

## Background

With the availability of more comprehensive and accurate climate data, and in response to the increasing impacts of severe wind events and climate change, Standards Australia have completed a project to revise the primary Australian Standards AS/NZS 1170.2 Structural Design Actions – Wind Actions and AS 4055 Wind Loads for Housing.

Whilst both AS/NZS 1170.2 and AS 4055 are referenced by the National Construction Code (NCC), AS 4055 exclusively determines wind ratings for class 1 and class 10a buildings within certain geometric limitations as prescribed by the standard.

This Technical Fact Sheet informs members about the critical changes in the Standard which will be mandatory once it is referenced by the NCC.

## Scope of AS 4055:2021

The objective of AS 4055 is to provide specifications for determining design wind speeds and wind loads for NCC building classes 1 and 10a within geometric limits as specified in the standard.

This revision of AS 4055 ensures its consistency with the revised and updated edition of AS/NZS 1170.2 based on updated climate data, scientific analysis and research with respect to wind speeds, terrain category, topography, shielding, etc.

## Summary of key changes

Some of the notable changes in AS 4055:2021 affecting the window and door industry are listed below:

- **Scope:**

The scope of the standard has been revised to include only NCC building classes 1 and 10a.

- **Geometric limitations:**

Modified provisions of geometric limitations for structures with retaining walls on site. The previous version of this standard was silent on ground level datum for a site with retaining walls. However, this revision brings more clarity to the reference of 'natural ground level' for practitioners. The maximum height of downslope or upslope of retaining wall or batter is specified as 3m.

- **Wind region map:**

Region B is extended by 100 km in South-East Queensland and northern NSW due to the increased severity of thunderstorm events as reported by the Bureau of Meteorology. Please see Figure 1 below.

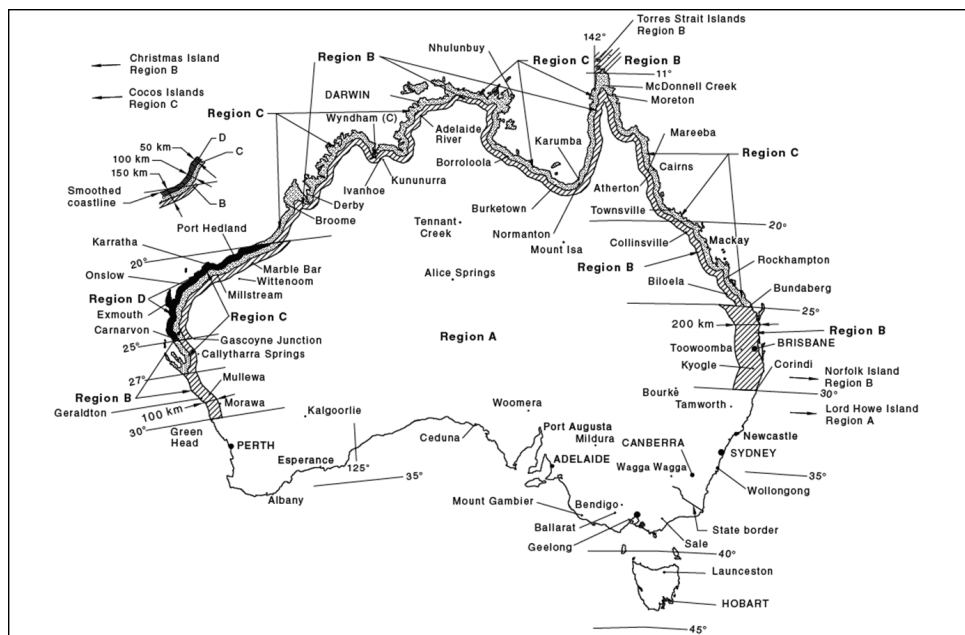
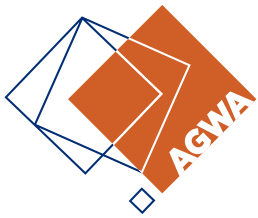


Figure 1. Map of Australia in AS 4055:2021 with revised Wind Region B.

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- **Table for site wind rating (Table 2.2):**

Although the method for determining site wind classification using this table has not changed, the table has been re-calculated to accommodate the changes in line with the modification of AS/NZS 1170.2. Some of these changes include modifications to wind region, wind speeds, terrain category, etc. Please note the method to calculate wind speeds in AS/NZS 1170.2 has changed significantly allowing interpolation within regions B2, C and D. This has been introduced to reflect an appropriate change in wind speeds from one region to another. Another change brought about by the AS/NZS 1170.2 is the reduction of design wind speed in regions C and D. Taking into consideration all the modifications in parameters within AS/NZS 1170.2, Table 2.2 of AS 4055:2021 has been re-calculated and presented conservatively in a simple format. Following are the key changes in Table 2.2:

- Site wind classification in regions C and D is specified as a function of distance from the coastline.
- In non-cyclonic regions, there is an increase in wind rating by one category in 4 out of the 130 'N' cells in the table. This is due to the change in the terrain category.
- In non-cyclonic regions, there is a decrease in wind rating by one category in 5 out of the 130 'N' cells in the table. This is due to the change in the terrain category.
- In cyclonic regions, there is an increase in site wind classification in 18 out of the 130 'C' cells in the table. This is partly due to changes in terrain category as well as other parameter changes in AS/NZS 1170.2
- In cyclonic regions, there is a decrease in site wind classification in 113 out of the 130 'C' cells in the table. This is partly due to changes in terrain category as well as other parameter changes in AS/NZS 1170.2 such as the interpolation of wind speeds within region C and D.

- **Changes to terrain categories:**

Terrain category 1.5 (TC1.5) has been removed and all terrains adjacent to water bodies are to be categorised as Terrain Category 1 (TC1). Therefore, as per AS 4055:2021, open terrain with very few or no obstructions and all water surfaces including open ocean, rivers, canals, bays and lakes fall under Terrain Category 1 (TC1). Please see the below illustrations.



Figure 2. Enclosed Bay - TC1 as per AS 4055:2021



Figure 3. Open Ocean - TC1 as per AS 4055:2021

- **Method for topographic factor:**

Unlike the provisions in the previous standard where the slope of the ground passes through the steepest cross-section of the hill (even though the site is some distance away), the new method to determine the topography focuses on the slope of the ground on a cross-section that passes through the site of the dwellings.

- **Definition of Shielding parameter:**

Clarification on full shielding when it comes to the effects of road reserves or other small open areas with a width of less than 20 m adjacent to the house site has been provided. Basically, such effects are to be ignored as per the new revision.

- **Introduction of naming convention for wind rating of wall and roof elements:**

Nomenclature of "r" and "w" has been added to the wind classifications (see Clause 2.6 of AS 4055:2021) which is used to evaluate roof and wall pressures, including elements on openings such as windows and doors. Please note no change has been made to the pressures used for each classification. For example, an N1r rating for a roof means an N1 rated roof and similarly, an N1w rating wall/windows means N1 rated windows.

**Important Note:** the internal and external pressure coefficients for each Site Wind Classifications have not been changed.

**For example:** N1 under this standard is the same as N1 previously. The primary difference in this revision, is that some sites rated to N1 previously, may be rated as N2 under this standard.

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