YOUR GUIDE TO STORM RESILIENCE





WHY IS IT IMPORTANT TO CONSIDER THE RESILIENCE OF YOUR HOME?

Research shows us that climate change is already leading to more frequent, intense and more damaging weather in Australia, including severe storms, hail, and tropical cyclones.

Homes and buildings in Australia are built to withstand severe weather up to a certain point. But recent severe weather, such as flooding and storms, reminds us that our homes in Australia are not always fully equipped to resist natural perils.

Making homes more resilient can help protect homes and people, reducing the stress, inconvenience and unexpected costs of cleaning up after a storm.







WHAT IS A STORM RESILIENT HOME?

A storm resilient home is one that is less likely to suffer damage as a result of high winds, rainfall, hail, and flying debris.

WHAT ARE KEY PRINCIPLES TO ACHIEVING STORM RESILIENCE?

Three principles guide how to achieve storm resilience for residential homes:



MAINTENANCE COMES FIRST

Externally, your home is subjected to a range of weather conditions. A good maintenance regimen provides the opportunity for your property to perform as designed for the period of its intended life cycle. Taking the time to inspect and maintain your home regularly will help reduce the chance of serious issues arising in the long term, by identifying small problems before they become significant.



PROTECTING THE BUILDING ENVELOPE IS CRITICAL

Protecting the building envelope of your property is critical to ensuring a robust and resilient home. When your house is subjected to severe storm conditions (e.g., wind or rainfall), it relies on the continuity of the external building elements to prevent water ingress, limit damage from wind borne debris and protect the underlying structure. Ideally, homes in South-East Queensland would be designed for peak, not average, conditions. That would mean adopting the design guidelines of house design in cyclonic regions (designing to Region C wind pressures, not just Region B).



A SYSTEMS RESPONSE IS REQUIRED

A system response is a recommended solution to ensure the best resiliency outcome. Recommendations might be made in relation to specific parts of your home; however, they should be considered as part of an overall building system. The overall performance of the protection mechanism is only as good as the weakest link.

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WHAT SPECIFIC ACTIONS WILL INCREASE THE STORM RESILIENCE OF MY HOME?

Ten priority actions, maintenance or modification actions have been identified to increase the resilience of homes. Our resilience experts will recommend specific actions after assessing your property for any vulnerabilities in the design and materials of your home's roof, doors, windows, exterior walls, and yard. Refer to our glossary of terms if required.



Storm Resilient Interventions	Description	Risk
1.Conducting annual property risk and maintenance assessment	Identify key property and structure risks and vulnerabilities of a site and priorities to increase storm resilience.	Proper maintenance allows you to address issues in your property early, potentially avoiding expensive repairs in the future.
2. Conduct hazardous tree assessment	An assessment undertaken by a trained and suitably qualified arborist to identify tree risks and vulnerabilities on a site.	Trees and branches can fall on roofs during high winds, causing water leaks and potential structural damage. Managing vegetation around your property avoids these risks in strong winds.
3.Increase capacity of roof drainage system	Upgrade the roof water extraction system to ensure water is removed from the roof as rapidly as possible.	In heavy rains, gutters and downpipes can overflow causing water to leak into parts of the building. Increasing capacity allows water to fall away as quickly as possible.







Storm Resilient Interventions	Description	Risk
4. Replace sheet metal roof system	Replace a poor condition sheet metal roof with new and include review and upgrade of tie-down system where applicable.	Deteriorating roofs are prone to leaking. Older roofs often have inadequate structural connections (tie-downs) to withstand strong winds, posing a risk of the roof lifting off in a storm.
5.Replace tile roof system	Replace poor condition tile roof cladding with new and include sarking to underside of tiles and mechanical fixing of all tiles, including part tiles.	Deteriorating roofs are prone to leaking. Older roofs often have inadequate structural connections (tie-downs) and mechanical tile fastenings to withstand strong winds, posing a risk of parts of the roof lifting off in a storm.
6.Add window protection	Supply and install wind and impact rated protection over windows (either lower cost film or guard).	In a storm, windows may be heavily exposed to flying debris. Broken windows can cause water damage from leaking, and window blow-outs are a common cause for roofs lifting off in extremely high winds.
7.Add debris screens on external glass doors	Supply and install wind and impact rated protection to external glass doors.	In a storm, glass doors are vulnerable to flying debris. Broken doors can cause water damage from leaking, and blow-outs are a common cause for roofs lifting off in extremely high winds.
8. Add robust door bolts to external swinging doors	Supply and install robust door bolts to external inward swinging doors.	In high winds, doors are prone to failing. Broken doors can cause water damage from leaking, and blow-outs are a common cause for roofs lifting off in extremely high winds.
9. Replace garage door	Upgrade non-rated garage doors with one that is wind rated for high wind areas and complies with AS4505:2012, including tracks and locks.	In high winds, garage doors are vulnerable to flying debris and to busting open. Broken doors can cause water damage from leaking, and blow-outs are a common cause for roofs lifting off in extremely high winds.
10.Manage site water	Site-specific storm water management assessment and advice to ensure water is safely and appropriately directed away from dwelling structures, and directed or detained on site to minimise risk of water ingress or erosion.	By managing where water falls on your property, you help reduce the risk of water damage internally or potential structural issues from erosion.







OTHER TIPS FOR STORM RESILIENCE

Your circumstances might change, so make sure you keep the following in mind as general considerations for storm resilience of your property:



Older roofs are more prone to damage during storm events. Periodic inspection by a qualified professional can identify compliance gaps, indications of uplift or movement, corrosion and rot.



Any roof mounted equipment including aerials and whirly birds can be damaged by wind forces or wind-borne debris. Any ventilation in the roof space can let in rainwater during severe weather events. Ensure inspection and repair after severe storm.



Tile roofs are prone to damage from hail, wind or debris and effects from strong winds to roof tiles can result in significant damage internally to ceilings, fixtures and fittings.

Valley gutters can allow wind-blown water ingress during storm events, leading to damage to internal ceilings, fixtures and fittings.

Asbestos sheeting is vulnerable to wind or debris damage. Consider consulting with a qualified professional to replace the asbestos wall cladding.

Door furniture, including latches, bolts and hinges are crucial to ensuring the satisfactory performance of the building envelope during severe conditions.

Unprotected windows can be damaged by severe winds or airborne debris, potentially leading to pressure increases inside the dwelling and failure of the roof structure.

Fibre cement ceilings in external locations (e.g. alfresco dining) are prone to damage from airborne debris during severe events.

External ceiling fans (e.g. outdoor dining areas) are prone to damage from high winds, and can damage the ceilings.

Water pooling or flowing underneath dwellings can soften or scour the foundation material (soil) and lead to erosion and potential undermining of the footing system.

Many retaining wall failures are a result of poor sub-soil drainage behind the wall. Water pressure can build up behind the wall due to insufficient number or size of weep holes.

If you are considering installing a garage door on the carport, install one that is wind rated for high wind areas and complies with AS4505:2012.

In the event of a storm, secure outdoor furniture, and any other loose outside item, secure windows and close doors.







THE BENEFITS OF TAKING STORM RESILIENCE ACTIONS

Having a resilient home can help reduce the costs and inconvenience associated with clean up and repair following a storm, help to keep your family safe, and can give you peace of mind.

Benefits	Overview
Protection of building envelope	When your house is subjected to severestorm conditions (e.g., wind or rainfall), it relies on the continuity of the external building elements to prevent water ingress, limit damage from wind borne debris and protect the underlying structure.
Safety	Undertaking maintenance and retrofitting works identify and minimise risks to property and people, including health and safety risks of mould, electrocution, slips, ceiling or structural collapse, loss of roof and flying debris. Window protection also protects against bushfire attack.
Save time and money	Knowledge about short and medium-term maintenance and modification priorities allow homeowners to plan their time and manage their finances better. Taking storm resilience actions can help reduce the cost and inconvenience of clean up and repairs following a storm. Some modifications, can provide energy savings as well, such as window protection and sarking.
Sustainability	Maintenance enhances the life cycle of key features of the home, reducing waste. Some interventions such as window protection and sarking can provide energy savings as well.





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GLOSSARY OF TERMS

Term	Meaning
Battens	A roof member immediately adjacent to and directly supporting roof cladding material.
Berm	An artificial ridge or embankment.
Box gutter	A gutter that is generally rectangular in shape and set into the roof with no outer overflow edge to safely release any excess water. Often used behind parapets.
Building Approvals	Building approvals control the safety of buildings and structures and are provided by building certifiers with reference to legislative requirements such as the National Construction Code.
Capping	The uppermost part on top of a piece of work, such as a roof.
Cladding	Any material used to provide a skin or outer layer to a building or structure.
Dektite seals	A branded product of flashing designed to seal penetrations through roofs.
Development Approval	A legal document that specifies the design that development or building works must follow, and that allows you to undertake development or building works. Local Government Authorities are responsible for assessing development applications and giving development approvals.
Eaves/Overhangs	The lower part of a roof that overhangs a wall.
Fasteners	Devices used to fix or join objects together.
Flashing	A strip of impervious material used to prevent the ingress of water between two surfaces.





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GLOSSARY OF TERMS

Term	Meaning
Overland flow	Water that runs across the land after rainfall, either before it enters a watercourse as floodwater, or after it rises to surface naturally from underground.
Rafter/top chord level	Upper most primary structural element supporting a roof.
Roof fall	Angle or pitch of a roof.
Sarking	Pliable, water-resistant membrane located beneath the roof covering or external wall cladding to collect and discharge water that may penetrate. Often combined with reflective foil to provide thermal insulation benefits.
Stub columns	A short vertical load-carrying element.
Tie-downs	A system of straps or anchors designed to stabilise and resist upward loads on building framing during high wind conditions
Tile ties	Mechanical devices to tie roof tiles to structure e.g., wire.
Tile clips	Proprietary clips designed to clip roof tiles to structure.
Valley gutter	An open gutter on the slope of a roof where two pitched roofs meet at an angle.
Water ingress	Water ingress is when water makes its way into a building.





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