

**Notes for engineers:**

- These charts of allowable wind pressures on free-standing walls versus cantilever height are based upon calculation of allowable working and ultimate bending moments, and equivalent uniformly distributed loads, using simplified reinforced concrete theory, backed up by panel transverse load testing.
- The charts at right, showing wind pressures for various Australian wind zones & exposure conditions, assume a wind pressure form factor of 1.4 (+0.8 upstream, -0.6 downstream) on a free-standing cantilever wall such as an acoustic barrier.
- A 150 thick panel was tested, with 100mm of EPS, 25mm of render (1 cement: 4 sand) and 125 sqmm/m of welded wire mesh reinforcement each face, over a simply-supported span of 2.2m. The panel was oriented vertically to avoid self-weight effects.
- A uniformly distributed load was applied to an area of 2sqm of the panel by means of an airbag, with a water manometer for pressure measurement.
- Pressure in the airbag was increased in 50mm increments to a water head of 1000mm, equivalent to a wind pressure of 6.7kPa on the full area. Deflection was measured at each increment, and the resulting graph is essentially linear.
- Calculated steel tensile stress at this loading was 260MPa, and concrete compressive stress was 2.2MPa.
- The panel displayed linear elastic behaviour under the test load, with one barely visible crack in the render at about 5kPa equivalent uniform loading.
- Panel deflection returned to zero after removal of the test load and the crack closed completely.

**Simplified wind categories:**

Wind regions are defined for Australia in AS/NZS 1172.2 "Structural design actions - Part 2: Wind". This should be referred to for details of the wind regions on the west coast, including region D.

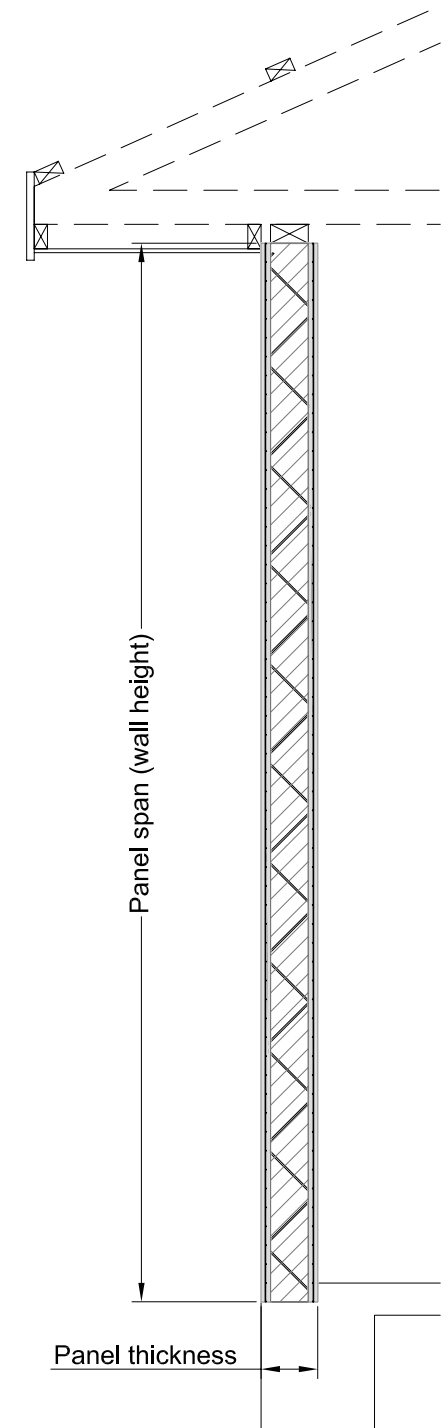
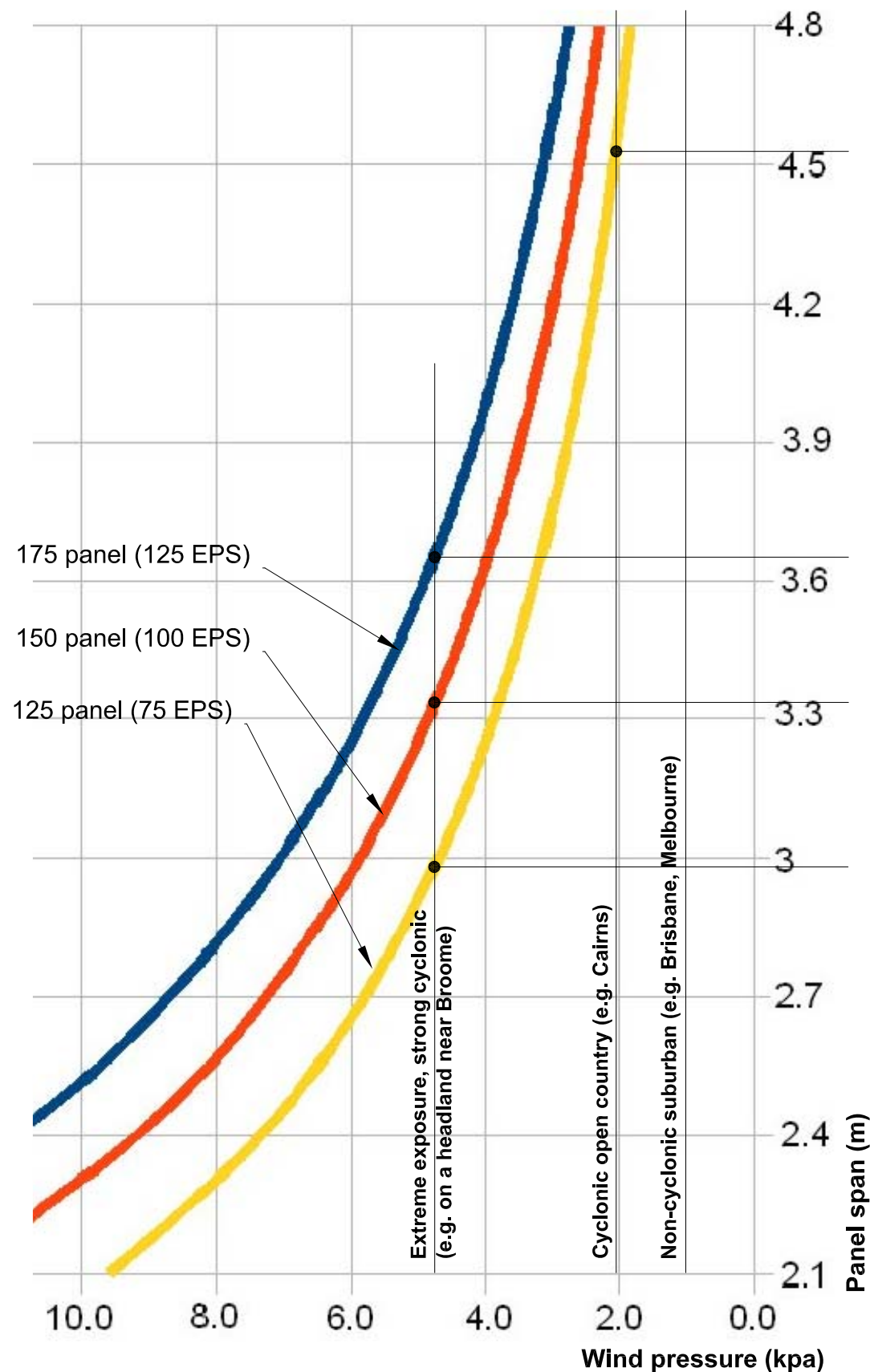
The following is a simplified table, for guidance. A more accurate result may be obtained by detailed analysis by an engineer for any specific region & terrain conditions.

**Cyclonic (region C):** within 50km of all coastlines north of latitude 25 (Bundaberg). Refer to note above for extra detail on the west coast.

- Suburban (Terrain category 3): **1.45kPa**
- Open country (Terrain category 2): **2.04kPa**

**Non-cyclonic: Regions A & B**, elsewhere in Australia.

- Suburban (Terrain category 3): **1.0kPa**
- Open country (Terrain category 2): **1.22kPa**



**Ultimate Load for  $f_y = 500$  MPa with capacity reduction factor = 0.85**

ASSOCIATED CONSULTANTS	Designed	JMF	C	Redrawn	JMF	19-4-09	<b>STANLEY AND PARTNERS</b> Pty Ltd Consulting Engineers 23 Loraine Street, Capalaba - PO Box 533, Capalaba Q 4157 T: 3245-1148 F: 3390-1654 E: mail@spcvil.com Approved <i>[Signature]</i> RPEQ 0835 DATE	Project VolcanWall panel system for Australian use	Drawing Title Load/span charts for wall panels				
	Drawn	JMF		B	Amended panel thicknesses	JMF			15-4-09	Client VolcanWall Australia Pty Ltd	Job reference	Drawing no.	Issue
	Checked			A	Operational issue	JMF			31-3-09		1496	05	C
				Issue	Reason	By			Date				

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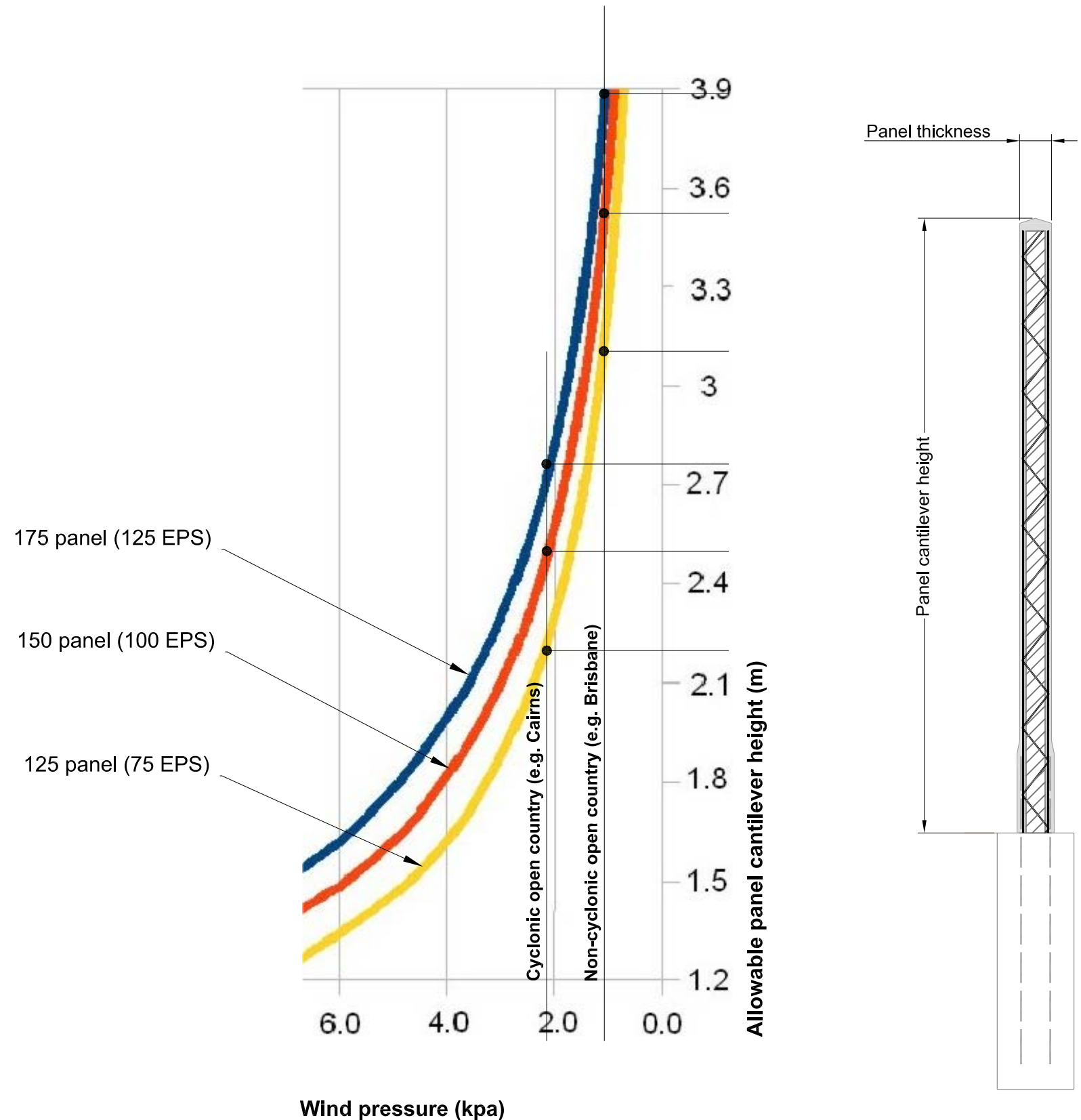
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**Ultimate Load for  $f_y = 500 \text{ MPa}$   
with capacity reduction factor = 0.85**

ASSOCIATED CONSULTANTS	Designed	JMF	B	Revised	JMF	18/04/09	<b>STANLEY AND PARTNERS</b> Pty Ltd Consulting Engineers 23 Loraine Street, Capalaba - PO Box 533, Capalaba Q 4157 T: 3245-1148 F: 3390-1654 E: mail@sptcvil.com Approved <i>[Signature]</i> RPEQ 0835 DATE	Project	VolcanWall panel system for Australian use	Drawing Title Load/height charts for sound wall panels			
	Drawn	JMF		A	Preliminary issue	JMF		07/04/09	Client	VolcanWall Australia Pty Ltd	Job reference	Drawing no.	Issue
	Checked				Issue	Reason		By	Date			<b>1496</b>	<b>06</b>