

VICTORIAN DESALINATION PROJECT

FACT SHEET

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AND FOR THE FUTURE.
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TUNNEL BORING MACHINES

Tunnel boring machines (TBMs) played a key role in the construction of Victoria's new desalination plant.

These highly specialised machines were used to carve the seawater intake and outlet tunnels 15 – 20 m under the seafloor.

What is a tunnel boring machine?

A TBM is an underground tunnelling machine, used to dig tunnels swiftly and easily, with minimal impact on the environment.

It has a rotating, cutting wheel at the front which can "bore" through all types of soil and rock.

Two TBMs were used on the Victorian Desalination Project – one to build the seawater intake tunnel, the other to build the outlet.

How do they work?

TBMs consist of a rotating cutting wheel at the front, called a cutter head, followed by trailing support mechanisms.

TBMs work very much like an earthworm, digging forward a short distance and then dragging the rear end behind.

The cutter head excavates a length of ground, which is then lined with pre-cast concrete rings, forming a watertight concrete tunnel.

Hydraulic jacks then push the TBM forward a short distance, and the process is repeated all over again.

Is this new technology?

No. Tunnel boring has been used on construction projects for more than 150 years and has proven to be a safe and environmentally sound method of tunnelling.

For this reason, TBMs are now used in construction projects all over the world, used to build everything from pipelines to huge road and rail tunnels beneath cities and the ocean, as on the Victorian Desalination Project.

What kind of TBMs were used on the Victorian Desalination Project?

The TBMs were custom-built, 'slurry shield' TBMs with a cutter head diameter of 4800mm, suitable for working in soft ground with very high water pressure and large amounts of ground water.

They were supplied by Herrenknecht from Germany, a world leader in tunnel boring machines.

How big were the TBMs?

Each TBM was 91 metres long in total and weighed more than 500 tonnes.



One of the two TBMs used on the Victorian Desalination Project.

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TUNNEL BORING MACHINE FAST FACTS

- Two TBMs named “Wonthaggi Maggie” and “Rocking Ruby”
- 91 metres long
- Weighed more than 500 tonnes
- Cutter head 4.8m diameter, capable of boring through mudstone, siltstone, sandstone, basalts
- Six trailers or “decks” towed behind each TBM, containing supplies and equipment
- Tunnels lined with 10,700 concrete segments, all Australian made
- Williamsons Beach remained open at all times during tunnel construction

TUNNEL FAST FACTS

- Both tunnels 4m diameter
- Intake tunnel 1.2 km long
- Outlet tunnel 1.5 km long
- 15 – 20 m below sea bed





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Inside the intake tunnel,
which will transport seawater
from Bass Strait to the
desalination plant.

CONTACT US

Visit the Victorian Desalination Project Community Information Centre
Shop 2, 33–35 Murray St, Wonthaggi

Opening hours

Tuesday–Friday 9.30am–4.30pm, Saturday 9am–12pm.



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