



DESIGN FOR WIND SPEED

AUSTRALIAN MADE FOR AN AUSTRALIAN LIFESTYLE

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DETERMINING CORRECT WIND SPEED



Whether you are building a stand-alone Carport or adding a Patio extension to your home, determining the correct wind rating is essential when considering the construction design and the materials that will be used.

There are 4 different factors that influence the wind classification, they are:-

- Region
- Terrain Category
- Shielding Determination
- Topographic Effect

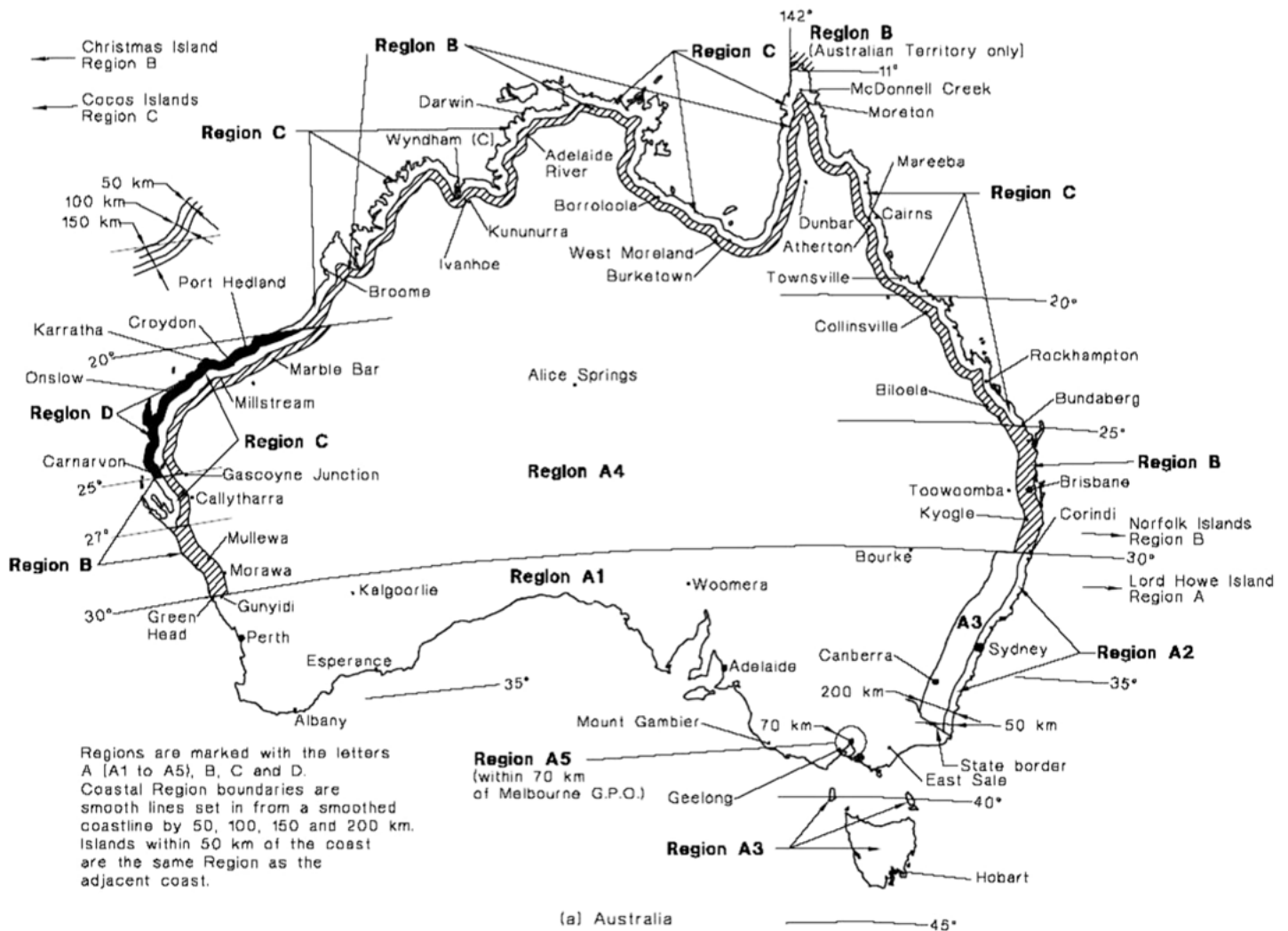
Please remember that this is a guide only, check with your local authority to determine your exact rating.

For a detailed analysis refer to the Australian Standard AS/NZS 1170:2:2021, the approach described here follows the AS 4055:2021 - Residential wind code method.

This approach is only suitable for structures up to 2 storeys high and no wider than 16m and 8.5m high. Outside these limitations, we recommend that you engage a structural engineer to provide advice on the approach suitable to your situation.

STEP 1 - REGION

Select the region from the map.



STEP 2 - TERRAIN CATEGORY

Terrain Category

1:

Exposed terrain for a 10km radius, no trees, other buildings or hills. No limited sized water ways such as, rivers, canals, lakes and enclosed bays.



Terrain Category

1.5:

Located adjacent to shoaling waves from open water ways such as, rivers, canals, lakes and large unenclosed bays on seas and oceans, extending greater than 10km in any wind direction.



Terrain Category

2:

Open terrain with few trees, surrounding buildings such as surrounding buildings such as farmland and cleared subdivisions with trees and uncut grass.



Terrain Category

2.5:

Open terrain, typical of a newly developed outer suburb housing estate, with few established trees or surrounding buildings.



Terrain Category

3:

A suburban backyard environment with numerous closely spaced houses. The minimum density of houses and trees (except in region C & D) shall be the equivalent to 10 house size obstructions per hectare. Where substantial well-established trees shall be considered as obstructions (except in region C & D).



STEP 3 - SHIELDING DETERMINATION

The shielding effect of established trees and established building structures will have an effect on the upward wind pressures. With the exception of regions C & D where trees are not considered a shielding element.

The 3 shielding classifications are:-

Full Shielding

FS

At least 2 rows of housing or similar size permanent structures surround the intended construction site. In Regions A & B, heavily timbered areas provide full shielding as long as they are within 100 metres.

Full shielding is only possible for houses within Topographical Classes T0, T1 and T2. The Full Shielding classification is only applicable to suburban developments with 10 or more houses and or similar sized structures, per hectare. The effects of roads or other open spaces within a distance of 100 metres in any direction are exempt.

FULL SHIELDING



Partial Shielding

PS

Partial shielding is only possible for houses within Topographical Classes T0, T1, T2 and T3.

To qualify there is a requirement to have at least 2.5 houses per hectare or equivalent structures situated upwind of the intended building location. This is typical of an acreage estate or housing based at the 2nd row from open water, abutting parklands or airfields.

PARTIAL SHIELDING



No Shielding

NS

This would be houses located on the edge of housing estates, the side of open water, airports, sporting fields and large open parklands.

NO SHIELDING

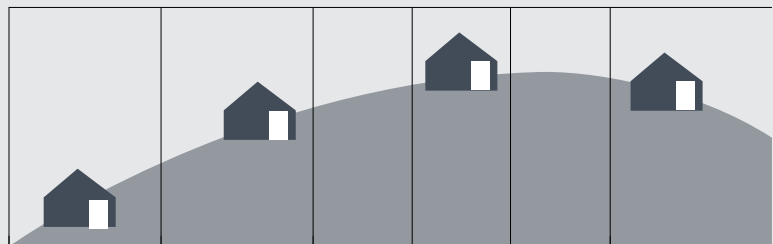


STEP 4 - TOPOGRAPHIC EFFECT

This step measures the effect of wind on a proposed structure based on its site location on a slope, ridge, mountain or escarpment, then the actual height/slope of that particular location. Topographic classifications are divided into zones T0, T1, T2, T3, T4 and T5. Use the following table to determine the applicable topographic classification of a proposed structure. If the slope, ridge, mountain or escarpment exceeds 30 metres please refer to AS 4055:2021.

TOPOGRAPHIC CLASSIFICATION EFFECT

SITE LOCATION ON SLOPE / MOUNTAIN / RIDGE / ESCARPMENT



MAXIMUM SLOPE OF MOUNTAIN / RIDGE / ESCARPMENT	LOWER THIRD		MID THIRD			TOP THIRD		OVER TOP
Less than 1:20 (2.9°)	T0	T0	T0	T0	T0	T0	T0	T0
Greater than & equal to 1:20 to Less than 1:10 (≥ 2.9° to < 5.7°)	T0	T0	T1	T1	T1	T1	T1	T0
Greater than & equal to 1:10 to Less than 1:7.5 (≥ 5.7° to < 7.6°)	T0	T1	T1	T2	T2	T2	T2	T0
Greater than & equal to 1:7.5 to Less than 1:5 (≥ 7.6° to < 11.3°)	T0	T1	T2	T2	T3	T3	T3	T1
Greater than & equal to 1:5 to Less than 1:3 (≥ 11.3° to < 18.4°)	T0	T2	T2	T3	T4	T4	T4	T2
Greater than & equal to 1:3 (18.4°)	T0	T2	T3	T4	T5	T5	T5	T3

STEP 5 - TOPOGRAPHIC CLASSIFICATION

By applying the results of the above 4 different factors that influence the wind classification, Region, Terrain Category, Shielding Determination & Topographic Effect to the WIND CLASSIFICATION CHART below a determination on the topographical classification can be made and then applied to the Delta Panels Engineering Charts.

WIND CLASSIFICATION FROM WIND REGION AND SITE CONDITIONS

TOPOGRAPHIC CLASSIFICATION

Region	Terrain Category	T0			T1			T2			T3		T4	T5
		FS	PS	NS	FS	PS	NS	FS	PS	NS	PS	NS	NS	NS
A	3	N1	N1	N1	N1	N2	N2	N2	N2	N2	N3	N3	N3	N4
	2.5	N1	N1	N2	N1	N2	N2	N2	N3	N3	N3	N3	N4	N4
	2	N1	N2	N2	N2	N2	N3	N2	N3	N3	N3	N3	N4	N4
	1.5	N2	N2	N2	N2	N3	N3	N3	N3	N3	N3	N4	N4	N5
	1	N2	N3	N3	N2	N3	N3	N3	N3	N4	N4	N4	N4	N5
B	3	N2	N2	N3	N2	N3	N3	N3	N3	N4	N4	N4	N4	N5
	2.5	N2	N3	N3	N3	N3	N3	N3	N4	N4	N4	N4	N5	N5
	2	N2	N3	N3	N3	N3	N4	N3	N4	N4	N4	N5	N5	N6
	1.5	N3	N3	N4	N3	N4	N4	N4	N4	N4	N5	N5	N5	N6
	1	N3	N4	N4	N4	N4	N4	N4	N5	N5	N5	N5	N6	N6
C	3	C1	C1	C2	C1	C2	C2	C2	C2	C3	C3	C3	C3	C4
	2.5	C1	C2	C2	C2	C2	C2	C2	C3	C3	C3	C3	C4	N/A
	2	C1	C2	C2	C2	C2	C3	C2	C3	C3	C3	C4	C4	N/A
	1.5	C2	C2	C3	C2	C3	C3	C3	C3	C4	C4	C4	N/A	N/A
	1	C2	C3	C3	C3	C3	C3	C3	C4	C4	C4	N/A	N/A	N/A
D	3	C2	C3	C3	C2	C3	C3	C3	C3	C4	C4	C4	N/A	N/A
	2.5	C2	C3	C3	C3	C3	C4	C3	C4	C4	C4	N/A	N/A	N/A
	2	C3	C3	C4	C3	C4	C4	C4	C4	N/A	N/A	N/A	N/A	N/A
	1.5	C3	C4	C4	C4	C4	N/A	C4	N/A	N/A	N/A	N/A	N/A	N/A
	1	C3	C4	C4	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Version Date: 2023-10-16

FINAL STEP - WIND CLASSIFICATION CHART

WIND CLASSIFICATION CONVERSION TABLE

WIND CLASSIFICATION		SERVICEABILITY LIMIT STATE GUST WIND SPEED metres per second	ULTIMATE LIMIT STATE GUST WIND SPEED metres per second
Regions A and B	Regions C and D		
N1 (Non-Cyclonic)	N/A	W26	W34
N2 (Non-Cyclonic)	N/A	W26	W40
N3 (Non-Cyclonic)	C1 (Cyclonic)	W32	W50
N4 (Non-Cyclonic)	C2 (Cyclonic)	W39	W61
N5 (Non-Cyclonic)	C3 (Cyclonic)	W47	W74
N6 (Non-Cyclonic)	C4 (Cyclonic)	W55	W86



Please note: This is to be used as a guide only. Check with your local authority for your exacting rating. For a complete analysis of estimating please refer to Australian Standard AS/NZS 1170.2:2021 and AS 4055:2021

Delta Panels will not accept any liability for any loss or damage suffered as a result of any errors in the misinterpretation of any information provided in this guide. It is recommended to seek the services of an independent registered Engineer to confirm any calculations.



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