

# MINO-1042 Waterview Tunnel and over-height warning systems advice

19 April 2024

Advises on Waterview Tunnel over-height warning systems and historical trigger incident statistics, as well as general information on existing over-height warning systems in place across New Zealand, principally their frequency of use and suitability.

## NZ Transport Agency Waka Kotahi’s response:

How many times has the Waterview Tunnel experienced over-height warnings being triggered in the past 5 years? Listed by year.

- Over the past 5 years (period from 18 April 2019 – 18 April 2024), the Waterview Tunnel has experienced 173 over-height warning trigger incidents.

Year	Number of over-height warning trigger incidents
2019/20	24
2020/21	15
2021/22	30
2022/23	51
2023/24	53

## What is the height limit of the Waterview Tunnel?

- The Waterview Tunnel’s maximum vehicle height is 4.3 metres. Any vehicle of, or above, the maximum vehicle height is prohibited from using the tunnel and must follow appropriate detour routes.
- The legal height limit for a vehicle to travel on New Zealand roads is 4.25 metres. For vehicles between 4.25 metres and 5 metres, drivers must survey the route prior to travel and obtain written permission from owner(s) of any overhead obstruction that the vehicle cannot safely clear. Drivers of vehicles over 5 metres must obtain an Over-dimension permit from NZTA. This process is designed to limit the frequency of infrastructure collisions.

## What is the height limit tolerance of Waterview Tunnel and how are height systems triggered/activated?

- The Waterview Tunnel has a height limit tolerance of 4.70 metres. Anything above that height will impact against the portal beam.
- The Waterview Tunnel possesses an over-height vehicle detection system comprising detectors and Variable Message Signs ahead of all Waterview Tunnel entry sites. The detection system consists of a pair of infrared detectors and an inductive loop on the pavement. To trigger detection, both detectors need to be simultaneously activated in the right sequence as the inductive loop detects the presence of a vehicle.
- The tunnel has a minimum of two over-height detection points on each approach. The first activates a variable message sign instructing the vehicle to take the next exit and sends an alarm to the tunnel

operators. The second initiates an automatic tunnel closing sequence after the last exit. The tunnel operators can close the tunnel at any time.

- The tunnel closing sequence involves activating the red lights and lane closure signs and an audible alarm. This is followed by tunnel entrance barrier closure.
- Once tunnel operators confirm the tunnel closure, an incident response crew is immediately dispatched to address the incident.
- There are over-height detection systems installed in all major New Zealand tunnels, as well as in other structures at risk of getting hit by large vehicles, such as the Penrose overpass.

**General info on existing height warning systems in New Zealand, including their suitability and frequency of use.**

- According to the NZTA Crash Analysis System, over-height vehicle crash incidents are frequently attributed to incorrect loading, no or incorrect measuring of load height, incorrect stowing of truck-mounted cranes and/or driver inattention.
- In general, over-height vehicle detection systems are deployed to warn drivers if their vehicle exceeds the maximum height for the upcoming infrastructure, whether that be a tunnel entrance, low bridge or sign gantry (structure supporting the signage in question). These systems typically consist of infrared beam transmitters and receivers.
- NZTA has seven over-height detection systems in place around the country to protect six major tunnels and one bridge. Over-height detection works well. However, these systems are also reliant on drivers to obey signage and pull over and stop. This is not always the case in all over-height incidents. NZTA is working with Heavy Haulage and Freight Forums to reduce the occurrence of over-height incidents given their increasing trend over the last few years.
- Additional over-height incident countermeasures are set out below, though advising on their common usage is challenging given several measures are reliant on adoption at the driver and/or company-level:
  - *Driver education*, such as information and awareness campaigns to aid drivers in measuring their load and ensure loads are adequately secured.
  - *In-Vehicle Technology*, including a truck GPS or smartphone app that notifies drivers in-vehicle of low-over-height structures, an in-cab warning system that notifies the driver if the load moves or is insecure.
  - *Road geometry and accident site monitoring*, which effectively means any site that has an over-height incidence record or high-risk profile should be regularly assessed for compliance and/or improvement needs.