BUILDING PERFORMANCE

QUICK GUIDE

Resilient homes – wind and storms

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

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Ministry of Business, Innovation and Employment (MBIE)
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MBIE develops and delivers policy, services, advice, and regulation to support economic growth and the prosperity and wellbeing of New Zealanders.

The Resilient homes – wind and storms quick guide is produced by the Building System Performance branch. It is intended to provide information to homeowners with practical tips to create a wind and storm resilient home.

While MBIE has taken care in preparing the document it should not be relied upon as establishing compliance with all relevant clauses of the Building Act or Building Code in all cases that may arise.

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More information

Information, examples, and answers to your questions about the topics covered here can be found on our website: www.mbie.govt.nz.

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Preparing properties to be resilient to the effects of wind or storms

A wind and storm resilient property is one that is designed, built and landscaped to reduce the impacts of high winds, heavy rain and storm related hazards.

Aotearoa New Zealand's climate is changing as high winds and storms are becoming more common, and these changes are expected to continue. Rising sea levels and temperatures are fuelling more intense weather systems including tropical cyclones which grow by heating from below. Warmer air also holds more moisture and every degree of warming increases water vapour by around seven per cent, contributing to heavier rainfall and stronger storms.

These risks aren't limited to coastal or rural areas. Urban suburbs, lifestyle blocks and hilltop properties are also exposed, particularly in regions prone to strong winds or where stormwater systems are already under pressure. As more homes are built on elevated, open or previously undeveloped land, the need for better protection from storm and wind damage becomes more urgent.

That's why it's now more important than ever to future-proof your home. Building or renovating with storm and wind resilience in mind helps protect your property, reduce future repair costs and support safer and more durable housing. Early planning decisions such as designing roofing, cladding and glazing systems for higher wind pressures, managing stormwater effectively and securing outdoor features can have a big impact when extreme weather hits.

The purpose of this guide

The purpose of this guide is to provide practical and affordable strategies to those planning to buy their own home or homeowners and designers planning to build or renovate a house.

If you are planning on buying, building, adding to, maintaining or landscaping a property in an area that is prone to wind and/or storms, you may want to consider the advice included in this guide.

Damaging effects of wind or storms on homes and communities

Extreme winds and storms cause widespread property damage and pose serious safety risks. High winds create pressure on structures, while heavy rain and storms increase the risk of flooding, leaks, and extensive water damage.

Common types of damage include:

- roofing and cladding being lifted, damaged, or blown off, exposing homes to further weather damage
- broken windows and doors caused by strong winds or flying debris
- water leaks and flooding, especially if the structure or roof has been compromised
- structural damage, including weakened or collapsed walls, roofs or foundations
- trees and branches falling onto buildings, vehicles or power lines
- outdoor furniture and equipment (especially trampolines) being overturned or damaged
- power outages and safety risks due to downed power lines
- injuries or safety hazards from flying debris, falling objects or electrocution.

Immediately after severe wind or storm events, ensure personal safety first. Avoid fallen power lines, damaged structures and unstable trees. Safely document any damage with photos, contact your insurance company promptly, and seek professional assistance for repairs and clean-up.

Wind and storm resilience strategies

1. Collaborate – ensure the right professionals are involved early in the design stage

Homeowners are responsible for managing risks to their property. A good first step is to work with professionals such as architects, designers and engineers who can help you design for your site's specific conditions. Your local council's building team can provide guidance on consent requirements with many councils also offering an eco-design advisor service to support more sustainable and resilient building choices.

2. Understand the risk to make better informed decisions

Knowing the risk of how wind or storms could impact your property is an important step in deciding what approach to take when designing or making changes to your home.

For example, a home built in a coastal area

Climate risk

Climate hazard
More intense storms and sea level rise increase the chance of coastal flooding and wind damage

Exposure
Highly exposed to storm surges, salt laden winds and coastal erosion

Vulnerability
Enhanced fixings may enable the building to better resist extreme winds

Information on the risk of climate hazards can be found in several places, including:

- Aotearoa New Zealand climate projections: Climate projections insights | Ministry for the Environment
- Earth Sciences New Zealand (formally known as NIWA) climate change advice: Providing climate change advice for New Zealand | ESI
- Ministry for the Environment: Climate Change | Ministry for the Environment
- Real time weather data and forecasting: MetService, WeatherWatch
- Local and regional council websites for hazard maps, district plans and wind zone data.

3. Understand the rules

New Zealand Building Code

All building work needs to comply with the Building Code, even if a building consent is not required. This is the case for both new buildings and for some repairs and alterations to existing buildings.

MBIE has published guidance on building work that does not require a building consent and has interactive resources:

- Building work that does not require a building consent
- Do you need a building consent?

Building to the minimum requirements of the Building Code may not be sufficient protection from extreme wind and storms.

The Building Code sets the minimum performance requirements of buildings so that people who use buildings are safeguarded from injury or illness. The Building Code also aims to protect other property from damage.

It is important to note that even if building work for a new home complies with the Building Code, this does not guarantee that the home won't be affected by extreme wind or storms at some time in the future.

Building Code clauses that relate to the performance of buildings for wind and storms:

Buildings and the material and components that they are made from can be affected by wind and storms, which can impact the performance of the building related to structure and weathertightness, as set out in the following Building Code clauses:

- **Structure and stability (B1):** ensures buildings are designed to withstand wind loads and other structural forces without failure. Applies to roofs, walls, bracing systems, foundations and fixings that must resist pressure, uplift and lateral loads during storms.
- **Durability (B2):** increased likelihood of moisture being forced into the building envelope, causing deterioration of building materials.
- **Surface water (E1):** requires buildings to be designed and constructed to manage surface water from rainfall. This includes stormwater runoff control, shaping of the gradient of the land, and downpipes and drainage systems to prevent flooding or water damage to the building.
- **External moisture (E2):** ensures external building elements like cladding, roofs, windows, and doors prevent water entry during wind-driven rain and storm events. Focuses on weathertightness and proper detailing (eg flashing, joints, fixings).

4. Invest in good design

Whether you're building a new home or renovating an existing one, it's important to consider how your home and site will perform under extreme weather conditions like high winds, heavy rain, flooding and flying debris. With the right design choices, you can reduce the risk of damage and improve the safety and durability of your home.

Start by identifying your property's wind zone which determines how strong the structure needs to be and what types of bracing, foundations, flashing sizes, fixings and materials are required. Areas exposed to open land, ridgelines or coastal zones may fall into higher wind zones and require extra reinforcement under the Building Code. Your designer or builder will assess this and any local council site-specific requirements. BRANZ has published a useful resource to understand this process: Designing for wind.

Storms and high winds can turn trees and outdoor items into hazards. As part of your site planning or garden update, remove or avoid planting large trees or shrubs close to the house that could fall or damage the structure. When planting trees, it's important to take into account the location of drainage and water pipes, as tree roots – and even fallen trees – can cause damage or disruption to these systems. Choose wind tolerant plant species, including New Zealand natives such as pōhutukawa, pūriri, and karaka which are known to better withstand strong gusts and turbulent conditions. Anchor fences and sheds securely and consider windbreak planting in exposed areas to reduce wind impact.

If you live near other homes, it's helpful to talk with your neighbours about any potential risks that could affect your property such as tall trees, loose roofing, trampolines or other unsecured items. A shared understanding can help reduce damage on both sides during a severe weather event.

By planning ahead and making thoughtful choices during design or renovation, you can build a home that's better prepared to handle Aotearoa's changing climate, keeping your home secure, reducing repair costs and improving safety for your whānau.

Other resources:

Smarter Homes

BRANZ designing for wind

BRANZ managing wind effects around buildings

NZ Building Code: Clause B1 and E2

Local council guides: eg Wellington Sustainable new builds and renovations

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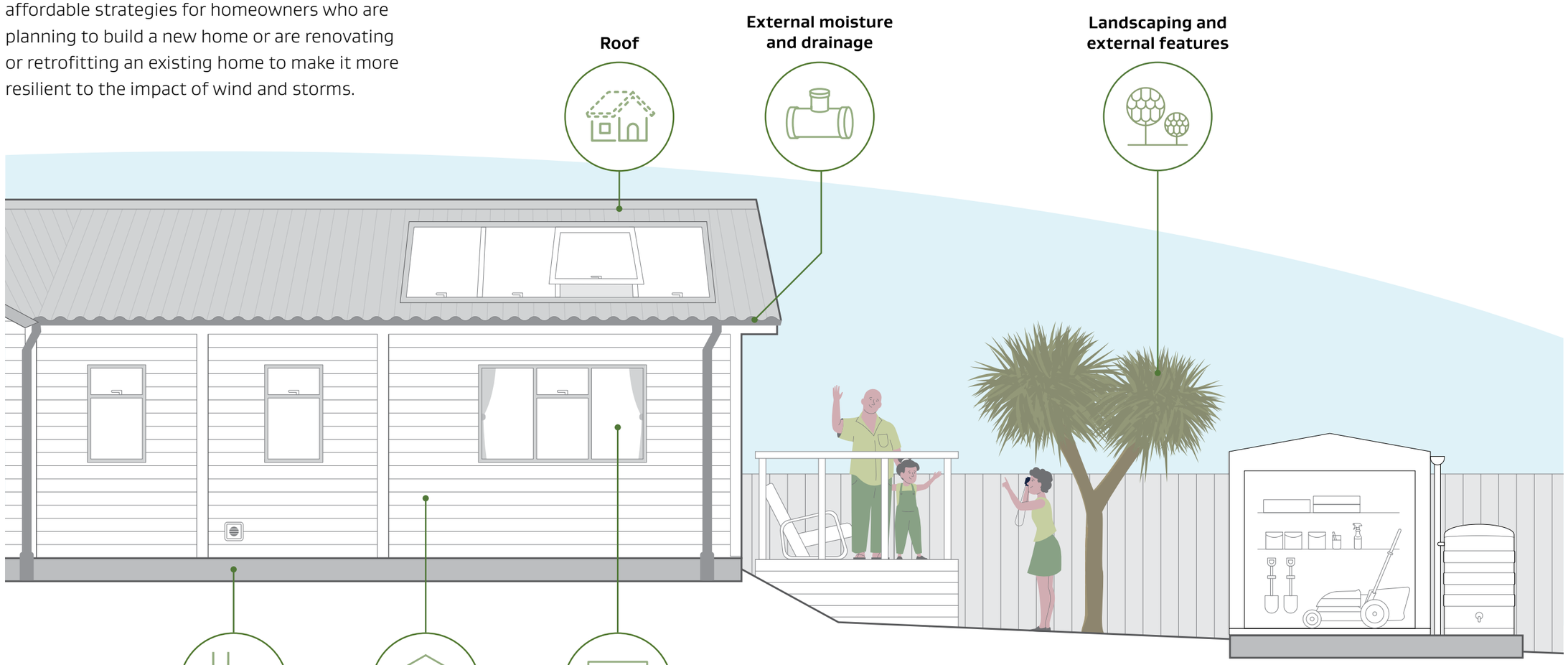
Wind and storm resilient home

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 wind and storms.



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.

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Wind and storm resilient home

An existing home

When altering or repairing an existing home it's a great opportunity to include wind and storm resilient features. Renovations might involve adding an extension or improving the home's performance by upgrading windows, doors or cladding. Storm-related repairs such as fixing damaged roofing, broken windows or water ingress can be costly. However, by choosing durable materials, reinforcing roof fixings and improving drainage you can reduce the risk of future damage and improve your home's ability to withstand severe weather. A wind and storm resilient home is better prepared for Aotearoa New Zealand's changing climate and helps protect your investment in the long term.

A new home

New homes must meet the minimum standards set out in the New Zealand Building Code including requirements for wind and weather performance. Designing beyond the minimum requirements such as upgrading structural systems, designing to a higher specification and considering local wind exposure early in the design process can result in a home that is stronger, safer and more resilient to storms and high winds.

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

Roof

- Use a simple roof shape (eg gable or hip) and design to reduce the risk of wind uplift.
- Ask your designer to specify that the roofing and trusses are secured with stronger fixings than the Building Code minimum to keep your roof firmly in place during extreme winds.
- Check that downpipes, gutters and flashings are maintained regularly to handle heavy rain and reduce the risk of leaks or flooding.
- Avoid internal gutters, parapets and any unnecessary penetrations.
- Anchor solar panels, satellite dishes and chimneys securely.
- Ask your designer to use a rigid air barrier and specify larger flashings than usual as these upgrades can help prevent water getting into your home.

Wall cladding and bracing

- Strengthen wall bracing systems to resist lateral wind loads (especially in high or extra-high wind zones).
- Keep the shape of your home simple and avoid tricky joins between roofs, walls and balconies as these areas are more likely to let in water.
- Use a single type of cladding to keep the exterior design simple and reduce the number of joins where water and wind may get in.

Windows and doors

- Install impact-resistant or toughened glass to reduce breakage during storms.
- Where possible, place doors and windows on the sides of the home that are more sheltered (eg protected by fencing or hedges and away from prevailing winds).
- Secure all large doors (eg garage doors) against wind pressure and reinforce if necessary.

External moisture and drainage

- Design the site with good drainage and slope land away from your home to avoid water pooling near foundations.
- Install backflow prevention in stormwater or sewer connections if the site is flood-prone.
- Use channel drains or permeable paving to manage surface water effectively.

Foundations and subfloor

- Secure subfloor framing and enclose underfloor areas to prevent wind-driven water or debris intrusion.
- For elevated or coastal sites, consult with an engineer to ensure piles or retaining walls are appropriately designed to resist wind and storm surge forces.
- Elevate ground floors in flood-prone areas or use flood vents to reduce water pressure on walls

Landscaping and external features

- Keep large trees and shrubs trimmed and away from the house.
- Secure fences, sheds and outdoor furniture to prevent damage from flying debris.
- Ensure planting does not create additional risk (eg top-heavy trees or those prone to snapping).
- Choose wind-tolerant plants and create buffer zones with low, dense vegetation where appropriate.

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