SELECTION PROCESS - 5 STEP GUIDE

To determine the wind classification for your domestic building site you must consider 4 factors: the Region, the Terrain Category, a Shielding Factor and the Topography.

This information is to be used as an approximate guide for residential structures only. This information is based on the Australian Standard AS4055-2012, wind load for housing. For a detailed analysis refer to the Australian Standard AS/NZS1170.2:2011.

This approach is only suitable for houses up to 2 storeys high and no wider than 16m and 8.5m high.

Step 1. Wind Region

Choose your wind region based on the dwelling location.
Step 2. Terrain Category

Determine your terrain category. The terrain category describes the surface roughness of the surrounding area 500m from the housing site.

**CATEGORY 1 – TC1**
Very exposed open terrain with few or no obstructions and enclosed limited sized water surfaces, e.g. flat, treeless, poorly grassed plains, or river, canals, lakes and enclosed bays, extending less than 10 km in the wind direction.

**CATEGORY 1.5 – TC1.5**
Open water surfaces subjected to shoaling waves, e.g. near-shore water, large unenclosed bays on seas and oceans, lakes and enclosed bays extending greater than 10km in the wind direction.

**CATEGORY 2 – TC2**
Open terrain including grassland with well-scattered obstructions having heights generally from 1.5m to 5m with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.

**CATEGORY 2.5 – TC2.5**
Terrain with a few trees or isolated obstructions. This category is intermediate between TC2 and TC3 and represents the terrain in developing outer urban areas with scattered houses, or large acreage development with fewer than 10 buildings per hectare.

**CATEGORY 3 – TC3**
Terrain with numerous closely spaced obstructions having heights generally from 3m to 10m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. “suburban housing, light industrial estates”.

#### Diagrams
- **Terrain Category 1**
- **Terrain Category 1.5**
- **Terrain Category 2**
- **Terrain Category 2.5**
- **Terrain Category 3**
**Step 3. Shielding Factor**

Determine your terrain category. The terrain category describes the surface roughness of the surrounding area 500m from the housing site.

**FULL SHIELDING – FS**

Full shielding where at least two rows of houses or similar size permanent obstructions surround the house being considered. In Regions A & B, heavily wooded areas within 100m of site provide full shielding. The effects of roads or other open areas with less than 100m measured in any direction shall be ignored. Full shielding is for typical suburban development greater than 10 houses per hectare. The first two rows of houses abutting permanent open areas with a least dimension greater than 100m, such as parklands, large expanses of water and airfields, shall be considered to have either partial shielding or no shielding.

**PARTIAL SHIELDING – PS**

Partially shielded where there are at least 2.5 houses, trees or sheds per hectare such as acreage type suburban development or wooden parkland. The second row of houses are classified as partially shielded.

**NO SHIELDING – NS**

No shielding where there are no permanent obstructions or where there are less than 2.5 obstructions per hectare, such as the row of houses or single houses.
Step 4. Topography Effect

The topographic classification is determined by the effect the wind has on the dwelling due to its position on the hill, designated to be T5.

The bottom of the hill is considered very flat or if the slope is less than a 1 in 20 rise a minimal slope would be classed as T0.

The maximum slope is measured at the steepest part of the hill regardless of where the dwelling is positioned. A cliff is a slope of greater than 1 in 3 and has the maximum of T5 at the top. Over the top of the hill the wind pressures drop down.

<table>
<thead>
<tr>
<th>Location On Hill (Zone)</th>
<th>Maximum Slopes</th>
<th>Lower Third</th>
<th>Mid Third</th>
<th>Top Third</th>
<th>Over Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>H&lt;10m</td>
<td>10m&lt;H&lt;30m</td>
<td>H &gt;30m</td>
<td></td>
</tr>
<tr>
<td>≤ 1:20 Very Flat</td>
<td>T0</td>
<td>T0</td>
<td>T0</td>
<td>T0</td>
<td>T0</td>
</tr>
<tr>
<td>≥ 1:20 to ≤ 1:10 Flat</td>
<td>T0</td>
<td>T0</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
</tr>
<tr>
<td>≥ 1:10 to ≤ 1:7.5 Small Hill</td>
<td>T0</td>
<td>T1</td>
<td>T1</td>
<td>T2</td>
<td>T2</td>
</tr>
<tr>
<td>≥ 1:7.5 to ≤ 1:5 Medium Hill</td>
<td>T0</td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td>T3</td>
</tr>
<tr>
<td>≥ 1:5 to ≤ 1:3 Big Hill</td>
<td>T0</td>
<td>T2</td>
<td>T3</td>
<td>T4</td>
<td>T4</td>
</tr>
<tr>
<td>≥ 1:3 Cliff</td>
<td>T0</td>
<td>T2</td>
<td>T3</td>
<td>T5</td>
<td>T5</td>
</tr>
</tbody>
</table>

H = height of the hill, ridge or escarpment (m)
Step 5. Wind Classification

WIND CLASSIFICATION SYSTEM FROM AS4055-2012
WIND LOAD FOR HOUSING

AS4055-2012 sets out 10 wind classes N1–N6 & C1–C4. The classification is a combination of wind region, terrain category, shielding and topography. By determining the appropriate wind class, the user can use AS4055 and other design aids to design dwelling or parts of dwelling for wind load accordingly.

<table>
<thead>
<tr>
<th>Wind region</th>
<th>Terrain Category</th>
<th>Topographic class</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>N1</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>N1</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>N2</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>N2</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
<td>F5</td>
<td>P5</td>
<td>N5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>N2</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>N2</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
<td>N3</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>C2</td>
<td>C2</td>
<td>C2</td>
<td>C2</td>
<td>C2</td>
<td>C2</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>C2</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>C2</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
<td>C3</td>
</tr>
</tbody>
</table>

Legend:
FS = Full shielding
PS = Partial shielding
NS = No shielding
N = Non-cyclonic
C = Cyclonic
N/A = Not Available, refer to AS1170.2: 2011.

<table>
<thead>
<tr>
<th>Wind Class</th>
<th>Common Notation</th>
<th>Serviceability</th>
<th>Ultimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td>W28</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>N2</td>
<td>W33</td>
<td>26</td>
<td>40</td>
</tr>
<tr>
<td>N3</td>
<td>W41</td>
<td>32</td>
<td>50</td>
</tr>
<tr>
<td>N4</td>
<td>W50</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>N5</td>
<td>W60</td>
<td>47</td>
<td>74</td>
</tr>
<tr>
<td>N6</td>
<td>W70</td>
<td>55</td>
<td>86</td>
</tr>
<tr>
<td>C1</td>
<td>W41C</td>
<td>32</td>
<td>50</td>
</tr>
<tr>
<td>C2</td>
<td>W50C</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>C3</td>
<td>W60C</td>
<td>47</td>
<td>74</td>
</tr>
<tr>
<td>C4</td>
<td>W70C</td>
<td>55</td>
<td>86</td>
</tr>
</tbody>
</table>

Note: N1–N6 are non-cyclonic wind classes, C1–C4 are cyclonic wind classes.
1) Choose your Wind Region based on your dwelling location. (Section 1)
2) Determine the appropriate Terrain Category. (Section 2)
3) Select the type of shielding your site has. (Section 3)
4) Establish the Topography of your area. (Section 4)

**EXAMPLES OF THE WIND CLASSIFICATION FOR CITIES AROUND AUSTRALIA**

<table>
<thead>
<tr>
<th>Place</th>
<th>Region</th>
<th>Terrain Category</th>
<th>Shielding</th>
<th>Topography</th>
<th>Wind Class</th>
<th>Common Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 House in the Suburbs - flat</td>
<td>A</td>
<td>TC3</td>
<td>FS</td>
<td>T1</td>
<td>N1</td>
<td>W28</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>N2</td>
<td>W33</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td>C1</td>
<td>W41C</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>C2</td>
<td>W50C</td>
</tr>
<tr>
<td>2 Sydney in the suburbs - flat</td>
<td>A</td>
<td>TC3</td>
<td>FS</td>
<td>T1</td>
<td>N1</td>
<td>W28</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>TC2.5</td>
<td>NS</td>
<td>T1</td>
<td>N2</td>
<td>W33</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>TC1.5</td>
<td>NS</td>
<td>T5</td>
<td>N5</td>
<td>W60</td>
</tr>
<tr>
<td>3 Melbourne, Hobart, Adelaide &amp; Perth in the suburbs</td>
<td>A</td>
<td>TC3</td>
<td>FS</td>
<td>T1</td>
<td>N1</td>
<td>W28</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
<td>NS</td>
<td>T3</td>
<td>N3</td>
<td>W41</td>
</tr>
<tr>
<td>4 Brisbane in the suburbs</td>
<td>A</td>
<td>TC3</td>
<td>NS</td>
<td>T3</td>
<td>N3</td>
<td>W41</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>N2</td>
<td>W33</td>
</tr>
<tr>
<td>5 Hervey Bay, Cairns &amp; Darwin in the suburbs</td>
<td>A</td>
<td>TC3</td>
<td>FS</td>
<td>T1</td>
<td>C1</td>
<td>W41C</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>TC2.5</td>
<td>NS</td>
<td>T1</td>
<td>C2</td>
<td>W50C</td>
</tr>
<tr>
<td>6 Broome, WA in suburbs - flat</td>
<td>C</td>
<td>TC1.5</td>
<td>FS</td>
<td>T1</td>
<td>C2</td>
<td>W50C</td>
</tr>
<tr>
<td>7 Karratha, Dampier, Carnarvon WA in suburbs</td>
<td>A</td>
<td>TC1.5</td>
<td>FS</td>
<td>T1</td>
<td>C3</td>
<td>W60C</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>T0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td>C4</td>
<td>W70C</td>
</tr>
</tbody>
</table>
PRODUCT DESCRIPTIONS

- All descriptions, specifications, illustrations, drawings, data, dimensions and weights contained in this catalogue, all technical literature and websites containing information from Lysaght are approximations only. They are intended by Lysaght to be a general description for information and identification purposes and do not create a sale by description. Lysaght reserves the right at any time to:

  (a) supply Goods with such minor modifications from its drawings and specifications as it sees fit; and
  (b) alter specifications shown in its promotional literature to reflect changes made after the date of such publication.

DISCLAIMER, WARRANTIES AND LIMITATION OF LIABILITY

- This publication is intended to be an aid for all trades and professionals involved with specifying and installing Lysaght products and not to be a substitute for professional judgement.

- Terms and conditions of sale available at local Lysaght sales offices.

- Except to the extent to which liability may not lawfully be excluded or limited, BlueScope Steel Limited will not be under or incur any liability to you for any direct or indirect loss or damage (including, without limitation, consequential loss or damage such as loss of profit or anticipated profit, loss of use, damage to goodwill and loss due to delay) however caused (including, without limitation, breach of contract, negligence and/or breach of statute), which you may suffer or incur in connection with this publication.

© Copyright BlueScope Steel Limited 3 May, 2017

WWW.LYSAGHT.COM

Technical enquiries:
steeldirect@bluescopesteel.com or call 1800 641 417

LYSAGHT® is a registered trademark of BlueScope Steel Limited, ABN 16 000 011 058. The LYSAGHT® range of products is exclusively made by or for BlueScope Steel Limited trading as Lysaght.