

Truck engine braking: Noise camera

INFORMATION SHEET

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NOISE CAMERA DEVELOPMENT PROGRAMME

The NZ Transport Agency is aiming to stop truck drivers using noisy engine brakes near houses. In 2013/14 the Transport Agency trialled a noise camera on State Highway 2 Takitimu Drive in Tauranga to identify trucks using noisy engine brakes.

The trial is summarised overleaf. The Transport Agency is now undertaking a two-year controlled development programme of the noise camera. This information sheet provides details of engine braking noise, the noise camera and the development programme.

A noise camera comprises an automatic number plate recognition camera with a sound analyser. When engine braking noise is detected by the sound analyser the number plate of the truck is captured. The data is manually reviewed to confirm the truck responsible and the sound detected was engine braking. The truck operator can then be contacted, either by the Transport Agency or through industry bodies, to raise the issue and ask that engine brakes are switched off near houses.

From the trial in Tauranga the Transport Agency has determined the technical and administrative requirements for running the noise camera and following up with truck operators. A controlled development programme is now being developed to confirm how these requirements translate across different sites/regions and how the system can be managed efficiently. The programme will last for two years (2015/16), during which time the camera will be deployed to three sites for at least six months at each site. The sites chosen will be locations where engine braking noise is known to have caused disturbance to groups of residents over several years.

Noise disturbance

A small proportion of older trucks operating in New Zealand have supplementary braking systems (engine brakes) that generate a loud and distinctive noise. When these engine brakes are operated near houses, the noise can cause significant disturbance, particularly at night. This can be avoided, either by the truck being fitted with an effective exhaust silencer, or by the driver switching off the engine brakes when driving near houses. Further information is provided in a **leaflet**.

There are no noise limits specifically for truck engine braking. The following two requirements relate to noisy engine braking:

- Land Transport (Road User) Rules (7.4) require that vehicles do not produce excessive noise. While this is determined by the Police on a case-by-case basis, unnecessary use of noisy engine brakes near houses could be considered excessive noise.
- The Resource Management Act (Section 16) requires every occupier of land to adopt the best practicable option to avoid unreasonable noise. Road users are not occupiers under section 16, but the Agency as a road controlling authority may be akin to an occupier. The noise camera assists the Agency in avoiding unreasonable noise from engine braking, while recognising that noise is not directly under the Agency's control.

Tauranga Trial

A noise camera system was developed, installed and tested in Tauranga during 2013. The Transport Agency worked with the Road Transport Association, National Road Carriers, the Log Transport Safety Council, and the Police for this trial. In late-2013, the trial was publicised and the Transport Agency and its partners started to act on data recorded by the camera. When the camera identified trucks with noisy engine brakes the Transport Agency and the industry bodies contacted the truck operators to discuss the issue. The trial continued until mid-2014 including some time while equipment issues were being resolved.

Findings from the trial were that:

- Despite the significant disturbance previously reported by residents, only a small number of trucks engine braking were detected, with up to approximately 5 engine braking noise events detected each week.
- A few trucks were responsible for the majority of the engine braking noise detected.
- The camera missed some events if number plates were not recognised, two trucks passed at once, or the engine braking stopped before reaching the camera. However, even if as many as half of all events were missed there are still only relatively low numbers of events, and the trucks causing regular disturbance would have been identified during another pass-by.

The apparent mismatch between the reported disturbance and the low number of trucks detected may be partly as sleep can be disrupted with relatively few events. It may also be that residents are incorrectly describing other noise sources (such as motorbikes) as trucks engine braking.

When the Transport Agency and industry bodies contacted truck operators, they all undertook to switch engine brakes off in this location. With one exception, all of the trucks that had regularly triggered the noise camera were no longer detected. At the end of the trial there were some weeks when no engine braking occurred, although there remain some weeks when a small number of other trucks are detected.

Modulation index

Engine braking noise can be disturbing both because it is loud and also as it has a distinctive characteristic modulation. Engine braking noise is caused by pulses of gases being emitted from the truck exhaust system, giving a 'machine gun' sound. These bursts of sound repeatedly getting louder and quieter in quick succession are known as a 'modulated sound'.

Noise cameras for engine braking have been developed in Australia over the last decade with a detection system that identifies this modulated sound. In this way trucks engine braking can be more reliably detected than simply by measuring the maximum level of the noise. The Transport Agency noise camera uses the same modulation detection system as the Australian systems. The camera is triggered when the 'modulation index' exceeds a certain threshold.



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