



## Quasar Management Services Pty Ltd

Incorporated in NSW ABN 21 003 954 210  
49A Parklands Road, Mt Colah NSW 2079, Australia  
p: +61 2 9482 5750 [www.electronicblueprint.com.au](http://www.electronicblueprint.com.au)  
f: +61 2 4360 2256 [rod@electronicblueprint.com.au](mailto:rod@electronicblueprint.com.au)



## Major Flooding in the Context of the BCA

### Background

As eastern Australia suffers the worst flooding in living memory, one must look to the adequacy of the various regulations governing the construction of infrastructure and buildings. This report focuses on the BCA (Building Code of Australia), which provides the model for state and territory building regulations, and its suitability as a tool for use by regulators, planning authorities and practising professionals including engineers and builders.

The discussion centres on BCA Volume 2 to design Class 1 buildings (detached houses, attached dwellings such as row houses, terrace houses, town houses, villa units and some boarding houses, guest houses, hostels and the like) for "surface water". Similar considerations are pertinent to other buildings, designed to BCA Volume 1, although the details are a little different.

This report does not deal with policies for the important large scale issues such as catchment management, catchment mapping, hydrology, levees, major runoff detention and trunk stormwater reticulation. However, it does comment on how large-scale flooding is handled within the BCA.

### Major Flooding in the Context of the BCA Volume 2

#### Performance

The performance requirement for the Surface Water is set out on BCA Volume 2 Part P2.2.1.

- (a) *Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.*
- (b) *Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.*  
*Limitation:*  
*P2.2.1(b) does not apply to a Class 10 building where in the particular case there is no necessity for compliance.*
- (c) *A drainage system for the disposal of surface water must—*
  - (i) *convey surface water to an appropriate outfall; and*
  - (ii) *avoid the entry of water into a building; and*
  - (iii) *avoid water damaging the building.*

BCA Volume 2 Part 1.1.1.2 defines:

*Surface water means all naturally occurring water, other than sub-surface water, which results from rainfall on or around the site, or water flowing onto the site, including that flowing from a drain, stream, river lake or sea.*

The definition of “surface water” correctly identifies that buildings are at risk from many sources of flooding. However the performance requirement relates the surface water to “a *storm* having an average recurrence interval of 20 years” [disposal] and “a *storm* having an average recurrence interval of 100 year” [entry of water into the building]. This reliance on storm recurrence interval caters well for local flooding due to local storm events; but fails to identify the risk to buildings posed by major flood events, which may be caused by a combination of river flooding, high tides, ground saturation, ground permeability, or failures of levees, detention systems or trunk stormwater reticulation.

#### DTS - ACM

BCA Volume 2 Part 3.1.2.0 states:

*Performance Requirement P2.2.1 is satisfied for drainage if the drainage is designed and constructed in accordance with AS/NZS 3500.3-Stormwater drainage, or AS/NZS 3500.5-Domestic installation-Section 5 Stormwater drainage.*

AS/NZS 3500.5 Section 5 includes design provisions for roofs, surface and subsoil drainage. These are based on rainfall with specified ARIs (average recurrence intervals). Although Clause 5.6.2.2 states “Factors that determine a layout [of site drainage] include the following ..... (iii) any stormwater discharges from adjacent files .....” it is the only mention of factors other than local storm influences.

#### DTS - ACP

In respect of the Acceptable Construction Practice, the details cater for events for similar local storm events; with only an explanatory note commenting on the “possibility of flooding”.

#### **Conclusions**

- Existing BCA performance requirements and DTS provisions cater reasonably for local flash flooding in local catchments.
- Further to local flash flooding in local catchments, additional consideration should be given in the BCA to major flooding.
- Design for such major flood events should be based on the appropriate recurrence interval of the flood, rather than on the recurrence interval of a storm.



Rod Johnston