

New Zealand guide to temporary traffic management

All workers and road users
go home safe every day

Trialling NZGTTM for Non-invasive activities: A WSP perspective

Justine Wilton, Robert Swears and Fergus Tate

June 2024

WORKSAFE

Mahi Haumaru Aotearoa

WorkSafe is New Zealand's primary
work health and safety regulator

NZTA's NZGTTM trials



What are 'non-invasive' activities in the road reserve?



Risk assessing the activities







Working in the gaps – traffic factors matrix

- What is a TTM risk matrix for non-invasive activities?
- What should it achieve?
- What's in it?
- How does it work?
- Will one size fit all?



THE MATRIX

Working in the gaps – traffic factors matrix

- We tried to keep it simple and concise.
 - 18 parameters across 7 pages.
 - 4 levels of risk per parameter.
 - 10 pages of complementary text describing process.
- Covered more than the basic requirements of our brief.
- Everyone has different appetite for risk; how do we standardise that appetite?

7 pages

The image shows a vertical stack of 7 pages of a traffic factors matrix. Each page contains a grid of parameters with risk levels indicated by colored cells (green, yellow, pink, blue). The pages are separated by horizontal lines, and a vertical double-headed arrow on the left indicates the total height of the stack, labeled '7 pages'.

Working in the gaps – traffic factors matrix

- Key factors considered:
 - Scale of activity (people and vehicles).
 - Relative speed of activity.
 - Experience of staff.
 - Sight distance.

The image displays a vertical stack of ten identical traffic factors matrix tables. Each table is a grid with multiple columns and rows. The cells within the grid are color-coded: green, yellow, pink, and blue. The tables are arranged vertically, with each table containing the same set of data and color-coding. The tables are separated by thin horizontal lines. The overall structure is a vertical column of ten such matrices.

Working in the gaps – traffic factors matrix

- Key factors considered
 - How far on to road.
 - Weather and lighting.
 - Traffic volume and type.
 - Position of activity vehicles.
 - Roadside condition.

The image displays a vertical stack of ten identical traffic factors matrix tables. Each table is a grid with multiple rows and columns. The cells within the grid are color-coded: green, yellow, pink, and blue. The tables are arranged in a vertical column, with each table containing the same set of data and color-coding. The tables are separated by thin white lines, and the overall structure is a long, narrow grid.

Working in the gaps – traffic factors matrix

- Basics of the matrix:
 - Field and office components.
 - How do we determine there is a gap?
 - Can we safely go on to road and leave road within that gap?
 - What is the effect of activity on road users?



NZTA requested us to focus on marking out faults in the lane



Method 1 - Rear spotter and attenuator



**Rear spotter with
AWVMS setup**



Attenuator setup



**Inspector's vehicle
setup**

Method 2 - Rear 'pilots'



Rear 'pilot' setup



Inspector's vehicle setup

What we did next



Contingency Plan Test 1 – Rescue a collapsed inspector



Contingency Plan Test 2 – Result: this one is best



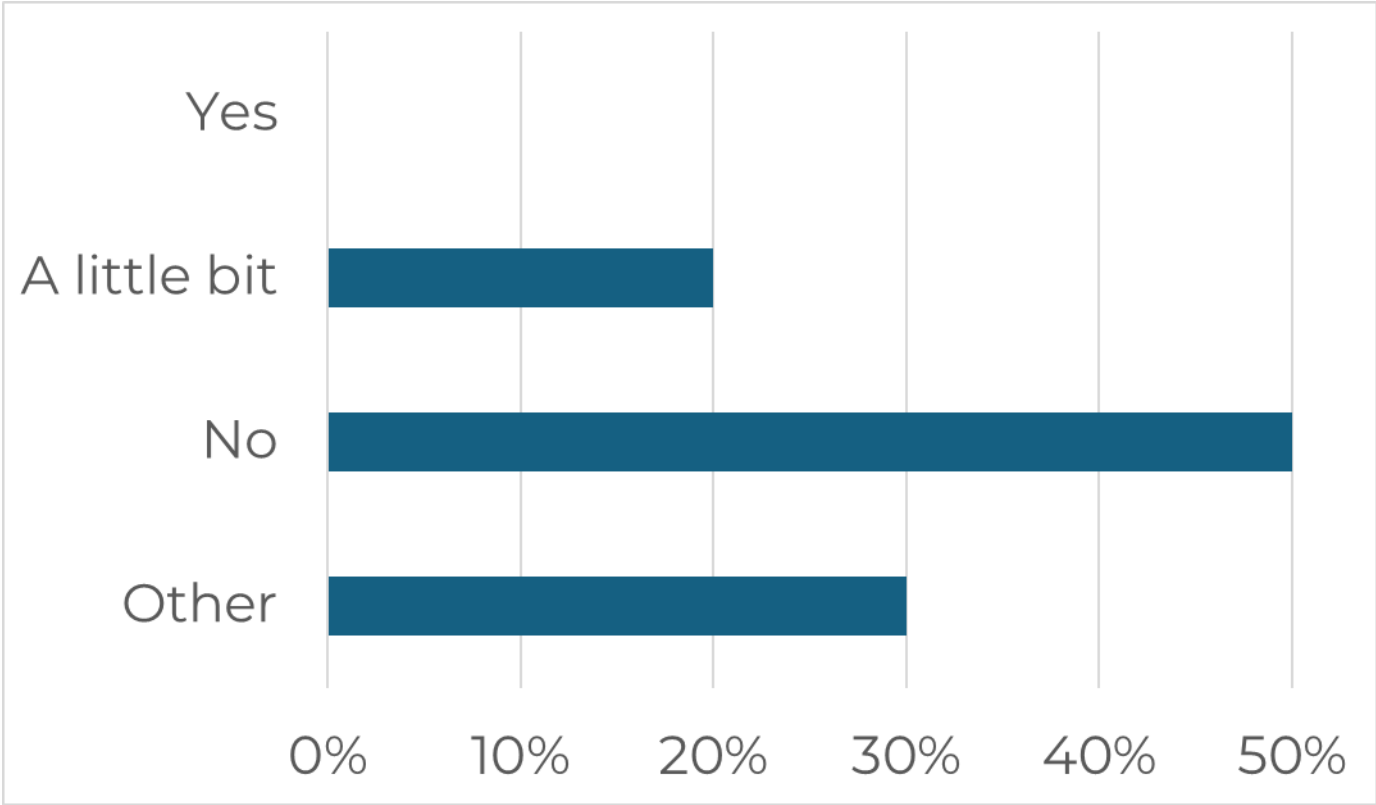
Inadvertent result



What to do if sight distance isn't 'enough'

- Working in the gaps using spotters to relay information about approaching traffic to the inspector.
- Require traffic to slow down / stop or go around.
- Change the work methodology.

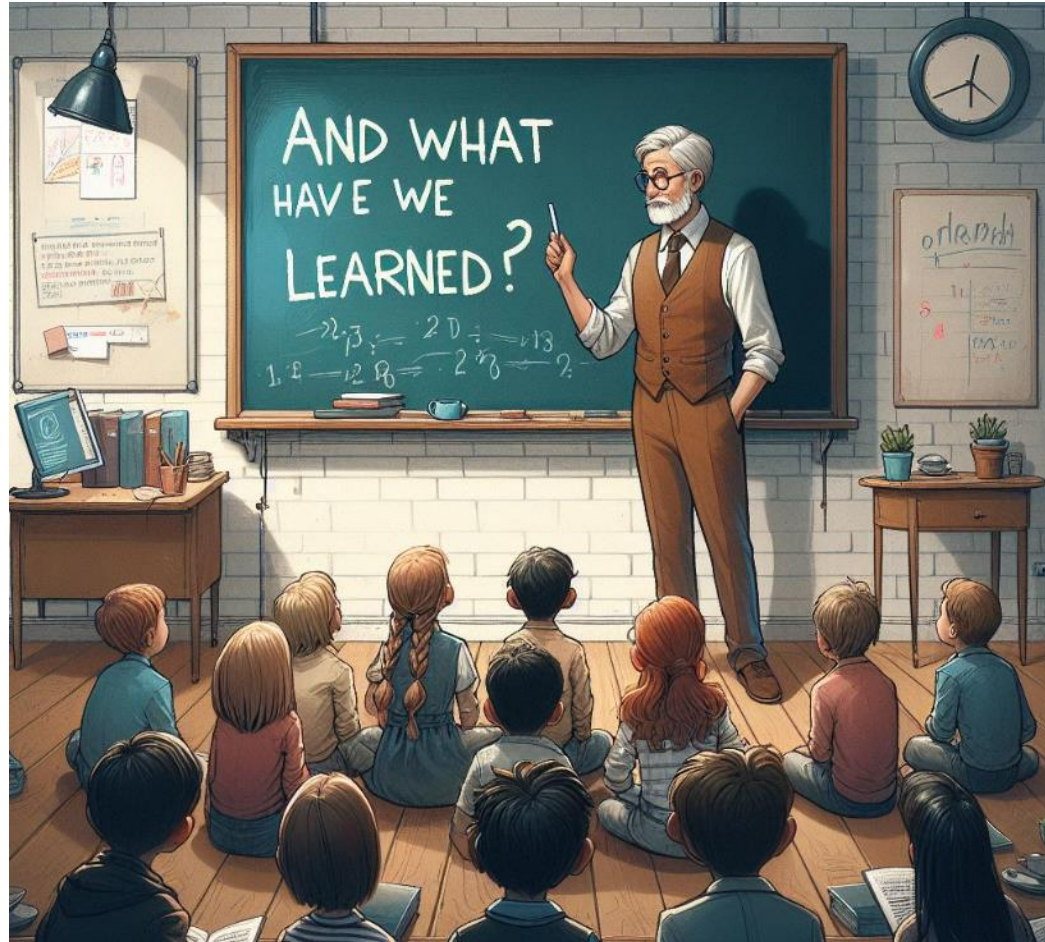
Do staff wholly rely on their spotter/s?



Do staff wholly rely on their spotter/s?

“depends - if I have formed a trusting relationship/connection with the Spotter I will rely on them advising me. If I don't have that, I'll keep awareness (hearing or sight) of traffic”

Learnings from the risk assessment process



So, what did we learn – traffic factors matrix

- Toddler factor: asking “why” is critical.
- Some current TTM foundations are shaky, others must remain set in stone.
- Question everything and develop answers.

Parameter	Field/Office	Applies for activity?	Weight	Risk			
				Low	Medium	High	Very High
A. Scale of activity including people, plant and equipment put down	Office	Y/N	2	Two people or less. Any plant and / or equipment is hand-	Two people or less. Any plant or equipment is	3-4 people and / or any plant or equipment put down	5 or more people and / or any plant or equipment put down
Risk controls for parameter C.						Reduce speed differential or provide shadow vehicle.	Reduce speed differential or provide shadow vehicle.
D. Experience of	Office	Y/N	4	Extensive experience, undertaken the	Moderate experience, has undertaken the	Limited experience, has undertaken the	No experience, has never undertaken the
C. Weather and lighting conditions (both).	(weather) Office	Y/N	2	Fine and clear and at least an hour after sunrise and an hour before sunset.	Dull overcast or light rain, but good visibility. More than half an	operating at medium or low risk level. Steady rain or moderate fog, either of which adversely affect visibility. Between half	Heavy rain or dense fog.
J. Lateral position of activity vehicle on the shoulder side of		Y/N	4	Roadside door of vehicle(s) >1 m from edgeline.	Roadside door of vehicle(s) just clear of edgeline.	Roadside door of vehicle(s) is up to 1 m (half light vehicle width) into live lane.	Roadside door of vehicle(s) is more than 1 m into live lane.
Risk controls for parameter L.					Consider the use of 4WD vehicle(s).	Find alternative location for stopping / operating vehicle(s). If unavoidable, ensure	Find alternative location for stopping / operating vehicle(s).
vehicle activity (both) AND sight distance for exiting vehicle if live lane is not entered.							
Risk controls for parameter O.						Identify options for increasing sight distance to vehicles, such as having spotters in front of or behind activity vehicle as appropriate.	Identify options for increasing sight distance to vehicles, such as having spotters in front of or behind activity vehicle as appropriate.
P. Distance of person on foot on shoulder side of edgeline (that is, not on live lane) (stationary). This parameter assumes the person is not		Y/N	3	>2 m.	1-2 m.	0-1 m.	
at least 20 m beyond the end of the barrier, and can maintain a distance of at least 1.5 m whenever there an approaching vehicle is within the parameter O sight distance. In that regard, vegetation trimming behind barriers to allow at least 1.5 m separation is important.							
Risk controls for parameter Q.						Move to a Low or Medium risk location relative to the vehicle	Move to a Low or Medium risk location relative to the vehicle
R. Subjective increase in risk level.	For any of the parameters, the risk level can be increased based on other factors of which you are aware. For example, if you are working at a site with low levels of skid resistance and you consider the risk level assessment based on the parameters does not adequately define the risk, the risk level for that parameter can be increased. Risk levels for any parameter should never be subjectively decreased.						
S. Final call: even if the matrix indicates the activity will be safe, do you feel safe conducting the activity?	<p>No: Do not conduct the activity, Advise manager as appropriate.</p> <p>Yes: conduct the activity with risk mitigation measures as necessary and appropriate.</p>						

So, what did we learn – traffic factors matrix

- Some parameters once evaluated don't need to be revisited.
- Aim is to minimise subjective assessment.
- We need considered outcomes, not blind adherence to process.

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So, what did we learn – traffic factors matrix

- Basic principles are sound.
- Matrix in paper form is complex.
- App is needed for simplification.
- Even if matrix says “okay”; personal perception for “no” should override.

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So, what did we learn – traffic factors matrix

- Some lines should not be crossed – can't argue with kinetic energy.
- Appetite for risk varies between and within individuals.
- Some things (e.g. trust) can't be objectively assessed.

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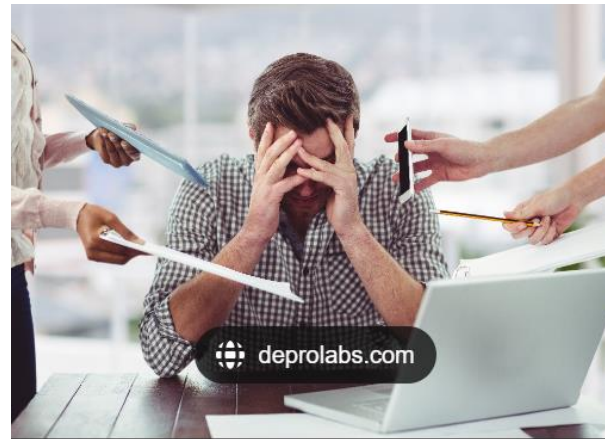
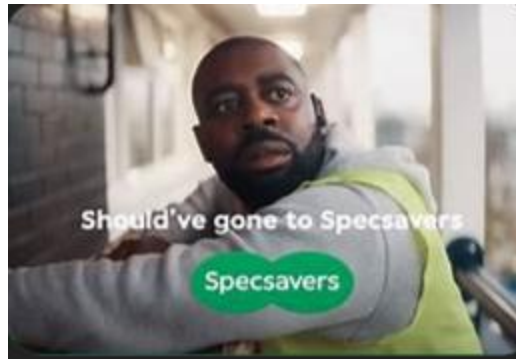
Safe space, honesty and trust is vital



Risk perception differs between individuals



Fitness for work:



Tasks ahead

- Decide what documentation is really necessary.
- Convert the traffic-factors risk matrix into a practise note.
- Workshop the activity-specific risk assessments.
- Produce and approve a TMP.

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