

Tallawarra B Project

Plume Dispersion Device FAQs

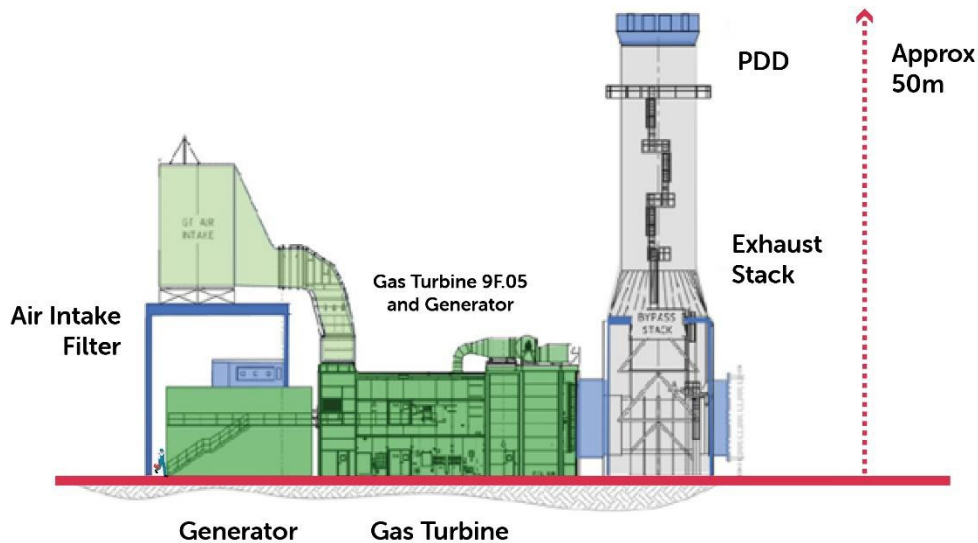


Can you provide an overview of the project?

Tallawarra B Power Station (TBPS) is an approved peak load open cycle gas turbine (OCGT) power station with an output of 316MW, currently under construction. TBPS is being built to the immediate east of the existing Tallawarra A Power Station on the western edge of Lake Illawarra, approximately 4.5km northeast of Shellharbour Airport.

TBPS is the first open cycle gas turbine in Australia which will be hydrogen enabled and one of the first in the world. TBPS will be 100% carbon offset from day one of operations. The project is expected to generate 200 local jobs during construction and add \$300 million to the local economy.

The OCGT was the chosen design over a combined cycle gas turbine (CCGT) because it is faster to start and can provide electricity into the grid more quickly when there is high demand. Exhaust gases from the OCGT will be discharged via a stack which will have a plume dispersion device (PDD).



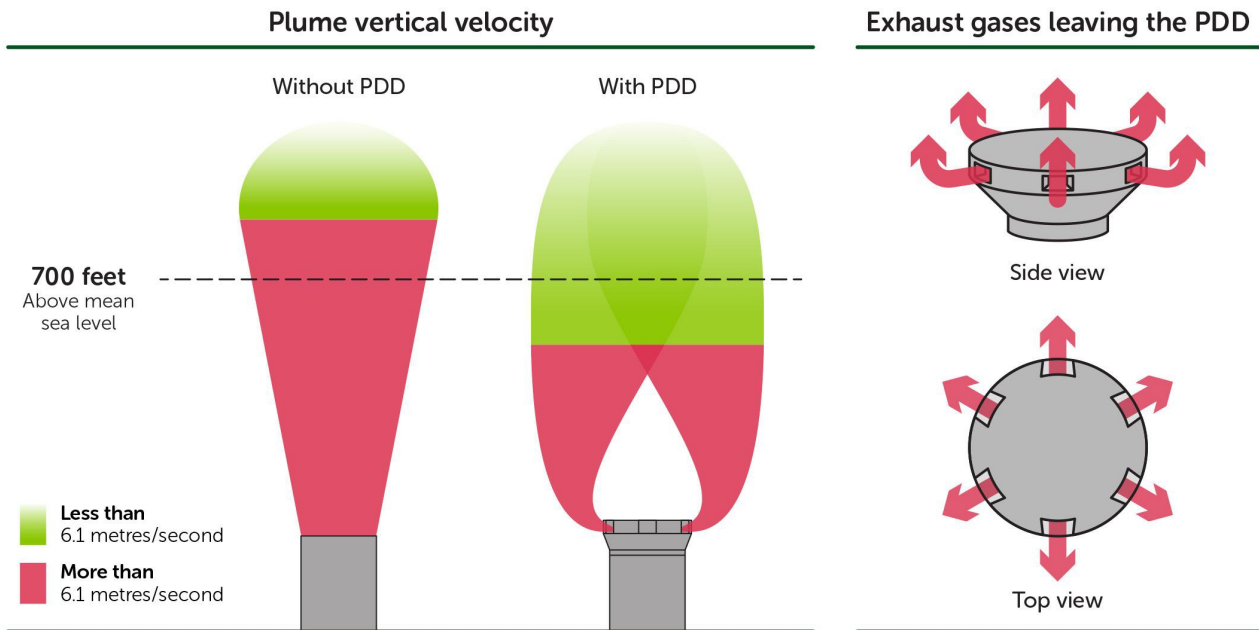
The OCGT works in a manner similar to a jet engine. The exhaust from the turbine is incredibly hot and, as we know, hot air rises. The heat of the exhaust gases relative to the outside air temperature means it rises rapidly in the air. Without a PDD on top of the exhaust stack, the exhaust gases would rise into the atmosphere as a column of hot air.

What is a 'plume dispersion device' (PDD)?

The plume dispersion device or PDD sits on top of the exhaust stack. Generally, PDDs have a number of outlets which allow the exhaust gases from the turbine to travel out of the stack in a number of locations, allowing the exhaust gases to mix with the outside air more quickly, cooling the air and slowing down its rise. PDDs are used for a number of different applications all over the world, including exhausts on naval vessels and cruise ships, offshore oil platforms, and other power stations.

So how does the PDD work in relation to Shellharbour Airport?

The PDD works to reduce the plume vertical velocity allowing the exhaust gases to mix with the outside air more quickly, cooling the air and slowing down its rise. This minimises the potential effects to the safety of aircraft using the nearby Shellharbour Airport. TBPS's exhaust gases must meet a critical plume velocity of no more than 6.1 metres/second at or below 700 feet above mean sea level (AMSL), as stipulated by the Civil Aviation Safety Authority (CASA).



TPBS cannot start operation until these criteria are met and the Department of Planning and Environment (DPE) are satisfied that operation of TBPS (an OCGT plant) would not have an adverse impact on aviation safety.

What is the approval process to allow TBPS to operate?

Conditions of Approval issued by DPE must be met for EnergyAustralia to construct and operate TBPS. Condition 1.6 states that we must submit a report to DPE which demonstrates that the operation of the OCGT will not have an adverse impact on aviation safety.

To satisfy this planning approval condition, EnergyAustralia has prepared the following reports and assessments:

- The Tallawarra B OCGT Aviation Impact Assessment – April 2020
- Supplementary Plume Rise Assessment for the Tallawarra B Power Station Aviation Impact Assessment – December 2020
- GHD Independent Review of Supplementary Plume Rise Assessment for the Tallawarra B Power Station Aviation Impact Assessment - March 2021
- Further GHD Independent Review of Supplementary Plume Rise Assessment for the Tallawarra B Power Station Aviation Impact Assessment - July 2021
- Final GHD Independent Review of Tallawarra B Power Station Review of CFD Plume Rise Assessment - April 2023

EnergyAustralia is currently engaging with key stakeholders, including the users and operators of the Shellharbour Airport, on the aviation mitigation measures and the final design of the PDD. The aviation mitigation measures include an extensive education and information program with all users and operators of the Shellharbour Airport.



Acknowledgment: EnergyAustralia acknowledges the support of the NSW Government for the Tallawarra B Power Station Project.

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