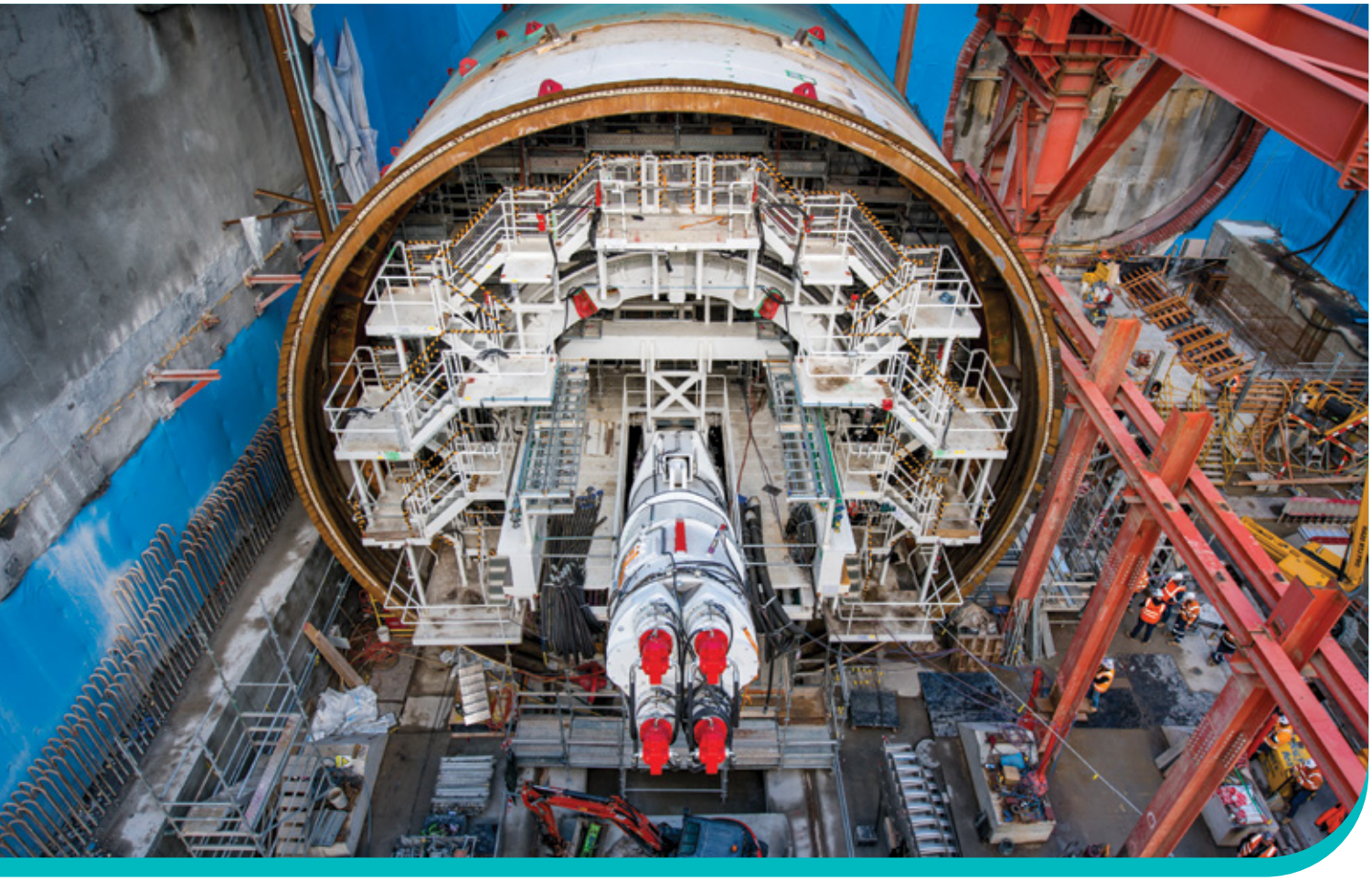
BUILDING THE WEST GATE TUNNEL

WEST GATE TUNNEL PROJECT



The West Gate Tunnel Project is building twin tunnels between the Maribyrnong River and the West Gate Freeway, providing a vital alternative to the West Gate Bridge.

The project will ensure quicker and safer journeys and remove over 9,000 trucks from streets in the inner west.

The tunnels are being built using two tunnel boring machines (TBMs) so the community and businesses can continue above ground while work happens below.

In partnership with:

Transurban

WEST GATE TUNNEL PROJECT

MAJOR TRANSPORT INFRASTRUCTURE AUTHORITY

VICTORIA'S BIG BUILD

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How do TBMs work?

While the TBMs bore up to 27 metres under the ground, it also installs a concrete lining, forming walls, roof and base of the tunnel.

The TBMs excavates rock and soil with a rotating cutterhead, before moving forward to make space for the concrete lining. It then stops moving and installs the lining using a specialised rotating machine.

Tunnelling requires highly specialised skills. Behind the TBMs, crews work to build the road surface and install electrics, ventilation and safety systems.

To inspect the TBMs cutterhead, up to four workers will enter a pressurised air lock to perform routine maintenance work in compressed air conditions. The compressed air is used to keep the groundwater away from the working area. The physical effects are similar to scuba diving to a depth of up to 35 metres.

After completing the maintenance tasks, the workers then spend up to two hours depressurising before returning to the surface.

Where does the excavated material go?

The TBMs will excavate around 1.5 million cubic metre of dirt and rock while building the tunnels.

During tunnelling, excavated dirt and rock is moved from the tunnel face to the rear of the TBMs by a series of internal conveyor belts.

From there, the dirt and rock moves onto a cover conveyor that will transport the excavated material away from the northern portal and over Somerville Road, straight into the massive soil handling shed at the project's tunnelling hub.

Once it reaches the shed, the conveyor will empty the excavated material into large bins before it gets loaded onto covered trucks and transported away from site.

Tunnel soil will then be transported to a purpose built disposal site in Bulla.

The tunnel will be 27.2 metres at its deepest point, the equivalent depth of an 8 storey building.

The cutter head rotates to bore through the ground.

The TBMs operator controls the machine in a cabin behind the head of the machine.

Concrete segment pieces are continually brought from the surface through the tunneled ground to line the area behind the TBMs.

The machines will bore at an average rate of 9 metres per day

TBM diameter 15.6 metres

What to expect

Our TBMs will operate, 24 hours a day, seven days a week and will reach a depth of up to 27 metres below ground. They have been purpose built to suit local ground conditions so that large-scale construction can happen underground, with minimal disruption above.

Noise and vibration

TBMs are very good at reducing vibration so many people living and working above the tunnel may not notice construction happening underground. We will:

- Inspect the properties above the tunnel before and after construction
- Monitor ground movement and vibration levels at all times
- Meet strict targets set to manage vibration and minimise disruption.

Ground conditions we will be working in:

Man-made fill

The top layer on the surface, which is man made, is used to change the elevation or gradient of the surface and easy to tunnel through.

Strong upper basalt rock

Younger basalt rocks, normally one of the strongest rocks and will need special disc cutters to break through.

Sediments

Soft ground made up of sand and clay soil, much easier to tunnel through than basalt.

Lower basalt rock

Much older rock that has a mix of hard and soft ground types, requires both disc cutters and soft ground tools to excavate through.

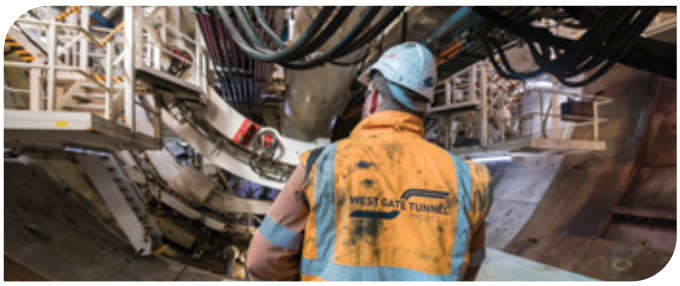
When the TBMs are under a house/business, will residents be able to hear it?

People above and 50 metres either side of the tunnels' alignment may feel some minor vibration or hear noise that travels up through the ground as the TBMs passes underneath.

This is normal and expected for any tunnelling project, but depends on the ground conditions in the area and the property's foundation construction.

What types of noises/sound could residents expect to hear once tunnelling starts?

Noise heard within a building that is generated by vibration transmitted through the ground into a structure is typically heard as a low frequency "rumbling".



Monitoring

Our sophisticated TBMs are very effective at minimising vibration and ground movement. We also utilise a wide range of monitoring equipment, both in and above ground, to review and assess any tunnelling impacts. This allows us to adjust our methods accordingly as we move through a range of ground conditions. It is important for us to measure the effects of tunnelling on nearby buildings, infrastructure, and the ground surface. While the activity is low risk, this real-time monitoring will ensure any mitigation measures can be actioned immediately.

How long will the monitoring equipment be in place for?

Monitoring data is continuously recorded and provided to engineers and the TBM operators.

For the past two years monitoring equipment installed around the Yarraville area and has provided the project with invaluable information about the ground movement behavior during various seasons and events such as an earthquake.

Where monitoring equipment has been installed on buildings, inspections of those devices will be undertaken weekly when the TBMs are within 100m.

The frequency will then increase to daily when each TBM is within 50m either side of a property.

Some monitoring equipment will be in place until tunnelling is complete.

Damage claims

While property damage is very unlikely to occur, properties near the tunnel alignment have previously received an offer for an independent property condition survey prior to tunnelling. These property condition surveys are in place to give peace of mind to owners about existing conditions and ensure any damage can be accurately assessed. In the event of any damage, claims will be assessed by an independent insurance assessor. The property condition survey and ground monitoring data collected before and during tunnel construction will be used during the assessment. During tunnel construction if you believe the works have caused damage to your property then you can contact the project on 1800 105 105 or info@wgta.vic.gov.au. A member of our community relations team will then contact you at the earliest convenience.

If you have not had a property condition survey undertaken and would like to do so, please contact us on 1800 105 105.

Once works are completed under your property, a final property inspection will be offered.

Regular tunnelling drop in sessions are available at the West Gate Tunnel Project Information Centre during construction where project staff will be available to answer any questions you might have.

Working hours

The TBMs are expected to bore up to nine metres a day, 24 hours a day and seven days a week. The main tunnelling construction compound at Whitehall Street will be operating both day and night.

Keeping you informed

We will keep people informed and work together to make things easier during construction.

You can expect to see regular information from us about construction activities happening in your area, including:

- Newsletters to keep you up to date
- Work notifications in your letterbox
- Weekly information drop in session with tunnel experts every Wednesday from March between 4.30pm–6.30pm at the Information Centre
- Information on the website
- News and updates on social media.

Our West Gate Tunnel Project Information Centre is also open Monday – Friday from 10am–5pm and Saturday 10am–4pm for project information and enquiries.

The Information Centre is located at the corner of Somerville Road and Whitehall Street, Yarraville.

We also have a team that is dedicated to working with the community. They are available 24 hours a day, seven days a week to answer any questions or concerns.

SIGN UP FOR PROJECT UPDATES:

westgatetunnelproject.vic.gov.au

Follow us on social media

CONTACT US

info@wgta.vic.gov.au | 1800 105 105

West Gate Tunnel Project Information Centre
Corner of Somerville Rd and Whitehall St
Yarraville VIC 3013

Translation service – For languages other than English, please call 13 14 50.

Please contact us if you would like this information in an accessible format.

If you need assistance because of a hearing or speech impairment, please visit **relayservice.gov.au**