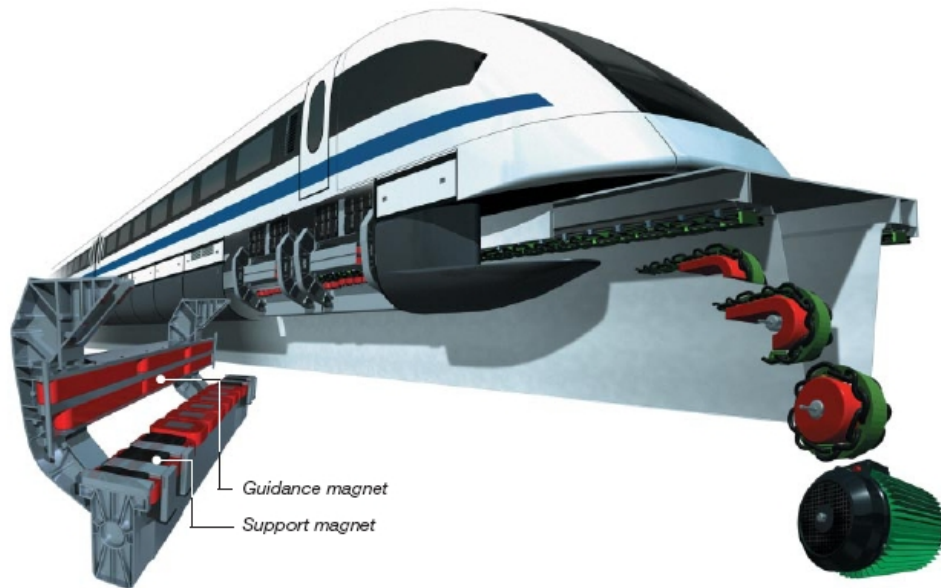


# Information Sheet – Maglev Fast Rail

## What is Maglev Fast Rail?



Instead of wheels, Maglev Fast Rail systems use magnets to magnetically levitate the train above the track. The track itself is an electric motor that has been unwound into a long linear motor. The linear motor propels the Maglev train along the track at speeds of up to 500 km / h.

There is no friction between the train and the track, there are no overhead wires.

Inside the train the magnetic field strength is one tenth of the magnetic field of a hair-dryer. The train levitates using on-board batteries which can keep the vehicle floating for up to an hour without any mains power supply to the track.

Outside there is no noise from steel wheels on steel track, no sparking from overhead wires. Visually the elevated track is compact with no overhead wires.

## Maglev Fast Rail Advantages

- **Total Independence** – a Maglev system would not use any part of the existing rail system. Maglev trains will never have to wait for Metro trains to get into Southern Cross Station.
- **The Most Affordable Grade Separated System** – where no spare easement is available fast rail must be build on pillars or underground. Maglev track can easily be placed on pillars to cross existing road and rail networks.
- **Ease of Installation** – elevated Maglev track can be placed above road and rail easements. It can run across farm land to Avalon Airport.
- **Low Energy Consumption** – Maglev uses less energy then other fast rail systems, and far less than road or air transport.
- **Lowest Maintenance Costs** – Because there is no contact between the track and the train and there are no overhead wires Maglev maintenance costs are much less than TGV-type fast rail systems.
- **Higher Grades, Tighter Corners** – Transrapid Maglev can accommodate steep grades up to 10% compared to 4% for TGV-type trains. This means Maglev's can be placed on freeway median strips or alongside existing tracks. TGV-type trains would have to have a whole new easement.
- **The Fastest System** – At up to 500 km/h Maglev is the fastest fast-rail system available. Maglev's can reach 300 km / h in 104 seconds – more than 3 times faster acceleration than TGV-type trains. This means many sections of track only need to be a single track.

## Why Not Steel-Wheel Fast Rail?

The French TGV or German ICE fast trains are examples of steel-wheel fast rail systems. These are cheaper to install then Maglev *where there is a spare fully grade separated straight and level fast rail easement*.

Installing a new TGV-type rail system to Ballarat would require a new easement to be built for the TGV as easements along the existing freeway and single rail line are too steep and have too tight a turns. This would require extensive earthworks and acquisition of private land.

Both the Geelong and Ballarat routes have many level crossings that would all need to be bridged for a fast rail system at ground level.

# Information Sheet – Maglev Fast Rail

## Costs

Adding up Labor's freeway and rail tunnel plans you get a sum of \$17 Billion dollars. This is enough to build high-speed rail links between Victoria's 3 major cities with enough left over for new lines to Rowville, Mornington and Doncaster.

In 2008 one of the Maglev manufacturers, Transrapid, quoted \$4 Billion for a dual-track Maglev all the way from Geelong to Frankston via Melbourne Airport.

This was comprised of:

- \$24 Million per kilometre for single track.
- \$34 Million per kilometre for double track.
- \$16.5 - \$20 Million per section of train. Trains may have up to 10 sections.

We used these figures to estimate costs for our Maglev proposal to Geelong, Ballarat and Melbourne Airport. Like Labor's promised billions of transport spending on freeways and tunnels, this would be delivered over the next decade.

## Approximate Travel Times

Section	Max Speed	Tracks	Minutes
Southern Cross Station – Footscray	250	2	3
Footscray – Avalon – Geelong	450	2	6 + 5
Footscray – Bacchus Marsh – Ballarat	500	1	7 + 7
Footscray – Melb. Airport	250	2	5

The Geelong & Melbourne Airport loops would operate 'continuously' for most of the day – that is with an interval of 10 minutes or less between services.

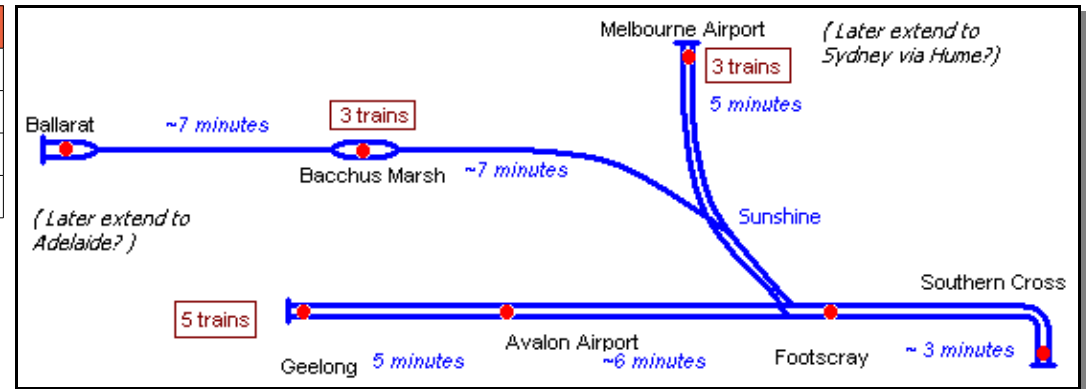
The Ballarat line would operate a 20 minute 'clock face' timetable.

Maglev trains are computer-controlled, there is no driver. Train movements would be synchronised to avoid waiting at passing loops. All trains would be crewed for security, medical and safety reasons but there is no need for a 'driver' as such.



The Maglev to Avalon & Geelong?

## Possible Track Configuration



Maglev track would be mostly placed above existing arterial road and rail easements. The Geelong track would branch down through industrial land from around Tottenham to the Geelong Freeway. The Melbourne Airport track would follow the freight rail line or the Western Ring Road north of Sunshine to near the airport perimeter and then fly over the Airport Drive industrial estate.

# Information Sheet – Maglev Fast Rail

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## Fall Back Alternatives

As noted previously a lot of grade separation work to remove all the level crossings would be needed for a TGV-type solution. Extra track would be needed to cater for fast and regular train services – they cannot safely share the same track at high speed. Avalon Airport would probably not be serviced by such a system.

However, the TGV-option should still be examined as a fall back in the event that the Maglev option proves impractical on close examination.

A Fast Rail Enquiry is needed to consider all the cost and benefits and determine which technical solution is right for Victoria.

## Noise Issues

Maglev is the quietest form of fast rail. As there is no contact between the train and the track the only sound is the wind noise. However, where the track passes close to homes or businesses double glazing or other techniques could be provided free if Maglev noise in the building turned out to be more than for normal traffic noise.

There would be much more serious noise issues with other types of fast rail.

## Inter State Extensions

The proposed system is valid as a 'stand alone' Victorian network or the start of an inter-State fast rail system. Unlike TGV-type fast rail a Maglev system could use the existing Freeway median strips for much of the distance. Existing freeway reservations can be used from Melbourne Airport to the Hume Freeway.



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## Possible Routes

Elevated Maglev is able to easily traverse existing roads, railway lines, farmland and industrial areas.

Most of the above Maglev routes would be along existing rail easements or freeways.

**At Footscray** the Maglev track would need to be over the existing rail tracks and elevated above Hopkins, Nicholson & Albert Streets. The Footscray Maglev station would be incorporated into the existing Footscray station. This would make Footscray the centre of the Maglev network.

**The Geelong Maglev** could travel south from the existing rail line at Tottenham across industrial land to the Geelong Freeway and then follow the Freeway to Avalon Airport before going on to Geelong.

**The Airport Maglev** continues through Sunshine and then follows the freight line or Western Ring Road North to enter the southern boundary of Melbourne Airport near Airport Drive. The airport station could be between the main airport building and the Hilton Hotel.

**The Ballarat Maglev** could follow the Freeway or the rail easement to Bacchus Marsh and Ballarat. This would be a single line initially with passing at Bacchus Marsh.

Much of the above route could not be used by a TGV-type system without entirely new easements and/or extensive tunnelling work which would be prohibitively expensive.

## Transrapid Videos and Brochures

[Flying on the Ground](#)

[The Emsland Test Track](#)

[Transrapid Quote for Melbourne System \(2008\)](#)

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