

Air quality

Fact sheet



Making sure we maintain good air quality on our roads and projects is vital to the liveability, health and safety of neighbouring communities.

The world's reliance on fuel is slowly changing. In the future the vast majority of vehicles will likely be powered by electricity or hydrogen, but right now road transport emissions account for about 12 per cent of global greenhouse gas emissions, which are the primary cause of climate change.

That's why we include certain features in our tunnels to minimise air pollution and monitor air quality.

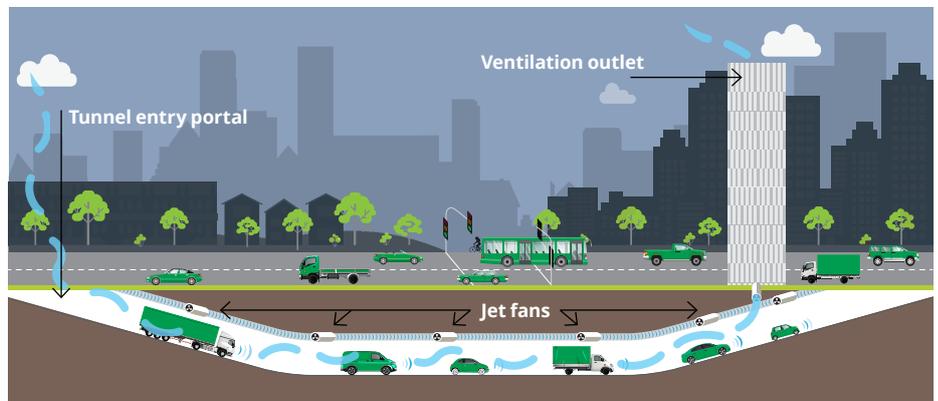
Managing air quality in our tunnels

Our tunnels host millions of trips every day and are an important part of the road networks in Sydney, Melbourne and Brisbane.

Tunnels can help reduce air pollution by moving thousands of vehicles off local roads and putting them underground. Our tunnel ventilation systems then effectively control air quality in line with relevant standards and regulations.

These ventilation systems move air into, through, and out of tunnels in a safe and efficient way. A typical ventilation system includes:

- jet fans to control air movement through the tunnel
- ventilation fans to draw air into and out of ventilation outlets
- ventilation outlets to discharge air (sometimes called 'vent structures' or 'stacks').



Traffic draws fresh air into tunnels at entry portals. Jet fans help move air along the tunnel towards the ventilation outlets. Ventilation outlets disperse emissions high into the atmosphere away from local communities.

Ventilation systems are designed to meet stringent air-quality criteria. Generally, safe air quality limits are set by the relevant environmental authority in each state and ongoing monitoring ensures that tunnel operators meet the air quality requirements for their tunnels.

Ventilation outlets use highly advanced technology to keep the air inside and outside the tunnel safe at all times—protecting the health and safety of local residents and people driving through the tunnels.

National air quality requirements and standards

One of the main ways Australia maintains safe air quality is through the National Environment Protection (Ambient Air Quality) Measure. Environment Protection Authorities in NSW and VIC, and the Department of Environment and Science in QLD are involved in setting air quality standards in line with National Environment Protection (Ambient Air Quality) Measures.

In addition, international best practice standards are set by the Permanent International Association of Road Congresses (PIARC), formerly known as the World Road Association relating to in-tunnel air quality and visibility.

When Transurban reaches an agreement with government to build or operate a road tunnel, we are required to ensure air quality within the tunnel is maintained at a safe level and any air emitted from the tunnel doesn't cause environmental harm. Transurban regularly reports air quality data to the relevant environmental authority in each state in accordance with terms set in the concession for each individual road.

Improving air quality through infrastructure design

Factors such as road design, gradient and free-flowing traffic all help improve air quality on our roads, and we incorporate these elements when we build new projects.

As an example, the tunnel gradient in NorthConnex was designed to be as flat and smooth as possible to allow vehicles to maintain a consistent speed of travel, resulting in better fuel efficiency and reduced emissions.

The internal dimensions of NorthConnex also enable greater volumes of fresh air to move through the tunnel, thereby reducing the build-up of emissions over its length.

Free-flowing traffic also contributes to improved air quality and significant travel-time savings. In FY21, our customers collectively saved on average 376,000 hours in travel time each workday compared to alternative stop-start routes. This reduced fuel use and greenhouse gas emissions by an average of about 30 per cent.

Monitoring and reporting

Transurban is required to meet stringent air quality measures within operational tunnels, which are reported to and enforced by the relevant environmental authority in each state.

Tunnels are monitored for air pollutant concentration to ensure that air quality is maintained within safe conditions as defined within our agreements with governments.

Monitoring and reporting requirements vary for different assets according to the specific operating requirements. We monitor air quality within our tunnels and depending on the individual tunnel may also monitor ventilation air quality and ambient air quality around tunnel portals.

We continuously monitor our tunnels and report on the level of carbon monoxide and other air pollutants. A system of jet fans, axial fans, ventilation tunnels and exhaust points manage air quality within the tunnel.

Currently, our air quality reporting shows we are performing far better than the minimum requirements for each asset.



Plant breathing walls initiative

In addition to designing and operating our roads and tunnels in ways that protect air quality, we are testing new pollution-reducing technologies through two pilot initiatives.

In Sydney, a group called Junglify has developed plant breathing walls, which we tested on the Hills M2 and Eastern Distributor to determine their impact on air quality.

They have performed well with nitrogen dioxide reduced by an average of 53 per cent, ozone by an average of 29 per cent and particulate matter (PM2.5) reduced by an average of 23 per cent.

In Melbourne, we have commenced a trial of air purifying paint on a CityLink wall panel. The paint has the potential to reduce pollutants like nitrogen oxide and nitrogen dioxide, and contains self-cleaning properties, which could reduce maintenance costs and water use.

Trials such as these are business as usual for us as we continually seek new ways to do things that create better outcomes for the environment and communities along our roads.

Air quality and construction

Air quality is monitored at the sites of all our current tunnel projects to understand current conditions. This helps us measure any changes to local air quality once a tunnel opens.

During construction we make sure our contractors develop and implement industry best practice construction environment management plans which detail how dust will be managed on the projects.

Some of the strategies used to minimise dust include:

- Cover dirt and rock when it is being moved
- Plan works so dusty activities are done away from homes and other sensitive areas where possible
- Spray water on open stockpiles and roads to keep dust down
- Landscape areas as soon as possible so topsoil isn't blown around.



Monitoring and reporting information on each tunnel can be found using the links on the right.

Melbourne

[CityLink: Burnley Tunnel](#)
[CityLink: Domain Tunnel](#)

Sydney

[Cross City Tunnel](#)
[Eastern Distributor](#)

Sydney (continued)

[Lane Cove Tunnel](#)
[M5 East](#)
[NorthConnex](#)
[WestConnex M4](#)
[WestConnex M8](#)

Brisbane

[AirportlinkM7](#)
[Clem7](#)
[Legacy Way](#)

Air quality and our projects

WestConnex

The WestConnex Project's tunnel air quality monitoring program and ventilation systems have been designed to protect and improve the health of communities and motorists using the tunnels.

The system has been designed to meet NSW's stringent air quality requirements (amongst the highest standards in the world), maintain safe air quality inside and outside the tunnel and manage emissions from predicted traffic volumes now and into the future.

Additionally, the WestConnex tunnels are designed to be wider, flatter and higher than most other tunnels in Sydney, meaning a smoother journey with less stop-start driving, relieving surface congestion and fewer vehicle emissions—including greenhouse gases.

Air quality assessments included in the M4 East and M8 Environmental Impact Statements show that regional air quality is unlikely to change as a result of WestConnex, rather, WestConnex will result in improvements in some areas where traffic uses the underground motorway tunnels instead of surface roads. And we have seen just that.

After opening the WestConnex M4 Tunnels, air quality along busy surface roads such as Parramatta Road improved by more than 10 per cent. The new underground alternative meant a drop in traffic on local streets and less stop-start

congestion, reducing emissions in local suburbs. Being one of the cleanest tunnels in Australia of its size, specially designed for low emissions, there has been no worsening of air quality at any monitoring location.



West Gate Tunnel

The West Gate Tunnel Project's tunnel ventilation system has been designed according to stringent air quality standards to protect the health of communities and drivers using the tunnels.

The ventilation system will include two ventilation structures, one above the northern tunnel portal and the other above the southern tunnel portal.

Air quality will be monitored during construction and for up to five years after the West Gate Tunnel Project opens. There will also be in-tunnel monitoring to ensure the tunnel ventilation is operating as it should.

The West Gate Tunnel Project will remove around 9,000 trucks off local streets in Melbourne's inner west.