# Tallawarra B Project

## Civil Aviation Safety Authority Advisory Circulars FAQs

**Who is the Civil Aviation Safety Authority and what is an Advisory Circular?**

The Civil Aviation Safety Authority (CASA) is a government body that ensures the safety of aviation in Australia. CASA licenses pilots, registers aircraft, certifies aerodromes, oversees aviation safety and promotes safety awareness. CASA is responsible for setting standards and safety outcomes that cover maintenance, airspace, aerodromes, licensing, and all types of operations.

Advisory Circulars (AC) give advice and guidance on how to meet the Civil Aviation Safety Regulations. Each AC explains certain rules or standards in more detail.

**Is there an Advisory Circular that relates to the operation of Tallawarra B?**

Yes, there is. CASA's Advisory Circular 139.E-02 v1.0 'Plume rise assessments' relates to the operation of Tallawarra B. This AC (and previous versions) provided the basis for planning approval under which EnergyAustralia has designed and constructed Tallawarra B. The AC outlines how plume rise assessments are to be completed to satisfy CASA.

**How has CASA's advice on plume rise assessments evolved over time? How did this impact Tallawarra B's development?**

CASA's AC regarding plume rise assessments have been amended during the construction of Tallawarra B. With reference to comments made about the shift in velocity parameters from 4.3 metres per second (m/s) to 6.1m/s, this amendment was made in the second revision of the AC (139-05) in January 2019 – the version in force when the approval was granted. CASA advised at the time that this change was in line with the Manual of Aviation Meteorology.

CASA's Advisory Circular (AC) 139-05 v 3.0 Plume Rise Assessments was based on the use of the TAPM plume rise model. CASA has also relied on the Spillane plume rise model when providing advice to land use planning authorities. Subsequent versions of the AC have recommended proponents like EnergyAustralia use Computational Fluid Dynamics (CFD) to model its plume due to the complexities in modelling plumes that are mitigated through engineering modifications of the exhaust stack (such as the plume dispersion device that has been designed for Tallawarra B).

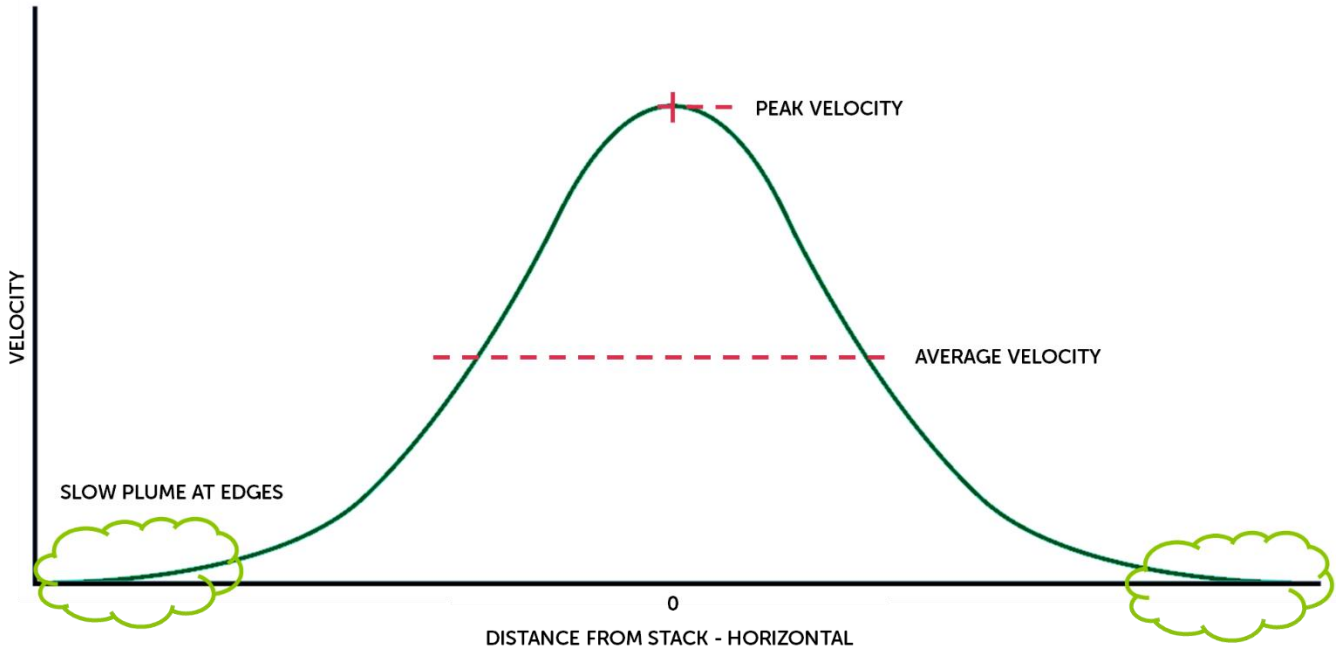
In letters exchanged between CASA and the NSW Department of Planning and Environment, CASA advised EnergyAustralia with reference to that AC that if the plume average vertical velocity at 700 feet above mean sea level (AMSL) does not exceed 6.1 metres per second (m/s), the risk to aviation is at an acceptable level of safety.

This AC does not just apply to EnergyAustralia and Tallawarra B, but anyone proposing to build facilities generating exhaust plumes, and the recommended methodology has been used for numerous other plume rise assessments in the recent past.

**Can you explain how this AC works in real life?**

The AC is predicated on plumes from a vent with a Gaussian vertical velocity distribution, and therefore the peak velocity of the plume will be twice the average velocity of the plume.

In layman's terms, this means that the velocity of the plume can be thought of as a standard bell curve. Some parts of the plume will move more quickly than others. CASA requires proponents like EnergyAustralia to find the mean (or average) speed of the plume and ensure that is does not exceed 6.1m/s. A graph giving an example of this is provided below:




**Can you give me an example of how this AC is applied?**

For example, an exhaust may have 100 kg of hot gas going up in the air, each kg will go at a different speed. One in the centre will go faster and one at the edge will go slower (like on a bell curve). So, when you measure the speed that plume you have a range.

What CASA has done is set the plume 'speed limit' based on the average speed of all 100kg – not the fastest kg.

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