

METAL INSULATED PANELS

DETERMINE YOUR WIND REGION

IN ACCORDANCE WITH NZS 3604:2011

IDENTIFY YOUR WINDZONE

HOW TO IDENTIFY YOUR WIND ZONE REGION?

The easiest way to determine your wind zone is by looking on the Branz site as they have a wind zone identification map, you can find this here:
www.branz.co.nz/branz-maps-zones/
(please read terms and condition of use and disclaimer on Branz website)

Or:

Alternatively you can enquire at your local council, or look on your house plans -If you have consented documentation for your home the wind zone is most likely on the plans.

Or:

Alternatively NZS 3604:2011 can be used to determine your wind zone region, however it can be complicated to understand so if you find it difficult you might need to seek assistance.

**THIS GUIDANCE DOCUMENT
SIMPLIFIES THE INFORMATION
WITHIN NZS 3604:2011**

Contact your Metalcraft Insulated Panel branch who can assist on how best to proceed.

WIND ZONES EXPLAINED

NZS 3604:2011 is a New Zealand standard and it contains the basic wind speed regions for New Zealand and also the modifying factors that govern the design wind load.

The predominant wind speed for New Zealand is 45 m/s. The exceptions are either side of Cook Strait and areas in the lee of mountainous areas.

Terrain also has a big effect.

Structures near the crest of a rise or on flat land near a steep face will have increased design wind pressure.

Wind Design Load is affected by design factors such as height, shape, proportions and orientation.

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Follow the steps below to determine your wind region.

FIGURE 5.1 (NZ3604:2011)

STEPS	ACTION	REFERENCE	VALUES AVAILABLE
1	Determine wind region	Figure 5.1	A,W
2	Determine if in a lee zone	Figure 5.1	See table 5.4
3	Determine ground roughness	Figure 5.2	Urban Terrain Open Terrain
4	Determine site exposure	5.2.4	Sheltered /Exposed
5	Determine topographic class	From tables 5.2, 5.3 and figure 5.2	Gentle to steep
6	Determine wind region	Table 5.4	L,M,H,VH,EH

5.2.3 (NZ3604:2011) SELECT YOUR GROUND

Ground roughness of the site shall be determined by considering the number, type and height of obstructions over which the wind passes as it approaches the site, using the definitions below. The ground roughness should be considered in all directions, with the most severe condition used to establish the site/ground roughness.

URBAN TERRAIN:

More than 10 obstructions, houses or trees (3m high) per hectare.



OPEN TERRAIN:

Grazed pastures, cropping, or areas adjacent to beaches and the sea, or airfields and other areas with only isolated trees or shelter.

Sites within a 500m wide fringe of the boundary between urban and open terrain shall be considered open terrain.



5.2.4 (NZS 3604:2011) SELECT YOUR SITE EXPOSURE

Site exposure for a building shall be determined by assessing the shielding effects of obstructions to wind flow around the site using the following definitions and assuming that the wind can come from any direction.

SHELTERED:

At least 2 rows of similarly sized, permanent obstructions at the same ground level all around.

EXPOSED:

Steep sites or sites adjacent to playing fields or other open spaces, beach fronts, large rivers, motorways, or adjacent to wind channels greater than 100m in width.

Steep sites = gradient greater than 0.2 i.e. slope max 1:5.

5.2.5 TOPOGRAPHIC CLASS

The steps in table 5.2 and categories in table 5.3 and 5.4 shall be used to determine the topographic class if the site. The "smoothed gradient" (see figure 5.2) shall be measured over an upwind horizontal distance from the crest of the lesser of 3 times the height of the hill (H) or 500m. The "smoothed gradient" is the ratio of the change of the elevation divided by the relevant distance (h/L). See figure 5.2

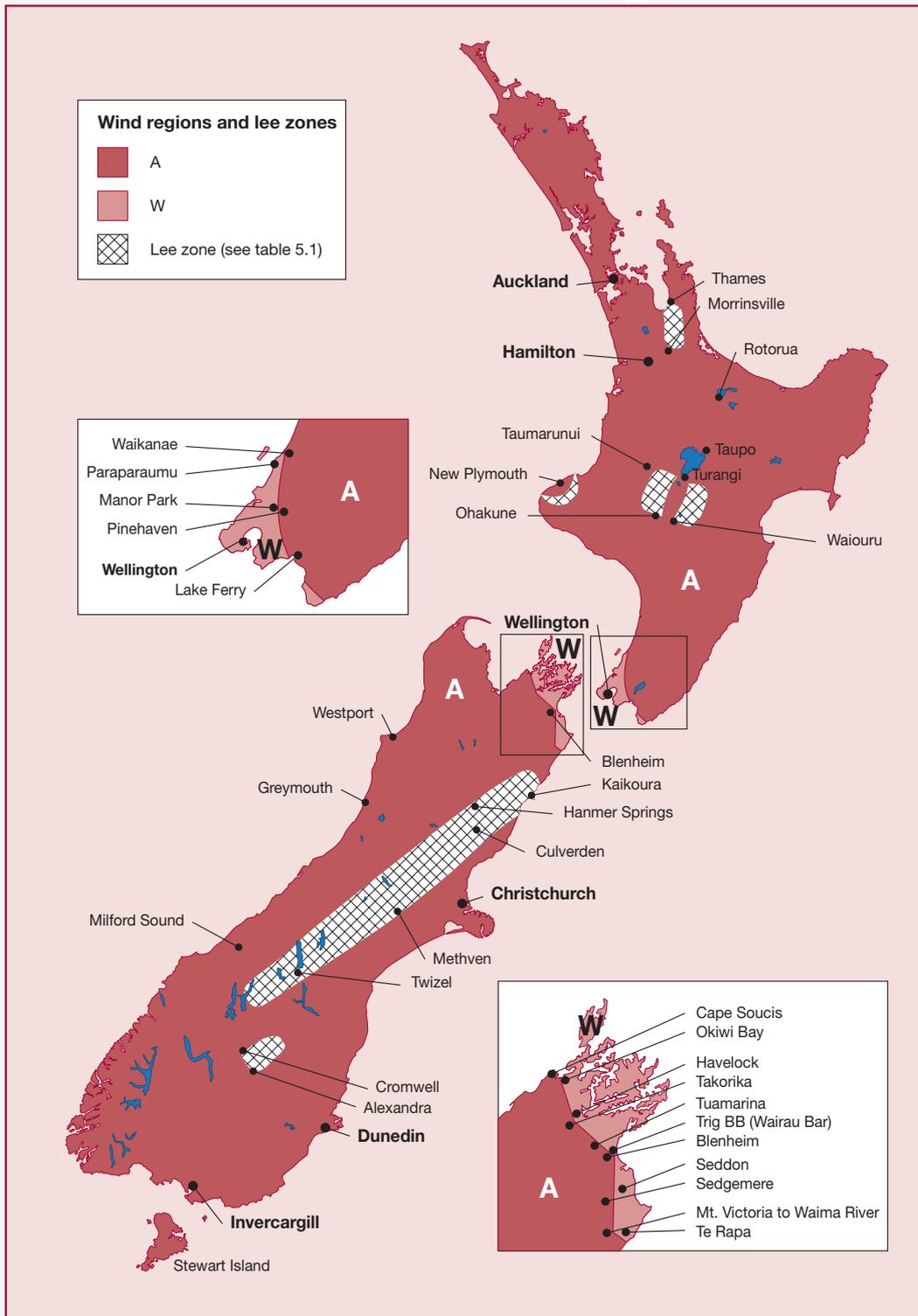
An escarpment is defined as a region, beyond a crest, having a rise or fall less than 1:20. See figure 5.3.

DETERMINE YOUR WIND REGION

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FIGURE 5.1 (NZS 3604:2011) WIND ZONES AND LEE ZONES

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DETERMINE YOUR TOPOGRAPHIC CLASS

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TABLE 5.2 PROCEDURE TO DETERMINE TOPOGRAPHIC CLASS T1-T4

STEPS	ACTION	REFERENCE	VALUES AVAILABLE
1	Determine hill height and formation	Figure 5.2	Hill, Escarpment
2	Determine smoothed gradient value and class	Figure 5.2	Low to Steep
3	Determine topography	Figure 5.2	Crest / outer
4	Determine site exposure	5.2.4	Sheltered /Exposed
5	Determine topographic class	5.2.5, table 5.3	-
IN THIS TABLE	GENTLE = GRADIENT <0.05 I.E. SLOPE MAX. 1:20 LOW = GRADIENT 0.05 <0.1 I.E SLOPE MAX. 1:10 MILD = GRADIENT 0.1 < 0.15 I.E. SLOPE MAX. 1:6:7 MODERATE = GRADIENT 0.15<0.2 I.E. SLOPE MAX. 1:5 STEEP = GRADIENT >0.2 I.E. SLOPE MAX. 1:5		

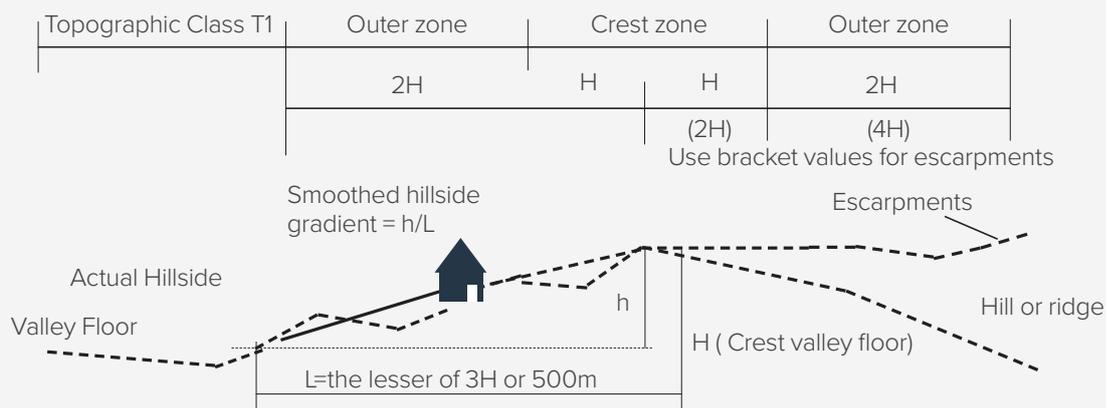
TABLE 5.3 - (NZ3604:2011)

TOPOGRAPHY	GENTLE	LOW	MILD	MODERATE	STEEP
CREST	T1	T2	T3	T4	T5
OUTER	T1	T1	T2	T2	T3

All sites outside the crest zones are topographic class T1 except that:

1. Sites within valleys which are known to have accelerated wind flows within them because of their shape and exposed mouths shall be classified T4.
2. Sites in areas with undulations of less than 10m in height, and gradients less than 1:20 shall be classified as T1.

FIGURE 5.2 TOPOGRAPHY (INCLUDING ESCARPMENTS)



DETERMINATION OF WINDZONE

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TABLE 5.4 - (NZS 3604:2011)

REGION	GROUND ROUGHNESS	TOPOGRAPHIC CLASS AND SITE EXPOSURE							
		T1		T2		T3		T4	
		Sheltered	Exposed	Sheltered	Exposed	Sheltered	Exposed	Sheltered	Exposed
A	Urban	Low	Medium	Medium	High	High	High	High	Very High
	Open	Medium	High	High	Very High	High	Very High	Very High	Extra High
W	Urban	Medium	High	High	Very High	High	Very High	Extra High	Extra High
	Open	High	Very High	Very High	Extra High	Very High	Extra High	SED	SED

NOTE:

Wind Speeds below are the maximum ultimate limit state wind speed for each wind zone.

Low = 32m/s

Medium 37m/s

High=44m/s

Very High 50m/s

Extra High=55m/s

SED = Specific engineering design

Winds in Lee zones shall be increased as follows

Low become High

Medium becomes Very High

High and above become SED



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WHO WE ARE

Metalcraft Insulated Panels specialises in the manufacture and supply of insulated panels. All our products are backed by solid warranties and the range of insulated panels, supplied by us can be used in a variety of applications from industrial and commercial coolstore to Agricultural and Architectural buildings.

For more information on Metalcraft Insulated Panels visit:
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