A shock to the system gets rid of polluting particles

By Deborah Smith, Science Editor
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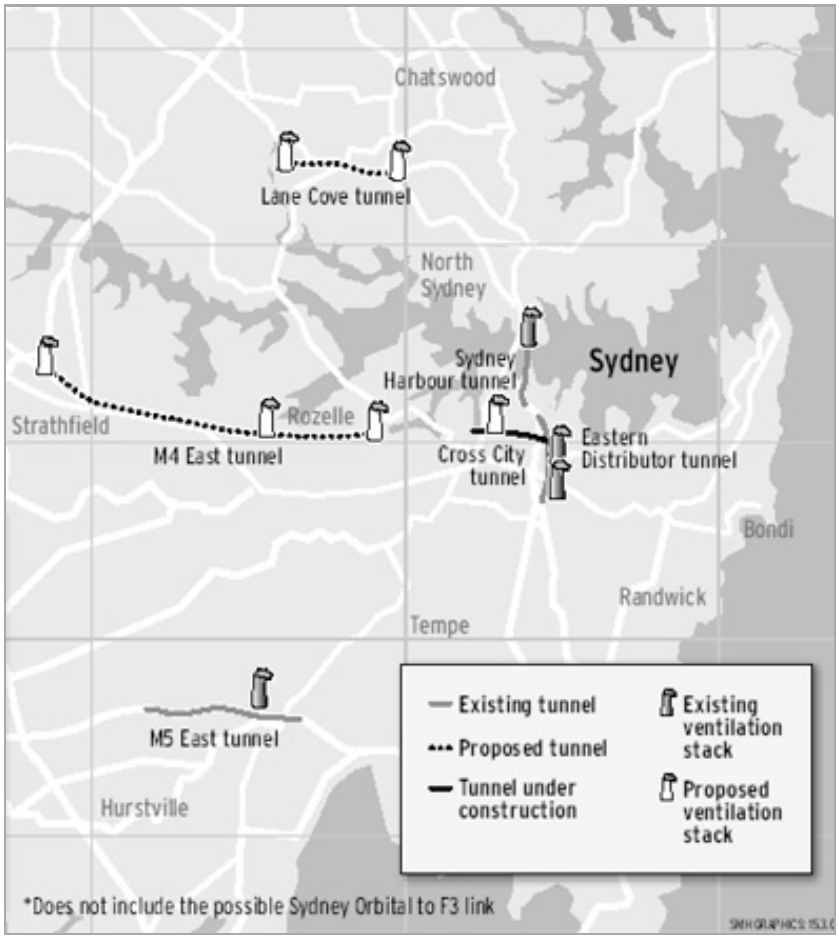

Electrostatic precipitators use electrically charged plates to filter particles of pollution from the air. They have been installed in road tunnels in Japan since 1979.

Recent improvements in design have led to claims by manufacturers that they can consistently remove 80 per cent of particles.

The system works by applying a large voltage to metal discharge plates. As the air passes, particles become electrically charged. They are then attracted to other electrically charged collection plates.

In Japan, the Mitsubishi company has pioneered a new design for the metal discharge plate, known as spiked plate ionisers.

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It says this approach has the advantage that only one high voltage power source is required, and the electric field created by the discharge plates is uniform, which improves dust collection.

The company told the RTA delegation that its equipment could collect 90 per cent of particles if the air was moving slower than 9 metres per second, but the efficiency dropped to 80 per cent at speeds up to 13 metres per second.

Techniques for removing nitrogen dioxide from air that has already passed through an electrostatic precipitator have also shown promising results in trials in Japan, the RTA group was told.

One technique uses an alkaline material to absorb the nitrogen dioxide. The other uses a metal substance to attract it.

The Japanese Government has not yet made a decision to start installing this equipment.

Electrostatic precipitators are used in 40 out of 8000 road tunnels in Japan.

In most cases the precipitators have been installed to improve visibility in the tunnel, and the polluted air is routed through them along a special side passage.

In seven cases, however, the precipitators have been installed to reduce particle emissions to air outside the tunnels.