Cyclone shelters: Standardising design, construction and maintenance

Discussion paper

March 2017
Table of contents

Table of contents

Purpose

What we plan to achieve from this discussion paper 3
Key stakeholders involved 3
Have your say 3
Attend a workshop session 3
More information 3

Background 4

Issues 5

Proposed actions/responses 5

1. Define a “cyclone shelter” 5
2. Introduce a new Queensland Development Code part for cyclone shelters 6
3. Ensure a cyclone shelter is fit for purpose before each cyclone season 7
4. Control what can be publicised or advertised as a cyclone shelter 10

Appendix 1—Discussion paper questions to the proposed actions/responses 11

Appendix 2—Map of Queensland current cyclone shelters 12

Abbreviations/glossary 13
Purpose

The purpose of this discussion paper is to seek feedback from key stakeholders on a proposal to standardise the design, construction and maintenance of cyclone shelters in Queensland.

What we plan to achieve from this discussion paper

- Identify the minimum requirements to design, construct and maintain a cyclone shelter.
- Integrate assessments and approvals for cyclone shelters within existing regulatory processes.
- Strengthen a local council’s ability to control the development of a cyclone shelter in its area.
- Clearly define when a building can be described as a cyclone shelter.

Key stakeholders involved

- Local councils in areas impacted by tropical cyclones
- Organisations involved, or with interests, in disaster management, land use planning and development and building design, construction and maintenance.

Have your say

Due to the severe impact of Cyclone Debbie, the consultation period has been extended until 28 July 2017.

You are invited to respond to the discussion paper by providing written feedback to the Department of Housing and Public Works by 5pm, Friday 28 July 2017.

Written submissions can be sent by:

Email: BIP@hpw.qld.gov.au ('Cyclone shelter discussion paper feedback' as email subject line)

Post: Building Industry and Policy
Cyclone Shelter Discussion Paper
Department of Housing and Public Works
GPO Box 2457
Brisbane QLD 4001

Attend a workshop session

We are planning to hold four workshop sessions in Cairns, Townsville, Mackay and Yeppoon. More information on these workshops will be circulated in the coming weeks and published on our Building Industry and Policy event’s page on the Department of Housing and Public Works’ website: www.hpw.qld.gov.au/BuildingIndustryPolicyEvents

More information

Visit the Department of Housing and Public Works’ website: www.hpw.qld.gov.au or email BIP@hpw.qld.gov.au

Follow us on social media:

- Facebook: www.facebook.com/hpwqld and www.facebook.com/buildingforgld
- Twitter: @QLDHPW
Background

A large portion of Queensland's coastline is affected by tropical cyclones. On average, approximately four cyclones affect the coast each year. Cyclones in recent years have caused widespread damage.

Queensland has the largest number of people in cyclone-affected areas of all Australian states and territories. The ability for people to withstand the impacts of a tropical cyclone will depend on many factors, including how severe the cyclone is, how resilient and prepared they and their properties are and how much time there is to evacuate (if necessary).

Successfully preparing for, responding to, and recovering from tropical cyclones starts with successful disaster management planning. In Queensland, local disaster management plans are prepared by local councils (as required under the Disaster Management Act 2003). One of the fundamental elements of a disaster management plan involves identifying and assisting people in the community most vulnerable to a major natural event. For tropical cyclones, it is typically people in low-lying areas close to the coast (in storm surge zones) and in older buildings (built before greater standards were introduced) who are more vulnerable.

A number of options exist to protect people more vulnerable to tropical cyclones. These options include advising people to seek shelter in a newer building outside of the storm surge zone, evacuating people to a location outside of the cyclone's path or, as a last resort, advising people to seek shelter in a designated cyclone shelter.

Queensland currently has 12 designated cyclone shelters to provide shelter to members of the public during a tropical cyclone. All current cyclone shelters are in central and north Queensland and are owned and maintained by government (either the State or a local council). They are located at:

- Bowen State School
- Edmonton Leisure Centre, Cairns
- Ingham State High School
- Innisfail State College
- Mackay Northern Beaches State High School
- Port Douglas State School
- Proserpine State School
- Redlynch State College, Cairns
- Townsville Heatley Secondary College
- Tully State School
- Yeppoon State High School.

Please refer to Appendix 2 to see the map of where these cyclone shelters are located.

Cyclone shelters are typically multi-use buildings. For the majority of their life, they may be used as sports halls, community facilities or for other public assembly purposes. They are only used as a cyclone shelter during severe tropical cyclonic events. Further, as cyclone shelters are a place of last resort for people who cannot shelter in their own house or another safe location, not everyone needs to shelter in a cyclone shelter. However, they are important infrastructure that can result in injuries/loss of life to a large number of people if they are not appropriately designed and maintained and the building fails. Current State-owned shelters hold up to 800 people.
**Issues**

Building and owning cyclone shelters in the future may not be limited to government. Private developers have previously sought advice from the Department of Housing and Public Works (the Department) on the standards for building a cyclone shelter in Queensland.

Any building built in Queensland must comply with relevant legislative requirements, including those prescribed in the *Sustainable Planning Act 2009*, the *Building Act 1975*, the *Building Regulation 2006*, the National Construction Code (NCC), the Queensland Development Code (QDC) and referenced Australian Standards. However, none of these contain requirements specific to cyclone shelters.

The State’s *Design Guidelines for Public Cyclone Shelters* (Design Guidelines) do not have legal force and cannot be used as part of standard processes for building approvals and building work for private sector developments. This increases the likelihood of deviation, cost-cutting and inconsistencies in design, construction and maintenance standards.

Additionally, the term “cyclone shelter” has been inconsistently used by some local councils and the media to refer to buildings that do not meet the current Design Guidelines. This can create public confusion and an unrealistic sense of security. There is a need to have a clear and consistently used definition of a cyclone shelter to help build community understanding and maintain confidence.

Through its current role in building and maintaining the State-owned shelters, the Department has been seen as the “lead agency” for cyclone shelter issues. It has been called upon to provide advice on existing buildings, proposed new shelters and their compliance with the Design Guidelines. However, completing this work duplicates, and can complicate, the existing assessment and approval process provided for in Queensland’s building regulatory framework.

**Proposed actions/responses**

Below are the four proposed actions/responses to standardise the design, construction and maintenance of cyclone shelters in Queensland.

1. **Define a “cyclone shelter”**

To ensure a clear understanding of what is and what is not a cyclone shelter, it is proposed to define a cyclone shelter as a building or part of a building that:

   a) is Class 9b during its use as a cyclone shelter and Class 5, 6, 7, 8 or 9\(^1\) during its normal use; and

   b) has been designed and constructed in accordance with a proposed mandatory QDC part for cyclone shelters (see second proposed action/response on page 7); and

   c) has a current certification of compliance from a qualified person (i.e. a building certifier or competent professional) that it has been maintained in accordance with a proposed mandatory QDC part for cyclone shelters (see second proposed action/response on page 7); and

   d) is included in a local government disaster management plan as a building that a group of people can take shelter in during a severe tropical cyclone.

---

\(^1\) See the Queensland Building and Construction Commission’s publication *Classification summary of buildings and structures* for an explanation of the building classes ([www.qbcc.qld.gov.au/sites/default/files/BCA%20Classes%20of%20Building.pdf](http://www.qbcc.qld.gov.au/sites/default/files/BCA%20Classes%20of%20Building.pdf)).
This proposed definition aims to:

- clarify that larger, commercial-type buildings are better suited to being a cyclone shelter because of their potential size to accommodate a large group of people
- allow a non-residential part of a building, e.g. a conference area within a hotel, to be a cyclone shelter
- make reference to the standards for designing, constructing and maintaining a cyclone shelter
- provide a mechanism that allows local councils to control the development of a proposed cyclone shelter, or the continuing use of a building as a cyclone shelter, through the disaster management planning undertaken by councils
- provide greater certainty for local councils that a cyclone shelter is fit for purpose to support their disaster response capability and broader disaster management functions.

Please note: Sub-clause c. of the proposed definition is explored in more detail below the third proposed action/response item in this discussion paper. Please read the definition in conjunction with that section (see pages 8-10).

1. What issues are there with this proposed definition?
2. Are there elements missing from the definition?
3. Are the proposed classes of buildings suitable?
4. Do local councils believe using their local disaster management plan to control the development of a proposed cyclone shelter is an appropriate mechanism? If not, why not?
5. If a local disaster management plan is not considered an appropriate mechanism, what alternatives should be considered and why (e.g. a concurrence agency jurisdiction for local government under the Sustainable Planning Act 2009)?
6. What changes would you make to the definition that could improve its implementation?

2. Introduce a new Queensland Development Code part for cyclone shelters


The National Construction Code does not provide specific standards to design and construct a cyclone shelter. Therefore, it is proposed to introduce a new mandatory part of the QDC specifically for cyclones shelters. A draft QDC part for cyclone shelters is available on the Draft and pending parts page of the Department of Housing and Public Works’ website: www.hpw.qld.gov.au/construction/BuildingPlumbing/Building/BuildingLawsCodes/QueenslandDevelopmentCode/Pages/QueenslandDevelopmentCodeDraftPendingParts.aspx.

7. Have all technical matters necessary for the design of a cyclone shelter been addressed in the draft QDC part?
8. What issues are there with any of the proposed technical matters, performance requirements and/or acceptable solutions in the draft QDC part?
9. Does the ‘Application’ section in the document provide an adequate trigger for this QDC part to be applied as part of a building development application?
10. What changes would you make to the draft QDC part that could improve its implementation?
11. Are there any aspects of the proposed QDC part that are considered to be outside the scope of what building codes should cover, or that are otherwise unduly restrictive on design?
3. Ensure a cyclone shelter is fit for purpose before each cyclone season

While the design and construction of a cyclone shelter are critical components of its performance during an event, its ongoing maintenance is also critical. Proper maintenance of a cyclone shelter ensures the building is fit for its intended purpose each year.

To ensure a cyclone shelter is fit for its intended purpose each year, it must be confirmed that it has been adequately maintained and that critical equipment and features are fully operational.

The State Government has existing arrangements in place to confirm to a local council that its cyclone shelters are fit for purpose each year. These arrangements are intended to continue. However, no arrangements exist for privately-owned and maintained cyclone shelters.

To identify and assess the possible solutions for ensuring a privately-owned and maintained cyclone shelter is fit for purpose before each cyclone season, a preliminary analysis of the current building, disaster management and fire safety regulatory frameworks in Queensland has been carried out.

Two options were identified and assessed (see the following table on pages 8-9). The common intent of the options is to ensure that local councils are provided with sufficient information each year, before the start of cyclone season, so they can be confident a privately-owned and maintained cyclone shelter is fit for its intended purpose. This requires that specific obligations for notification must apply. If a local council decides not to continue to include a building as a cyclone shelter in its local disaster management plan, e.g. because there is insufficient evidence of appropriate maintenance, it is intended that the building would no longer be defined as a cyclone shelter and cannot be advertised, promoted or signed as a cyclone shelter.
### 1. Self-assessment and statement of compliance by building owner:
The building owner provides written confirmation each year that the building is fit for its intended purpose as a cyclone shelter.

- The building owner would be responsible for organising and paying for the necessary services to carry out their self-assessment and support their statement of compliance.
- The statement of compliance would be in the form of a letter to the chief executive of the relevant local council stating that the building (or part of it) complies with the QDC part for cyclone shelters, any conditions of the original approval and is fit for its intended purpose as a cyclone shelter.
- The letter would be provided once a year, at least one month before cyclone season commences (i.e. 1 November).

- Keeping inspection, compliance and payment responsibilities with the building owner is consistent with the current building regulatory framework.
- Option is consistent with the current arrangements for State-maintained cyclone shelters.
- Improved efficiencies for the building owner to act on maintenance and rectification work when the building owner is responsible for the inspection/assessment.
- A number of professions are qualified/licensed and experienced in assessing buildings for compliance (e.g. building certifiers, registered professional engineers).
- An existing process in the Building Act 1975 allows compliance advice to be provided for existing building work (Form 29).
- Avoids potential legislative duplication or inconsistency where maintenance obligations may already exist under other Acts.
- Requires the building owner to know which competent professionals to engage and conduct the necessary inspections (may be mitigated by a guideline or checklist).
- Some building professionals may choose not to provide this service or may have insurance limitations to providing this service.
- May require local councils to have expertise to assess the statement of compliance provided by the building owner.
- There is no direct obligation on the owner to conduct specific maintenance (e.g. on mechanical and electrically-operated systems that may need regular maintenance).

### 2. Assessment and certification by local council:
Relevant local council conducts an

- Local council would use in-house or externally-contracted expertise to conduct the annual inspections.
- Local councils can have greater confidence that buildings are fit for their intended purpose as cyclone shelters before each cyclone.
- Some risks from non-compliance are transferred from, or shared between, the building owner to the relevant

---

2 Building owners have existing obligations to maintain fire safety installations (see Queensland Development Code MP 6.1)
| Annual inspection of cyclone shelters included in their local disaster management plan. | • Local council would certify that the building complies with the QDC part for cyclone shelters, any conditions of the original approval and is fit for its intended purpose as a cyclone shelter.  
• Inspections would be carried out before cyclone season (i.e. before 1 November each year) and would need to include adequate time for the building owner to rectify any problems before cyclone season starts. | Season. Reduces the inspection burden on building owners. | Local council (e.g. community concern, adverse media attention, financial).  
• Inspection costs are borne by local government (may be mitigated by allowing local government to charge the building owner).  
• New procedures and guidance would be needed to support implementation and dispute resolution.  
• Not consistent with the current arrangements for State-maintained cyclone shelters.  
• There is no direct obligation on the owner to conduct specific maintenance (e.g. on mechanical and electrically-operated systems that may need regular maintenance). |

---

3 Building owners have existing obligations to maintain fire safety installations (see Queensland Development Code Mandatory Part 6.1)
4. Control what can be publicised or advertised as a cyclone shelter

There is concern that currently there is nothing to stop a building being referred to as a cyclone shelter even though the building may not meet the requirements for a cyclone shelter.

To address this issue, it is proposed to make it an offence for a person to publicise or advertise a building as a cyclone shelter unless:

(a) the building:
   (i) meets the definition of a cyclone shelter; or
   (ii) was approved before the commencement of the proposed mandatory QDC part for cyclone shelters and was recognised as a cyclone shelter (i.e. certified to comply with the Design Guidelines); and

(b) the building owner has provided written confirmation to the relevant local council that the building is fit for its intended purpose as a cyclone shelter and is ready for use. The written confirmation is to be provided at least one month before the start of the next cyclone season (i.e. one month before 1 November each year).

The proposed offence would be regulated in the *Building Regulation 2006* and have a maximum penalty of 20 penalty units. Local government has existing powers under the *Building Act 1975* that would allow the proposed offence to be enforced.

Please note that the proposed sub-clause b) is subject to the result of consultation and decision on the options for ensuring cyclone shelters are fit for purpose before each cyclone season (see Proposal 3 on pages 7-10).

The proposed action/response aims to:

- reduce the likelihood of harm to members of the public and maintain a clear public message by ensuring only buildings that meet mandatory requirements can be referred to as a cyclone shelter
- allow for existing cyclone shelters recognised by the State government to continue to meet the standard they were originally built to
- require owners to ‘certify’ that their building continues to be appropriately maintained and operational as a cyclone shelter before each cyclone season
- if a building is no longer a cyclone shelter, allow time for a local council to develop alternative arrangements and amend its local disaster management plan before cyclone season starts.

15. Do you think the offence provision is necessary?
16. Will the proposed fine act as a sufficient deterrent to prevent inappropriate use of the term ‘cyclone shelter’?
17. What alternatives are there to a fine?
### Appendix 1—Discussion paper questions to the proposed actions/responses

<table>
<thead>
<tr>
<th>Proposed actions/responses</th>
<th>Questions</th>
</tr>
</thead>
</table>
| Define a “cyclone shelter”                                                                 | 1. What issues are there with this proposed definition?  
2. Are there elements missing from the definition?  
3. Are the proposed classes of buildings suitable?  
4. Do local councils believe using their local disaster management plan to control the development of a proposed cyclone shelter is an appropriate mechanism? If not, why not?  
5. If a local disaster management plan is not considered an appropriate mechanism, what alternatives should be considered and why (e.g. a concurrence agency jurisdiction for local government under the *Sustainable Planning Act 2009*)?  
6. What changes would you make to the definition that could improve its implementation? |
| Introduce a new Queensland Development Code part for cyclone shelters                     | 7. Have all technical matters necessary for the design of a cyclone shelter been addressed in the draft QDC part?  
8. What issues are there with any of the proposed technical matters, performance requirements and/or acceptable solutions in the draft QDC part?  
9. Does the ‘Application’ section in the document provide an adequate trigger for this QDC part to be applied as part of a building development application?  
10. What changes would you make to the draft QDC part that could improve its implementation?  
11. Are there any aspects of the proposed QDC part that are considered to be outside the scope of what building codes should cover, or that are otherwise unduly restrictive on design? |
| Ensure a cyclone shelter is fit for purpose before each cyclone season                   | 12. Which option do you support?  
13. Are there other options?  
14. Are there any modifications you would recommend to your supported option that could improve its implementation? |
| Control what can be publicised or advertised as a cyclone shelter                         | 15. Do you think the offence provision is necessary?  
16. Will the proposed fine act as a sufficient deterrent to prevent inappropriate use of the term ‘cyclone shelter’?  
17. What alternatives are there to a fine? |
Appendix 2—Map of Queensland current cyclone shelters

4 As at 1 October 2016
## Abbreviations/glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Department of Housing and Public Works</td>
</tr>
<tr>
<td>NCC</td>
<td>National Construction Code</td>
</tr>
<tr>
<td>QDC</td>
<td>Queensland Development Code</td>
</tr>
</tbody>
</table>