

## Tunnel ventilation systems and air quality

The West Gate Tunnel Project ventilation system design will be best practice and operate within stringent air quality standards to protect the health of communities and drivers using the tunnels.

The project will include twin tunnels linking the West Gate Freeway to a new bridge over the Maribyrnong River. Tunnels can help reduce air pollution by moving traffic off roads where people live and work putting it underground. In a tunnel, vehicle emissions can be controlled and dispersed more effectively and are monitored to ensure standards are met.

**With thousands of tunnels in the world, there are well-established and effective ways to design tunnels and ventilation systems so that there are no negative effects on local or regional air quality.**

The ventilation system for the West Gate Tunnel Project will include two ventilation structures - one above the northern tunnel portal near the Maribyrnong River and the other above the southern (outbound) tunnel

portal in the West Gate Freeway. Studies show that ventilation structures operate most efficiently when located close to the tunnel exit.

The project's tunnel ventilation system has been designed to:

- meet Victoria's stringent air quality requirements – which are among the highest standards in the world
- ensure high air quality inside the tunnel
- manage emissions from current and future traffic volumes.



### Did you know?

The West Gate Tunnel Project will have no emissions from the tunnel portals.



New bridge over the Maribyrnong River and MacKenzie Road ramps

Artist impression only - does not include detailed design

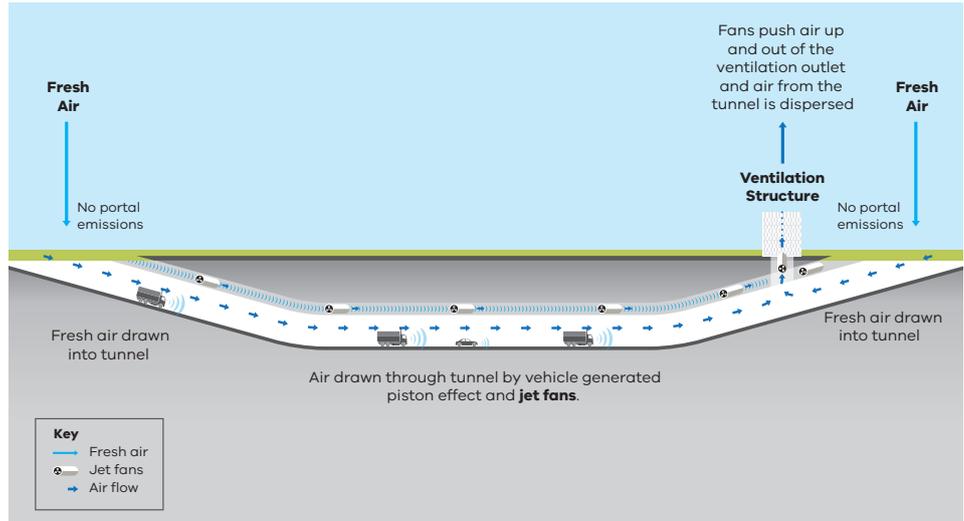
# How tunnel ventilation works

Tunnel ventilation systems are designed to maintain safe air quality both inside and outside the tunnel to meet stringent air quality standards.

Ventilation systems work by drawing in fresh air from the tunnel entry, which is then pushed through the tunnel by the movement of vehicles and jet fans.

Before the tunnel exit, air is pushed up and out of the tunnel through a ventilation structure and into the atmosphere where it mixes with fresh air. There are no emissions from the tunnel portals where vehicles enter and exit.

Research from around the world clearly shows emissions from well-designed tunnel ventilation systems have no measurable effect on local or regional air quality.



## Monitoring and reporting ensuring safe operation

We will monitor air quality before and after the tunnels open. Monitoring will also be undertaken inside the tunnel to confirm that the ventilation system is operating effectively as it should.

### West Gate Tunnel Project ventilation system design

An internationally recognised air dispersion model is used to assess the design and height of ventilation structures in achieving effective and safe dispersion. The model takes into account existing air quality, local weather and topography and conservative assumptions about vehicle emissions and types.

This modelling is based on worst case scenarios to ensure the ventilation system is effective in even the most unlikely circumstances, such as continuously congested traffic and no future improvements in vehicle standards.

## Victoria's air quality standards

The *State Environment Protection Policy (Air Quality Management)* and *State Environment Protection Policy (Ambient Air Quality)* set objectives to protect the health and wellbeing of people, plants and animals against harmful and unhealthy levels of air pollution.

Victoria's air quality standards are consistent with best practice and the World Health Organisation guidelines. You can read more about them on the EPA Victoria website.

## Environment Effects Statement (EES)

The EES for the West Gate Tunnel Project has detailed information about how the project could affect people and the environment and how the impacts will be managed. The EES has assessed potential impacts in 17 areas including transport, air quality, noise, landscape and visual, vibration, business, ecology and human health. To view the EES visit [www.westgatetunnelproject.vic.gov.au/EES](http://www.westgatetunnelproject.vic.gov.au/EES).