

# **New Zealand guide to temporary traffic management:**

## **Identification of TTM risks**

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Common issues and associated risks to prompt thought are shown in the table below. This is not a complete list and should not be used for preparation of a risk assessment for a site. The tables have been reproduced from the Austroads Guide to TTM part 2, table 3.2 (2019). There is more material in the Austroads Guide to TTM part 10 (2019).

Issue	Potential risk	Example of site-specific impact of risk
<b>Vulnerable road users</b>		
Pedestrians, cyclists, people with disabilities and other vulnerable road users such as children, parents with prams, users of small-wheeled vehicles/mobility aides and the elderly	Unable to pass safely past the site using existing paths	Unsafe crossing practices in unsigned locations  Schools, clubs or other facilities that may generate high volumes of pedestrian or cycle traffic and facilities such as hotels or taverns where pedestrians may have their judgement impaired
Unacceptable length detour	Detours have a much larger impact on people walking and cycling	Detour created for pedestrians with significantly changed length or terrain
<b>Vulnerable road workers</b>		
Abusive communication from road users or the community	Exposure to verbal and non-verbal abuse, leading to psychological harm and loss of morale	Poor community engagement with work programme leading to workers experiencing high levels of exposure to verbal abuse from passing road users and psychological harm
Objects thrown or projectiles aimed at workers by road users	Objects or projectiles strike workers causing physical and psychological harm. Or near miss causing psychological harm	Passing road user throws a bottle at a worker causing bruising and psychological harm
Physical assault, with or without the use of a weapon	Physical assault causing physical and psychological harm to the worker	Road user leaves their vehicle and punches the worker causing bruising and psychological harm
Vehicle unintentionally breaching TTM boundary	Unintentional breach causing physical and psychological harm to the worker	Member of the public misunderstands TTM signage and drives their vehicle beyond the TTM boundary hitting a worker and causing broken bones, bruising, and psychological harm
Vehicles intentionally driven into workers	Road user chooses to drive their vehicle into a worker causing physical and psychological harm	Member of the public chooses to drive their vehicle into TTM stop/go worker causing physical and psychological harm
<b>Path users</b>		
Clear direction for path users	Unfamiliar and illegible paths which are not used by path users	Pedestrians in the path of work site vehicles, equipment or other vehicles moving through the site
Surfacing of temporary paths	Surface not appropriate for prams, strollers, wheelchairs and the visually impaired	Trip hazards
Location of pedestrian crossings	Crossing position unfamiliar to path users	Unpredictable pedestrian behaviour when crossing roads

Issue	Potential risk	Example of site-specific impact of risk
School crossings		
Presence of school crossings within site area requiring relocation	Safe school crossing practices compromised	Children crossing the road in an unsafe and unpredictable manner in and around the site
Site/location		
Site access	Compromised safe access to worksite	Worker injury due to unexpected vehicle entry to worksite
Length of worksite	Excessive length of worksite, including rural areas	Dangerous driver behaviour resulting from excessive length of queues because of time needed to manage reversible flow  Infrequently used property access in the middle of the site may not be adequately monitored resulting in unsafe site entry  End of queue collisions
Traffic impacts		
Traffic queues and delays	Unacceptably long delays to road users	Aggressive driver behaviour and lack of community acceptance of worksite
End of queue collisions	Inadequate warning of traffic queue results in collision	Multiple vehicles in queue affected by collision resulting in injury and property damage
Detouring of traffic on a major or multi-lane road	Volume of detoured traffic has unacceptable impact on surrounding areas  Detoured traffic experiences unacceptable delays	Property and business access is compromised  Increased volume of traffic on residential streets leading to compromised safety outcomes for residents
Interference with the operation of permanent traffic signals	Compromised legibility of traffic controls for road users	Road user confusion leading to increased likelihood of traffic incidents
Complete closure of turning lanes	Removal of option for road users  Compromised legibility of road layout for road users	Road user confusion leading to increased likelihood of traffic incidents  Compromised property and business access leading to lack of community acceptance of worksite  Increased congestion on other areas of the road network
Site in operation during times of low visibility	Sight distance or vision of road user compromised on approach to worksite	Road user unable to respond in a timely manner to the hazard ahead
Incorrect placement of devices	Sight distance or vision of road user compromised on approach to worksite	Injury to road users and roadworks as a consequence of reduced stopping distance

Issue	Potential risk	Example of site-specific impact of risk
Lane availability		
Need to maintain a minimum number of available lanes	Traffic volume not adequately accommodated	Extensive delays on road network leading to increased travel times  Decreased community acceptance of worksite
Closure of high-volume traffic lanes and impact on remaining trafficable lanes	Inadequate provision made for high volume of traffic	Road structure being used above design capacity
	Volume of traffic in remaining lanes becomes unacceptably high	Extensive delays on road network leading to increased travel times
Times of operation		
Periods in which work can and cannot occur	Work occurs at inappropriate times of the day	Disruption of residential areas  Interference with known peak traffic times  Frequent interference with usual business activity  Dust and noise impacts on surrounding areas
Requirement to implement the TMP for more than 14 hours within a single shift	Staff fatigue	Decreased concentration of workers leading to increased likelihood of incidents
Speed choices		
Credible speed limits, considering the safety of workers and road users	Road users travel at inappropriate speeds due to lack of understanding of applicable speed limits	Increased likelihood and severity of incidents
Specifications, standards, rules and policies		
Clarity of applicable specifications, standards, rules and policies. Some documents may change from project to project	Application of incorrect or expired specifications, standards, rules and policies	Confusion regarding mandatory safety regulations leading to inconsistent application
	Older works may be governed by older standards, roles, specifications and/or policies	Worksite is not in line with required safety standards
Stakeholders		
Stakeholders must be consulted regarding the project and its impacts	Stakeholder opposition to project	Delays as complaints are addressed and resolved

Issue	Potential risk	Example of site-specific impact of risk
Environmental risk		
Existing vegetation	Obscured positioning of signs and devices	Road user is unaware of approaching queue leading to collision
Shadowing, fog or glare on roads in east-west direction	Impact on visibility of traffic control devices	Road user collides with work equipment parked in the shoulder
Inclement weather or smoke	Impact on visibility of traffic control devices	Traffic speed has not been reduced adequately resulting in loss of driver control of motor vehicle
	Change in condition of road surface	
Night conditions	Reduced legibility of worksite or visual overload with retroreflective devices.	Confusion as to intent of signage resulting in incidents
Conflict between existing signage or infrastructure and proposed temporary signage	Compromised legibility of worksite	Confusion as to intent of signage resulting in incidents
Personnel access		
Requirement for construction traffic to exit and enter the traffic stream	Use of inappropriate exit and entry points	Shadow vehicle collides with general traffic leading to road user or worker injury
	Unsafe site exit and entry to the traffic stream	
Site constraints with no escape route for workers or traffic controllers	Workers cannot escape traffic incidents on site	Worker is injured as a result of traffic incident on site
Emergency vehicle access		
Emergency vehicle access to site	Delay to emergency services travelling through the site	Emergency services unable to respond to emergencies in a timely manner
	Delay to emergency services attending emergencies on site	
Public transport		
Bus stops, tram stops, and railway crossings located within the traffic control zone	Impact on provision of usual public transport services	Negative community perception of impact of worksite
		Unpredictable public transport passenger movements near the worksite
Access to adjoining development		
Adjoining properties with access near or at the site	Compromised access to adjoining development for property owners and occupiers	Decreased community acceptance of presence of worksite

Issue	Potential risk	Example of site-specific impact of risk
Rural area		
Presence of stock crossing routes	Disruption of essential stock crossing times	Disruption of local, rural economic activity
Low quality of road surfacing	Existing road surface unsafe for worksite	Damage to worksite equipment and vehicles
Existing parking facilities		
Parking facilities exist within the proposed temporary worksite	Reduction in available parking facilities for the local area	Illegal or unsafe parking practices may occur if alternative parking and/or clear signage is not provided
Impact on adjoining road work		
Change of traffic flow impacts on surrounding road network	Excessive queue lengths Excessive delays	Impact on road user travel time Congestion Frustration with presence of worksite leading to decreased community acceptance
Heavy and oversize vehicles and loads		
Accommodation of truck traffic and over-sized loads	Inadequate lane widths Inadequate provision for turning movements Inadequate vertical alignments	Turning truck catches parked vehicles in shoulder
Other issues as specified by transport access authority		
Specific restrictions relating to dates or days, particularly around school holiday periods and other significant dates	Impact on scheduled operation of the work site	Delays to project completion



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New Zealand Government