FITEC
akoranga mo te waotu

He Mihi

Nga pakiaka ki te Rawhiti.	*Roots to the East.*
Nga pakiaka ki te Raki.	*Roots to the North.*
Nga pakiaka ki te Uru.	*Roots to the West.*
Nga pakiaka ki te Tonga.	*Roots to the South.*
Nau mai, Haere mai	*We greet you and welcome you.*
ki te Wãonui o Tane	*To the forest world of Tane.*
Whaia te huarahi,	*Pursue the path,*
o te Aka Matua,	*of the climbing vine,*
i runga, I te poutama	*on the stairway,*
o te mãtauranga.	*of learning.*
Kia rongo ai koe	*So that you will feel,*
te mahana o te rangimãrie.	*the inner warmth of peace.*
Ka kaha ai koe,	*Then you will be able,*
ki te tũ whakaiti,	*to stand humbler,*
ki te tũ whakahĩ.	*Yet stand proud.*
Kia Kaha, kia manawãnui	*Be strong, be steadfast.*
Tena koutou katoa.	

First edition August 2007

This Best Practice Guideline is to be used as a guide to traffic control. It does not supersede legislation in any jurisdiction or the recommendations of equipment manufacturers.

FITEC believes that the information in the guideline is accurate and reliable; however, FITEC notes that conditions vary greatly from one geographical area to another; that a greater variety of equipment and techniques are currently in use; and other (or additional) measures may be appropriate in a given situation.

Other Best Practice Guidelines included in the series:

- Cable Logging
- Chainsaw Use
- Fire Fighting and Controlled Burnoffs
- Ground-based Logging
- Land Preparation
- Maintenance Inspections of Yarder Towers
- Manual Log-making
- Mechanised Harvesting and Processing
- Mobile Plant
- Personal Protective Equipment
- Road and Landing Construction
- Silvicultural Pruning
- Transport
- Loading
- Tree Felling
- Tree Planting
- Working with Helicopters

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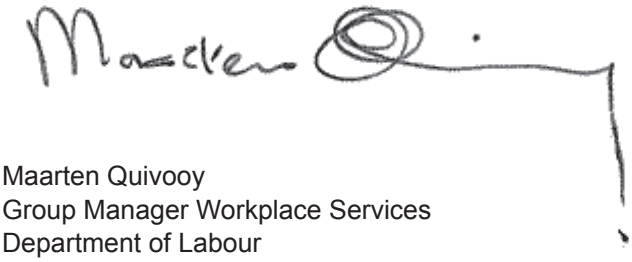
Best Practice Guidelines for Temporary Traffic Control on Private Forest Roads

Foreword

Best Practice Guide for Temporary Traffic Control on Private Forest Roads.

This Best Practice Guideline establishes recommended minimum standards of temporary traffic control on forest roads. Adopting these standards will ensure users of forestry roads are clearly and consistently warned of operational forest activities or specific hazards in close proximity to a road. They will also allow road works to be undertaken safely and efficiently.

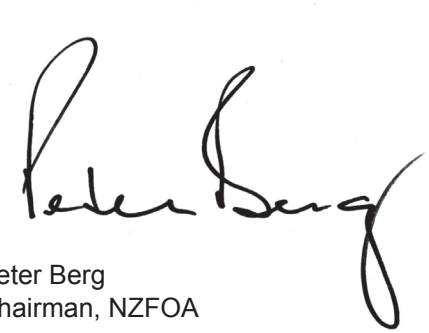
I am delighted that the Department of Labour has joined with the NZ Forest Owners Association and its stakeholders in developing this improvement in temporary road traffic management practice for the benefits it will contribute to safe workplace practices in forestry.



Maarten Quivooy
Group Manager Workplace Services
Department of Labour

The New Zealand Forest Owners Association is committed to the maintenance of appropriate codes and standards related to sustainable forest management. The Association strongly endorses the Best Practice guidelines for Traffic Management on Temporary Traffic Control and considers that it will make a significant contribution to ensuring transport safety within forestry operations.

NZFOA commends the Best Practice Guidelines to its members as the industry benchmark in this area and expects that all members will support, and adhere to, its principles and practice.



Peter Berg
Chairman, NZFOA

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Introduction

Background

The Health and Safety in Employment Act 1992 specifies that a person is required to take those steps only in respect of circumstances that the person knows or ought reasonably know about. A step is practicable if it is possible or capable of being done and is a matter of fact and degree. The degree of risk and severity of injury or harm must be balanced against the cost and feasibility of the safeguard.
This Best Practice Guide (BPG) utilises current industry knowledge to identify 'preferred practice'. It does not express the only acceptable means of achieving the standard required by the Act. However, observance of this BPG may be considered as evidence of good practice in a court.

Forest owners manage activities on their land or under their control. Their role includes taking all practicable steps to ensure the safety of people working within the forest and visitors using the roads.

As a Principal, the Forest Owner must identify significant hazards caused by activities over which they have control. (Approved Code of Practice for Safety and Health in Forest Operations). They can also play an active role, in partnership with contractors, in defining control measures.

Also, the forest owner may have responsibilities as the Road Controlling Authority (RCA). If so, the forest owner must establish some method for managing temporary traffic controls and operational sites where there is risk to drivers and/or forest workers.

In 2000, Transit New Zealand released the first version of the Code of Practice for Temporary Traffic Management in New Zealand (TNZ Code) . The TNZ Code was designed primarily with public highways in mind. As a consequence, the TNZ Code does not always provide a practicable means of managing hazards affecting low-use, private forest roads and tracks.

This situation led the New Zealand Forest Owners Association (NZFOA) and FITEC to develop the Best Practice Guidelines for Temporary Traffic Control on Private Forestry Roads. Public roads (those roads administered by TNZ or territorial authorities) are not covered by these guidelines.

These guidelines have been developed to minimise the risks from forest activities on traffic using private forest roads. They cover all aspects of temporary traffic control, from management and planning processes, to guidelines for warning sign layout and use. They represent the minimum standard of temporary traffic control on forest roads. Where appropriate, they are aligned with the principles of the TNZ Code, and provide a workable means of ensuring the safety of road users and workers.

What is Temporary Traffic Control

Temporary Traffic Control (TTC) is a means of managing road traffic through a hazard zone. These hazards may be associated with work sites on, or adjacent to, the road. They also include unplanned incidents affecting the road, such as slips or washouts.

TTC relies on the use of standard signs and barriers to isolate and minimise hazards. They are used to not only protect road users, but also those working on or adjacent to the road.

Guiding Principles

- TTCs are put in place to manage hazards that may affect forest workers and visitors. Where a hazard has been identified, there is an expectation that all practicable steps must be taken to eliminate, isolate, or minimise the hazard (in that order).

- Planning of TTCs must be considered as part of hazard management.

- Documented chains of direction, action and responsibilities must be established.

- TTCs must be consistent across the New Zealand forest industry. To ensure this, minimum standards for warning sign or barrier use and layout have been established.

- The planning of traffic controls needs to be flexible to recognise the uniqueness of the forest and forest road environment. It should also allow the use of a range of means to achieve the desired outcomes.

- TTC of forest roads that allow unrestricted use by the general public (i.e., public easement, right-of-way) need to be consistent with TTCs on public roads.

How to Use these Guidelines

These guidelines have been arranged into four main sections:

- **Basics** covers traffic control process, responsibilities, and training.
- **Equipment** describes the signs and associated equipment used for temporary traffic control.
- **Planning and Application** details the procedure for planning, setting up and maintaining temporary traffic controls.
- **Auditing** describes the aims of auditing and provides an audit template.

The Glossary gives the meaning of terms used in these guidelines.

Temporary Traffic Management Process

The temporary traffic management process involves 3 stages (Figure 1). These are:

1. Planning to determine if TTC should be used, who should use it, and what type should be used.

2. On-site application and management of standard traffic controls for site-specific conditions.

3. Auditing of TTCs to determine effectiveness, compliance, and improve future planning and application decisions.

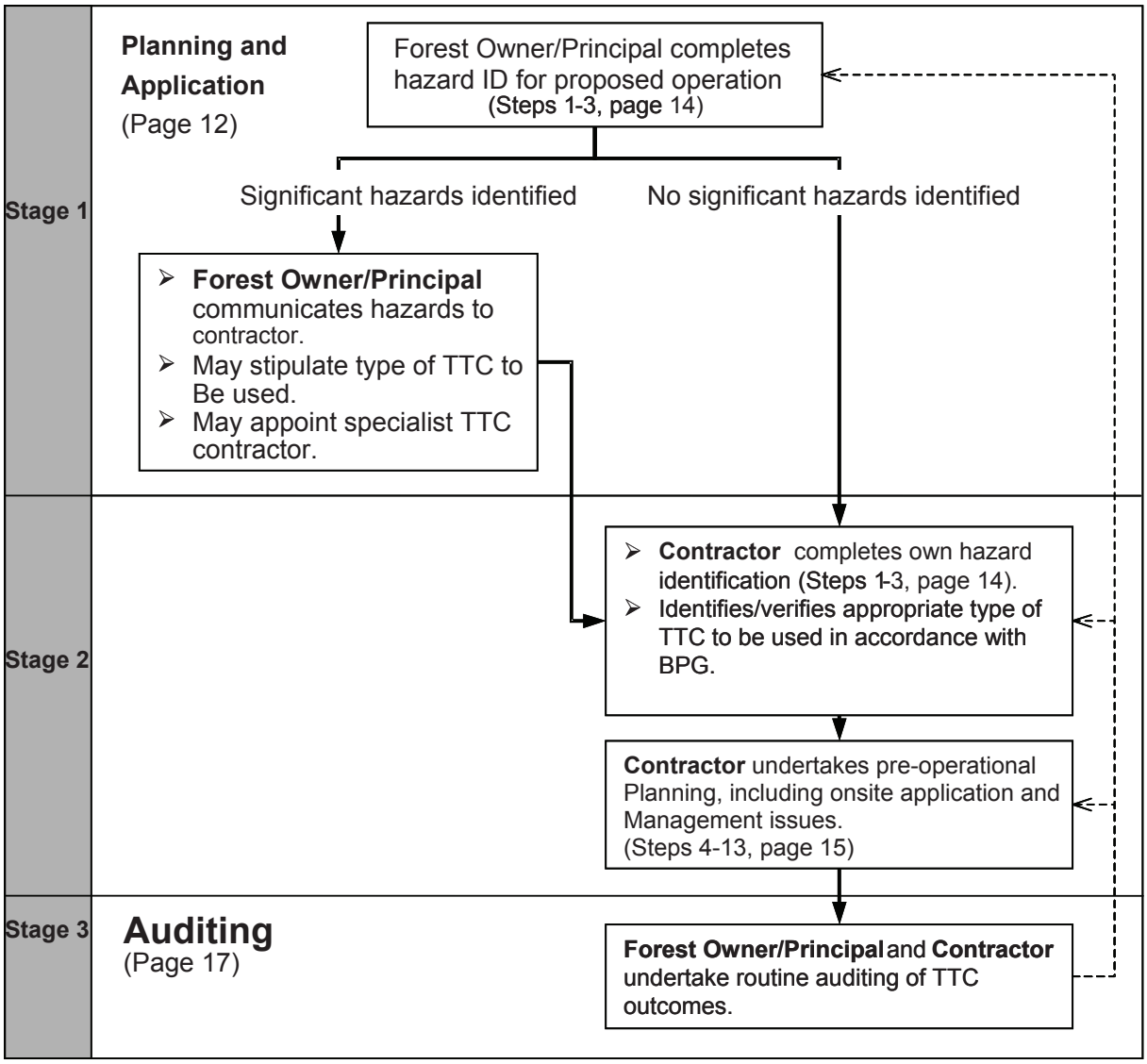


Figure 1 - Three stages of temporary traffic management on private forest roads

Responsibilities

There are three main areas of responsibility for TTC. They are:
- Road Controlling Authority (RCA)
- Principal
- Contractor.

RCA

The RCA is the organisation that manages the roads. For public roads this means Transit New Zealand or a territorial authority. For private roads this may mean a forest owner, a farmer, or a utility owner (such as an energy company).

The RCA has a statutory duty to ensure safe operation of the roading network under their authority. The responsibilities of the RCA include:

- Ensuring all TTCs are in accordance with the appropriate code or guidelines.
- Notifying contractors (or those responsible for TTC) as to the type of controls required. The type of control(s) will be consistent with the nature of hazards that exist and the nature of road users.
- Authorising and setting conditions for work and other activities on or adjacent to the road/track.
- Ensuring that appropriate delegation of authorities is set in place.
- Ensuring that there is adequate monitoring and auditing of TTC measures under their jurisdiction. This includes internal process auditing, and ensuring that contractor auditing is being completed as required).

Principal

The Principal is a person or organisation that engages any person (other than an employee) to do any work for gain or reward. A forestry company will be the Principal where they use contractors to undertake work on their behalf. Note the forest company may have a dual role as RCA and Principal.

When acting as a Principal, the forestry company is responsible for seeking approval from the RCA to undertake work on or adjacent to the road. This will include specifying;

- Significant work-related hazards caused by operations under their control (e.g., public access, transport operations through the worksite)

- If any TTC measures are to be employed at the site to eliminate, isolate or minimise those hazards (Refer to Rules for General Safety, Principals, Approved Code of Practice for Safety and Health in Forest Operations).

The Principal may seek delegated authority from the RCA in terms of day-to-day temporary traffic management where the RCA does not have the infrastructure or resource to complete their responsibilities.

Contractor

A person, organisation or company that is responsible for implementation of an activity on or adjacent to a road whether or not under contract to the RCA. This includes road construction and maintenance, harvesting, silvicultural, and specialised traffic control contractors.

The contractor is responsible for the following:

- Ensuring that the appropriate instruction from the RCA or Principal has been gained before working on or adjacent to the road.
- Completing site/operation hazard management prior to the commencement of work and when the nature of the work or hazards change.
- Implementing traffic controls and ensuring that the warning signs and layouts comply with these guidelines and that they effectively manage the hazards caused by their operation.
- Providing appropriate on site communication systems.
- Identifying responsibilities for site management.

Assigning the responsibility of Site Traffic Co-ordinator (STC) as follows:

- The STC must be on-site when full or temporary road closure is used.
- The site must be under the control of an STC in all other situations.
- Ensuring that warning signs and other controls are removed when the hazards no longer exist.
- Reporting any incidents or accidents to the RCA or Principal.

Site Traffic Cordinator Responsibilities and Training

The Site Traffic Co-ordinator (STC) is responsible for:

- Ensuring that specified traffic controls are adapted and applied according to these guidelines and that they effectively manage the hazards facing road users and workers.
- Implementing on site communication methods that ensure permission for access through temporary road closure is gained directly from the hazard causing operator who's actions have closed the road.
- Undertaking and documenting auditing of TTCs at the contractors work site(s).
- Ensuring the appropriate contractor staff are trained in correct usage of TTCs. Training and supervision activities must be documented.

Site Traffic Co-ordinators must hold one of the following unit standards:

Unit Standard under development- Application and Management of Temporary Traffic Controls on Private Forest Roads (Note: This unit standard is under development, and will be introduced in 2008)

Unit Standard 5627 - Operate as a Traffic Controller (TC) for a low volume and Level 1 road

Unit Standard 5628 - Operate as a Site Traffic Management Supervisor (STMS) for a low volume and Level 1 road.

Equipment

Signs

TTCs are used to manage hazards affecting road users and forest or road workers. The main equipment used are signs.

These signs must;

- Be clear, clean, and firmly held in position.
- Display standard symbols and text (shown below).
- Conform to established standards for size and colour.
- Be retro-reflectorised as per TNZ standards if they are used during the hours of darkness (one hour before sunset to one hour after sunrise).

Note that there is flexibility in how the signs are constructed. This allows for equipment such as banners and barriers.

There are two types of signs used for TTC. These are:
- Advance warning signs
- Direction/protection signs.

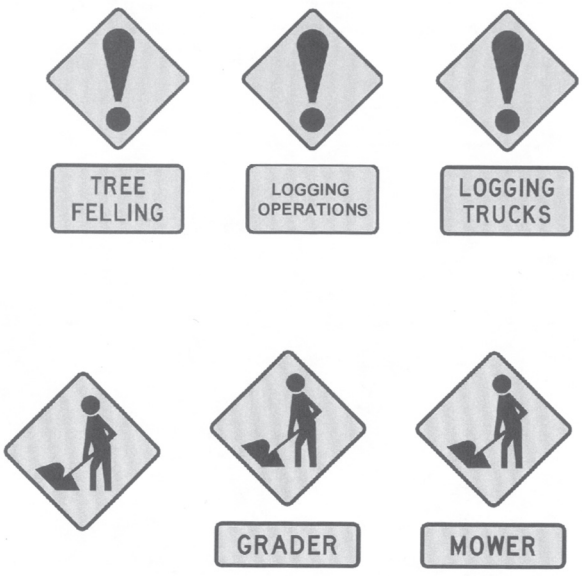
Advance Warning Signs

Advance warning signs warn drivers that they are approaching an operation or incident on or adjacent to the road. In some operations, two Advance Warning signs may be used. For example, a Logging Operations sign will be permanently placed at the entrance to a harvesting operation while a Tree Felling or Log Loading sign will be temporarily placed before a specific hazard requiring temporary road control.

Depending on the nature of the hazards, there may be further instructional (direction/protection) signs ahead. In all cases, the driver of a vehicle passing an advanced warning sign should be prepared to slow and/or stop ahead.

Advance Warning signs are orange diamond-shaped signs depicting an exclamation mark or road worker.

- Where an exclamation (!) sign is used, a rectangular supplementary sign stating the type of operation must also be shown. Note: For all harvesting operations, a Logging Operations sign shall be displayed at the start of the harvesting area.
- A road worker sign may be used on it's own, or it may have a supplementary sign stating the type of operation.



Direction/Protection Signs

- Direction/protection signs instruct the driver on how to respond before reaching the hazard zone.
- Generally these signs will instruct the driver to slow down, give way and/or stop.
- The range of direction/protection signs that may be used is shown in Table 1.

Table 1 – Direction/protection signs used on private forest roads

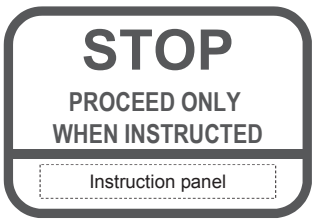
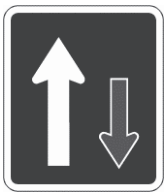
Sign	What the sign means	Comments on usage
	The road is closed beyond this point. DO NOT ENTER on foot or in your vehicle.	This sign MUST appear when the road is closed with no intention of allowing temporary access. The sign may appear as a stand-alone sign or may appear on a banner or barrier. The sign is positioned in the middle of the road. A full road-width banner, tape or other barrier MUST accompany this sign.
 Example instruction panels CALL Mead 23 on Channel 33 PLEASE USE MICROPHONE ON POLE TO CALL OPERATOR PHONE 0123 456 789	The road is closed temporarily. DO NOT go past the sign (on foot or in your vehicle) UNTIL instructed to. Get the “OK” to pass by contacting the ‘hazard causing operator’ as directed on the instruction panel. **If you are unable to contact the ‘hazard causing operator’ do not proceed.** Always replace any banner, tape or barrier behind you.	This sign MUST appear at a temporary unmanned or manned road closure. Sign has two elements; “STOP PROCEED ONLY WHEN INSTRUCTED” and a lower instruction panel. The sign MUST not be used without an appropriate instruction panel displayed except when the closure is manned. Methods of communication to gain access must work effectively to gain permission from the hazard causing operator. The sign may appear as a stand-alone sign or may appear on a banner or barrier. A full road-width banner, tape or other physical barrier MUST accompany this sign except when the closure is manned. **Note this is a new sign. Specifications are shown in Appendix 1.**

Table 1 (continued)

Sign	What the sign means	Comments on usage
	Flagmen ahead The road is temporarily closed ahead. Prepare to stop.	Optional sign for manned temporary road closure. Warns of flagman on road ahead.
	Stop or Go as directed by the flagman.	This double-sided sign MUST be used by flagmen at sites of manned temporary road closure. This sign MUST not be left unattended.
	Vehicle speed should not exceed that shown on the sign (e.g. 30 km/h). Be prepared to stop or give way.	Used to protect drivers and forest/road workers. This speed restriction sign is used when traffic must be slowed while approaching, passing through or around a hazard area. Sign may be used on the approach to a full or temporary road closure to allow vehicles to stop safely.
	Two-lane roadway is going to reduce to a single width as shown on the sign.	Used approaching a single lane. Followed by a sign indicating right of way.
	Give way to oncoming traffic.	Used where traffic is reduced to a single lane at unmanned sites.
	Other traffic should give way to you.	Used on the opposite side of a single lane diversion from the give way sign above.

Banners, Tape and Barriers

- Full road closures and unmanned temporary road closures require a full road-width obstruction (such as rope, tape, bungee, gate arms) to stop unauthorised vehicles driving around any signs into the hazard zone.

- The obstruction must include a high visibility component contained within the vehicle carriageway. This component may comprise signage, banner or tape incorporating high visibility colours (Figure 2).

- To be considered as the high visibility component, tape must be at least 100 mm wide and of a visible colour.

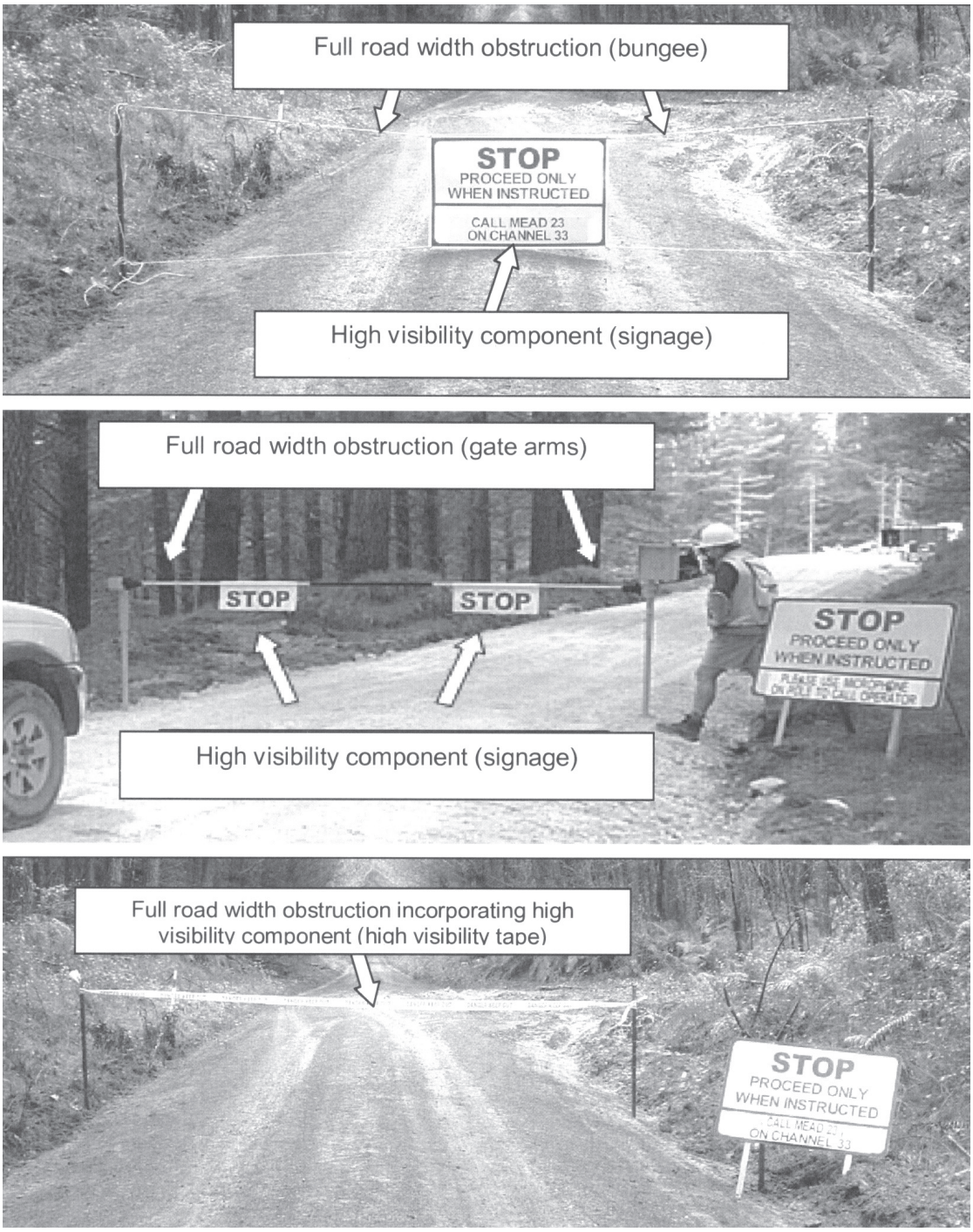


Figure 2 – Three examples of unmanned temporary road closures showing full road-width obstruction and high visibility components.

- The banner, tape, or barrier should extend the full width of the road surface to a height of approximately 1-1.5 m.
- The banner or barrier may have the final direction/protection sign (such as road closed or stop) incorporated in its design.
- Banners or tape used at sites of temporary road closure must be able to be easily taken down and put up by passing drivers.
- Where temporary and/or emergency access is required, this physical barring of the road will need to be removable.
- Whenever mechanical or electronic barriers are used they shall be installed, operated and serviced to the manufacturers specifications.

Planning and Application

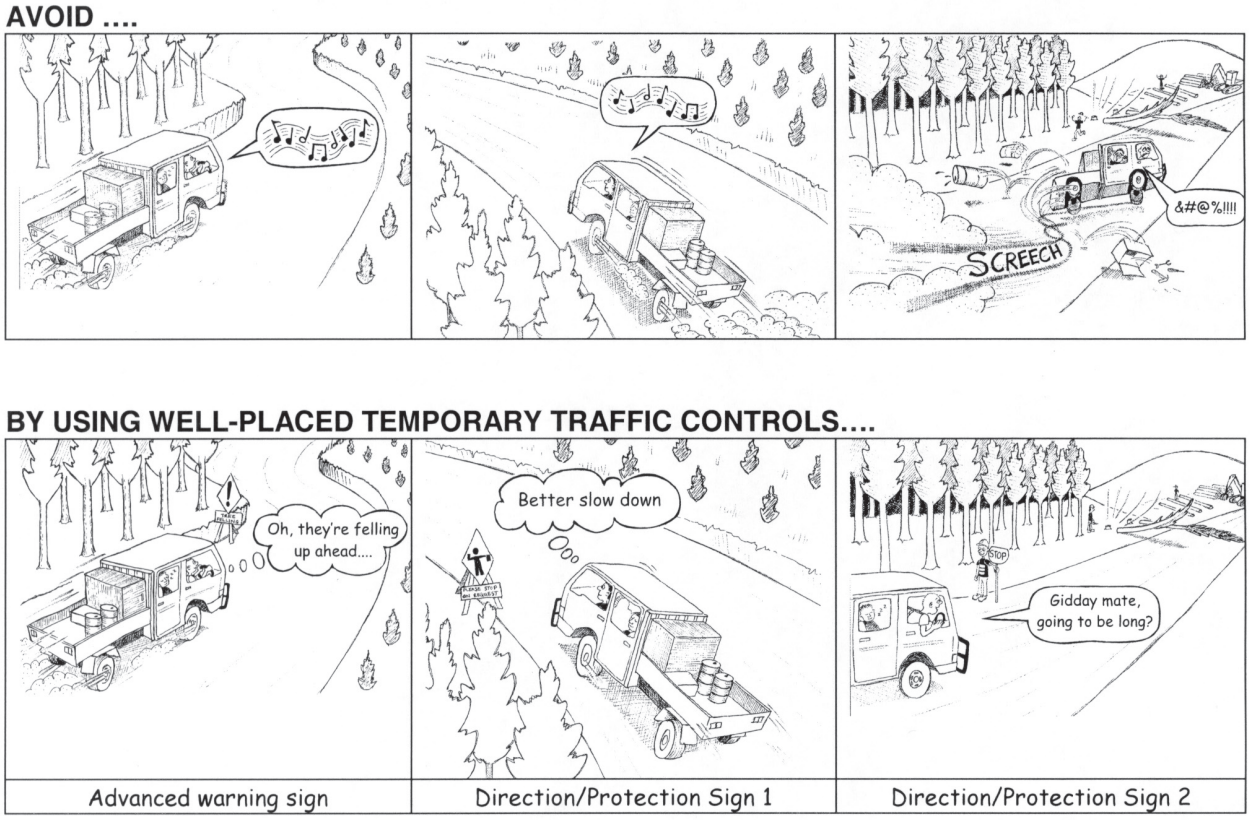
Refer to Figure 1 Page 4 for Planning and Application responsibilities

Important Points

- TTCs comprise advanced warning sign(s), direction/protection sign(s), and barriers.

- The use of TTCs must consider the drivers of vehicles using the road.

The sequencing of signs aim to:
- Inform road users there is an operation/incident ahead (i.e., tree felling, road works, etc)
- Let them know that there are traffic controls ahead and what type (i.e., temporary road closure, single lane, etc)
- Tell them how to act (i.e., stop, proceed only when instructed, etc).



Hazard

Hazards are those caused by the operation or incident, and any additional hazards associated with the temporary traffic control. Examples of the latter are shown in Table 2.

Table 2 – Examples of traffic control hazards

Hazard	Control
Moving vehicles	• Ensure signage allows vehicles to slow/stop well before the hazard zone. • Flagmen and road workers must wear high visibility garments that comply with the TNZ standards or NZFOA guidelines. Garments must be reflectorised if working during the hours of darkness.
Falling debris or trees	• Do not enter the hazard zone around tree felling (i.e., within two tree lengths) or earthworks operations. • Contact the operators and get clearance before entering the hazard zone.
Inadequate communications	• Ensure sufficient battery life is available for RTs. • Ensure the chosen RT channel is not cluttered. • Ensure all RTs are tested prior to work start. • Stop the operation if RT communication is not working properly. • Consider full road closure and/or detours.
Forest fire	• Ensure staff are aware of smoking rules. • Ensure required fire fighting equipment is on site.
Sharp changes in light contrast or low sun angles	• Be aware of how light conditions might affect how on-coming traffic are able to see the signs and flagmen – alter locations if necessary.
Slippery, steep or uneven road conditions	• Be aware of how road surface conditions might affect how on-coming traffic are able to stop – increase sign spacing if necessary.
Vehicle parking	• Ensure all operational vehicles are parked to allow signs and flagmen to be seen by on-coming traffic.
Signs not visible to on-coming traffic	• Check that the signs are clean, and clearly visible to on-coming traffic prior to starting work. • Increase spacing if necessary to improve sight distance. • Check signs at regular intervals (consider wind, theft). • Use signs appropriate to the conditions • Ensure signs are securely placed
Unclear warnings/instructions	• Ensure signs comply with industry guidelines and/or TNZ Code. • Ensure that signs are appropriate to the type of traffic control.

Hazards (cont...)

Hazard	Control
Signs obstructing vehicle passage	• Ensure that roadside warning signs are placed off the road surface.
Slowed or stopped vehicles	• Ensure adequate spacing and sight distances between signs. • Allow space at temporary road closures for stopped traffic. • Minimise waiting times at temporary road closures.
Complacency of road users	• Only use signs when traffic control is necessary. • Avoid unnecessary signage. • Ensure signs are removed or covered up as required.
Impatient Drivers	• Be courteous to waiting drivers if on Stop/Go duty. • Ensure signs are removed or covered up as required by the plan.

Planning Steps

Step 1. Identify the hazards associated with the activity or incident.

Step 2. Define the nature of the hazards in terms of extent, severity, and exposure. Rate each as low, medium or high using Table 3.

Table 3 – Defining the nature of hazards

Nature of Hazard	Rating		
	Low	Medium	High
Extent (What is affected)	❑ Affects 10's metres ❑ Entire hazard zone visible	❑ Affects up to 100 metres ❑ Entire hazard zone visible	❑ Affects 100's metres ❑ Entire hazard zone not visible
Severity (What might happen)	❑ May cause distraction ❑ Indirect injury and/or damage possible	❑ Will require evasive action ❑ Injury and/or damage possible	❑ Will require evasive action ❑ Life may be at risk
Exposure (Who is affected)	❑ Forest workers and vehicles only ❑ Low usage (<2 vehicles per hour) ❑ Spur/stub roads and tracks	❑ Forest workers and vehicles only ❑ Moderate usage (2-10 vehicles per hour) ❑ Spur/stub – arterial roads	❑ Forestry and public access/vehicles ❑ Moderate to high usage (>2 vehicles per hour) ❑ Spur/stub – arterial roads

Step 3. Determine the most appropriate TTC type based on the nature of the identified hazards. Table 4 provides the basis for this decision (Examples of this step are shown on Pages 16 - 17).

Table 4 – Determining the appropriate type of temporary traffic control

Type of traffic control	Nature of hazards
Full road closure	❑ Low to high extent – hazard affects entire road width ❑ High severity ❑ Medium to high exposure and detour available, or low exposure
Flagmen-controlled temporary road closure	❑ Low to high extent – hazard affects one lane or entire road ❑ High severity ❑ Medium - high exposure (includes non-forestry vehicles or vehicles lacking the necessary communication means)
Unmanned temporary road closure	❑ Low to high extent – hazard affects one lane or entire road ❑ High severity ❑ Low -medium exposure (no non-forestry/public vehicles)
Slow and divert traffic through or around the hazard	❑ Low extent (hazard affects one lane only) ❑ Medium severity ❑ Low to high exposure
Slow the traffic through the hazard zone	❑ Low to high extent ❑ Low to medium severity ❑ Low to high exposure
Notify traffic of operation ahead	❑ Low to high extent ❑ Low severity ❑ Low to high exposure

Step 4. Based on the type of TTC identified above, select the most suitable type of sign layout (Appendix 2).

Step 5. Determine if the selected layout needs modifying to improve safety? Walk the approaches to the hazard zone identifying where the example layout suggests sign locations.

Increase the spacing from that shown in the example layout if:

- The nature of the road or traffic, could increase slowing and/or stopping distances (i.e., down hill approach, slippery conditions, over-dimensional trucks)
- The sight distance to the advanced warning sign is less than desired (i.e., winding road or blind approach to work site)
- Slightly increased spacing improves the visibility of direction/protection signs
- Driver visibility is reduced through fog, dust, smoke, or similar
- Vehicles may back up if there is inadequate distance between the control sign and opposing traffic.

Add optional signs e.g. speed restriction signs, if necessary to reinforce the need for a slow approach to the hazard zone.

Step 6. Layout the signs along the road (or mark their positions for later installation)

Start placing signs from the hazard zone and work back up the road in reverse sequence. Place signs according to considerations above.

Step 7. Document on site the selected layout and modifications.

- Reasons for selecting particular layout and modifications to be recorded.
- Format and method for recording is up to the contractor (e.g. hazard management documents), so long as evidence is available on site and can be audited.

Step 8. Pre-operation crew meeting.

- Run through temporary traffic controls (type, layout, issues)
- Identify communication requirements.
- Identify responsibilities including checking, and removing at end of run and/or day.
- Relevant crew members to initial on site documentation.

Examples of Planning Decisions (Steps 2 and 3 on page 14)

Example 1	
Activity/Incident -	Tree felling within two-tree lengths along 300m of a secondary road (forestry traffic only)
Hazards for road users -	Falling trees, fallen trees, flying debris, machine movement
Assessment of nature of hazards	
Extent -	High (Hazard zone is full road width and 100's m in length)
Severity -	High (Life may be at risk)
Exposure -	Medium (2-10 forestry vehicles per hour)
Type(s) of temporary traffic control	
Possible options are: • Full road closure if an alternative route for traffic is easily available or • Flagmen-controlled temporary road closure or • Unmanned temporary road closure	

Example 2	
Activity/Incident -	Culvert outlet repair on arterial road with public access. Affects one lane.
Hazards for road users-	Machine movement (digger), loose road surface, on-coming vehicles
Hazards for road workers -	Traffic, sprayed gravel
Assessment of nature of hazards	
Extent -	Low (Hazard zone is one lane and 10's m in length, entire hazard zone visible)
Severity -	Medium to high
Exposure -	High (>2 vehicles per hour, includes public vehicles)
Type(s) of temporary traffic control	
Possible options are: • Flagmen-controlled temporary road closure or • Slow and divert traffic through the hazard zone.	

Example 3	
Activity/Incident -	Grader operating on a secondary forestry road (forestry traffic only)
Hazards for road users -	Machine movement, rough road surface (ridges), obstructed lane(s), on-coming vehicles.
Assessment of nature of hazards	
Extent -	High (may be kilometres long)
Severity -	Medium (greatest risk to on-coming traffic during first grader pass)
Exposure -	Medium (no public traffic)
Type(s) of temporary traffic control	
Possible options are: • Slow and divert traffic around hazard (grader) or • As above with addition of speed restriction signs.	

Example 4	
Activity/Incident -	Roadside loading of a log truck
Hazards for road users-	Falling or fallen logs, machine movement (truck/trailer, loader, other machines), suspended loads.
Assessment of nature of hazards	
Extent -	Low (loader may unsighted to vehicle drivers, affects entire road width)
Severity -	High (based on falling logs)
Exposure -	Medium (no public traffic)
Type(s) of temporary traffic control	
Possible options are: • Flagmen-controlled temporary road closure or • Unmanned temporary road closure.	

Auditing

The forest owner/principal and contractor must periodically audit temporary traffic management under their jurisdiction as part of their ongoing safety audit program.

The aims of this auditing are to:

- Verify that hazards are being effectively managed
- Verify compliance with this industry best practice guideline.
- To provide feedback to improve future process-control, decision-making, and application.

To be effective, auditing needs to be:

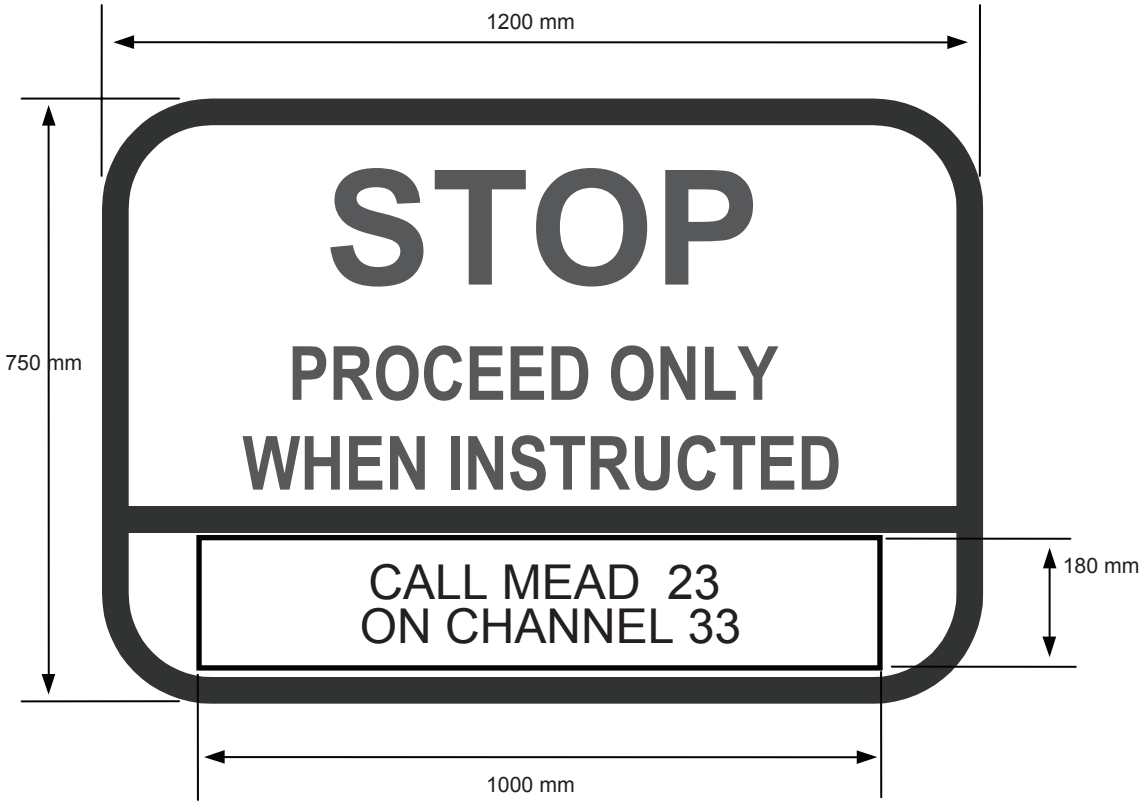
- Performed on a periodic basis using a standard format
- Performed without prior warning to the contractor/crew.

The forest owner/principal and the contractor shall audit their temporary traffic management compliance as part of their normal safety auditing procedures.

An example of an auditing template is provided in Appendix 3.

Appendices

Appendix 1 –Specification for "Stop, Proceed Only When Instructed" sign



Dimensions

Feature	Height
Border	25 mm
Space	50 mm
STOP	120 mm series E
Space	50 mm
PROCEED ONLY	80 mm series C
Space	40 mm
WHEN INSTRUCTED	80 mm series C
Space	40 mm
Line	25 mm
CALL MEAD 23	70 mm series C
Space	25 mm
ON CHANNEL 33	70 mm series C
Space	25 mm
Border	25 mm

Colours

All text, lines and borders	Reflectorised red
Background	White

Other examples for instructions panel

Phone 012345678	PLEASE USE MICROPHONE ON POLE TO CALL OPERATOR

Appendix 2 - Example Traffic Control Layouts

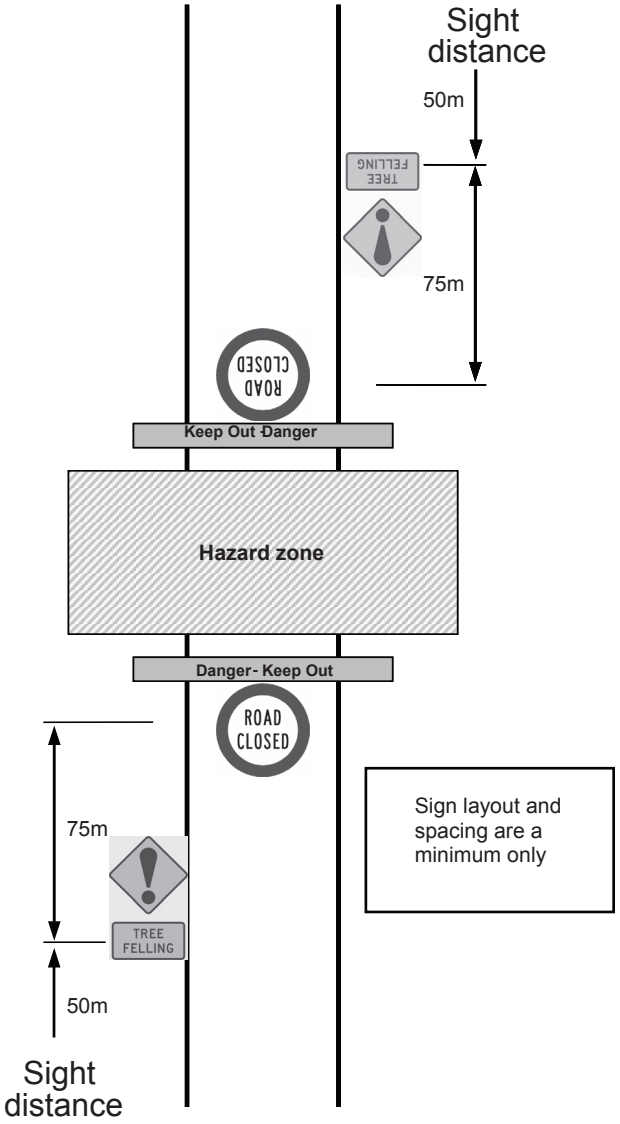
Note

The following layouts are examples of sign use and sequencing.

Sign selection, spacing and sight distances indicated on the layouts are an example only. Actual sign selection and spacing will be based on site conditions, and the type and volume of traffic on the road. This will be determined during on-site planning.

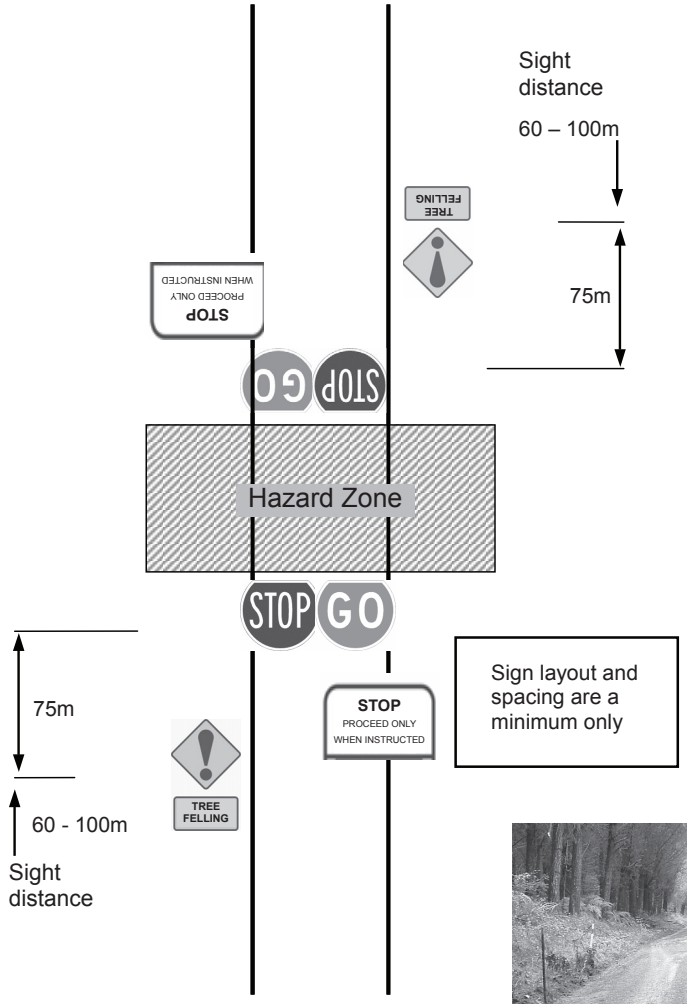
Additional protection/direction signs may be used to help manage the traffic where deemed appropriate.

Example Layout 1- Full road closure



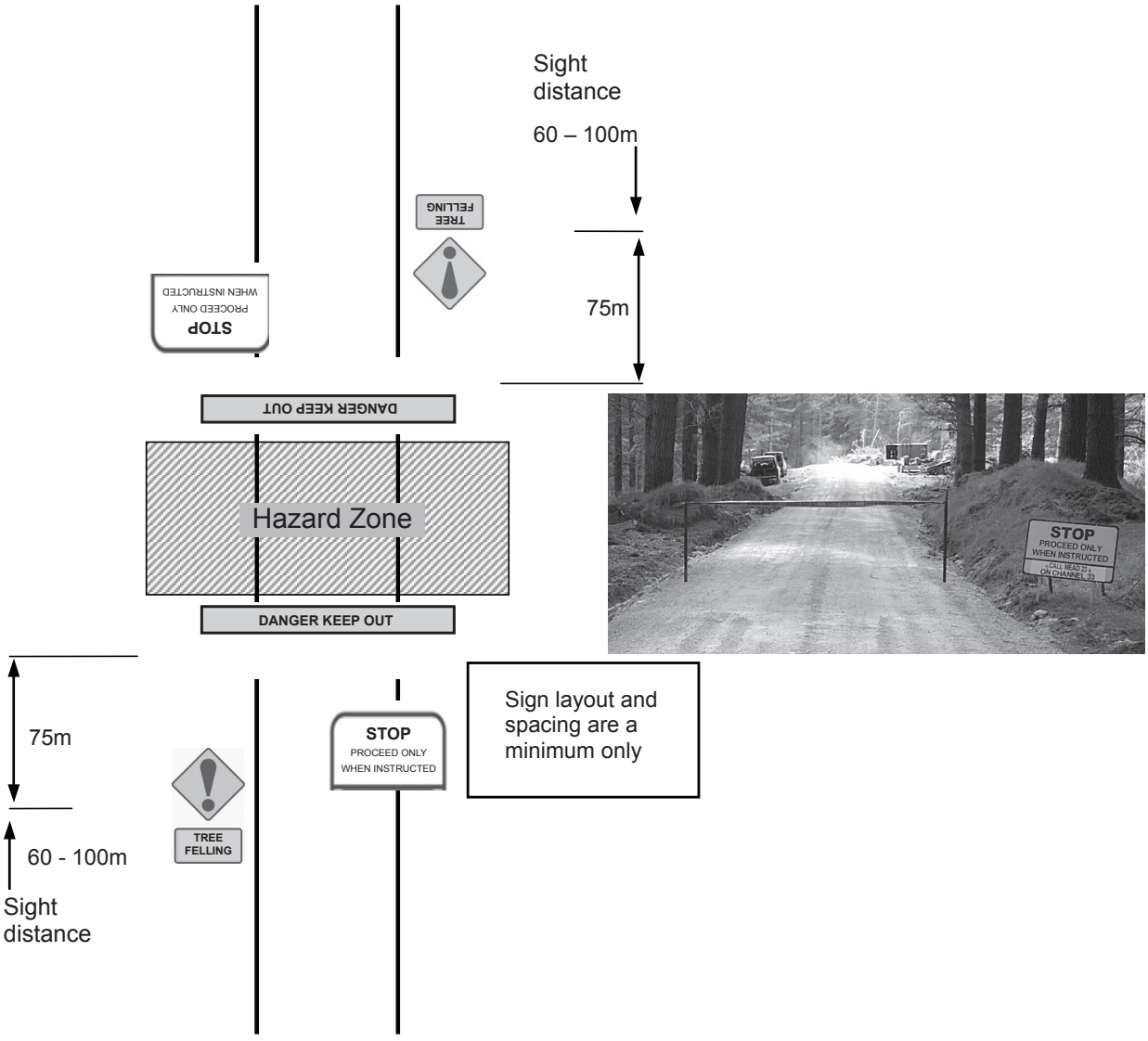
NOTES	
Advanced warning sign	• Position on the left-hand side of the track/road, off the running surface.
Road Closed sign	• Position in the centre of the track or road, outside of the hazard zone where it can be clearly seen by on-coming traffic • May be incorporated onto full road-width banner or barrier.
Barrier	• Must extend over the full track/road width at approximately 1-1.5m height.
Optional sign	• A 30km/hr sign may be placed between the advanced warning and Road Closed signs. A minimum spacing of at least 75m between each sign should be used.
General	• Ensure all access points to the hazard zone are managed.

Example Layout 2 – Flagman-controlled temporary road closure



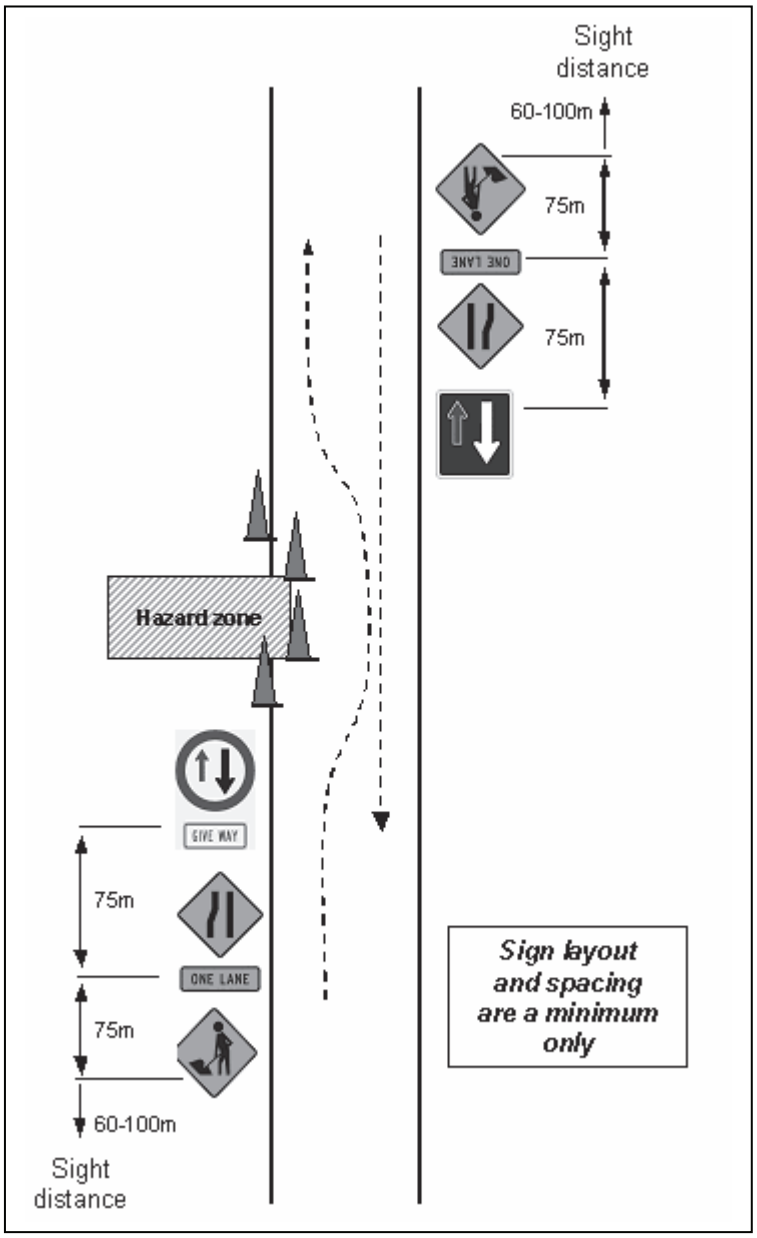
NOTES	
Advanced warning sign	• Position on the left-hand side of the road, off the running surface.
Direction/ Protection signs	• May use 30 km/hr or flagman sign individually. • Position on the left-hand side of the road, off the running surface.
Stop/Go sign	• Flagman to stand in centre of lane, with active sign facing on-coming traffic. • Ensure correct PPE is worn at all times.
General	• For high use roads or where approach visibility is limited a speed restriction sign (e.g., 30 km/h) should be considered between the Flagman and Stop/Go signs. Maintain the 75m spacing between all signs. • Cones may be placed at the flagmen point to highlight stop position. • Ensure all access points to the hazard zone are managed.

Example Layout 3 – Unmanned temporary road closure



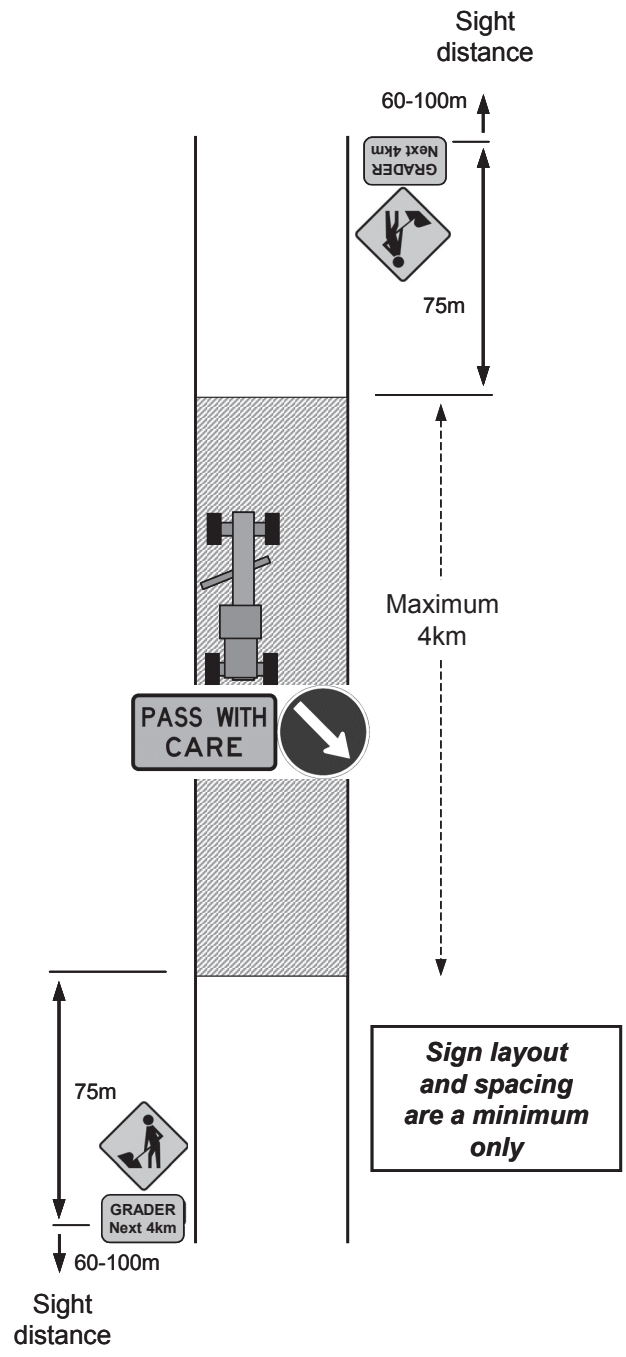
NOTES	
Advanced warning sign	• Position on the left-hand side of the road, off the running surface.
Speed restriction sign	• Position on the left-hand side of the road, off the running surface.
Stop sign	• If using a separate sign, position on the side of the road, off the road surface (to allow it to be easily read by the driver) • May be incorporated onto full road-width banner or barrier.
Barrier	• Must extend over the full road width at a height of approximately 1-1.5m. • If using a separate Stop sign, ensure the tape is immediately behind the Stop sign.
General	• For Arterial roads (or roads with 70 km/h speed limit) a speed restriction sign (e.g., 30 km/h) may be positioned between the Flagman and Stop signs. Maintain the 75m spacing between all signs. • Ensure all access points to the hazard zone are managed.

Example Layout 4.1 – Slow and divert traffic around static road works



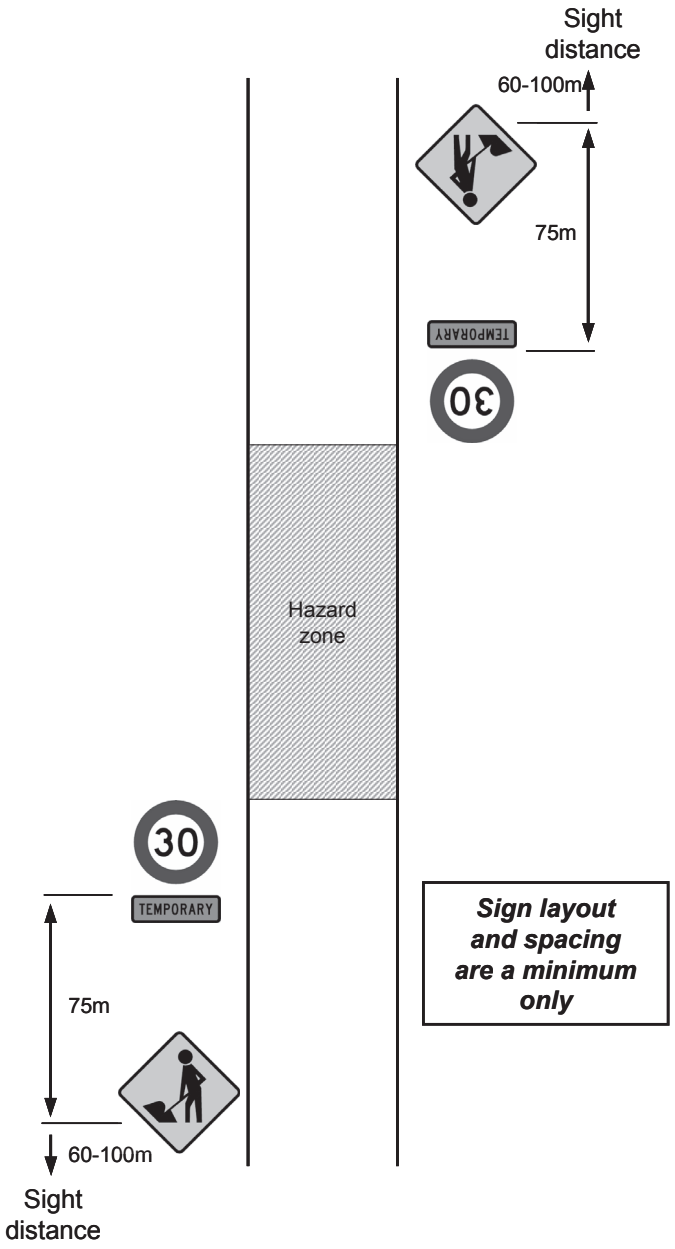
NOTES	
Advanced warning sign	• Position on the left-hand side of the road, off the running surface.
One Lane sign	• Position on the left-hand side of the road, off the running surface.
Give Way sign	• Position on the left-hand side of the road, outside of the hazard zone where it can be clearly seen by on-coming traffic • The opposite side of the hazard zone must be able to be seen by vehicles approaching the Give Way sign.
General	• Make sure one lane is fully open. If not, flagmen (Example Layout 2) are required to direct traffic. • Cones may be used to separate traffic from the hazard zone. Ensure cones taper away on both sides of the hazard zone. • Ensure all access points to the hazard zone are managed.

Example Layout 4.2 – Slow and divert traffic around mobile operation



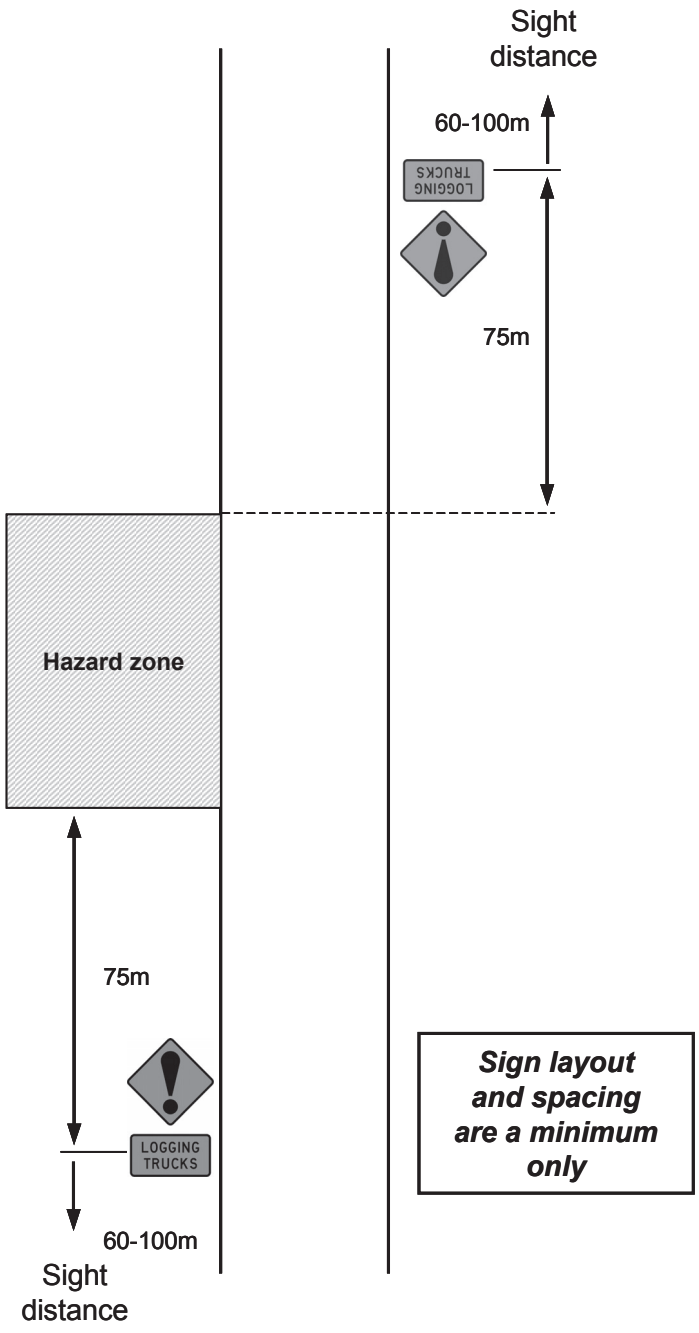
NOTES	
Advanced warning sign	• Position on the left-hand side of the road, off the running surface.
Pass With Care/arrow	• Must be fitted to the rear of the mobile equipment.
General	• Ensure all access points to the hazard zone are managed.

Example Layout 5 – Slow traffic through the hazard zone



NOTES	
Advanced warning sign	• Position on the left-hand side of the road, off the running surface.
Speed restriction sign	• Position on the left-hand side of the road, off the running surface.
General	• Ensure all access points to the hazard zone are managed.

Example Layout 6 – Operation adjacent to the road



NOTES	
Advanced warning sign	• Position on the left-hand side of the track/road, off the running surface.
General	• Ensure all access points to the hazard zone are managed.

Appendix 3 - Site Auditing Form Template

Site Auditing Form

Operation type: ..... Contractor/Crew: .....

Location: ..... Inspected by: .....

..... Inspection date: .....

..... STC: .....

Layout used - Draw layout to include measurements of sight distance(s) and sign spacing.

(y – yes n – no n/a – not applicable)

Advanced warning zone(s)		
Correct sign(s) used?	y	n
Sight distance OK?	y	n
Placement OK?	y	n
Sign condition OK?	y	n

Direction/Protection zone(s)			
Correct sign(s) used?	y	n	n/a
Spacing OK?	y	n	n/a
Visibility OK?	y	n	n/a
Placement OK?	y	n	n/a
Sign condition OK	y	n	n/a
Flagmen PPE OK?	y	n	n/a

Barriers/Banners			
Visibility OK?	y	n	n/a
Placement OK?	y	n	n/a
Condition OK?	y	n	n/a
Effectively blocks road?	y	n	n/a

General		
Hazards appropriately managed?	y	n
TTCs documented on site.	y	n

Comments/Improvements: .....

.....

.....

.....

.....

.....

.....

.....

Improvements due by: .....
Date

Improvement(s) verified ....
Auditor/delegate to sign Date

Glossary of terms

Advanced warning sign	Signs that warn drivers that they are approaching an operation or incident on or adjacent to the road. They are orange diamond-shaped signs depicting an exclamation mark or road worker.
Barrier	A means of blocking the road at full and temporary unmanned road closures. Comprises tape, banner, or gate.
Contractor	Person, organisation or company that works under contract to the principal or forest owner.
Direction/Protection sign	Signs that instruct the driver on how to respond before reaching the hazard zone.
Flagman	Person controlling “Stop-Go” sign at a manned temporary road closure.
Principal	Person or organisation that engages any person (other than an employee) to do any work for gain or reward.
Private forestry road	A road owned and/or operated by an individual or company for the purpose of accessing forestry resources and operations. May be used by the public but does not form part of public-operated road network.
Public road	For the purposes of these guidelines, is defined as a road administered by Transit New Zealand or a territorial authority, and covered under the TNZ code.
Road Controller Road Controlling Authority (RCA)	Organisation that manages roads.
Site distance	The distance from the advanced warning sign where it is clearly visible.
Site Traffic Co-ordinator (STC)	Person within operational crew, responsible for on-site aspects of temporary traffic application and management.
Specialist TTC Contractor	Contractor engaged specifically to provide temporary traffic management at a worksite. Generally, staff are trained to TC and STMS standards.
Temporary Traffic Control (TTC)	Means of managing road traffic through hazard zones using standard signs and barriers. Hazards may be caused by work sites on or adjacent to the road, or incidents affecting the road (e.g., slips or washouts).
Traffic Management Plan (TMP)	Formal plan complying with the TNZ Code.

Poroporoaki

Whaia te huarahi	*Pursue the path*
o te mãtauranga	*of learning.*
Ka piki ake koe,	*The higher you climb,*
ka whãnui atu nga pae.	*the wider the horizons.*
Rapuhia nga pae	*Seek also the horizons*
i roto, I tõu nei ngakau.	*within your self.*
E tipu, e awhi, e tũ.	*Grow, embrace, stand tall.*