IS YOUR HOUSE PREPARED FOR A CYCLONE?

ADVICE FOR THE HOMEOWNER

This brochure was prepared by the Cyclone Testing Station with support from thern Territory, Queensland and Western Australia governments.

Northern Territory Government

Queensland Government Department of Infrastructure and Planning

Government of Western Australia Department of Housing and Works

Cyclone Testing Station

1. AIM

This brochure has been prepared for you, the homeowner, to create awareness of the main causes of cyclone damage to houses. It highlights maintenance issues that you may need to address to ensure your house is in good condition in readiness for the cyclone season. It also provides an overview of key areas in and around your house that may require protection to reduce the risk of cyclone damage.

2. WHAT IS A CYCLONE?

Every year between November and April, coastal areas within cyclonic regions C and D are at risk of being hit by cyclones. Ch eck with your local council if your house is located within one of these cyclonic regions.

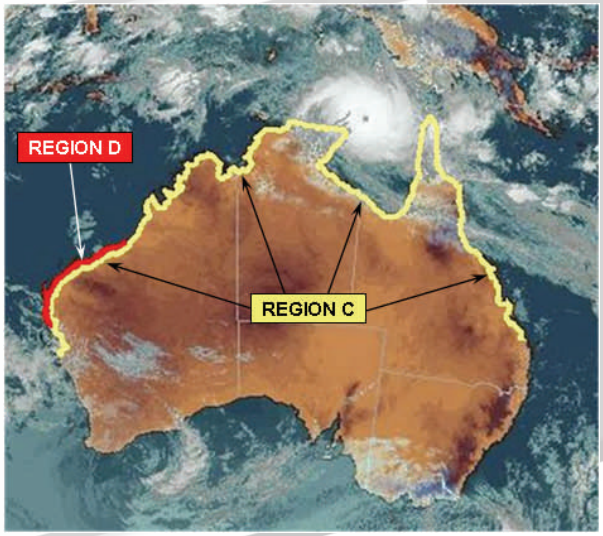


Image showing Cyclone Monica from April 2006 and highlighting coastal areas of Australia within cyclonic regions C and D. Image from Bureau of Meteorology.

A cyclone is a violent storm characterised by strong winds rotating around a calm centre. It can produce destructive winds and bring heavy rain causing flooding and, in some events, cause a storm surge (i.e. a rapid rise in sea level).

Strong winds, heavy rain and flying debris created during a cyclone can cause extensive damage to your house. However, the risk of damage can be minimised if you take a proactive approach to protecting your house.

3. DAMAGE FROM CYCLONIC WINDS

A review of past reports on cyclone damage to houses in Australia shows that the most common types of damage observed were:

- Damage due to failure of corroded fasteners, connector plates, roof battens and other components.
- Damage caused by failure of rotten timbers.
- Garage doors being blown in or out.
- Roofs being blown away in whole or in part.
- Collapse of unreinforced masonry walls.
- Damage to inadequately built housing in exposed locations such as hills and sea frontages.
- Flying debris breaking doors and windows, resulting in further damage from water leakage and strong winds.
- Doors and windows blown open due to inadequate fixing to walls or inadequate locks.
- Damage to ceilings and walls due to water leakage.
- Failure of attachments such as guttering, fascias and eaves.
- Damage due to fallen trees.

4. MAINTAINING YOUR HOUSE

One of the most important actions you can take to protect your house is to maintain it in good condition. Your house may be at risk of cyclone damage if house elements are

weakened due to factors such as corrosion, rotten timber, termite attack or loose fixings.

4.1. Corrosion

You should check for signs of corrosion around the house. This is the time to look inside the roof space for corrosion of metal roof coverings, metal battens, batten straps, fixing bolts, fixing plates, screws, nails, etc. No te that the risk of corrosion is particularly relevant in areas near the coast. Metal components showing signs of corrosion may need replacing.

Corroded batten straps contributing to roof failure

4.2. Rotten timber

Non-treated timber rots naturally due to high moisture levels. This damage can affect components of your house such as floor framing, flooring, timber wall lining and timber framing. There is a higher risk of timber rotting if it is continuously exposed to moisture, such as a leaking water pipe. Rotten timber may need replacing.

4.3. Termite attack

Cyclonic regions within Australia are often areas of high termite risk and therefore, timbers in your house may be susceptible to termite attack. Timber protection systems require on-going inspection and maintenance to ensure they provide an effective on-going barrier to termite attack. If it is found that termites have attacked timbers in your house, expert advice should be sought on whether the timber needs to be replaced and to repair the termite barrier.

Termite attack to timber

4.4. Loose fixings

The combined effect of high humidity, high rainfall, strong winds and long dry periods can cause structural components to shrink or expand. This can resu lt in loosened fixings and tie-down bolts. Loo se fixings should be re-tightened where possible or additional fixings installed if needed.

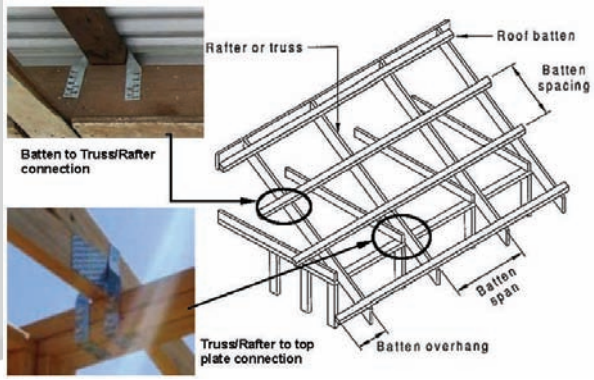
5. KEY AREAS TO BE PROTECTED

As a homeowner, you can minimise cyclone damage to your house by protecting critical areas where wind and rainwater can enter and by identifying any potential hazards around your house that may cause damage. These critical areas include the roof, gable end walls, doors and windows, garage doors, roof eaves, leaks, house attachments and other objects and equipment.

5.1. Roof

Roof damage is by far the greatest risk that your home faces during a cyclone, so protecting your roof should be given serious consideration.

Houses built before the mid 1980s in Queensland and Western Australia or before 1975 in the Northern Territory may not be built to cyclonic building standards and therefore may not have appropriate connections to resist cyclonic winds.



Typical roof connections – Part of image from AS1684

It is recommended that you have your roof inspected by a qualified building practitioner to advise you whether your metal or tile roof has appropriate connections.

Connections to be inspected include: roof sheet-to-batten connections, batten-to-truss/rafter connections, truss/rafter-to-wall connections and tile connections. On advice from a building practitioner you may need to consider upgrading these connections to meet current standards.

5.2. Gable end walls

The gable end walls of a house can take a tremendous pounding during a cyclone. If not properly braced and anchored, they can collapse and cause significant damage to the house. In general, the taller the gable end triangle, the greater the risk of damage. However, gable end walls are usually easy to strengthen through bracing, if necessary.

Failure of a gable end wall allowing strong wind and rain water into the house

5.3. Doors and windows

A common problem observed during cyclones is windows and doors being broken by the impact of flying debris. This allows strong winds into the house causing high internal pressures which may increase the risk of roof and wall failure.

Impact resistant screens, that are either permanent or temporary, are recommended for protection of windows and doors.

The frame of external doors and windows may be inadequately fixed to walls, which can cause them to be pushed in or out of your house. A similar problem can occur with door and window locks that may not be sufficiently strong to withstand the wind forces.

French doors and some sliding doors can also burst open during cyclones if they do not have a sufficient wind strength rating.

5.4. Garage doors

It is common to see garage doors fail when they are pushed in or out by strong winds.

Damage to garage doors.

Failure of garage doors allows wind to enter the house, which can cause the roof and walls to fail. To reduce the risk of this happening, it is recommended that you install garage doors that are adequately wind and debris rated. Alternatively, you can brace your existing garage door from wind forces by installing a permanent or temporary bracing system.

5.5. Roof eaves

Damage to eaves lining by strong winds is another common cause of damage to houses. This can happen due to inadequate fixing or support for the eaves lining or because the lining spans too far. Eaves lining damage allows rain and wind to blow into the roof space, which may result in damage to ceiling and wall lining inside your house.

Damage to ceiling due to water ingress

5.6. Leaks

Improving the structural integrity of your home is not enough to protect your house during a cyclone. Wind-driven water leakage can cause significant damage to walls, ceilings, carpets, etc., which can be disruptive and expensive to repair or replace. Water may enter your house through roof vents, holes, cracks, gaps or wherever a pipe or cable pierces the wall or roof. Permanent sealing of cracks, holes and gaps in your house and temporary sealing of vents will help to minimise water leakage into your home.

5.7. House attachments

House attachments such as porch roofs, carports and screen enclosures can get damaged by strong winds and can often lead to damage to the main part of your house.

Porches and overhangs, if poorly fixed to the house, may become detached and cause extensive damage to both your and other's property. The uplift forces on these roofs can be quite large so it is important to have a qualified building practitioner check these connections.

5.8. Other objects and equipment

Other outdoor objects and equipment such as air conditioning equipment, hot water tanks, swimming pool equipment, solar water panels, satellite dishes, antennas and similar objects may be blown around in a cyclone and can become flying debris that could impact your house or other houses in your neighborhood. You should ensure that all equipment is not loose and that it is properly fixed.

Flying debris resting in front of a house

6. HAVE YOUR HOUSE INSPECTED

There is no such thing as a cyclone-proof house. However, if you plan ahead to maintain and protect your house, you can reduce the likelihood of it being damaged in a cyclone.

You can engage a qualified practitioner such as a building certifier, structural engineer, architect or builder to inspect your house if you have doubts about the ability of your house to withstand a cyclone.

You should also consider having your house inspected if it has been subjected to cyclonic winds; even if it survived the cyclone.

7. CHECKLIST

Keep your house in good condition by checking and fixing any of the following:

- Corrosion
- Rotten timber
- Termite attack
- Loose fixings

Engage a qualified building practitioner to check for critical areas in and around your home such as:

- Roof
- Gable end walls
- Doors and windows
- Garage doors
- Roof eaves
- Leaks
- House attachments
- Other objects and equipment

For more information on cyclones, cyclone preparedness and ways to protect your house, please visit your local council in Queensland and Western Australia or the Building Advisory Services Branch of the Department of Planning and Infrastructure in the Northern Territory and the following websites:

CYCLONE TESTING STATION
www.eng.jcu.edu.au/cts

NORTHERN TERRITORY

NT Police, Fire and Emergency Services
www.pfes.nt.gov.au
NT Building Practitioner Board
www.nt.gov.au/bpb
NT Building Advisory Services
www.nt.gov.au/lands/building

QUEENSLAND GOVERNMENT

Emergency Management Queensland
www.emergency.qld.gov.au
Department of Infrastructure and Planning
www.dip.qld.gov.au
QBSA (for details of licensed builders & building certifiers)
www.bsa.qld.gov.au
Queensland Board Professional Engineers (for details of registered engineers)
www.bpeq.qld.gov.au
Board of Architects of Queensland
www.boaq.qld.gov.au

GOVERNMENT OF WESTERN AUSTRALIA

Government of **Western Australia**
Department of **Housing and Works**

WA Fire and Emergency Services Authority
www.fesa.wa.gov.au

BUREAU OF METEOROLOGY
www.bom.gov.au

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