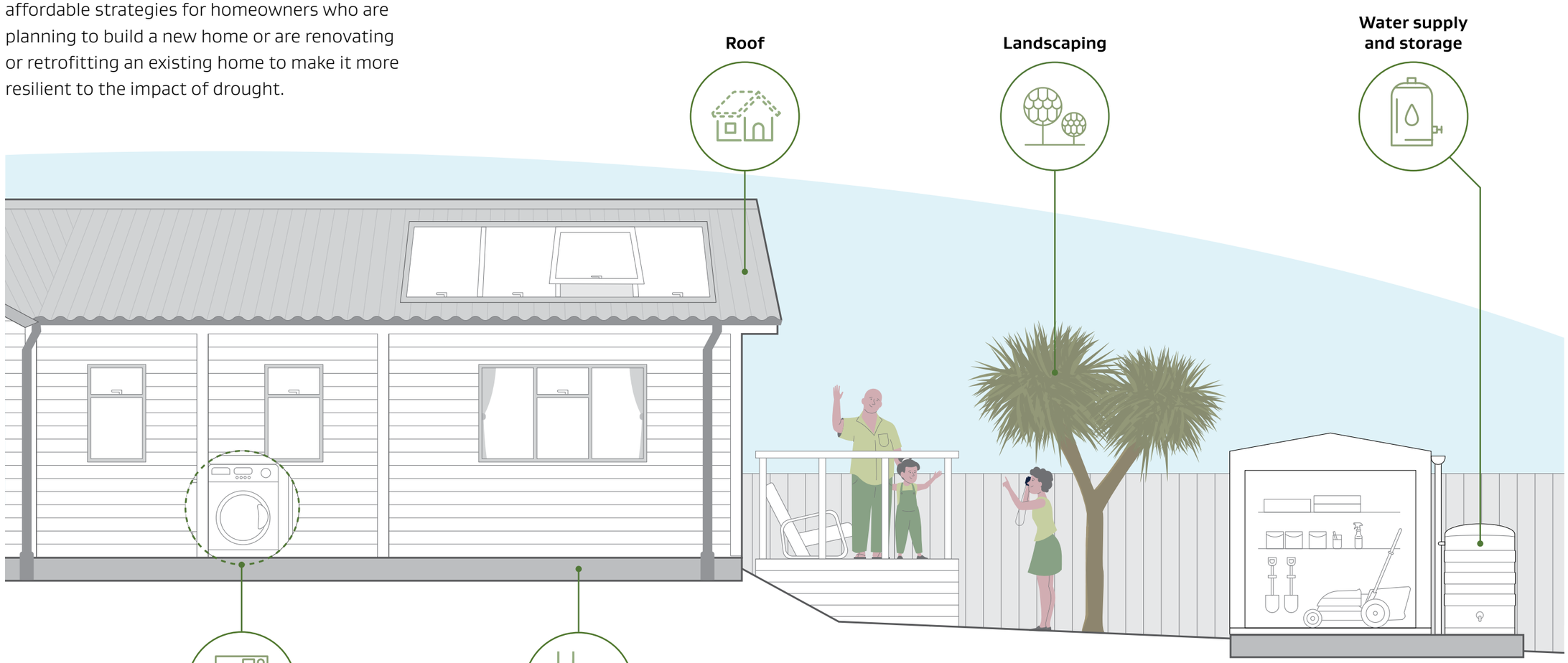
BUILDING PERFORMANCE

Drought resilient home

This illustration presents some practical and affordable strategies for homeowners who are planning to build a new home or are renovating or retrofitting an existing home to make it more resilient to the impact of drought.



Contact the local council and your insurance company

It is important to speak with the local council and your insurance company as early as possible in the design stage.

Seek independent professional advice

Before applying any of these strategies shown you should seek independent professional advice.

BUILDING PERFORMANCE

Drought resilient home

An existing home

When altering or repairing an existing home, consider including drought resilient design features. Homes are altered for a number of reasons; it may be to add an extension, alter the internal layout, or to increase the performance of the house by adding insulation or upgrading windows. Making repairs after a drought can be expensive, but by making smart decisions with water usage, and choosing materials and systems that suit dry conditions, any damage caused can be mitigated. A drought-resilient home helps reduce reliance on mains water, lowers costs and is better prepared for Aotearoa New Zealand's changing climate.

A new home

New homes need to comply with the Building Code. The Building Code sets the minimum performance requirements for buildings. Building better than the minimum that is required by the Building Code will result in a more drought resilient home.

Applies to new homes only
All other strategies apply to both new and existing homes

Roof design

- Simple roof shapes like gable or mono-pitch are best for capturing rainwater as they direct water to fewer collection points, making it easier to install gutters and connect downpipes.
- Use long-run metal roofing as its durable, low maintenance and ideal for collecting clean water.

Foundations

- Always get a soil test to identify if you're building on expansive or reactive soils which can shrink during drought and swell with rainfall.
- For clay rich soils you may need a more robust foundation system to minimise the impact of any future soil movement.
- Structural and/or geotechnical engineers can provide advice to ensure drought and climate change risks are addressed in foundation design.
- When renovating or extending your home, consider how the proposed work will interact with existing foundations and whether any drought related movement or cracking has already occurred.

Water efficient fixtures and appliances

- Use water efficient appliances and fittings like low flow taps, dual flush toilets and water efficient washing machines (check their WELS ratings – Water Efficiency Labelling Scheme).
- Group wet areas (kitchen, laundry and bathroom) in the floorplan to reduce plumbing needs and potential water loss.

Water supply and storage

- Installing a rainwater tank is one of the most effective ways to prepare for drought conditions.
- Most rainwater tanks don't require building consent, but plumbing connections to internal fixtures do. A pump may be required if water needs to be delivered uphill (eg raised garden beds).
- Tank placement should allow for easy access and have good connection to downpipes.
- Greywater systems are another useful way to irrigate gardens, although you may need a building consent if they are storing water for a period of time or require plumbing alterations.

Landscaping

- Choose plants that cope well with dry conditions (such as native plants) and group those with similar watering needs together to make watering more efficient.
- Use mulch or compost to keep moisture in the soil and reduce evaporation.
- Add organic matter like compost or manure to your soil to improve its water retention.
- Use non-combustible ground covers such as gravel or pavers close to the house to reduce water demand and fire risk.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

BUILDING PERFORMANCE

Wildfire resilient home

A wildfire resilient home is one that is built or renovated to reduce the risk of ignition, damage or destruction during a wildfire. It incorporates fire resistant materials, design prevention measures and landscape management to protect against flames, heat and embers.

This illustration presents some practical and affordable strategies for homeowners who are planning to build a new home or are renovating or retrofitting an existing one to make it more resilient to the impact of wildfires.

Chimneys
Seal chimney-to-roof junctions thoroughly and fit chimneys with spark arrestors.

Roof
Choose a simple roof shape to reduce places where embers and debris may accumulate and use fire-resistant roofing materials such as metal or concrete tiles.

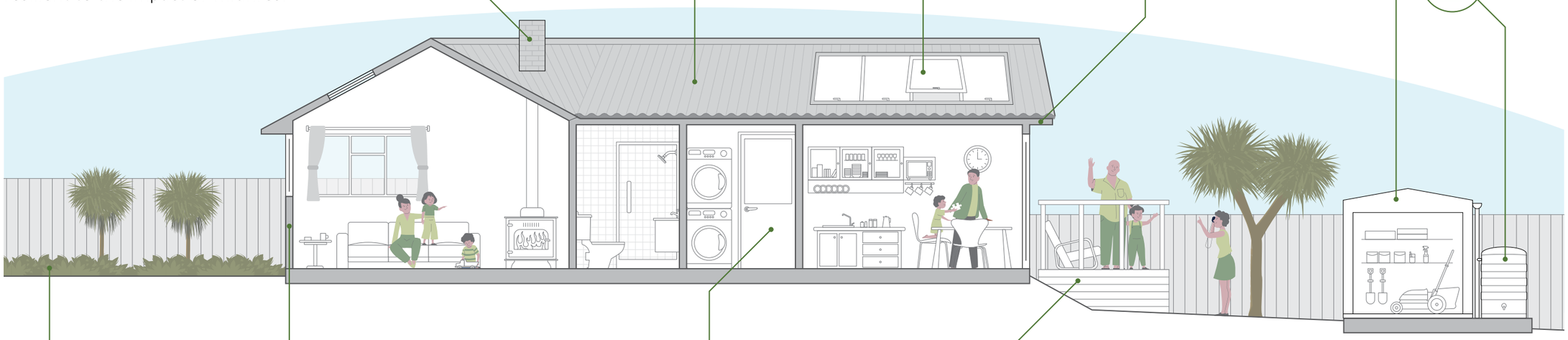
Skylights
Install skylights made from fire-resistant tempered (toughened) glass and ensure they are properly sealed.

Eaves and gutters
Seal and enclose eaves to prevent embers from entering and igniting internal roof structures or insulation.

Regularly clean gutters and fit them with metal mesh guards to prevent debris build-up.

External storage
Keep firewood, gas bottles and other combustible items stored safely away from the house.

Water storage



Landscaping
Remove or limit flammable vegetation and materials such as bark mulch close to your home to reduce fire risk.

Exterior walls
Avoid flammable materials such as untreated timber weatherboards; instead choose fire-resistant cladding like fibre cement, brick or metal.

Doors and windows
Use fire-resistant frames (such as aluminium or treated timber) and double-glazed or tempered glass to prevent breakage from radiant heat.

Decks and balconies
Construct decks from fire-resistant materials or treat timber appropriately and enclose areas underneath to stop embers from accumulating.

Contact the local council and your insurance company
It is important to speak with the local council and your insurance company as early as possible in the design stage.

Seek independent professional advice
Before applying any of these strategies shown you should seek independent professional advice.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

BUILDING PERFORMANCE

Wildfire resilient home

An existing home

When altering or repairing an existing home, consider including wildfire resilient design features. Homes are altered for a number of reasons which could be to add an extension, alter the internal layout, or to increase the performance of the house by adding insulation or upgrading windows. Repairing after a fire can be expensive, therefore, building in fire smart features now may save money later. By including resilient design features, some of these costs may be reduced.

A new home

New homes need to comply with the Building Code. The Building Code sets the minimum performance requirements for buildings. Building better than the minimum that is required by the Building Code will result in a more wildfire resilient home.

Applies to new homes only
All other strategies apply to both new and existing homes

Skylights and chimneys

- Install skylights made of toughened glass or other non-combustible materials and ensure they are tightly fitted to the roof.
- Install a spark arrestor over the top of the chimney to stop embers from escaping or entering.
- Seal the chimney-to-roof junction properly to prevent ember entry around flashing and base connections.

Roof

- Use simple roof shapes (eg gable or hip) to avoid complex valleys where embers can settle.
- Install fire resistant materials such as long run metal sheeting, concrete or clay tiles.
- Maintain a clear perimeter from overhanging trees and vegetation.

Eaves and gutters

- Use metal gutters and downpipes (eg aluminium, colourteel or copper) and fit metal guards to prevent debris build up.
- Use of fire-retardant plastics can reduce the risk of fire spread, but these may melt if temperatures get too hot.
- Construct eaves with non-combustible linings (eg fibre cement) and enclose them to prevent ember entry.
- Cover vents with fine metal mesh to let air in but keep embers out.
- Regularly clear gutters, especially during the fire season, to prevent ignition from embers.

External features

- Store firewood or other combustible items (eg LPG bottles) away from the house and ideally in a closed shed.
- Secure or relocate items that can catch embers such as outdoor furniture, mats and covers.
- If there is a nearby wildfire, inspect your property for any combustible materials and relocate them.

Landscaping

- Clear flammable materials like bark mulch, shrubs, wooden furniture, and firewood from within 2 metres of the home and deck.
- Use non-combustible ground covers (eg concrete paths, gravel, pavers) close to the house.
- Choose low-flammability, drought-tolerant plants, space them well apart and prune lower branches of trees and shrubs.
- Maintain a 10 metre defensible space with fire safe landscaping and regular upkeep (eg trimming grass and removing dead leaves).
- Ensure access for emergency services (4m wide by 4m high clearance) and keep your RAPID number (rural properties) clearly visible.
- Use irrigation where practical to keep gardens hydrated during dry periods to prevent direct flame spread.

Exterior walls and cladding

- Use non-combustible materials or fire-resistant cladding such as fibre cement, brick, concrete, stucco, metal or rendered masonry.
- Seal up any gaps, vents or cracks where embers could get in with fire resistant sealants.
- Keep building design simple, flat and continuous wall surface reduces the risk of ignition.
- If you have a suspended timber floor, consider enclosing with masonry, steel cladding or fine steel mesh.

Decks and balconies

- If decks are timber, treat them with fire retardant products or include a non-combustible buffer (eg concrete strip) between the deck and house.
- Enclose the underside of decks to prevent ember accumulation.
- Minimise gaps between deck boards to reduce ember lodging and ignition risk.

Doors and windows

- Fire resistant glazing such as toughened (tempered) safety glass or double glazing will reduce the risk of glass breaking under intense radiant heat.
- Aluminium or powder coated steel frames are more resilient than untreated timber. If timber is to be used, it should be treated or fire rated, particularly in exposed areas.
- Using fine metal mesh screens will prevent ember entry.
- External doors should ideally be made from solid timber, steel or composite doors.
- Make sure garage and side doors are sealed and made from fire-resistant materials.

Water storage

- Install water tanks for dampening down the property when conditions are very dry or there is a nearby wildfire. A pump may be needed to ensure there is enough water pressure.
- Ensure emergency services can access stored water.
- If your site has a natural water reservoir such as a stream or a well, this could become your emergency supply in case of fire.
- Plan how to handle an emergency, including being able to easily connect a hose to the emergency water supply.
- Keep this in mind when choosing a site and positioning your buildings. Selecting a rural site | Building Performance.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government