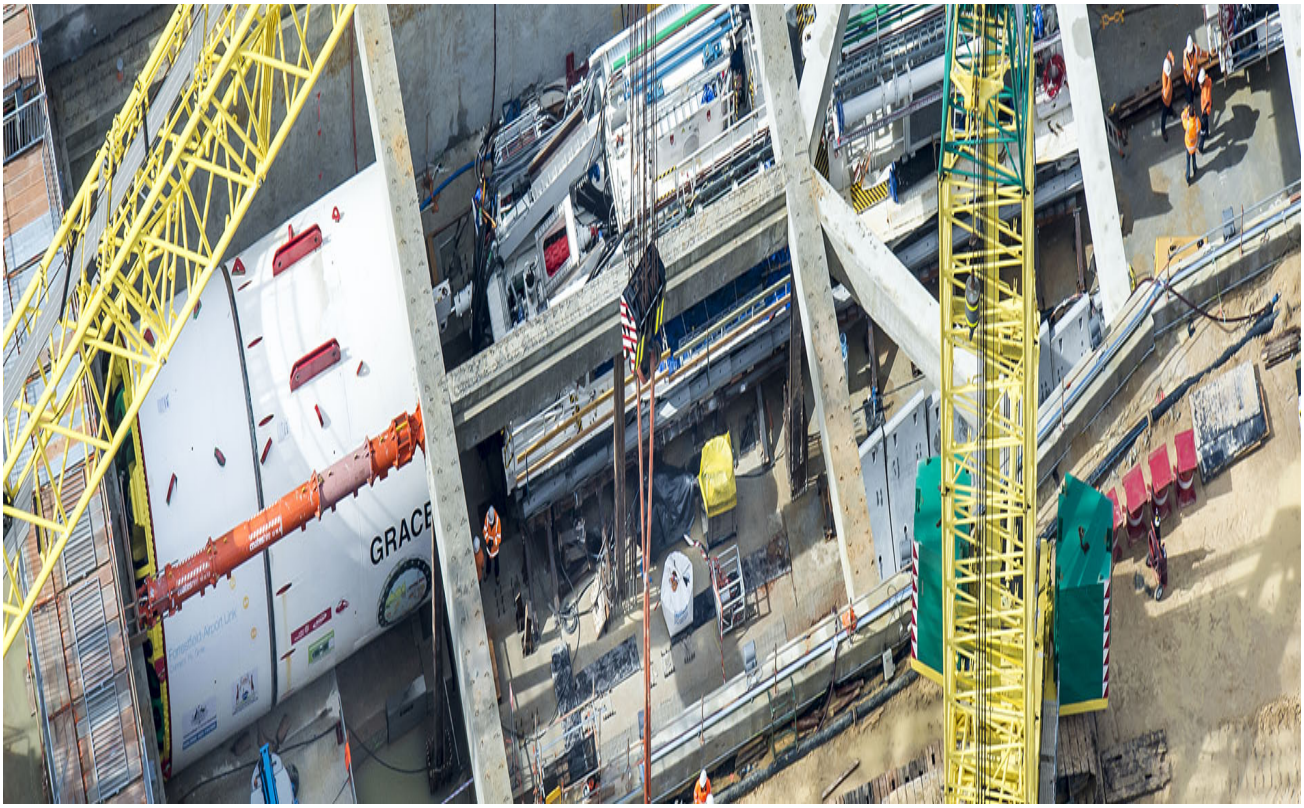
Forrestfield Airport Link (/)



Tunnelling Tunnel Boring Machines

Tunnel Boring Machines

Tunnel boring machines (TBMs) are large machines that excavate below the ground surface, while simultaneously installing concrete lining units (segments) to build a tunnel. Two TBMs have been specifically designed for the Forrestfield-Airport Link by German company Herrenknecht, the world's leading supplier of TBMs.

There are various types of TBMs to cater for different ground conditions and project requirements. For this project, the TBMs are Mixshield which use the latest dual-mode technology capable of adapting to variable ground conditions (such as sand, rock and clay) as the machine progresses.

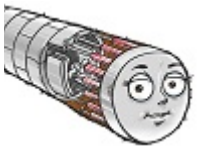
Key components for our TBMs were manufactured in various places around the world before an in-depth nine-month assembly and testing program was conducted in China. Once testing was finished, they were disassembled and shipped to Henderson Port. The TBMs were then transported to site, reassembled and lowered into the dive structure at Forrestfield, where they began their journey towards Bayswater in 2017.

During their 8km journey, the TBMs will excavate under Perth Airport and the Swan River reaching up to 26m depth below the surface.

To find out more about how these machines operate, view the TBM fact sheet (/Portals/14/SAL10761%20TBM%204PP%20Fact%20Sheet%20-%202019%20-%20WEB.pdf).

TBM tracker

As at 5pm, Tuesday February 5, 2019:

	**Metres tunnelled**	**Number of tunnel rings installed**	**Status**
TBM Grace	3944m	2363	Stopped underneath car park at the corner of Snook and Taplin roads for screw conveyor repairs.
TBM Sandy	3839m	2297	Stopped underneath Woods Road for screw conveyor repairs.

TBMs stopped due to mechanical issue

On Friday January 18, workers operating TBM Grace reported a potential mechanical issue with the machine. Since then tunnelling experts from SI-NRW and German TBM manufacturer Herrenknecht have been able to identify and isolate the issue – damage to the screw conveyor, which moves excavated material away from the front of the TBM – and repair works have started.

Repairs include replacing a 3m section of the 16m-long screw conveyor and repairing cracks that have a been identified. At this stage, it is estimated repair works will be completed in March. TBM Grace will remain stationary during this time.

On Monday February 4, TBM Sandy was stopped as a precaution so that the machine's screw conveyor could be proactively inspected for similar faults. Inspections have confirmed the presence of cracks. A damage assessment has taken place and the machine will remain stopped while repairs are completed.

The mechanical issue does not pose a risk to worker safety, and no ground disturbance issues are expected.

Two new screw conveyors will be manufactured by Herrenknecht and will be installed while the TBMs are at Redcliffe Station later this year.

Naming the TBMs

Like ships, TBMs are named before they begin work to bring good luck. Traditionally, a TBM cannot start work until it is given a name. TBMs are generally given female names as underground workers look to Saint Barbara for protection.

Our first TBM is named Grace, in honour of pre-primary student Grace McPhee who was nominated by her classmates at Edney Primary School in High Wycombe. The students said Grace, who is undergoing treatment for leukaemia, was the toughest person they knew - a toughness the TBM would need to bore through the earth. This TBM was decorated with artwork by Year 6 Walliston Primary School student Georgia Fields.

Our second TBM is named Sandy as suggested by High Wycombe Primary School Year 4 student Sarah Spratt. Sarah was inspired after finding a sandgroper in her backyard, as the local insect (which is also a colloquial name for Western Australians) is 'excellent at tunnelling, just like the TBM'. This TBM was decorated with artwork by Rossmoyne Primary School Year 5 students Faith Brand and Jood Al Jashammi.

Will I hear the TBMs?

Despite their huge electric and hydraulic-powered motor drives, TBMs create little noise at the surface and cause only minor vibrations as they cut through the soil and rock in their path. If you are living near the tunnel route, you'll be given plenty of notice and information before the tunnels are bored, but most people will not notice when the boring machines are close by.

Frequently Asked Questions

Is tunnelling safe? ()

Are workers in the TBM safe? ()

Are people at the surface above the TBMs safe? ()

Is the ground safe where the tunnels have already been built? ()

Have there been any ground disturbance issues since tunnelling commenced? ()

130m

The length of each TBM

600t

The weight of each TBM

VIEW OUR INTERACTIVE RAIL MAP (/RAIL-MAP/RAILMAP?FALCAT=RAILROUTE)

(http://www.forrestfieldairportlink.wa.gov.au/)

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CONSTRUCTION SITES (/construction-sites)

Bayswater Junction (http://www.pta.wa.gov.au/forrestfieldairportlink/construction-sites/bayswater-junction)
Redcliffe Station (http://www.pta.wa.gov.au/forrestfieldairportlink/construction-sites/redcliffe-station)
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TUNNELLING (/tunnelling)

Tunnels (http://www.pta.wa.gov.au/forrestfieldairportlink/construction-sites/tunnels)
Tunnel boring machines (http://www.pta.wa.gov.au/forrestfieldairportlink/construction-sites/tunnel-boring-machines)

NEWS & RESOURCES (http://www.pta.wa.gov.au/forrestfieldairportlink/news-resources)

Register for updates (http://www.pta.wa.gov.au/forrestfieldairportlink/about/register-for-updates)
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