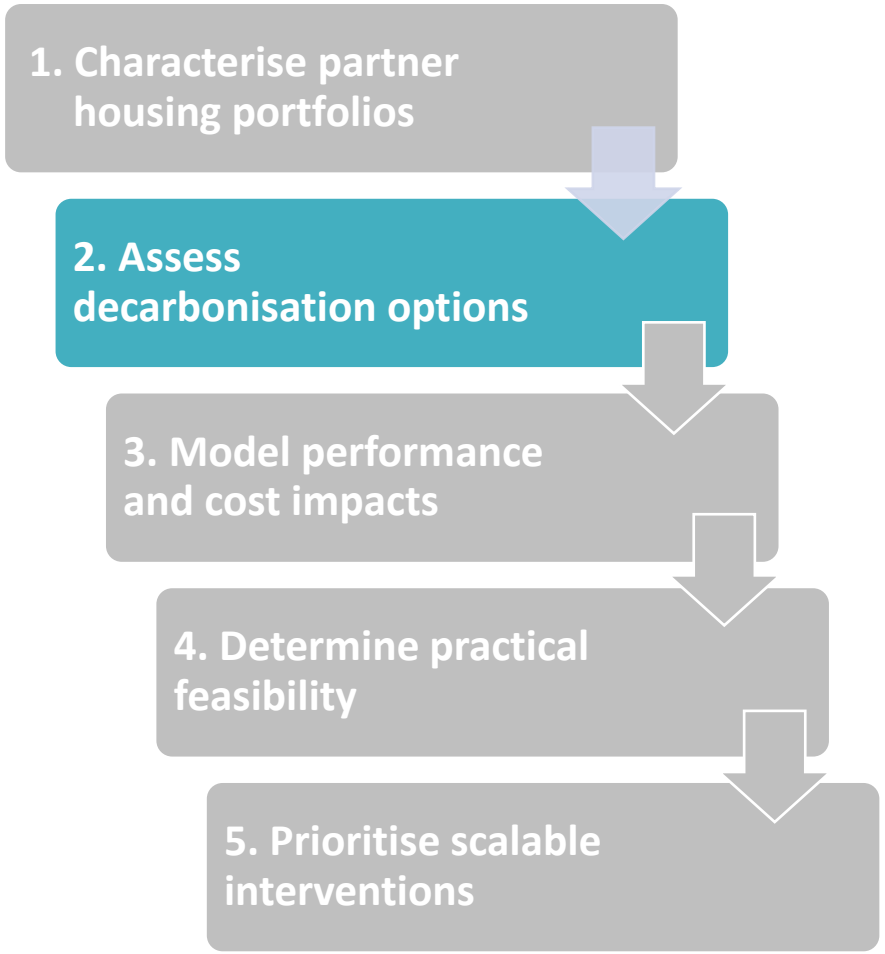
(Source: https://www.abcb.gov.au/abcb-climate-map#/).

Research method / approach

Phase 2. Assess decarbonisation options

Conduct rapid literature scan to catalogue potential decarbonisation interventions grouped as:

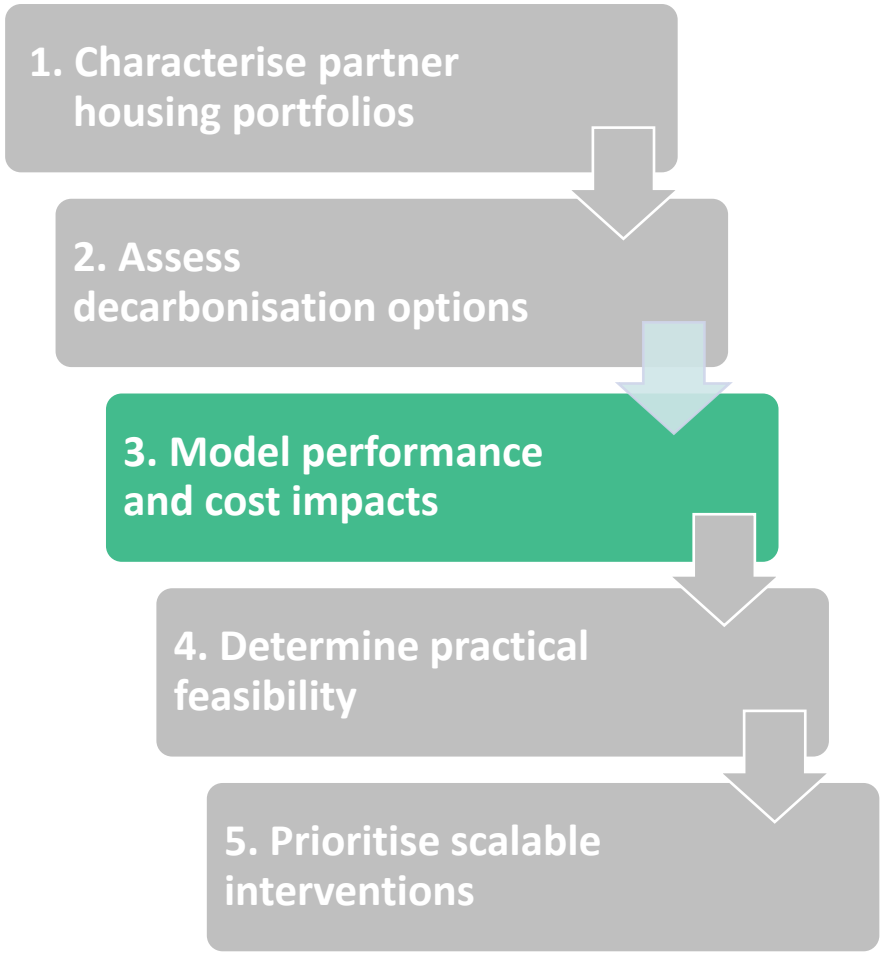
- **Fabric** (insulation, airtightness, shading, surface colour)
- **Systems** (HVAC upgrades, controls)
- **Onsite PV** and electrification
- **Operations**/maintenance & behaviour



Research method / approach

Phase 3. Model performance and cost impacts

- Model 2–3 priority interventions for each state's reference building using a common set of assumptions.
- Report simple, comparable indicators (energy use, bills, emissions).
- Scale these results across each portfolio to estimate overall decarbonisation impact.



Research method / approach

Phase 4. Determine practical feasibility at scale

- Engage technical experts and asset managers to qualitatively assess buildability, cost, maintenance, and social factors.

Building type and setting

Intervention options	Brick construction (Urban)	Brick construction (Remote)	Timber frame (Urban)	Timber frame (Remote)
Insulation				
Rooftop PV				
Efficient HVAC system				
Behaviour change program				
Vegetation				

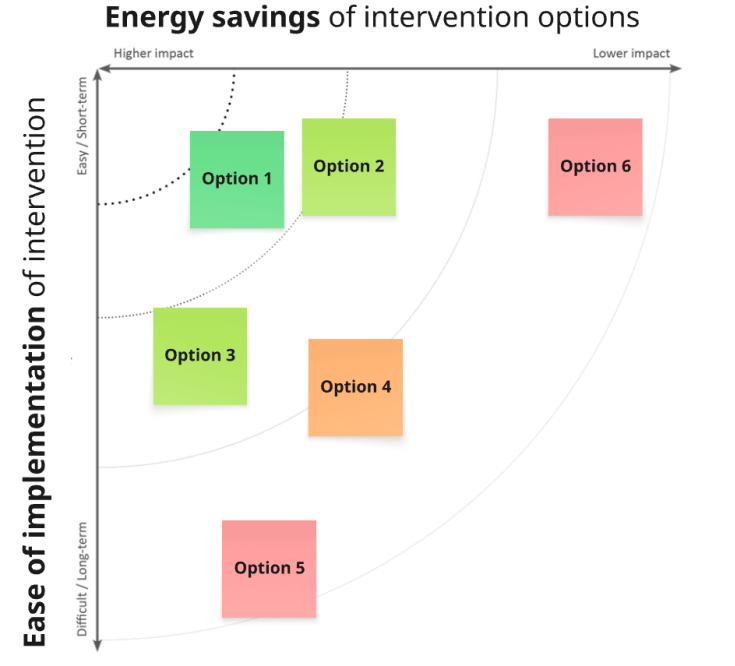
Interventions and building types are indicative only

1. Characterise partner housing portfolios
2. Assess decarbonisation options
3. Model performance and cost impacts
4. Determine practical feasibility
5. Prioritise scalable interventions

Research method / approach

Phase 5. Prioritise scalable interventions

- Develop a prioritisation matrix including decarbonisation impact and ease of implementation at scale.



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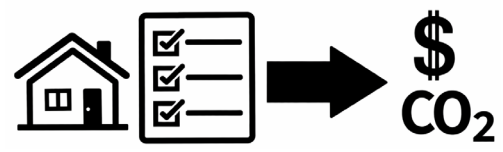
Industry Outcomes

This project aims to deliver the following industry outcomes:



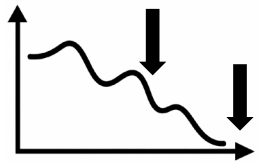
- A **decision support and analytical framework** for prioritising retrofit strategies to cut carbon and operating costs across housing portfolios.



- **Evidence-based guidance** on retrofit strategies for a typical building type in QLD, WA, and NSW government and community housing portfolios.



- **Portfolio insights** identifying interventions that best balance impact, feasibility and value.



- **Strengthened decision-making frameworks** aligned with 2035 and 2050 net-zero targets.



- Improved **tenant comfort** and **lower household energy bills**.

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