Part 3 Toolbox

A SMS stage 1 scoping workshop and draft agenda

B Memorandum of Understanding

C Delivery plan spreadsheets

D Road safety strategy checklist

E SMS component workbook and checklist

F SMS stage 3 document review checklist and meeting agenda

G Deficiency database and prioritisation process

H List of possible standards and guidelines

I Continuous improvement monitoring workbook

A SMS stage 1 scoping workshop and draft agenda

Objectives

- To develop a SMS that is useful to the RCA, is easy to use by all staff and satisfies the requirements of Land Transport NZ.
- Stage 1 – scope the process for the development
  - Identify existing current systems and inputs.
  - Development needs.
  - Identify key users of the SMS.
  - Confirm form and function of the SMS.
  - Confirm methodology, team inputs and tasks (who does what).
  - Programme for delivery and costs.

Draft meeting agenda

9.00 am	Introduction/roles/background	Land Transport NZ objectives RCA objectives General description of roading network and management structure
9.30 am	Philosophy, form of SMS and function	Purpose, users Shape, size, structure and detail
10.15 am	Introduction section	Brief introduction/foreword – what is purpose of document, who should read it
10.30 am	Strategy section	In SMS or separate and referred to Key reference documents eg RCA strategic plan, asset management plan, regional land transport strategy
11.00 am	Management section	Who will own and operate, ensure ongoing development and compliance with SMS Management structure, organisational chart
11.30 am	Expertise and training section	Land Transport NZ objectives RCA objectives General description of roading network and management structure
12.00 pm	Audit (monitoring and review) section	Level of detail Key performance indicators (KPIs) Land Transport NZ role/involvement
12.15 pm	Lunch	
12.45 pm	Standards/guidelines/policies and procedures	Split - network hierarchy/activity/asset What's required based on by risk Structure – list or template
2.45 pm	Where to from here?	Programme for completion of stage 2 (Development of SMS) Discussion of delivery plan Establish who does what /when/how Confirm stage 2 timetable
3.00 pm	Finish	

B Memorandum of Understanding

Memorandum of Understanding

between

Land Transport New Zealand

and

XXXX District Council

This **Memorandum of Understanding** is made on the XXth day of XXX 2005

Between: The Director of Land Transport New Zealand

And: XXXX District Council

Introduction

1 Land Transport New Zealand was established on 1st December 2004 from the merger of the Land Transport Safety Authority and Transfund. Its principal vision is "to allocate resources and to undertake its functions in a way that contributes to an integrated, safe, responsive and sustainable land transport system." Land Transport New Zealand achieves its objectives by working in partnership with service delivery organisations such as XXX Council (hereinafter called RCA).

2 The RCA works in partnership with the community and other agencies to improve safety. They work to improve road safety outcomes by means of engineering, enforcement and education strategies. The RCA is principally regulated by the Local Government Act 2002.

3 Both parties consider effective partnerships to be essential to the achievement of their goals and the fulfilment of their missions.

4 The parties currently work together and offer advice to each other. They wish to formalise this relationship in the area of Safety Management Systems (SMS). They wish to specify the terms and conditions under which this co-operation will occur, in order to clarify agreements and procedures, and thereby to road safety outcomes.

Purpose

5 The purpose of this Memorandum of Understanding is to promote a collaborative working relationship between Land Transport New Zealand and the RCA, covering the area of SMS.

6 This Memorandum of Understanding consolidates updates and supersedes all previous Memoranda of Understanding covering the areas set out in the attached Schedule.

Outcomes

7 The desired outcomes of this Memorandum of Understanding are to enhance:

- community safety through an improvement of safety for the users of New Zealand's land transport system;
- the achievement of the Safety Strategy 2010 road safety targets;
- the roles of the RCA and Land Transport New Zealand in delivering land transport safety initiatives through SMS;
- the collaborative relationship between the parties; and
- local relationships in the area of SMS.

Effect of this Memorandum of Understanding

8 This Memorandum of Understanding confirms the relationship between the parties based on a spirit of goodwill and co-operation. The parties agree to work together to achieve the agreed outcomes outlined in clause 7.

Schedules to the Memorandum of Understanding

9 The parties agree that from time to time they will develop agreements or protocols relating to specific SMS procedures and activities involving the parties. These will be attached to the Memorandum of Understanding as Schedules, in Annex A. New agreements or protocols may supersede existing agreements or protocols. All current agreements or protocols specific to SMS will be attached as Schedules.

10 New Schedules may be developed and added with approval from the Partnership Manager of Land Transport New Zealand, and the Chief Executive of the RCA, or their delegated staff.

11 Reviews, modifications or terminations of existing Schedules may be undertaken by the mutual agreement of the signatories to the Schedule. All changes must be notified to the Partnership Manager of Land Transport New Zealand and the Chief Executive of the RCA or their delegated staff, so that the master document can be amended.

12 Schedules will be reviewed initially one year after signing and then every two years, or as agreed, in line with the reviews of this Memorandum of Understanding (see clauses 14 - 16).

Sharing of Information

13 Land Transport New Zealand and the RCA will seek to develop strategies and plans to share SMS related information in order to enhance community safety through agreed outcomes.

Review of the Memorandum of Understanding

14 The parties' representatives will meet initially one year after signing and then every two years, or as agreed, to review this Memorandum of Understanding.

15 This Memorandum of Understanding can only be modified by a written agreement duly signed by the parties' representatives who are authorised to sign on behalf of the parties.

16 The parties' representatives are primarily responsible for ensuring that the intent of this Memorandum of Understanding is followed.

Issue or Dispute Resolution

17 An attempt to resolve all issues, disputes and differences between the parties in relation to the interpretation or performance of this Memorandum of Understanding that arise, shall, in the first instance, be made at the earliest opportunity by the Land Transport New Zealand SMS Project Coordinator or the RCA SMS Champion in whose jurisdiction the issue has arisen.

18 If the matter cannot be resolved within four weeks it should be referred to the Land Transport New Zealand SMS Project Manager or the RCA Roading Asset Manager / Engineer in whose jurisdiction the issue has arisen.

19 If agreement cannot be reached by referral to the above parties' representatives, the matter shall be referred, in writing, within a further four weeks, to the Land Transport New Zealand Partnership Manager in whose jurisdiction the issue has arisen and the RCA Chief Executive for final resolution within four weeks.

Costs

20 Unless the parties mutually determine otherwise, the cost of meeting the commitments of this Memorandum shall be met by the party incurring the cost.

Termination

21 Either party may terminate this Memorandum of Understanding by three months' notice, in writing, to the other party.

Conditions

22 Nothing in this Memorandum of Understanding shall make either party liable for the actions of the other, or create any new legal relationship between the parties.

23 The provisions in this Memorandum of Understanding are to be read subject to any Chief Executive, Council or Cabinet directives, and any formal resolution or enactment.

24 Where there are changes to Council or Government policy which affects the purpose and functions of this Memorandum of Understanding, each party agrees to inform the other of those changes at the earliest possible time thereafter and agrees to meet to renegotiate, if necessary, any aspects of this Memorandum of Understanding.

Parties' Representatives

The parties' representatives and their street, and postal addresses, and telephone and facsimile numbers, are:

Land Transport New Zealand

Address: _____

_____

Telephone: _____ **Facsimile:** _____

Party Representative: Partnership Manager _____

_____ **District Council**

Address: _____

Telephone: _____ **Facsimile:** _____

Party Representative: _____

Signed by the Partnership Manager of Land Transport New Zealand

Signature: _____

Name: _____

In the presence of: _____

Signature: _____

Name: _____

Address: _____

Designation:

Signed by the Mayor/CEO

Signature: _____

Name: _____

In the presence of _____

Signature: _____

Name: _____

Address: _____

Designation: _____

ANNEX A

Schedules to the Land Transport NZ and RCA Memorandum of Understanding

Responsibilities of parties

Joint:

1 To work together in the development, implementation and audit of a Safety Management System for the RCA applying best practice generally in accordance with current Guidelines.

2 Participate in National Safety Management System Review Workshops.

RCA:

1 Commitment of appropriate resources to the development of a Safety Management System.

1 Adopt, implement, operate, audit and revise the Safety Management System that is developed via this Memorandum of Understanding.

1 Make information and processes available for review, monitoring and evaluation to be undertaken of road safety performance and audit of the Safety Management System.

1 Participate in external auditing processes

Land Transport New Zealand:

1 Payment of consultants to assist with development, implementation and audit of the Safety Management System.

1 Provide support and guidance to assist with development, implementation and audit of the Safety Management System.

1 Provide RCA travel expenses to National Safety Management System Review Workshops.

1 Facilitate external audit of Safety Management System documentation, implementation and outcomes.

1 Organise National Safety Management System Review Workshops.

C Delivery plan spreadsheets – Example documents only

SMS delivery plan – Overview page

Project	Duration	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
SMS Document Development and delivery plan													
- Stage one	1 day												
- Stage two													
- Delivery Plan in place													
- internal doc review	1 day												
- Stage Three (Land Transport NZ)	1 day												
Buy-in													
- Councillors													
- CEO													
- Upper level management	ongoing												
- Engineering team	ongoing												
- Other internal units													
- Parks and Gardens	ongoing												
- Planning	ongoing												
- Utilities	ongoing												
- Consultants													
- Contractors													
- Key road safety partners	ongoing												
Implementation Issues													
- SMS Safety Team in place													
- Opportunity For Improvement process operational													
- Road Safety Strategy signed off by Council and operational													
- deficiency database operational													
- Crash Reduction Study programme operational													
- Safety Inspection prog operational													
- contracts incl SMS req's													
- professional (Safety Management Plan in place)													
- physical (Safety Intervention Plan in place)													
- SMS included in Job Descriptions													
- SMS included in induction processes													
- SMS included in performance review process													
etc													
Audits/Reviews													
- Stage three development review (Land Transport NZ)	1 day												
- Safety Team meetings													
- Internal Audit													

SMS document development

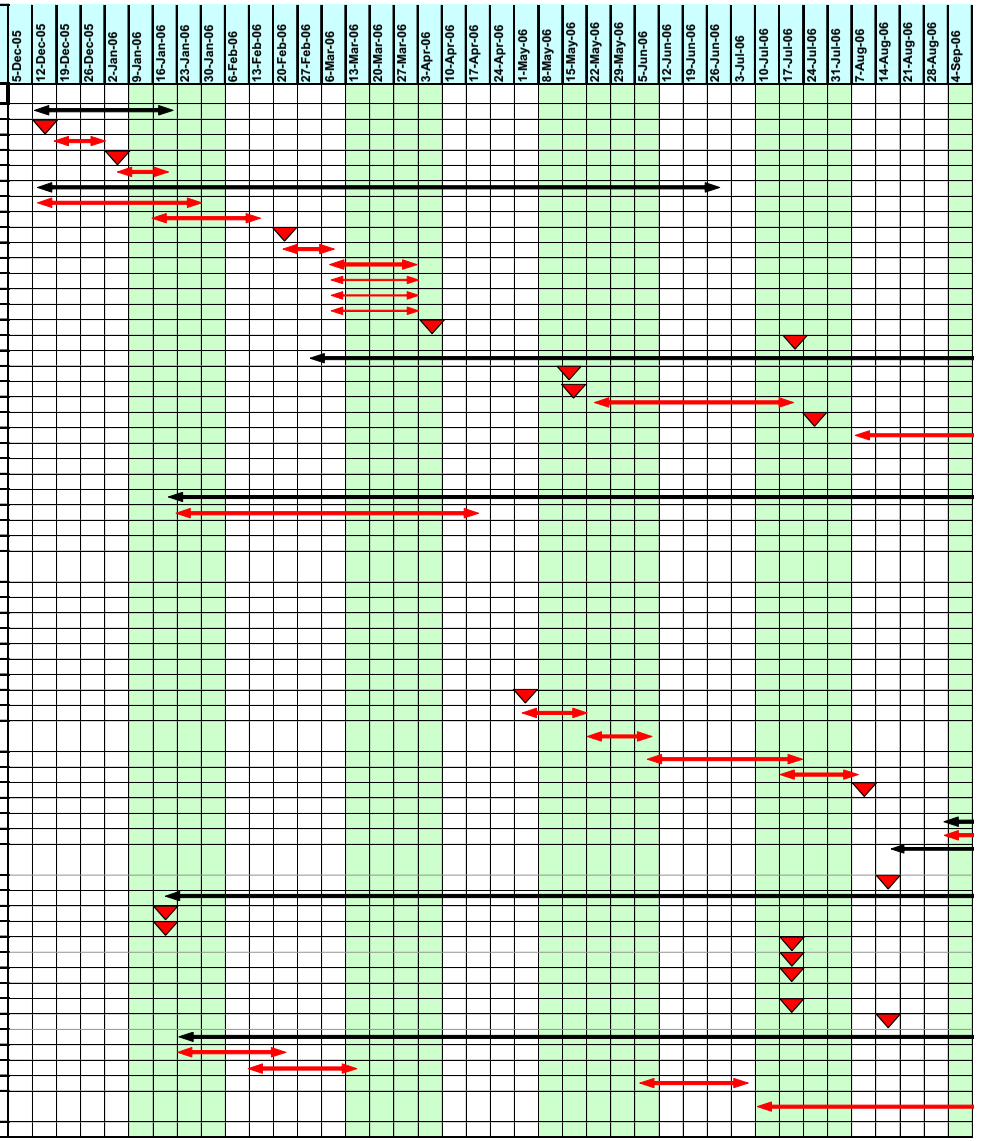
Project	Duration	Who?	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
Stage one	1	Land Transport NZ, RCA, Consult	←									
- necessary info gathered for meetings		RCA	←									
Stage Two												
- Activity Sheets												
- Agree Activity sheet layout	0.5	RCA, Consult		←								
- develop activity sheets	10	RCA, consult, internal units			←				→			
- Review Activity sheets	2	RCA, internal units			←				→			
- Road Safety Strategy (RSS)												
- Draft RSS contents		Consultant		←								
- Review RSS		RCA, Consult, Land transport NZ, Partners			←							
- Finalise RSS contents and layout		RCA, Consult, Partners				←			→			
- Consult with Council on RSS		RCA							←			
- consult with community on RSS?		RCA							←		→	
- RSS finalised and operational		RCA, Partners							←			
- Expertise												
- draft Expertise section		consult			←							
- Delivery Plan developed		RCA. Consult, Land Transport NZ										
etc												
Internal doc review	1 day	RCA, Consult								←		
- work through Stage 3 checklist		RCA, Consult								←		
Stage Three Review	1 day	Land Transport NZ, RCA, Consult									←	

Buy-in

Project	Duration	Who?	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06
Councillors													
- presentation on SMS approach							↔						
- presentation on Road Safety Strategy									↔				
- launch of SMS												↔	
CEO													
- meeting to discuss SMS and sign MOU	0.5		↔										
- launch of SMS	0.5											↔	
Upper level management													
- presentation at Management Exec mtg	0.5					↔							
- launch of SMS												↔	
Engineering team													
- presentation on SMS	0.5			↔									
- activity sheet development	10				↔				↔				
- presentation on OFI system	0.5						↔						
- launch of SMS	0.5											↔	
Other internal units													
- Parks and Gardens													
- presentation on SMS	0.5			↔									
- champions team member elected	0.5			↔									
- activity sheet development	2				↔				↔				
- launch of SMS	0.5											↔	
- Planning													
- presentation on SMS	0.5			↔									
- champions team member elected	0.5			↔									
- activity sheet development	3				↔				↔				
- launch of SMS	0.5											↔	
- Utilities													
- presentation on SMS	0.5			↔									
- champions team member elected	0.5			↔									
- activity sheet development	2				↔				↔				
- launch of SMS	0.5											↔	
Consultants													
- presentation on SMS	0.5			↔									↔
- Safety Team members appointed	0.5			↔									
- activity sheet development	10				↔				↔				
- launch of SMS	0.5											↔	
- Safety Management Plan development	20												
Contractors													
- presentation on SMS													
- Safety Intervention Plan development													
Key Road Safety Partners													
- Road Safety Strategy development													
- Road Safety Strategy delivery													
- launch of SMS												↔	

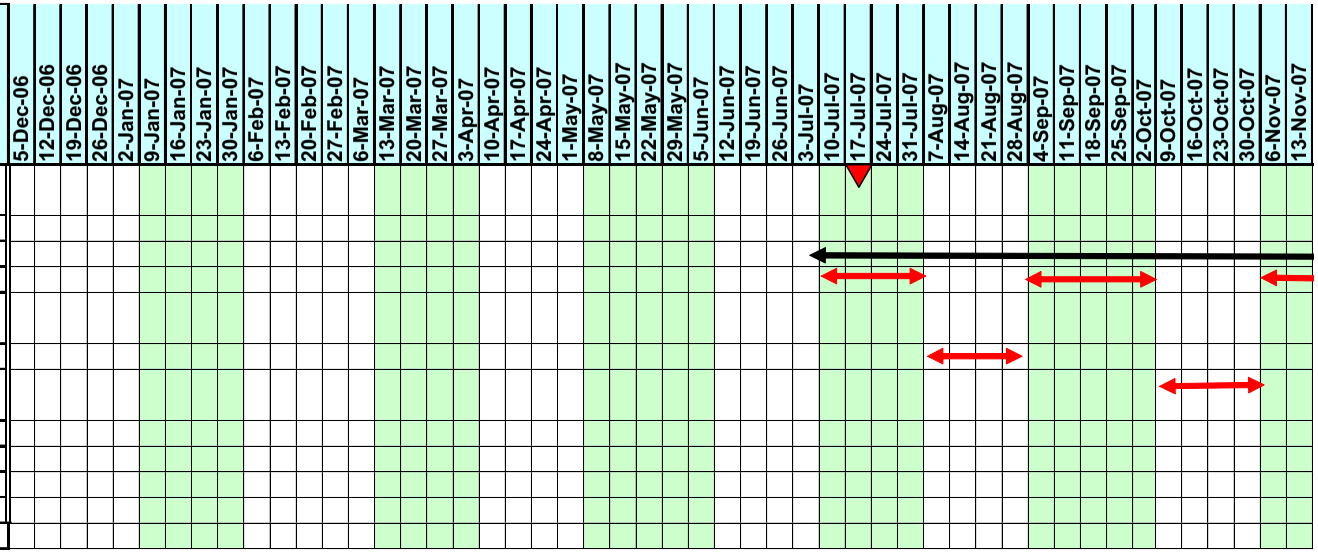
SMS delivery plan – Implementation page

Project	Resource (staff initials)	Duration (man/ days)
Implementation Issues		**83.5**
- Safety Team		**2**
> Letters of invite sent out to team		*0.5*
> Team Confirmed		*0.5*
> Inaugural meeting to draft MO		*0.5*
> Smafety Team MO agreed and signed		*0.5*
- Opporunity For Improvement (OFI) process		**11.5**
> OFI procedure developed (document control)		*5*
> OFI procedure (paper) tested by internal auditor		*2*
> OFI procedure approved by Safety Team		*0.5*
> OFI responsibilities assigned		*0.5*
> OFI procedure explained to staff		*3*
>> RCA employees		*2*
>> Professional services employees		*0.5*
>> Contractor and subcontractors staff		*0.5*
> OFI Process operational		*0*
> 1st OFI review		*0.5*
- Road Safety Strategy (RSS)		**24.5**
> RSS signed off by Council and operational		*0*
> Road Safety (Action) Plan (RS(A)P) group formed		*1*
> RS(A)P (year 1) developed		*5*
> RS(A)P (year 1) agreed		*0.5*
> RS(A)P (year 1) delivered		*12*
> RS(A)P (year 2) developed		*5*
> RS(A)P (year 1) reviewed		*1*
> etc		*0*
- Deficiency database		**16.5**
> Def/dbase development scoped		*4*
>> Contents		-
>> Formatt		-
>>> Custom built, 3rd party or iLand Transport NZ design		-
>> Use		-
>>> Data input		-
>>> Management		-
>>> Outputs		-
>>> On-going development		-
>>> Monitoring and reviewing		-
>> Data aquision		-
> Format of database agreed		*1*
> Def/dbase procedures (paper) tested by interal auditor		*2*
> Def/dbase procedures confirmed & agreements put in place		*1*
> Def/dbase developed/putrchased		*5*
> Relevant staff trained on database use		*3*
> Def/dbase operational		*0*
> 1st deficency database report/ review		*0.5*
- Crash Reduction Study programme operational		**2**
> Monitoring process for CRS established		*2*
- Existing Road Safety Audit prog operational and on-going		**6**
> Road safety Audit Inspections		*6*
- Contracts incl SMS req's		**4**
> Reseals contract		*0.5*
> Maintenance contract		*0.5*
> Signs contract		*0.5*
> Road markings contract		*0.5*
> Street lighting contract		*0.5*
> Professional services contract		*0.5*
> professional (SMP in place)		*0.5*
> physical (SIP in place)		*0.5*
- SMS personnel development HR Department		**17**
>SMS included in Job Descriptions		*5*
>SMS included in induction processes		*2*
>SMS included in performance review process		*5*
> SMS included in all staff training and development programs		*5*
etc		



Audits / Reviews

Project	Resource (staff initials)	Duration (man/ days)
Stage three development review		1
Safety team meeting		
- Review and action OFI's		0.5
- Continuous Improvement Monitoring		
- Crash Reduction Studies		0.5
- Existing Road Safety Audit/Inspection		0.5
- Deficiency Database		0.5
- etc		
- etc		
External Audits		



D Road safety strategy checklist

Road safety strategy checklist for _____ Council

Date: _____

Checked by: _____

1. Vision

Does the RSS contain a vision?	Is the vision realistic?	Is the vision achievable?
Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

2. Problems/issues

Is the current level of road safety in the area identified?	Are key issues identified?	What are the key issues identified?
Yes ☐ No ☐	Yes ☐ No ☐	∉ ∉ ∉ ∉

3. Goals

Do the goals reflect the local contribution required for achievement of the 2010 Strategy document?	Do the goals reflect the issues identified in 2 above?
Yes ☐ No ☐	Yes ☐ No ☐

4. Targets

Are all targets…

Measurable?	Achievable?	Results orientated?	Trackable?
Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

5. Interventions

Do the interventions proposed identify the responsibilities of the partners delivering them?	Do the interventions proposed realistically identify possible constraints in their application?
Yes ☐ No ☐	Yes ☐ No ☐

6. Monitoring and measuring performance and review

Does the RSS outline how the performance of the RSS will be monitored and measured?	Does each target have at least one performance measure?	Does the RSS indicate how often performance will be evaluated?	Does the RSS indicate how often the RSS will be reviewed?
Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

E SMS component workbook and checklist

Contents

E.1 Introduction

This document proposes a set of checklists to assist road controlling authorities (RCA) to develop a comprehensive safety management system (SMS). The checklist is to encourage the RCA, when preparing the SMS, to consider all of the issues identified in a range of SMSs that have been produced to date, and include them if appropriate. Due to the diverse nature of each RCA, not all issues and items will be needed in all SMSs but some of the critical items will be common to all. Other issues may be included in the SMS that are unique to that RCA.

There is overlap with some issues being identified in a number of sections due to them being inter-related.

The checklist should be conducted through interviews with the critical staff involved in managing and implementing the SMS. Following the interviews, specific examples should be cited where possible to determine that the procedures are being followed as the managers understand. This should include viewing of records and contract documents.

When filling the gaps in an existing SMS the overriding question should be 'is the proposed solution appropriate to the RCA and likely to lead to improved road safety'.

Philosophy

The background philosophy of the SMS should be defined. The SMS can be a high-level document making reference to other documents, a stand-alone document or a combination of both. The intended audience and method of use of the SMS should be defined.

- Has the philosophy of the SMS been defined?
- Has the RCA defined who should use the document and how it should be used?
- Is the document able to be used by its intended readers as intended?
- Have the objectives of the SMS been defined?

Linkage to other documents

The SMS will reference and complement other planning and management documents of the RCA. Some documents will be based around the outputs of the SMS ie annual plan and asset management plan, others will use the SMS outputs to support regular reviews ie district plan. The way the SMS links to other documents should be defined.

Does the RCA identify how other documents inter-relate with the SMS?

E.2 Road safety strategy

RCAs have many different formats for their road safety strategy (RSS) and road safety plans (RSP). The most appropriate format for use in SMS is to have a road safety plan that is a prescriptive document detailing specific programmes that can be referred to from the SMS if necessary. The RSS is a less detailed version of the RSP. The RSS is a policy document.

The RSS may or may not be a part of the SMS. It could be a separate document that the SMS refers to or it could be a section within the SMS.

The following items may or may not be listed in the SMS but they must be specified in the RSP and referred to from the RSS.

The first group of items listed are those that will define the objectives of the strategy.

Vision

The RCA should set a vision for road safety that it believes is realistic and can be achieved. For example, it is not realistic to expect no crashes on the roads when many of the crashes cannot be affected by the RCA.

- Does the RCA have an achievable vision for road safety?
- Is it compatible with the road safety goals set nationally by the government?
- Is the vision reviewed regularly to reflect progress in achieving the vision?

Key stakeholders and partners in the community

These are the groups/individuals that will contribute to and benefit from the success of the RSS. The RCA may typically create or join specific community groups to promote road safety. An example is the Road Safety Co-ordination Committees.

- Has the RCA specified the people and groups in the community that can assist in improving road safety?
- Has the RCA specified how input from these external groups will be received and how the RCA will work with them?
- Have the community groups bought in to the parts of the SMS that they can influence?
- Are there specific actions proposed by the community groups that will affect road safety?

E.2 Road safety strategy, continued

Problem analysis

The RSS should analyse the level of road safety currently experienced within the area identifying the costs to the local community of the road crashes. The analysis should be detailed enough to identify the target safety issues that the RCA considers it could make safety improvements in.

The RCA may also keep a database of crashes reported by the local community to compliment the Land Transport NZ crash database. This should not subvert or duplicate the Land Transport NZ database or the scale of the safety problem will be overstated.

- Has the RCA analysed the level of the safety problem within their area?
- Does the analysis compare the level of their problem to other similar RCAs in their peer group?
- Does the RCA maintain a local crash database to supplement the Land Transport NZ database?
- Is the local crash database maintained to ensure it does not duplicate the Land Transport NZ database?
- Are complaints and issues raised by members of the public included in this process?
- Have the main crash types and at risk road user groups been identified and grouped as key safety issues?
- Is the analysis updated regularly to ensure that progress towards the goals and vision is monitored?

Local crash reporting database

Some RCAs have set up database for the public to report crashes that may not have been reported to the NZ Police/Land Transport NZ. This can result in a fuller picture of the crash patterns around the road network and can indicate where safety issues may need to be addressed that do not show up on the NZ Police/Land Transport NZ reported crash database (CAS).

If the RCA does operate a local crash database, they must take care to ensure that the crashes they list are not duplicates of the crashes listed in CAS. Sometimes, a number of reports are made by different members of the public relating to each crash and care must also be taken to ensure that duplicates of the same crash are not included in the local database. The local database should be regularly purged of duplicated crashes to prevent double counting.

- Does the RCA operate a local crash reporting database?
- If so, is the database regularly checked for duplicates both within the database itself and with the CAS database?

E.2 Road safety strategy, continued

Key safety issues

Based on the problem analysis, the RSS should identify key safety issues and targets that will influence and improve road safety. The targets should be achievable and realistic and specific to the target areas identified in the problem analysis. Other less well-defined areas such as community involvement should also be included as well as (ideally) education and enforcement issues.

- Do the key safety issues address the problems identified in the problem analysis section?

Scope

It is essential that certain elements are included in the initial SMS. These are the items that the RCA can directly influence. While the community elements are also considered essential, it is acknowledged that they can be more difficult to produce because of the diverse nature of the groups involved and can be added later if necessary.

Has the RCA attended to the following?

- Physical activities on the road reserve.
- Design of improvements.
- Land use activities including land use planning.
- Regulatory controls.
- Enforcement.
- Road safety education and publicity.

Community education initiatives

These initiatives will probably involve external organisations and the RCA's involvement with the initiative may be limited. Whether this will be fully included in the RSS or referred to as a separate document will be a matter for each RCA to resolve.

Education initiatives should aim to develop a safety culture within the RCA and the wider community at large.

- Does the RCA participate in education initiatives either on its own or in association with community groups?
- Are the improvements in road safety provided by these initiatives measured and reported regularly?

Enforcement initiatives

The RCA should have a good working relationship with all their road safety partners. An important partner is the NZ Police. Sharing knowledge of the safety problems that each is aware of will improve the ability of both organisations to carry out their respective roles in improving road safety. An example is speed management and enforcement.

- Does the RCA have regular meetings with the police to discuss safety issues?
- Does the RCA make recommendations on the distribution of police hours applied to strategic outputs in the National Land Transport Programme (NLTP)?

E.3 Delivery of the strategy

These mechanisms should deliver improved safety with a focus on the key safety issues identified in the strategy above. The order of these items does not indicate their relative importance.

Crash reduction studies

These are formal studies carried out to investigate the cause of groups of crashes at black spots based on the Land Transport NZ crash database and local information (if available). The studies generally produce engineering solutions to identified safety deficiencies at the site. They rely on past safety records to determine the problem.

Some RCAs are known to carry out grey spot studies where a regular analysis of crash data will identify sites that could become black spots. This is a more proactive approach that attempts to prevent sites becoming black spots.

- Does the RCA carry out formal crash reduction studies?
- Does the RCA have an identified programme for crash reduction studies?
- If not, does it identify and address specific safety concerns?
- Is this appropriate to the level of the problem?
- Does the RCA specify the level at which a site is considered a black spot that will cause its inclusion in a crash reduction study?
- Does the RCA regularly interrogate the Land Transport NZ crash database to identify sites that are developing crash problems ie, grey spot analysis?
- Has the RCA specified the type of person and level of independence that is required to undertake the crash reduction studies?
- Are the goals of crash reduction studies specified?
- Are the expected outcomes of the studies defined in a way that can be measured?
- Does the RCA prepare a response to the recommendations of the studies?
- Does the RCA provide details of works undertaken to the Land Transport NZ for monitoring?

E.3 Delivery of the strategy, continued

Technical auditing

There are a number of different types of audits. These are necessary to ensure that work is appropriately and regularly checked. Some are project audits and some are systems audits. The system audit will be that carried out for the SMS regularly and are addressed separately in section E8.

A proportion of each may be able to be carried out in-house, but some must be carried out externally to ensure that in-house work and auditing is of a standard that is equal to the industry at large.

Project safety audit

- Does the RCA have a policy for safety auditing maintenance and/or construction projects?
- Are any projects undertaken without audits?
- Is there evidence that the audits have been carried out?
- Does the policy specify who may undertake such safety audits?
- Does the policy specify the standards to be used for the audits?
- Does the RCA provide a response to recommendations made in the audit report?
- What actions does the RCA take in response to the audit recommendations?

Existing road safety audits

- Does the RCA have a policy for safety auditing existing roads?
- Are these audits programmed within the forward financial plans of the RCA?
- Does the policy specify who may undertake such safety audits?
- Does the policy specify the standards to be used for the audits?
- Has the RCA made changes to policies and management systems as a result of these audits?

E.3 Delivery of the strategy, continued

Temporary traffic management

Temporary traffic management is becoming increasingly important as road networks are being developed and maintained with traffic growth requiring greater consideration of the needs of traffic to negotiate the works safely and efficiently. Standards for temporary traffic management have recently changed and the number of different standards consolidated into a single standard.

The *Land Transport Rule – setting of speed limits 2003* requires a temporary speed limit to be set by installing signs in accordance with a traffic management plan approved in writing by the RCA.

Temporary traffic management schemes should be approved by the RCA and audited on-site to ensure they are safe and comply with standards. If the scheme involves a temporary speed limit, it must be approved by the RCA.

- Does the RCA have a policy for specifying temporary traffic management standards?
- Does the RCA approve schemes prior to them being implemented?
- Is the standard for temporary traffic management and interpretations specified appropriate to the RCA?
- Does the policy specify auditing of the temporary traffic management on the road?
- Does the policy specify who may undertake such audits?
- Does the policy specify the standards to be used for the audits?
- What actions are taken by the RCA as a result of the audits?

Deficiency analysis and database

The RCA needs to be aware of the specific safety deficiencies within its road network so that improvements can be programmed. Deficiencies can be identified in a number of ways including formal safety inspections. The deficiencies identified should be entered into a database for recording purposes and future ranking. Some of the deficiencies may be used to develop the minor safety programme. Others may need to be programmed for major remedial action or entered onto a maintenance programme. A specific management plan may be needed for significant deficiencies in the interim period until major remedial action can be taken.

- Has the RCA carried out routine road safety inspections on the roads to identify specific safety deficiencies?
- Are deficiencies identified in other ways ie, public complaints?
- Are the identified deficiencies included in a database and programmes for future upgrading?
- Is the deficiency analysed before inclusion in the programme?
- If the deficiency is significant but cannot be remedied early, is there a maintenance management plan for the deficiency?
- Is the database used in developing the minor safety programme?
- Is the method of prioritising the deficiency appropriate?

E.3 Delivery of the strategy, continued

Hazard register

The RCA needs to be aware of any recurring intermittent safety issues that may not be able to be remedied permanently such as ice and flooding or growing vegetation that will limit visibility, or vegetation that may fall on the road after strong winds. Other hazards may be identified that are part of a future improvement programme and need to be managed and maintained in the meantime. This is not the same as the deficiency database.

This register also ensures that environmental problems are identified and can be considered in any project that affects the section.

- Is there a hazard register prepared by the RCA to record recurring safety issues?
- Does the RCA ensure that contractors are aware of and use the register?
- Is the hazard register updated as new hazards are identified?
- Does the hazard register affect land use planning?

Road hierarchy

Roading hierarchies can be created for different purposes.

- Has the RCA created a roading hierarchy?
- Have the reasons for and philosophy of the hierarchy been defined?
- Is the roading hierarchy used to determine funding priorities?
- Is the roading hierarchy used to determine design standards?
- Is the roading hierarchy used to determine maintenance standards?

Traffic counting

While not a specific safety issue, it is important for the RCA to understand traffic demands and patterns on its roads.

- Does the RCA have a traffic counting programme that provides adequate information of traffic demands on the network?
- Is this programme used to determine priorities?

Speed management

Speed management should involve both enforcement and engineering to provide a consistent speed environment.

- Does the RCA specify its goals in managing speed?
- Does the RCA regularly review speed limits to ensure appropriateness?
- Has the RCA specified the actions and strategies it uses to manage speed?
- Have appropriate outcomes and performance measures been stated to determine success in managing speed?

E.3 Delivery of the strategy, continued

Maintenance of traffic control devices

Traffic control devices require regular checks to ensure that they have not been vandalised, damaged accidentally or failed due to age. This includes:

- signs
- delineation devices
- road markings
- traffic signals
- any other the devices the RCA may use.

- ∉ Has the RCA specified a regular inspection regime to identify and replace damaged or deficient standards of traffic control devices for each type of device?
- ∉ Are the inspection periods suitable?
- ∉ Are the replacement or repair response times adequate?

Traffic management facilities

Many local authorities use some form of traffic management devices. These are usually in urban areas and include local area traffic management schemes and urban/rural speed threshholds. The design of these is non-standard and varies between RCAs.

- ∉ Does the RCA have policies and standards for the use and design of traffic management facilities?

Land use planning and regulatory controls

Adjacent land uses can affect road safety if they are not controlled to be sympathetic to the road network. This includes their access points, on-street manoeuvring and parking demand and any associated site specific signage. Advertising signs fall within this category. Excessive amounts of advertising can cause distraction and sign clutter detracting from important regulatory and warning signs. Other signs such as sandwich board signs on the footpath can create a hazard for pedestrians if they are not controlled properly. Typically, these issues are controlled through the district plan and/or bylaws.

- ∉ Does the district plan require safety issues to be considered when applying for resource consent or subdivision consent?
- ∉ Do the road safety staff have input into the resource consent process?
- ∉ Do the road safety staff have input into the district plan and bylaw review process?
- ∉ Are safety audits carried out on proposed and new subdivisions?
- ∉ Are safety audits carried out as part of the resource consent process and after approval?
- ∉ Does the RCA control and approve advertising signage?

E.3 Delivery of the strategy, continued

Street lighting

Street lighting has many purposes including road safety. In urban areas, it can improve drivers' visibility of pedestrians, cycles and stationary vehicles. It also illuminates properties and can improve security. It can also cause a nuisance to some residents by shining into their rooms and preventing sleep, so some balance must be provided between conflicting demands.

In rural areas, street lighting can identify intersections of some importance for approaching drivers and can identify changes in road environment such as at passing lane diverges and merges.

- Does the RCA specify the AS/NZ standard for road lighting in contracts and maintenance?
- Do their policies specify the acceptable level of lighting for each road type and/or road?
- Does the RCA have a policy for flag lighting at rural intersections?

Landscaping and vegetation control

Experience has shown that many RCAs have difficulty managing design, installation and maintenance of landscaping in the road reserve.

- Does the RCA have specific requirements for landscaping and vegetation control within the road reserve?
- Is the responsibility for the landscaping within the department that acts as the RCA?
- If they are not within the RCA's department, does the RCA have effective control over their activities?

Overdimension and overweight routes

These are safety issues when trucks carrying overdimension or overweight loads use inappropriate roads damaging the road structure and/or street furniture, or may not be able to negotiate intersections such as roundabouts.

- Does the RCA have a series of overdimension and overweight routes specified for its network?
- Does the RCA have appropriate controls in place to enforce the use of these routes?

E.3 Delivery of the strategy, continued

Vulnerable road users

Vulnerable road users include those with special needs that may not need to be catered for in all projects but their potential presence should be considered and evaluated in any project. These can include children, elderly, tourists, people with intellectual handicaps, sight impaired and specific facilities such as hospitals and schools where these people may congregate.

- Does the council carry out specific audits of the needs of vulnerable road users and the facilities and routes they most commonly use?
- Are objectives and goals specified for each type of vulnerable road user?
- Has the RCA created performance measures for each type of vulnerable road user?
- Does the RCA measure how well it has achieved its performance measures for each type of vulnerable road user?

Cycle facilities

Most regional transport strategies have a policy of encouraging modal switch from private passenger vehicles to public transport and cycles.

- Does the RCA have a policy on encouraging modal switch to cycling?
- Does the RCA provide alternative networks for cyclists in its system?
- Are cyclists considered at all stages of the road planning process?

Pedestrian facilities

Pedestrian facilities need to be well designed and used to ensure adequate safety for all road users. The location of the crossing is also important in that it must allow sufficient visibility for the driver to be aware of the facility's existence and intervisibility between the driver and the pedestrian. Where the facility is used at night, adequate lighting should be provided.

The surface where pedestrians cross the road should be of a different material from the footpath so that the pedestrians recognise that they are no longer on a protected footpath.

- Does the RCA use appropriate guidelines and warrants for establishing and maintaining pedestrian facilities?
- Does the RCA monitor use of the pedestrian facilities to ensure they continue to meet their warrant requirements?
- Are pedestrian facilities illuminated when they have significant night-time usage?

E.3 Delivery of the strategy, continued

Footpaths

The standard of maintenance of footpaths is critical as they are used by people who may not be able to clear shallow obstructions and may drive mobility scooters. Mobility scooters are often unable to climb steep inclines from the footpath to the carriageway when crossing roads. Footpaths need to be kept clear of vegetation that could obstruct or injure pedestrians.

- Does the RCA regularly inspect footpaths for defects such as tree root damage?
- Does the RCA have a policy with regulatory backing to ensure footpaths are clear of vegetation?
- Does the RCA consider mobility scooters when providing footpath access to road crossings?

Drainage systems

There are a number of individual parts to any drainage system and each of these should be considered. Rural and urban drainage systems are typically quite different.

Bridges/culverts

Bridges and culverts require regular inspection to ensure that their structural integrity is intact. They also require regular maintenance to ensure that waterways and headwalls are clear and regular painting of steel surfaces is undertaken. The end treatments are also important to ensure that if a vehicle strays from the carriageway, it does not strike a non-frangible object such as a concrete headwall.

- Does the RCA have an inventory of all its bridges and culverts?
- Does the RCA have a programme for investigating the structural integrity of the bridges and culverts including headwall protection using appropriately qualified personnel?
- Does the RCA have a programme for inspecting and clearing the vegetation in the waterways that would impede flow in the channel?
- Does the RCA have a programme for inspecting and repainting steel members on bridges?
- Does the RCA have a policy for protecting bridges with safety barriers?
- Does the RCA have a policy of replacing or widening underwidth bridges and culverts?

E.3 Delivery of the strategy, continued

Drainage systems, continued

Catchpits/sumps

These range from soakholes in free draining soils to structural sumps in the carriageway. All are essential and must be maintained appropriately. If not, localised flooding can result causing damage to the roads and adjacent properties, and vehicles may lose control in flood waters. Sump gratings can cause problems for users such as cyclists whose wheels may get caught in the gratings.

- ∉ Does the RCA have a programme for regularly inspecting drainage structures to ensure they are not blocked or damaged?
- ∉ Does the RCA specify sump gratings that are perpendicular to and level with the travel path of cyclists?

Kerb and channel

Kerb and channel controls the flow of water and protects the edge of the road from damage. It also defines the trafficable portion of the carriageway and is often used in rural areas around intersections to control the path of traffic around the intersection. Over time, kerb and channel can become rough and damaged and hold water in puddles or allow it to infiltrate under the road.

- ∉ Does the RCA have a programme for inspecting and replacing kerb and channel as it is damaged?
- ∉ Does the RCA use kerb and channel in rural areas to define vehicle paths and protect road edges and embankments?

Deep drains and irrigation channels

Deep drains can be a hazard for pedestrians (particularly children) who may fall into them while they are in flood. They may also be close to the carriageway and often have vertical sides that will not allow a vehicle to recover if it is out of control. This is related to clear zone policy.

- ∉ Does the RCA have a policy or programme for piping urban drains to prevent access by pedestrians?
- ∉ Does the RCA protect traffic from deep drains and irrigation channels adjacent to the carriageway?

Swale drains

These are shallow drains in rural areas that allow overland flow of water from the carriageway to drainage structures. They are usually used in flatter terrain. Because of this, maintenance is important to prevent vegetation from slowing the flow of water and creating ponding.

- ∉ Does the RCA have a policy or programme to insure vehicle crossings do not create a hazard to vehicles leaving the road?
- ∉ Does the RCA have a policy or programme to insure the swale slope and surface does not create a hazard to vehicles leaving the road?

E.3 Delivery of the strategy, continued

Vehicle crossings and accessways

All properties are required to have frontage to a road whether or not they use it for vehicle access. Informal vehicle crossings cause damage to footpaths and berms. The structure of footpaths is not usually strong enough to accept vehicles, and damage to footpaths may impact on utilities underneath. Informal vehicle crossings may not be located in the safest location with the best visibility.

- Does the RCA require all property owners to apply for formal vehicle access?
- Are construction standards specified as a part of the application process?
- Does the RCA take action against those that do not have an approved vehicle crossing?
- Does the RCA specify visibility requirements for vehicle crossings?

Stock control, crossings and underpasses

Many RCAs have areas where stock may have access to roads. This can be either for droving along the road or crossing the road to access land on the other side of the road. The occurrence of stock crossing has increased recently with the conversion to dairy farms. Control of stock movements is important to prevent uncontrolled interaction between the stock and other road users. Some RCAs have gone to the expense of subsidising stock underpasses where the movement of stock is frequent.

- Does the RCA have policies and bylaws controlling stock access to, and movement along the road?
- Does the RCA require farmers to comply with temporary traffic management practices while their stock are on the road?

Effluent disposal facilities

Effluent disposal facilities have become important since new regulations requiring stock trucks to have effluent holding tanks on their trucks have come into force. These rules were promulgated to prevent uncontrolled stock effluent being concentrated on the carriageway and splashed onto vehicles and windscreens. Stock effluent can also degrade the road surface. The effluent disposal sites are generally on high volume, high speed rural roads and may be near places where stock are held such as saleyards and freezing works.

- Does the RCA have a policy for controlling stock effluent on the roads?
- Does the RCA provide effluent disposal sites within their area?

Weighbridges

Weighbridges are provided on the road reserve for the use of the police. The RCA has a role in approving and usually siting the weighbridge in consultation with the police. Demand for the weighbridges tends to be on higher volume, high speed rural roads and their design is critical to ensure that they are safe.

- Does the RCA have a policy for siting and constructing weighbridges?
- What design criteria does the RCA have for the entry and exit access points?

E.3 Delivery of the strategy, continued

Rest areas

Rest areas are provided to allow drivers to stop and rest safely when fatigued. They are often located in places where people stop to view scenery or other places of interest without creating a traffic hazard. Often they are intended to cater for tourists and their design needs to allow for this.

- Does the RCA have a policy on the provision of rest areas within their area?
- What design criteria does the RCA have for the entry and exit access points?

Safety barrier

A safety barrier has many new forms and can be applied in many situations that were previously uneconomic. However, some uses of a safety barrier can create a greater hazard than the hazard it is trying to protect. Examples are when a safety barrier is short or terminates on curves without adequate flaring.

- Does the RCA have a policy on the use of safety barriers?
- Are the appropriate standards applied to the design of safety barriers?
- Does the RCA regularly inspect safety barriers to ensure they retain their integrity?

Retaining structures

Retaining structures are generally constructed around structures such as bridges or to prevent steep, unstable slopes from collapsing onto the carriageway. Particular maintenance requirements include draining the structure adequately to prevent pore pressure building up behind the structure and preventing scour and the loss of material from behind the structure.

- Does the RCA regularly inspect retaining structures to ensure their integrity?

Parking

Parking can cause safety problems, particularly on arterial and other major roads. Cyclists can be impacted by parked vehicles, both angle parked and parallel parked. If insufficient width is provided for cyclists adjacent to parallel parked vehicles, drivers may open car doors in front of the cyclist. Angle parking reduces the driver's view to the approaching cyclist that will be close to other parked vehicles. This can be controlled to some extent through appropriate land-use planning and application of bylaws.

- Does the RCA control the amount of on-street parking demand by requiring developments to accommodate their parking demand on-site?
- Does the RCA allow angle parking on streets or main roads?

Emergency response

By their nature, emergencies are unforeseen events. These can vary from vehicle crashes to land slides and water pipe explosions. The RCA must have a flexible plan that allows for an appropriate response to any problem.

- Does the RCA have a flexible emergency response plan?

E.3 Delivery of the strategy, continued

Road closures

Road closures must be approved and advertised prior to the closure. Closures are required for road works or events such as parades.

- ∉ Does the RCA have formal procedures for road closures that comply with the legislative requirements?

Pavement maintenance

Scrim analysis

This is a system of testing the skid resistance of the pavement surface.

- ∉ Does the RCA carry out regular testing of its sealed roads for skid resistance?
- ∉ Does the RCA specify minimum standards of skid resistance for the sealed roads under its control?
- ∉ Does the RCA have a policy for treating sections of roads that have deficient skid resistance?

Potholes

While potholes may have been shown to be no more than a minor contributor to crashes, if not treated properly they can cause problems of widespread structural failure due to water ingress. They can also cause serious safety problems to cyclists and pedestrians.

- ∉ Does the RCA carry out regular inspections of the surface for potholes?
- ∉ Are response times specified for the repair of potholes?
- ∉ Are standards for the repair of potholes specified?

Physical defects

Long term deterioration will be picked up by regular RAMM rating surveys. Such items as road roughness will be identified during these surveys. Systematic inspections to identify the maintenance issues should be carried out between surveys to identify visual failures such as rutting and loose material on the carriageway.

In between surveys, there may be sudden failure of the road due to unforeseen circumstances.

- ∉ Does the RCA carry out regular RAMM rating surveys?
- ∉ Does the RCA specify systematic visual inspections of the road to identify structural road failures or distress?

E.3 Delivery of the strategy, continued

Pavement maintenance, continued

RAMM data and analysis

An up-to-date inventory system such as RAMM can contribute to road safety. It can indicate where sections of road fail to meet set standards for roads of that type as well as supplying an inventory of road furniture for future maintenance reference. The standards are set to achieve a consistent road environment.

- Does the RCA have a programme for gathering RAMM data that provides information on network deficiencies?
- Is this information used to determine priorities?

Grading unsealed roads

The regular grading of unsealed roads is important to prevent minor problems escalating into larger problems that require reconstruction work.

- Does the RCA actively monitor the condition of unsealed roads prior to grading?

Clear zones

Clear zones attempt to keep the road shoulders clear of obstructions so that an out of control vehicle has some chance of recovery or stopping without striking a solid obstruction. This includes the gradient of shoulders. Only frangible objects should be placed in the clear zone and even then with caution. Where clear zones cannot be provided, protection of the hazard is the alternative.

- Does the RCA have a policy on providing clear zones?

Railway crossings

Railway crossings have been the site of many serious crashes over the years. Although the crossings are under the jurisdiction of the rail operator, the RCA has an important advocacy role to ensure that the rail operator maintains and upgrades rail crossings to an acceptable standard for road users. The RCA also provides the advanced signage.

- Does the RCA have a policy for railway crossings?
- Does the RCA have regular contact with the rail operator to discuss concerns about rail crossings?

E.3 Delivery of the strategy, continued

Road openings by utility and other external service authorities

The RCA is responsible for the road network and must exhibit some control over those that work on it. They can only do this effectively when they know who is working on the road and where when they are working on the road.

- Does the RCA maintain a street openings register to be aware of where and when contractors will be working on the road so they and their work can be inspected/audited?
- Does the RCA specify the temporary traffic management requirements for external service authorities and their contractors to work on the road?
- Are these requirements similar to those that the RCA imposes on its own internal contractors?

Road openings by other departments within the RCA's organisation

Experience has shown that the department nominated as being the RCA often has difficulty in getting the cooperation of other departments within the organisation to comply with the traffic management requirements of road openings. These include departments with assets under the road such as sewer and water pipes and those that maintain landscaping on the road reserve.

- Does the RCA have service agreements with other internal departments that control their and their contractor's activities in the road reserve?

Roads under the control of other RCA's

A number of other authorities can have public roads within the RCA area but not under the control of the RCA. These include:

- ports
- airports
- Department of Conservation.

It is important that the RCA has a good working relationship with any organisation that has control of roads that will eventually affect the RCA.

Other RCAs have common boundaries. It is important that all of the RCAs regularly discuss and agree issues that affect them, particularly at the boundaries.

- Does the RCA have a policy and protocols in place to deal effectively with each RCA within its boundaries?
- Does the RCA have a policy and effective cooperation to deal with other RCAs that have common boundaries with them?

E.4 Standards, guidelines and policies

An easily audited way of presenting these is to use a table stating each type of asset or work for which standards and guidelines are to be used. See part 3–H for a current list of standards and guidelines. This section, in particular, will need to be updated regularly as the RCA changes or introduces new policies, as new standards are adopted and promulgated by the Standards and Guidelines Steering Group, and others are superseded.

Examples of how these can be applied are shown in both of the example SMSs in part 4–C and 4–D.

The table should include all known aspects of:

- design
- construction
- maintenance of all roading assets and road reserves.

Some important elements that should be specified are the road design elements including:

- horizontal alignment
- vertical alignment
- carriageway width
- intersection layout
- solid and flush medians.

It is essential that these are communicated easily and accurately to ensure consistency in the road network of the RCA.

Any deliberate departures from the standards, guidelines and policies should be acknowledged on each occasion and recorded for auditing purposes.

Standards

These are the national (Land Transport NZ requirements) and legal standards (government rules and regulations) that must be complied with. They are not allowed to be varied by local decisions unless prior approval is given.

- Are the standards to be used listed in the SMS?
- Are the appropriate standards listed for each asset and/or activity?
- Is it easy for users to follow which standards should be applied to each asset and/or activity?
- Is there evidence that the list is updated regularly?
- Does the RCA have interpretations of the standards that may vary from the accepted norm?

E.4 Standards, guidelines and policies, continued

Guidelines

These are the national guidelines that may be complied with. There is no legal requirement to work to these guidelines but they are considered to provide appropriate solutions to some safety problems. The RCA may vary the guidelines to suit local conditions, but any local variations or interpretations should be documented to ensure that they are communicated clearly to anyone working on the road network.

- Are the guidelines to be used listed or included in the SMS?
- Have the guidelines used been formally adopted by the RCA?
- Are the appropriate guidelines listed for each asset and/or activity?
- Is it easy for users to follow which guidelines should be applied to each asset and/or activity?
- Is there evidence that the list is updated regularly?
- Does the RCA have local variations and interpretations of the guidelines?
- Are the local variations and interpretations recorded and communicated properly to those who work on the roads?

Policies

These are the policies adopted by the RCA to address issues specific to that RCA that may not fall within a national standard or guideline.

- Are the policies to be used listed or included in the SMS?
- Have the policies used been formally adopted by the RCA?
- Are the appropriate policies listed for each asset and/or activity?
- Is there evidence that the list is updated regularly?

Compliance with standards, guidelines and policies

It is acknowledged that there will be occasions when standards, guidelines and policies for general use may not be able to be applied. On these occasions, the departure from recognised standards should be documented with the reasons why the recognised standards could not be applied.

- Does the RCA record departures from recognised standards, guidelines and policies?
- Are there checks within each project (apart from the safety audits) to ensure that the appropriate standards, guidelines and policies have been complied with?

E.5 Expertise, qualifications and roles

Staff training and competence

The RCA is responsible for ensuring that staff who are responsible for road safety activities are competent for the task. They must be provided with sufficient resources and authority to complete the tasks successfully.

- Is the amount of delegation from the SMS manager to staff clearly communicated in written records?
- For RCA staff, is compliance with the SMS written into employment contracts as a condition of employment?
- For external consultants and contractors employed by the RCA, is compliance with the SMS written into the conditions of contract?
- Do staff attend seminars and training sessions to ensure that they are appropriately trained and with sufficient knowledge of state of the art techniques?
- Does the RCA have a formal policy on staff development?
- Do staff meet the minimum requirements for fulfilling the position as described in the job description or are they being encouraged to achieve those requirements?
- Where no RCA staff are sufficiently skilled to meet the requirements for an aspect of the SMS, does the RCA employ a consultant/contractor with an appropriate level of skills?
- Are the skill levels required appropriately described and specified in the SMS?

External service authorities and other commercial road occupiers

It is important that external authorities are required to buy into and accept the requirements of the SMS as a part of their authority to occupy and/or work on the road. This is an area where the RCA will need to delegate some responsibility to the external authority but must still ensure compliance with the SMS. Standards must be imposed to prevent the recent examples of a rotten wooden power pole falling on a vehicle, catastrophic blowouts of gas and water mains and other problems such as leaking pipes beneath the road causing the road structural failure. Standards of maintenance and acceptable risk need to be defined as well as levels of traffic control while working on the road.

Another significant group is (for example) farmers who may use roads for crossing or driving stock, install irrigation pipes under the roads from time to time without being aware of requirements, shelter belt trimming and tree felling.

- Does the RCA have an agreement with external service authorities about the construction and maintenance standards of their assets that are allowed to occupy the road reserve?
- Does the RCA have effective control over irregular and informal occupiers of the road by others such as farmers?
- Does the RCA have requirements specified for scheduled event management?

E.5 Expertise, qualifications and roles, continued

Appointment of consultants and contractors

Appointing consultants and contractors requires a standardised set of procedures. These procedures must comply with legislation and be transparent to avoid any question of inappropriate behaviour in appointments. Not all contracts will require an open tender process but all must have some form of evaluation and paper trail to ensure that the appointee has the credentials and ability to perform to the standard specified by the SMS.

- ∉ Does the RCA have formal procedures for the appointment of consultants and contractors that considers the skills and expertise that is required for the task?

E.6 Management of the SMS

Management / ownership of road safety

The organisation must specify who is accountable for the safety of work and ensure that the SMS is complied with. The person who is accountable for the SMS will continue to be accountable even if they have passed on responsibility for managing and operating the system to others. While it may be possible for a person outside the RCA to perform the duties, it is essential that ownership of the SMS resides within the RCA. Smaller RCAs will need to pay particular attention to this person where their duties may overlap with the management and service delivery functions.

- Is someone within the RCA specified as responsible for championing the SMS?
- Is it in their job description that they must ensure compliance with the SMS?
- Does this person have sufficient seniority within the RCA to ensure that staff will comply with the SMS?
- Are mechanisms used to ensure that the person responsible will continue to champion the SMS?
- Is there a clear separation of responsibilities between management of the SMS and service delivery?

Monitoring of staff compliance with the SMS

The RCA will need to monitor that staff are complying with the requirements of the SMS. This can only be done with an adequate paper trail to show how the staff have complied. Staff must be able to demonstrate that in carrying out their duties, they have complied with the SMS requirements for that specific duty.

- Are projects and staff performance reviewed regularly in-house to ensure compliance with the SMS has been achieved?

Ongoing system development

Since this is a living document, it is important that deficiencies in the system be identified and rectified as soon as practical. All staff should be encouraged to participate in the ongoing development of the system. This is important to encourage ownership of the system amongst lower level staff.

- Are staff and external agencies provided the opportunity and encouraged to identify improvements to the SMS?
- Is there a system in place to capture the opportunities for improvement so that they can be actioned or considered in the next review of the document and its systems/processes?

Operational / management structure

It is important that the roles of all of those involved with implementing and maintaining the SMS should be aware of the operational and management structure within the RCA. This can be most effectively communicated by use of a flow chart to show responsibilities in each area.

- Does the RCA provide a flow chart of the organisational structure as it relates to road safety – noting that planning and parks and reserves operations also have a key role to play in road safety?

E.7 Auditing

The system must be regularly internally and externally audited to ensure that it is successful, appropriate, meets the needs of the RCA and complies with national standards.

Review, monitoring and evaluation of road safety strategy

The RSS should be reviewed, monitored and evaluated regularly to assess progress towards the goals. A minor audit could be held annually with a major review periodically (perhaps every three to five years) to redefine the vision and goals. As well as these formal audits, it should be updated as and when new information becomes available that may affect the RSS.

- Does the RCA have a policy of maintaining and upgrading the RSS?
- Is there documented evidence of the RSS being maintained?
- Is progress towards achieving the vision and goals being recorded and reported by the RCA?
- Has the RCA recorded and reported progress towards achieving the vision and goals
- Does the RCA monitor/evaluate their staff's progress towards upgrading their knowledge and qualifications?

E.7 Auditing, continued

SMS audit

An SMS audit consists of a document review, process monitoring and outcome evaluation.

This is a circular process with the recommendations of previous audits being included to improve the SMS. The document review ensures that the SMS contains current best practice and guidelines and all issues having an affect where safety risk is more than medium. The system monitoring is to ensure compliance with the processes of the SMS. The assumption is made that by carrying out work in accordance with the SMS, safety will be improved. This is evaluated by ensuring that safety outcomes are delivered on the road for road users. If safety is not improved but the processes are being followed, it will be necessary to review the SMS to identify specific failings.

The SMS should be updated on an as-needs basis when new standards, policies procedures etc become available.

- Has the RCA formed a policy on the auditing of the SMS?
- Has the RCA specified external and/or internal audits?
- Does the RCA carry out monitoring/evaluation of their performance in achieving the vision and goals?
- Is there a frequency of auditing specified for both internal and external audits?
- Are the auditors and their level of expertise/experience specified?
- Does the audit consider whether the goals are being met as well as the systems complied with?
- Does the RCA use the report from previous audits to make improvements to the SMS?
- If there are issues raised in the audit that indicate non-compliance with the SMS or that goals are not being achieved, are identifiable actions taken?
- Does the audit review the policies, procedures, standards and guidelines for consistency, currency and relevance?
- Does the RCA control the number of copies of the SMS to ensure that all copies are current with all amendments included?
- Is there a SMS document control system in place to manage and record changes?
- Is there a safety team established to manage the system and document changes?

E.8 Endorsement of the SMS

Appropriate endorsement

Once the SMS has been written it will require endorsement by the Land Transport NZ. This will be given following a successful review of the document to certify that it complies with the guidelines for developing a safety management system.

A form will be signed by both the RCA and the Land Transport NZ. It is envisaged that the RCA will be represented by the mayor and/or the chief executive and Land Transport NZ will be represented by the appropriate partnership manager. Signing of the form will indicate endorsement of the document by the Land Transport NZ and will bring into force the Memorandum of Understanding that provides both responsibilities and privileges to both parties.

Appropriate forms are shown in the Rangitikei, Ruapehu and Wanganui SMS, part 4–C of this document but this can be altered to suit.

- Has the SMS been suitably endorsed?

E.9 Checklist

This checklist is designed for simplicity. It is intended that it should be completed by the RCA to ensure that they have considered the issues and items to be included in the SMS. This checklist can be used to identify gaps in the RCAs' current practices that could be filled during the process of developing the SMS.

This checklist includes the following:

- Land Transport NZ ranking. The Land Transport NZ has identified items to be included in a SMS for it to address a normally expected level of risk. The ranking is as follows:

  **item expected to be included in the SMS. This normally involves a risk greater than medium.

  *item could be included if it has a safety risk greater than medium.

- The RCA is encouraged to evaluate each item and issue listed. They can be identified as:
  - item is included in the SMS
  - item has not been included in the SMS but needs to be
  - item has not been included in the SMS but further consideration will be given to including it
  - item does not apply to this RCA or is considered a minor or insignificant safety issue.

An example could be traffic signal issues in a largely rural authority.

Additional items not in the list should be included by the RCA if they consider them to be a medium or greater safety issue.

E.9 Checklist, continued

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Not included in SMS but may be	Not applicable in this SMS
Endorsement of the SMS					
**	RCA				
**	Land Transport NZ				
Introduction/summary/philosophy					
	Introduction/glossary of terms and abbreviations				
	Cover and document structure				
	Philosophy				
	Linkage to other documents				
	Memorandum of Understanding				
Road safety strategy (RSS)					
**	Vision				
*	Key stakeholders and partners in the community and linkages				
**	Identify problems/issues for the road safety strategy to address				
**	Goals				
**	Targets				
**	Interventions ∉ Engineering initiatives ∉ Community education initiatives ∉ Enforcement initiatives				
**	Monitoring and measuring of performance				
**	Review date				

E.9 Checklist, continued

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Not included in SMS but may be	Not applicable in this SMS
Expertise, qualifications and roles					
*	Staff training and competence				
**	External service authorities and other commercial road occupiers				
**	Appointment of consultants and contractors				
*	Staff training and competence				
Management of safety management systems					
**	Management/ownership of road safety				
**	Monitoring of staff compliance with SMS				
**	Ongoing system development				
	Operational management structure				
Audit					
**	SMS internal audit				
**	SMS external audit				
	RSS review and monitoring (see RSS section)				
Delivery of the strategy					
**	Crash reduction studies				
**	Deficiency analysis and database				
**	Road safety hazard register of environmental items				
**	Road hierarchy				
**	Traffic counting				
**	Speed management				
*	Street lighting				
**	Landscaping and vegetation control				
*	Clear and safety zones				

E.9 Checklist, continued

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Not included in SMS but may be	Not applicable in this SMS
	- Technical auditing including				
**	Project safety audit				
**	Existing road safety audit				
	- Maintenance of traffic control devices including				
**	Signs				
**	Delineation, (ie, EMP, RRPM, bridge end markers, hazard markers)				
**	Road marking				
	Traffic signals				
	Any other devices				
	- Traffic management				
	Local area traffic management (LATM)				
	Land use planning controls including: ∉ District plan ∉ By-laws				
	Overdimension and overweight routes				
	Emergency response				
	Road closures				
**	Temporary traffic management including approval and auditing				
	- Vulnerable road users				
*	Cycle facilities				
*	Pedestrian facilities				
*	Footpaths				

E.9 Checklist, continued

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Not included in SMS but may be	Not applicable in this SMS
	- Drainage systems				
*	Bridges and culverts				
*	Catch pits and sumps				
*	Kerb and channel				
*	Deep drains and irrigation channels				
*	Swale drains				
	- Crossings				
*	Vehicle crossings and accessways				
	Stock control, crossings and underpasses				
	Rail crossings				
	- Pavement maintenance				
*	Scrim analysis				
	Potholes				
*	Physical defects				
	RAMM data and analysis				
*	Grading unsealed roads				
	- Road openings				
	Under control of RCA's roading departmentt				
	Under control of other departments				
	By utility and external service authorities				

E.9 Checklist, continued

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Not included in SMS but may be	Not applicable in this SMS
	- Roads under the control of other RCAs including				
	Boundary issues with neighbouring RCAs				
	Ports				
	Airports				
	Department of Conservation				
	Power/hydro authorities				
Standards and guidelines					
**	Standards				
**	Guidelines				
**	Policies - national				
**	Policies - local				
**	Compliance with standards, guidelines and policies				
General notes					

F SMS stage 3 document review checklist and meeting agenda

Contents

F.1 Safety management systems stage 3: review meeting

Background

For background information on the document review meeting and a suggested list of meeting attendees refer to these guidelines.

Objectives

- Ultimate

  A SMS is developed that is useful to the RCA, is easy to use by all staff and satisfies the requirement detailed in the guideline and is expected to produce a consistently safe road environment for all users.

- Meeting

  Review the SMS document using the document review checklist (part 3–F.2) to identify that:

  - suitable existing /current systems are included
  - existing /current systems have been modified if required
  - new systems are included if required
  - additional systems are identified to be included
  - users are able to operate in accordance with of the SMS
  - an appropriate audit regime exists

  Agree future actions required of the parties

Draft stage 3 review meeting agenda

10.30 am	Welcome and housekeeping	Chairperson: Land Transport NZ representative Scribe: SMS consultant Open review and confirm objectives
10:45 am	Endorsement and introduction section	Endorsements, purpose and users Shape, size, structure and detail
10.55 am	Road safety strategy (RSS) section	Is the RSS contained within the document or not Key reference document should be listed, eg, RCA strategic plan, asset management plan, regional land transport strategy
11.15 am	Management section	Who will own and operate, ensure ongoing development and compliance with SMS Management structure, organisational chart
11.40 am	Standards, guidelines, policies and procedures	Split -network hierarchy/activity/asset Structure – list or template Is what's required included
12.00 pm	Lunch	
12.30pm	Roles and responsibilities	Is what is required included Any gaps
12:45pm	Management systems	Who will own, operate, ensure ongoing development and compliance with the SMS Management structure and organisational chart
1.15pm	Audit systems	Level of monitoring evaluation and review detail Key performance indicators (KPIs) Land Transport NZ role/involvement
1.45pm	Appendices	Is what required included in OFI's list Any gaps
2.15pm	Where to from here	Establish who does what/how/when
3.00pm	Finish	

F.2 SMS document review checklist

For _____

Completed by: _____

Date: _____

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
	Endorsement of the SMS			
**	Appropriate endorsement			
Introduction/executive summary/philosophy				
	Philosophy			
	Linkage to other documents			
Other				
Road safety strategy				
**	Vision			
*	Key stakeholders and partners in the community			
	Problem analysis			
	Local crash reporting database			
**	Key safety issues			
	Scope			
*	Community education initiatives			
*	Enforcement initiatives			
Other				

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
Delivery of the strategy				
**	Crash reduction studies			
	Technical auditing including:			
**	∉ project safety audit			
**	∉ existing road safety audit.			
**	Temporary traffic management including approval and auditing			
**	Deficiency analysis and database			
**	Road safety hazard register of environmental items			
**	Road hierarchy			
**	Traffic counting			
**	Speed management			
	Maintenance of traffic control devices including:			
**	∉ signs			
**	∉ delineation			
**	∉ roadmarking			
	∉ traffic signals			
	∉ any other devices.			

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
Delivery of the strategy, continued				
	Traffic management facilities, ie, LATM			
**	Land use planning and regulatory controls including district plan and bylaws			
*	Street lighting			
**	Landscaping and vegetation control			
	Overdimension and overweight routes			
*	Vulnerable road users			
*	Cycle facilities			
*	Pedestrian facilities			
*	Footpaths			
	Drainage systems including:			
*	∉ bridges and culverts			
	∉ catchpits and sumps			
	∉ kerb and channel			
*	∉ deep drains and irrigation channels			
*	∉ swale drains.			

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
Delivery of the strategy, continued				
*	Vehicle crossings and accessways			
	Stock control, crossings and underpasses			
	Effluent disposal facilities			
	Weighbridges			
	Rest areas			
	Safety barrier			
	Retaining structures			
	Parking			
*	Emergency response			
	Road closures			
	Pavement maintenance including:			
*	∉ scrim analysis			
	∉ potholes			
*	∉ physical defects			
	∉ RAMM data and analysis			
*	∉ grading unsealed roads.			
*	Clear zones			

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
Delivery of the strategy, continued				
	Railway crossings			
	Road openings by utility and other external service authorities.			
	Road openings by other departments within the RCA.			
	Roads under the control of other RCA's including:			
	∉ ports			
	∉ airports			
	∉ Department of Conservation.			
Other				
Standards, guidelines and policies				
**	Standards			
**	Guidelines			
*	Policies			
**	Compliance with standards, guidelines and policies			
Other				

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
Expertise, qualifications and roles				
*	Staff training and competence			
**	External service authorities and other commercial road occupiers			
**	Appointment of consultants and contractors			
Other				
Management of the SMS				
**	Management/ownership of road safety			
**	Monitoring of staff compliance with the SMS			
**	Ongoing system development			
	Operational/management structure			
Other				
Audit				
**	Review, monitoring and evaluation of the RSS			
**	SMS audit			
Other				

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should be	Comments
General comments				

G Deficiency database and prioritisation process

Contents

G.1 Deficiency database and prioritisation processes

Background

Developing a safety deficiency database will be a major component for many RCAs of their implementation delivery plan. However, most RCAs will already be recording a lot of the information that could be placed in such a database through existing safety audits, safety inspections and reports from contractors.

In mid-2005 Land Transport NZ, in partnership with the Ministry of Transport (MoT) and 10 RCAs and consultant engineers undertook a project examining what the key attributes of any database and prioritisation process should be and assessing existing systems. The following information is provided to assist RCAs develop/upgrade their safety deficiency database based on current best practice. As more knowledge becomes available, this will be made available by Land Transport NZ safety management system co-ordinators.

Overview

Deficiency databases allow deficiencies on a road network to be logged with sufficient information and tracked from a variety of sources, including:

- public notification/complaints
- contractors
- staff
- safety inspections
- safety audits
- emergency services.

Provided a consistent level of information for each deficiency is recorded, the data sorted within the database can be further interrogated to provide an indication of which deficiencies pose the highest risk and should therefore be examined for treatment first.

Interrogation of the database will also quantify the deficiencies that exist on the network as a whole or on a specific road or section.

The key benefits of a safety deficiency database are:

- as a repository of deficiencies on an RCA's network
- as a tool to measure tracking of responses
- as a mechanism to check contract intervention levels are being met
- the ability to interrogate data to assist with asset management
- the ability to identify the deficiencies on the network which present the highest risk if left untreated, which thus provides an order of programme for treatment investigation.

G.1 Deficiency database and prioritisation processes, continued

Overview, continued

The key benefits of a prioritisation process are:

- facilitates best risk reduction/ safety benefits for money spent
- allows programming and budgeting of safety improvement works
- assists with future maintenance or upgrade work programming where safety improvements can be added on or incorporated into work programmes at a lower cost than as stand-alone projects
- provides a prioritisation for treatment of deficiencies based on an understandable process to assist in consultation with politicians and ratepayers
- provides a consistent process for defence against litigation.

Although there is still further work to be undertaken on the project, the decision has been made to release a summary of the information from the project to date and the associated checklists to enable RCAs to progress their deficiency databases. Copies of the full report can be obtained via Land Transport NZ safety management system co-ordinators.

The project explored a cross-section of existing deficiency database and prioritisation process systems ranging in complexity from simple Excel spreadsheets developed in-house by the RCAs or their consultants, to more complex systems developed by third parties. An overview of some overseas systems was also provided within the report.

Input fields

To assist with delivery planning RCAs should consider the process that forms a safety deficiency database, including a current list of all sources of input information ie, safety deficiency identification. A suggested minimum list of inputs fields for such a database is as follows:

- deficiency number recorded in the system
- road name
- direction of travel
- side of road
- RAMM route position of side road
- distance from side road
- left or right on road
- type of hazard
- operating speed at hazard
- comments (ie, text)
- annual average daily traffic
- proposed treatment
- treatment cost.

G.1 Deficiency database and prioritisation processes, continued

Input fields, continued

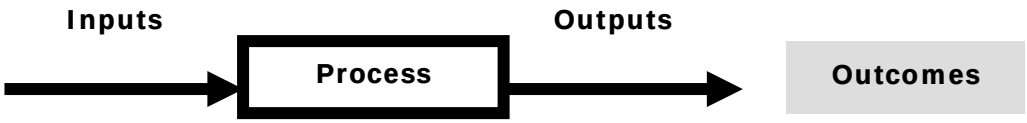
Further consideration may also be given to providing:

- images of the location/hazards, particularly if the assessor doesn't have good local knowledge of the area
- indication of speed limit/advisory speed
- approach speed of traffic
- the length of hazard
- where relevant, indication of proportion of commercial vehicles could help as ARRB's road safety risk manager allows for this for certain road types
- characteristics of the site such as lane width, shoulder width (sealed and unsealed), available clear zone, hazard severity, type of terrain, horizontal alignment, delineation, overtaking provision, left and right turn provision, sight distance, intersection or road section type
- indication of ongoing treatment costs and treatment life
- street address.

Deficiency database process attributes

One output from the Land Transport NZ/MoT project was to define a list of attributes that should be considered by an RCA investing in a deficiency database and prioritisation process. This is shown in the following figure.

Figure 1 Process flow diagram



Using the components of the above diagram to define what various stages to consider, the following paragraphs define the attributes that should be examined:

- Data INPUT process attributes
  - The system must be user friendly ie, simple to use and easy to access.
  - The system should not require the use of engineering judgement when data is being entered ie, while an RCA engineer might be involved in the collection and identification of data, the system must be simple enough to ensure that data entered into the system could be done by administrative staff.
  - The system should allow for both electronic and manual transfer of data from one system to another.

G.1 Deficiency database and prioritisation processes, continued

Deficiency database process attributes, continued

- PROCESS design attributes
  - The system must be able to generate responses quite rapidly – real-time responses are expected.
  - The system must be able to store, analyse and prioritise the safety deficiencies identified.
  - The system could be hosted internally or externally or via the internet so it can be accessed as and when required. Large RCAs might wish to host and own the system, whereas small RCAs might wish to have the system hosted and owned by an external consultant.
  - Contractors and consultants should be able to use the system. In some cases, they may own the system and use it to deliver services to RCAs.
  - The system will be used as a tool to assist RCAs in their analysis of safety issues and safety expenditure – the amount of decision-making capability that the system should have must be flexible.
    - At one extreme, the system could provide an analysis of different safety deficiencies eg, it could provide 'what if' options when identifying solutions and the outcomes and costs of those solutions.
    - At the other extreme, the system could simply be used as a data repository, where pertinent details of safety deficiencies are recorded.
- The system must be designed to facilitate and process, where it adds value, the input of data into the system from different sources eg, RAMM, CAS.
- While the system might require the use of engineering judgement at the output stage to understand the results, the process to produce the outputs must be transparent and understandable to the lay person.
- It is important to appreciate that any system used by an RCA must meet the IT requirements of the RCA, as these requirements will have a significant impact on how the system is hosted, used and operated.
- The system needs to capture new data on existing deficiencies and be able to use this data to update the value of the existing deficiencies.
- The system should rank and prioritise the safety deficiencies on a range of different criteria eg, safety concerns, mitigation costs, high risk deficiencies.
- The system should allow the RCA to prioritise their projects by use of a safety return criteria.
- The range and depth of safety deficiencies that the system is able to record should be flexible – to facilitate the capture of deficiencies identified on an RCA's network.
- Any system used must be simple, robust, accurate and secure.

G.1 Deficiency database and prioritisation processes, continued

Deficiency database process attributes, continued

- OUTPUT attributes
  - The information outputs of the system must achieve a sufficient level of quality to enable RCAs to obtain maximum value for money with respect to safety expenditure.
  - The documentation produced by the system should provide a clear line for auditing.
  - The system should ideally be able to provide specific reports for key areas or issues to be addressed.
  - The information produced by the system needs to be in a format that enables it to be exported/imported into other generic software programmes eg, MS Excel, MS Word, LTP online.
  - The information produced by the system must be able to support engineering judgement when decisions are made with respect to solutions to manage the risks being analysed.
  - It must be clearly identifiable when and why engineering judgement is used in the analysis process and any or all assumptions made through out the process are recorded.
  - The system should be able to produce reports of varying levels of complexity and detail, to meet the user's level of technical capability.
  - The final reports from the system must be understandable to a wide range of people ie, easy to read by a wide audience, easy to understand and easy to defend and justify, although interim outputs could require engineering judgement to understand.
  - The system should be able to provide ranked lists of all safety deficiencies identified and stored within the system.
  - The system should be able to produce a range of outputs eg, text reports, graphical, pictorial representations.
  - Reports produced on a micro level might be used by contractors as action lists to rectify deficiencies.
  - Reports produced on a macro level might be used by RCA engineers, management and politicians to analyse trends, develop strategies and policies.
  - While the system would be developed to meet safety issues and concerns, it should be adaptable in the future, to be able to capture and address information for a range of possible outcomes, such as environmental sustainability.

G.1 Deficiency database and prioritisation processes, continued

Deficiency database process attributes, continued

- OUTCOME attributes
  - A dynamic record of all safety deficiencies are noted and identified on the network.
  - The safety deficiency database is at the heart of the SMS, in that all information on network deficiencies feed into the system.
  - The use of such a system should provide the RCA with a defendable position, in that it will show that the RCA has been able to identify and prioritise actions to address or mitigate the identified risks and hazards.
  - The information produced should quantify all deferred risks, allowing the RCA to better manage their funding allocation.
  - The information produced must be used by the RCA to allow it to determine whether they are able to obtain value for money with respect to safety spending.
  - The use of the information produced from such a system should identify the consequences of politically-driven decisions and as such increase the potential effectiveness of an SMS.
  - Information produced by the system must be able to be used to analyse and address deficiencies to allow the RCA to better manage their SMS.
  - The system must only be used as a tool to assist the RCA to determine how it will manage its safety deficiencies – it is not the panacea, but a key tool to allow the RCA to meet it's SMS obligations.
  - The use of the information produced by the system should allow the RCA to track and measure its safety performance.
  - The system should be able to produce information that could be used on a national level by Land Transport NZ to identify national concerns and issues.

These attributes allow the identification and stimulation of thought on what the characteristics of a database that an RCA should consider when starting out.

G.2 Deficiency database and prioritisation process checklist

Another output from the Land Transport NZ/MoT project was a checklist for a database and prioritisation process, which provides a mechanism for an RCA to methodically check the components of the system they are developing and/or investing in, thereby ensuring that any such system will meet good practice. This checklist is as follows.

Input characteristics

Data characteristic	**Essential characteristics**
Deficiency location	Tick √
Use RAAM method of identification Key information required ≠ Road name ≠ Section of road ≠ District, ward ≠ Physical location ≠ Side of road ≠ Direction of travel	

G.2 Deficiency database and prioritisation process checklist, continued

Input characteristics, continued

Data characteristic	Essential characteristics
Deficiency information	Tick √
Deficiency number Date identified Data sources ≤ Safety inspections ≤ Crash reports ≤ Analysis of RAMM ≤ CAS analysis ≤ Black-spots, Grey-spots, Hot-spots ≤ Crash site monitoring ≤ Stakeholder queries ≤ Public queries ≤ Crash reduction studies ≤ Corridor management plans ≤ Safety studies ≤ Safety audits ≤ Contractor information Identified by who Description of deficiency ≤ Type of deficiency ≤ Size of deficiency Crash data recorded ≤ Number of crashes ≤ Type of crashes ≤ Seriousness of crashes Comments (text)	

G.2 Deficiency database and prioritisation process checklist, continued

Input characteristics, continued

Data characteristic	Essential characteristics
Deficiency category	Tick √
Category of treatment ≠ Scheduled maintenance ≠ Unscheduled maintenance ī Urgent ī Non-urgent Minor safety ≠ Capital project (Project feasibility study) Who is responsible for deficiency	
Deficiency programming	Tick √
Is the deficiency to be assessed Is the deficiency to be treated Date treatment was implemented Treatment solution to address deficiency Person responsible for developing solution Person responsible for implementing solution Status of solution implementation Cost to develop solution ≠ Estimate/provisional sum Cost to implement solution ≠ Estimate/provisional sum Funding source ≠ RCA and Transit NZ amounts ≠ RCA accounting code/s	

G.2 Deficiency database and prioritisation process checklist, continued

System characteristics

System characteristic	Essential characteristics
System use	Tick √
Frequency of data entry ∉ Daily ∉ Weekly ∉ Monthly ∉ Periodically Skill required for those entering data ∉ Administration – skilled in use of system ∉ Technician – skilled in use of system ∉ Engineer – skilled in use of system Entry method ∉ Manual data ∉ Importing electronic data	
Information storage	Tick √
Years ∉ 1 – 2 ∉ 2 – 3 ∉ 3 – 4 ∉ 4 – 5 ∉ > 5 Track deficiency treatments over time	
System familiarity	Tick √
Systems to use common software features	
System 'terminology'	Tick √
Terminology to be common NZ-wide	

G.2 Deficiency database and prioritisation process checklist, continued

Process characteristics

Data characteristic	Essential characteristics
Criteria used to assess risks	Tick √
Factors considered for treatment ≠ Cost ≠ Risk ī Frequency ī Severity ī Exposure ≠ Benefits ≠ Location ≠ Extent of problem ≠ If future works are programmed at site Crashes ≠ History ≠ Seriousness Vulnerable road users Vulnerable road user crashes Police concern Public concern Other agencies concern – Land Transport NZ, Transit NZ, etc. Is it a key item in road safety strategy Traffic volume annual average daily traffic (AADT)	
Risk assessment	Tick √
Risk before treatment ≠ Likelihood value ≠ Exposure value ≠ Severity value ≠ Result in a risk score	

G.2 Deficiency database and prioritisation process checklist, continued

Process characteristics, continued

Data characteristic	Essential characteristics
Risk assessment, continued	Tick √
Risk after treatment ∉ Likelihood value ∉ Exposure value ∉ Severity ∉ Result in a risk score Risk reduction of treatment ∉ Risk reduction score/percentage ∉ Cost-benefit score/percentage Ability to evaluate multiple treatment solutions Date assessment carried out	
Prioritisation process	Tick √
Criteria ∉ Pre-treatment risk ∉ Risk reduction ratio ∉ Treatment cost ∉ Benefit/cost ratio Complexity of risk model ∉ Simple assessment – qualitative ∉ Simple assessment – crash data Process response time ∉ Short time – 2 to 4 minutes	
Use of engineering judgement	Tick √
When data is entered into system When risks are prioritised by system ∉ Analyse the likelihood ∉ Analyse the consequences ∉ Calculate the risk (score)	

G.2 Deficiency database and prioritisation process checklist, continued

Process characteristics, continued

Data characteristic	Essential characteristics
Use of engineering judgement, continued	Tick √
When risks treatments are identified When risks treatments are proposed When impact of treatment is assessed When output is reviewed by engineer	
Treatment development	Tick √
Developed by RCA engineer Treatments developed one-at-a-time	
Decision making capability	Tick √
Analysis of individual deficiencies Analysis of treatments for each deficiency	
System location	Tick √
Hosted internally by RCA Accessible by consultants	

G.2 Deficiency database and prioritisation process checklist, continued

Output characteristics

Data characteristic	Essential characteristics
Course of action	Tick √
Deficiency assigned appropriate action Deficiency assigned to right person Note if further investigation is required Mode of treatment ∉ Safety works programme ∉ Existing maintenance contract ∉ New maintenance contract Dates of action ∉ Date action has been completed	
Output media	Tick √
Hard copy Export ∉ MS Word ∉ MS Excel Report format ∉ Text	
Reports produced	Tick √
Sort by ∉ Date deficiency entered ∉ Date deficiency assessed ∉ Date deficiency treated ∉ Status of treatments ∉ Deficiency ranking/priority ∉ Risk ranking pre-treatment ∉ Risk ranking post-treatment ∉ Amount risk reduced ∉ Treatment cost ∉ Benefit/cost ratio	

G.2 Deficiency database and prioritisation process checklist, continued

Output characteristics, continued

Data characteristic	Essential characteristics
Reports produced, continued	Tick √
≠ Deficiencies treated ≠ Deficiencies to be treated ≠ Deficiencies per maintenance area ≠ Deficiencies per maintenance contract ≠ Deficiencies per contractor ≠ Contractor per maintenance area ≠ Type of deficiency per network ≠ All deficiencies per network ≠ Type of treatment options ≠ Type of treatment solutions Provide clear line for auditing	
Users of reports (system outputs)	Tick √
RCA engineers RCA politicians RCA management Land Transport NZ	

G.2 Deficiency database and prioritisation process checklist, continued

Outcome characteristics

System characteristic	Essential characteristics
Value of system to RCA	Tick √
System to capture deficiencies ∉ All deficiencies on network ∉ New deficiencies on network ∉ Existing deficiencies on network Formal system ∉ To prioritise or rank deficiencies ∉ To prioritise minor safety projects Decision making tool to assist RCA ∉ To prioritise or rank deficiencies ∉ To prioritise minor safety projects Reason for use of system ∉ Decision-making tool ∉ Provide formal process ∉ Provide hard facts ∉ Provide solutions to deficiencies Holistic approach to managing safety issues More proactive response to safety projects Enhanced strategic knowledge of RCA's assets More focused efforts to achieve 2010 targets Greater value for safety expenditure Provide legal protection	

G.3 Simplified process

The safety deficiency database

A database is simply a list, in this case, a means of listing the deficiencies that occur on the RCA's network. Some of the deficiencies in the list will be items that form part of the maintenance contractors scheduled maintenance and thus the system needs to be able to show when the deficiency was identified and when the maintenance contractor was informed of the deficiency. Ideally the system would have a means of providing a closed loop such as notification from the maintenance contractor that the deficiency repair has been programmed and actioned.

The prioritisation process

Other safety deficiencies will form either unscheduled maintenance or additional safety deficiencies which fall outside the maintenance contracts. These need to be assessed for risk to the road user and/or asset deterioration, and appropriate treatment costs to eliminate, isolate or mitigate the hazard.

To undertake this process will require the person doing the work to have a good understanding of the application of risk in this environment and be able to identify the most appropriate treatment for the hazard.

In its simplest form prioritisation could be considered as follows:

2 Provide a risk score for the deficiency identified based on a combination of exposure, likelihood and severity. This step will provide an initial indication to the RCA of the deficiencies that should be looked at first in terms of treatment as they pose the greatest risk on the RCA's network.

3 Match a treatment against the deficiency that will either eliminate the risk or reduce it to an acceptable level and provide a rough cost for the treatment.

4 Provide a risk score for the treated deficiency as in step 1.

5 Subtract the treated deficiency risk score (step 3) from the deficiency risk score (step 1) to give the risk reduction achieved by the treatment.

6 Divide the risk reduction (step 4) by the treatment cost (step 2) to give the risk reduction per dollar spent.

7 Prioritise the deficiencies based on the greatest risk reduction per dollar spent.

The above provides a simple prioritisation of deficiencies. Land Transport NZ engineering staff involved with SMSs can provide an example of a simple matrix that could be used for the above process; alternatively the Land Transport NZ/MoT report discusses a number of systems currently in use within New Zealand.

G.3 Simplified process

The next step

Firstly:

- what the RCA's needs are with respect to a deficiency database should be determined. Consideration must be made of what use the deficiency information will be put to within the RCA. For many RCAs there will simply be a process of initiating the gathering of information to provide a picture of what issues/deficiencies there are on the network and to quantify the extent of those issues/deficiencies.

Then the RCA needs to:

- review this section of the guidelines and the Land Transport NZ/MoT report to get a feel of what an safety deficiency database can do and decide
- determine what the best path forward should be for them and what support they need.

As a starting suggestion most of the smaller RCAs could commence with a simple spreadsheet to capture information (ie, the deficiencies) and then work (possibly with a consultant) to get these reviewed and prioritised periodically throughout the year, either using a simple matrix or a more complex commercial product.

H List of possible standards and guidelines

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
Planning	Land use planning and controls	Resource Management Act (1992)	NZS 4404:2004 Land development and subdivision engineering	Guide to traffic engineering practice series, general, Austroads	District plan
		Local Government Act (2002)	RTS 6: Guidelines for visibility at driveways	Draft state highway geometric design manual (2000-03)	Land use and regulatory control procedures
				Guide to traffic engineering practice, Part 5: intersections at grade	
				Planning policy manual (1999), TNZ	
				RTA Guide to traffic generating developments	
				RTS 3: Guidelines for establishing rural selling places	
				RTS 6: Guidelines for visibility at driveways	
				RTS 7: Advertising signs and road safety: Design and location guidelines	
				TNZ planning and policy manual	
	Landscape	Local Government Act (2002)	Code of practice for temporary traffic management (SP/M/018), TNZ	RSS 15 - Roadside hazard management, LTSA	Asset management plan
			Guidelines for planting for road safety (1991), TNZ	TNZ standards	Roadside planting procedures
			NZS 4404:2004 Land development and subdivision engineering		
	Road network planning	Local Government Act (2002)	Guide to Traffic engineering practice series, general, Austroads	Transit NZ planning for a safe and efficient highway network (1994)	Asset management plan
		Resource Management Act (1992)	LTSA RTS Standards general	Guide to traffic engineering practice series, general, Austroads	District plan
		Transit NZ Act (1989)	NZS 4404:2004 Land development and subdivision engineering	Draft state highway geometric design manual (2000-03)	Roading policies

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
			Standards and guidelines manual, Transfund	LTSA RTS standards general	
			TNZ guidelines	NZS 4404:2004 land development and subdivision engineering	
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				TNZ standards	
Structures	Asset creation, development and management	Local Government Act (2002)	Accounting regulations and standards	Guide to traffic engineering practice series, general, Austroads	Asset management plan policy
		Resource Management Act (1992)	NZ asset management asset valuation and depreciation guidelines		Regional land transport strategy
		Transit NZ Act (1989)	International infrastructure management manual, 2002, NAMS		
	Bridges and culverts	Resource Management Act (1992)	bridge inspection and maintenance manual (SP/M/016), TNZ	Waterways design: a guide to the hydraulic design of bridges (AP-23/94), Austroads	Asset management plan – bridges and culverts
		NZ Building Code (1992)	Bridge manual (SP/M/022) 2nd Ed, TNZ	Draft state highway geometric design manual (2000-03)	Policy for upgrading handrails
		Health and Safety in Employment Act (1992)		TNZ M/01 Roading bitumens, 1995	To have two way bridges on all sealed roads
				TNZ M/23 Road safety barrier systems	
	Carriageway pavements	Local Government Act (2002)		Code of practice for temporary traffic management (SP/M/018), TNZ	Asset management plan - roading policies
		Resource Management Act (1992)		NRB TR8 – Manual for maintenance of unsealed roads	District plan
		Transport Act (1962 & 1997)		Road condition rating and roughness manual (PFM 6); Transfund, 1997	
		Traffic Regulations (1976)		TNZ C/03 Repair potholes	
				TNZ C/04 Digout repairs in flexible pavements	
				TNZ C/05 Repair of surface openings and minor surface levelling	

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
				TNZ C/06 Repair of surface defects	
				TNZ C/07 Repair of edge break	
				TNZ C/08 Adjusting service covers	
				TNZ C/09 Emergency work	
				TNZ C/10 Maintenance of unsealed shoulders	
				TNZ C/11 Unsealed pavements : repair of potholes	
				TNZ C/12 Unsealed pavements : surface and shape restoration	
				TNZ C/13 Unsealed pavements : digout repairs	
				TNZ C/14 Unsealed pavements : supply and place maintenance aggregate	
				TNZ C/15 Removal of surface detritus	
				TNZ P4, P7, T11	
				TNZ Specifications and guidelines for maintenance of road networks	
	Drains, catchpits and sumps	Resource Management Act (1992)	Draft state highway geometric design manual (2000-03)	Guide to the Design of Road Surface Drainage, NAASRA	Asset management plan
		Local Government Act (2002)	NZS 4404:2004 land development and subdivision engineering	Rural road design: a guide to the geometric design of rural roads, Austroads	Ensure all sump grates are cyclist friendly and have grating at right angles to kerb line with no dropoffs
		Transport Act (1962 & 1997)		TNZ C/15 Removal of surface detritus	Roadside drains should preferably be behind the fence or sufficiently far from the road that vehicles can stop before entering the drain
		Transit NZ Act (1989)		TNZ C/16 Maintenance of stormwater structures	
		Traffic Regulations (1976)		TNZ C/21 Vegetation control	
	Kerb and channel (including vehicle	Resource Management Act (1992)	NZS 4404:2004 Land development and subdivision engineering	Guide to traffic engineering practice, Part 10: local area traffic management	Asset management plan

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
	crossings)			Guide to traffic engineering practice, Part 13: pedestrians	Footpath policy
				Guide to traffic engineering practice, Part 5: intersections at grade	Footpath strategy and standards (including drainage)
				Guide to traffic engineering practice, Part 9: arterial road traffic management	
				NZS 3661 - Slip resistance of pedestrian surfaces	
	Overweight/ overdimension loads	Heavy Motor Vehicle Regulations (1974)	Bridge inspection and maintenance manual (SP/M/016), TNZ	Load pilot driver code, 2004, LTSA	Encourage overweight vehicles to travel on State Highway network wherever possible
			Overweight permit manual, TNZ	LTSA Factsheet 13: maximum permitted vehicle weights and dimensions	Overweight policy
	Road construction and design (including barriers)	Local Government Act (2002)	AS/NZS 3845:1999 road safety barrier systems	ARRB sealed local road manual, 1995	District plan
		Resource Management Act (1992)	Draft state highway geometric design manual (2000-03)	Bridge inspection and maintenance manual (SP/M/016), TNZ	Roading policies
			NZS 4404:2004 land development and subdivision engineering	Bridge manual (SP/M/022) 2nd Ed, TNZ	Footpath policy
			TNZ M/23 Road safety barrier systems	Code of practice for temporary traffic management (SP/M/018), TNZ	Asset management plan
				Guide to traffic engineering practice, Part 13: pedestrians	Guardrail procedures
				Guide to traffic engineering practice, Part 5: intersections at grade	
				Guide to traffic engineering practice, Part 6: roundabouts	
				Highway surface drainage: design guide for highways with a positive collection system, NRB	
				Pavement design: a guide to the structural design of road pavements, Austroads (plus) New Zealand supplement (May 2000)	

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
				RTS 11: guidelines for urban roadside barriers and alternative treatments	
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				Safety barriers: consideration for the revision of safety barriers on rural roads, NAASRA	
	Slips and retaining structures	NZ Building Code (1992)			Regional policy statement
		Resource Management Act (1992)			All new structures require specific design and building permit
	Stock crossings and underpasses	Transit NZ Act (1989)	Code of practice for temporary traffic management (SP/M/018), TNZ	Bridge manual (SP/M/022) 2nd Ed, TNZ	Landowner funds all maintenance costs, except structural repairs which are not due to his use of the underpass
			Culvert manufacturer's guidelines for design and installation	Manual of traffic signs and markings: part 1 - traffic signs (Ed. 4)	
			Transfund programme and funding manual: Clause 7.4.20 stock underpasses		
			Transit NZ stock underpass procedures manual 2001		
	Utilities/road reserve	Local Government Act (2002)	Code of practice for temporary traffic management (SP/M/018), TNZ	LTSA and TNZ road and traffic standards	Street opening policy
		Resource Management Act (1992)	Manual of traffic signs and markings: parts I and II	TNZ M/23 road safety barrier systems	District plan
		Telecommunications Act (2001)			Consent for works on the road
		Electricity Act (1992)			Roading policies
		Gas Act (1992)			
		Health and Safety in Employment Act (1992)			
		Transit NZ Act (1989)			

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
		Transport Act (1962 & 1997)			
		Traffic Regulations (1976)			
Systems	Accident notification system	Traffic Regulations (1976)		Accident investigation system manual, LTSA	Police and local accident reports
				Annual LTSA road safety report	Emergency procedures manual
				Code of practice for temporary traffic management (SP/M/018), TNZ	
				LTSA RTS standards general	
				State highway asset management manual	
				TNZ standards	
	Annual plan and strategic plan process	Local Government Act (2002)		Guide to traffic engineering practice series, general, Austroads	Regional land transport strategy
		Transit NZ Act (1989)		LTSA RTS standards general	Annual plan
				TNZ standards	
	Crash reduction studies	Traffic Regulations (1976)	Accident investigation procedures, TNZ/MOT,1991	Accident investigation monitoring system - coding manual, LTSA	Crash reduction studies procedures
				Accident investigation system manual, LTSA	Undertake crash reduction study at least once every four years
				Guide to traffic engineering practice, part 4: road crashes	
				LTSA RTS standards general	
				Policy guidelines for traffic accident reduction and prevention, TNZ/MOT	
				TNZ standards, criteria and guidelines manual	
	Emergency response	Traffic Regulations (1976)	Code of practice for temporary traffic management (SP/M/018), TNZ	TNZ C/09 Emergency work	Emergency procedures manual
		Transport Act (1962 & 1997)			Policies for road stopping, snow clearing

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
		Transit NZ Act (1989)			
	Hazard registers / safety databases	Local Government Act (2002)	Standards and guidelines manual, Transfund	Asset management manual, Chapter 2, Transfund	Network maintenance contracts
		Resource Management Act (1992)		Code of practice for temporary traffic management (SP/M/018), TNZ	Asset management plan
				Manual of traffic signs and markings: Parts I and II	District plan
				RTS 5: Guidelines for rural road marking and delineation	
	Public services / consultation	Local Government Act (2002)		Guide to traffic engineering practice series, general, Austroads	Policy manual
		Transit NZ Act (1989)		LTSA guidelines general	Delegation manual
		Transport Act (1962 & 1997)		NZ road code	
		Traffic Regulations (1976)		NZS 4402: 1986 methods for testing soils for civil engineering purposes	
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				Safety audit policy and procedures (1993), TNZ	
				Standards and Guidelines manual, Transfund	
				TNZ standards	
	Road safety plans and strategies	Traffic Regulations (1976)		LTSA guidelines for developing a safety management system for road controlling authorities	Road safety plan
				NZ road safety plan guidelines, 2004, LTSA	Regional land transport strategy
				NZ road code	Road safety strategy
				TNZ SH safety management system manual	
	Safety audits	Local Government Act (2002)	Guidelines for auditing existing roads, Transfund	Guide to traffic engineering practice series, general, Austroads	Asset management plan – risk section

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
			Safety audit policy and procedures (1993), TNZ	Road safety audit, Austroads 1994	Existing road safety audit procedure
			Safety audit policy and procedures (2004), TransfundNZ	Rural road design: a guide to the geometric design of rural roads, Austroads	
				TNZ maintenance specifications	
	Safety inspections	Resource Management Act (1992)	Code of practice for temporary traffic management (SP/M/018), TNZ	Waterways design: a guide to the hydraulic design of bridges (AP-23/94), Austroads	Asset management plan
		Local Government Act (2002)		Bridge inspection and maintenance manual (SP/M/016), TNZ	Roading policies
		Transit NZ Act (1989)		Draft state highway geometric design manual (2000-03)	Manage unofficial signs
		NZ Building Code (1992)		Guide to traffic engineering practice, Part 5: intersections at grade	Manage lighting overspill (glare)
				Guide to traffic engineering practice, Part 6: roundabouts	
				Guidelines for auditing existing roads, Transfund	
				Highway surface drainage: design guide for highways with a positive collection system, NRB	
				NZS 4404:2004 land development and subdivision engineering	
				Road safety audit, Austroads 1994	
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				Transit New Zealand safety certification procedures	
				TNZ standards, criteria and guidelines	
	Traffic counting program			A guide on estimating AADT and traffic growth, and a traffic count monitoring programme basis, Transit New Zealand	GK5000 Traffic recorder/ classifier, Fred Daggs quick guide to traffic counting and classifying
				Code of practice for temporary traffic management (SP/M/018), TNZ	Strategic planning requirements

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
				Local authority RAMM operation database manual	
				Economic evaluation manual, Land Transport NZ	
Traffic management	Carriageway surface and friction	Local Government Act (2002)		Guide to the selection of road surfacings, 2000, Austroads	Asset management plan
		Resource Management Act (1992)		Bituminous sealing manual, Transit New Zealand, 1993	Road snow clearing policy
		Transport Act (1962 & 1997)		Code of practice for temporary traffic management (SP/M/018), TNZ	
		Traffic Regulations (1976)		Local authority RAMM operation database manual	
				Road condition rating and roughness manual (PFM 6); Transfund, 1997	
				RRU bulletin 79 - guidelines for selection, design and construction of thin flexible bituminous surfacings in NZ	
				RSS 10 - Skid resistance, LTSA , 1998	
				SCRIM Deficiency report, user guidelines, TNZ 1998	
				TNZ C/10 Maintenance of unsealed shoulders	
				TNZ C/15 Removal of surface detritus	
				TNZ C/22 Frost and ice gritting and snow clearance	
				TNZ Standards and specifications for testing and evaluation	
				TNZ T3: Measurement of texture by sand circle method	
	Delineation	Traffic Regulations (1976)	Manual of traffic signs and markings: Parts I and II	Bridge manual (SP/M/022) 2nd Ed, TNZ	District plan
		Local Government Act (2002)	RTS 5: guidelines for rural road marking and delineation	RSMA Compliance standard for traffic signs (2003)	Rural delineation policy
		Transport Act (1962 & 1997)		TNZ C/18 Maintenance of edge marker posts	Asset management plan

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
				TNZ C/20 Erection and maintenance of traffic signs, chevrons, markers and sight rails	
				TNZ M/12 Raised pavement markers	
				TNZ M/14 Edge marker posts	
				TNZ P/16 Installation of edge marker posts	
				Standards and guidelines manual, Transfund	
	Detritus sweeping and vegetation control	Local Government Act (2002)	Manual of traffic signs and markings: Part 1 - traffic signs (Ed. 4)	Guidelines for planting for road safety (1991), TNZ	Regional policy statement
				NZS 4404:2004 land development and subdivision engineering	Weed pest strategy
				NZS 8409: 1995 agrichemical uses code of practice	District plan
	Intersection control (including traffic signals)	Local Government Act (2002)	AS/NZS 2144:2002 Traffic signal lanterns	Draft state highway geometric design manual (2000-03)	Code of practice for development
		Resource Management Act (1992)	Guide to traffic engineering practice, Part 7: traffic signals	Guide to traffic engineering practice, part 5: intersections at grade	Asset management plans
		Transport Act (1962 & 1997)	Roading design guidelines RD-1 Intersections at grade RD-2 roundabouts	Guide to traffic engineering practice, part 6: roundabouts	Policy not to use the rural right turn lane Type B in Austroads
		Traffic Regulations (1976)		Manual of traffic signs and markings: Parts I and II	
		Traffic control devices rule		New Zealand on-road tracking curves, LTSA	
				RTS 1: guidelines for the implementation of traffic control at crossroads	
				RTS 9: guidelines for the signing and laying out of slip lanes	
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				State highway control manual (SM012), TNZ	
				AS2353 - 1999 pedestrian push button assemblies	

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
				Guide to traffic engineering practice, Part 8: traffic control devices	
				guide to traffic engineering practice, part 9: arterial road traffic management	
				NZS 5431:1973 specification for traffic signals, Section 18: warrants for traffic signals	
				RTS 14: guidelines for Installing pedestrian facilities for people with visual impairment	
	Parking (including bus stops)	Traffic Regulations (1976)	Guide to traffic engineering practice, Part 11: parking	Draft State highway geometric design manual (2000-03)	District plan
		Local Government Act (2002)		Highway surface drainage: design guide for highways with a positive collection system, NRB	Asset management plan
				Manual of traffic signs and markings: Parts I and II	District plan, Appendix F sets out required manoeuvring and parking dimensions
				Rural road design: a guide to the geometric design of rural roads, Austroads	
				TNZ M/23 road safety barrier systems	
	Road Closures	Local Government Act (2002)	Code of practice for temporary traffic management (SP/M/018), TNZ		Temporary traffic management
		Transport Act (1962 & 1997)	Manual of traffic signs and markings: Part 1 - traffic signs (ed. 4)		Road stopping policy
		Resource Management Act (1992)			Asset management plan
		Traffic Regulations (1976)			District plan
		Transport (Vehicular Traffic – Road Closures) Regulations (1965)			
	Road lighting	Transport Act (1962 & 1997)	AS/NZS 1158 Road lighting series	guide to traffic engineering Part 12 : roadway lighting	Roading street lighting policy

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
		Local Government Act (2002)	NZS 6701: Code of practice for road lighting	NZS 4404:2004 land development and Subdivision engineering	Asset management plan
		Traffic Regulations (1976)			Street lighting procedures – prioritise upgrades and improvements/requests from public to fit criteria
	Road signage	Traffic Regulations (1976)	Manual of traffic signs and markings: Part 1 - traffic signs (ed. 4)	Draft state highway geometric design manual (2000-03)	District plan
		Local Government Act (2002)	RSMA compliance standard for traffic Signs (2003)	Guide to traffic engineering practice, Part 1: traffic flow	Asset management plan
		Transit NZ Act (1989)	RTS 5: guidelines for rural road marking and delineation	Quality standard TQS1: 1995 for high QA level contracts, TNZ	Signage policy
		Transport Act (1962 & 1997)		RTS 2: Guidelines for street name signs	Consolidated bylaw
		Traffic Control Devices Rule		RTS 7: Advertising signs and road safety: design and location guidelines	Parking restriction selection types policy
		Resource Management Act (1992)		TNZ C/20 Erection and maintenance of traffic signs, chevrons, markers and sight rails	
				TNZ standards for design, construction and materials	
	Road marking	Traffic Regulations (1976)	Manual of Traffic signs and markings: Part 2 – markings (ed. 3 interim update)	Code of practice for temporary traffic management (SP/M/018), TNZ	Asset management plans
		Traffic control devices rule	RTS 5: guidelines for rural road marking and delineation	guide to traffic engineering practice, Part 14: bicycles	Flush medians policy
			LTSA and TNZ road and traffic standards	TNZ P/12 Pavement marking	Keep clear marking policy
				TNZ P/14 Installation of raised pavement markers	Broken yellow lines for intervisibility at driveways policy
				TNZ specifications - E/3 1995; E/4 1994; M/7 1993; M12 1986; M/20 1994; Q/3 1995; T/8 1996; TQS/2 1995	Remark existing markings in March/May and October/November each year
	Speed limits	Transport Act (1962 & 1997)	Land Transport Rule: Setting of Speed Limits (2003)	Code of practice for temporary traffic management (SP/M/018), TNZ	Asset management plan

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
		Traffic Regulations (1976)	speed limits New Zealand (2003), LTSA	Manual of traffic signs and markings: Parts I and II	
		Land Transport Rule: Setting of Speed Limits (2003)			
	Temporary traffic management	Health and Safety in Employment Act (1992)	Code of practice for temporary traffic management (SP/M/018), TNZ	AS/NZS 1906 series (1993-97): reflective materials	Roading policies
		Traffic Regulations (1976)	OSH documents	Manual of traffic signs and markings: Parts I and II	Street opening policy
		Local Government Act (2002)	Contractors health and safety procedures	Safe handling of bituminous materials, BCA	Asset management plan
		Transport Act (1962 & 1997)		TNZ handbook “Working on the road”	Special events guidelines for road usage
		Land Transport Rule: Setting of Speed Limits (2003)		Transfund interim procedures for safety audit of traffic control at roadwork sites: Feb. 1999	Health and safety policy
		Transit NZ Act (1989)			Road closures procedures
Vulnerable users	Cycle facilities	Traffic Regulations (1976)	Guide to traffic engineering practice, Part 14: bicycles	Bridge manual (SP/M/022) 2nd ed, TNZ	District plan
		Local Government Act (2002)	Guidelines for cycle audit and cycle review, IHT	New Zealand cycle design guide, draft, 2003, TNZ	Roading policies
				Guide to cycle facilities, NRB/UTC	Cycle and walking strategy
				Manual of traffic signs and markings: Parts I and II	Road safety plan
				NZS 4404:2004 land development and subdivision engineering	Strategic cycle plan
				The National cycle network: guidelines and practical issues: Issue 2 (Ove Arup, 1997)	Cycleway policy and action plans
	Pedestrian crossings	Traffic Regulations (1976)	AS/NZS 3661 series (1993-94): slip resistance of pedestrian surfaces	Guide to traffic engineering practice, Part 7: traffic signals	Pedestrian crossings are established where pedestrian and vehicle numbers meet the warrant
			Guide to traffic engineering practice, Part 13: pedestrians	NZS 4404:2004 Land development and subdivision engineering	Roading policy

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
			LTSA Fact sheet 26: kea crossings - school crossing points, 2003		
			Manual of traffic signs and markings: Parts I and II		
			NZS 6701: Code of practice for road lighting		
			TR 11: Recommended practice for pedestrian crossings		
			Draft Guide to Pedestrian Crossing Facilities (2001),TRAFINZ		
	Pedestrian facilities	Traffic Regulations (1976)	Draft guide to pedestrian crossing facilities (2001),TRAFINZ	AS/NZS 3661 series (1993-94): slip resistance of pedestrian surfaces	Asset management plan
		Local Government Act (2002)	Guide to traffic engineering practice, Part 13: pedestrians	Guide to traffic engineering practice, Part 14: bicycles	Walking and cycling strategy
		Transport Act (1962 & 1997)	Manual of traffic signs and markings: Parts I and II	Guide to traffic engineering practice, Part 7: traffic signals	Pedestrian strategy
		Resource Management Act (1992)	RTS 14: Guidelines for installing pedestrian facilities for people with visual impairment	LTSA Fact sheet 26: Kea crossings - school crossing points, 2003	Multilane road pedestrian crossing policy
				NZ road code	Footpath strategy
				NZS 4121:2001, design for access and mobility – buildings and associated facilities	
				NZS 4404:2004 Land development and subdivision engineering	
				NZS 6701: Code of practice for road lighting	
				NZS 6701: Code of practice for road lighting	
				TR 11: Recommended practice for pedestrian crossings	
	Traffic calming	Traffic Regulations (1976)	Guide to traffic engineering practice, Part 10: local area traffic management	Guidelines for local area traffic management, Western Australia Main Roads Department	LATM policy and guidelines

Group	Subject	Legislation	Commonly used guidelines	Additional standards / guidelines	Examples of local policies
		Transit NZ Act (1989)	Guide to traffic engineering practice, Part 9: arterial road traffic management	Manual of traffic signs and markings: Parts I and II	Code of practice for development
				RTS 15: Guidelines for urban - rural thresholds	

I Continuous improvement monitoring workbook

Content

I.1 Introduction

A safety management system (SMS):

- is a method for managing the road network to improve safety
- documents road safety strategies, policies, standards, procedures, staff expertise, management and audit systems of the road controlling authorities (RCAs)
- is an integral part of the overall management system for the road network.

An SMS is the fundamental means of achieving the vision of a greater degree of consistency in how the national road environment appears to road users. In order to ensure that an RCA is continually achieving its vision through the use of its SMS, it is vital that the RCA is able to continually improve and develop their SMS over time.

Continuous improvement is the term used to describe the fact that system improvement takes place in incremental steps. It never stops. However good things may be, they can always be better. Continuous improvement is a relentless effort to improve the SMS, in order to add value to the customer, the road user.

Once the RCA commences implementing their SMS they begin the process of continuous improvement. This workbook contains a set of checklists to assist the RCA during the process of implementation of their SMS. These checklists assist the RCA to ensure that all of the issues identified within their SMS documentation are being implemented appropriately.

It should be noted that due to the diverse nature of each RCA, not all issues and items noted in the workbook will be needed. Some of the critical items, however, will be common to all. Other issues unique to a particular RCA, which are not noted in the workbook, may be included in that RCA's SMS.

I.2 Continuous improvement

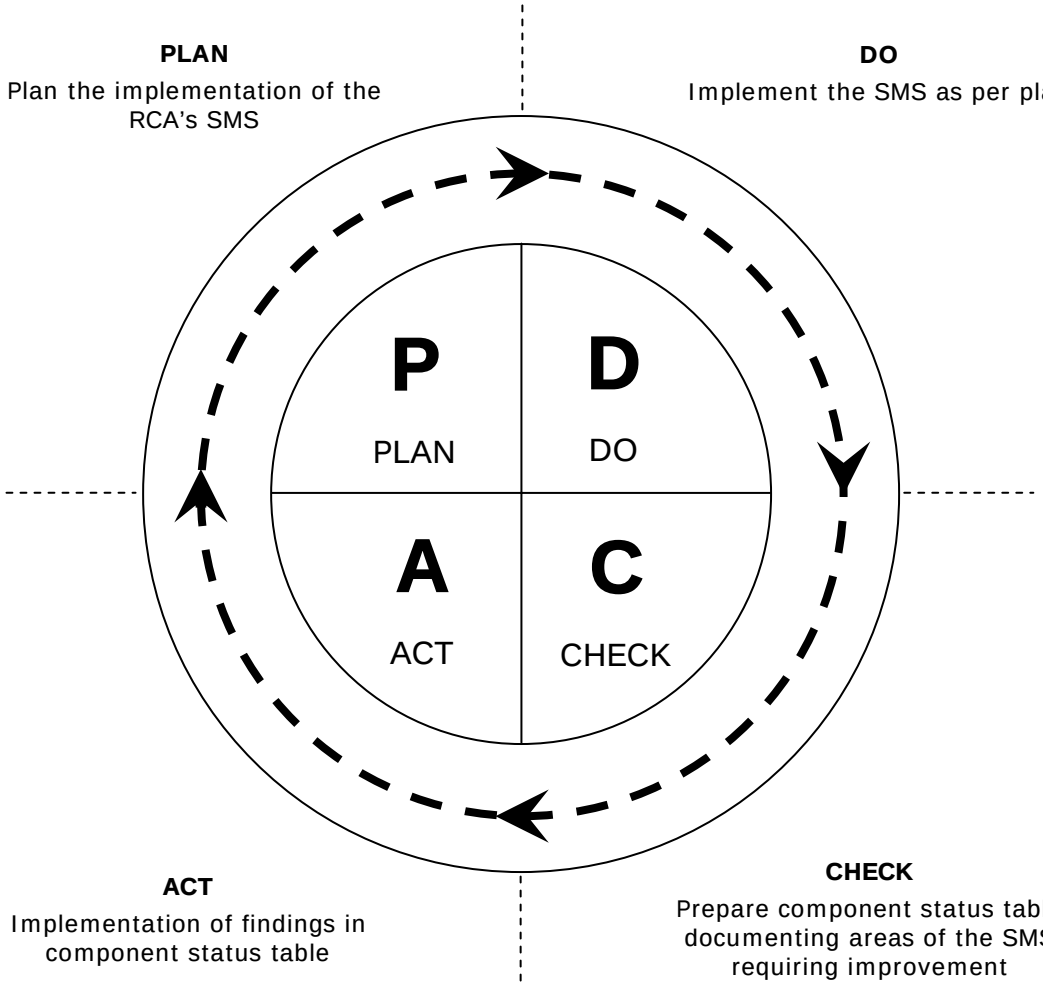
Continuous improvement is the term used to describe the fact that system improvement takes place in incremental steps. A key tool used to achieve continuous improvement is the Plan–Do–Check–Act (PDCA) cycle. The PDCA cycle is a checklist of four stages which one must work through to get from one stage of the improvement process to the next. The four stages are:

8 Plan.

9 Do.

10 Check.

11 Act.



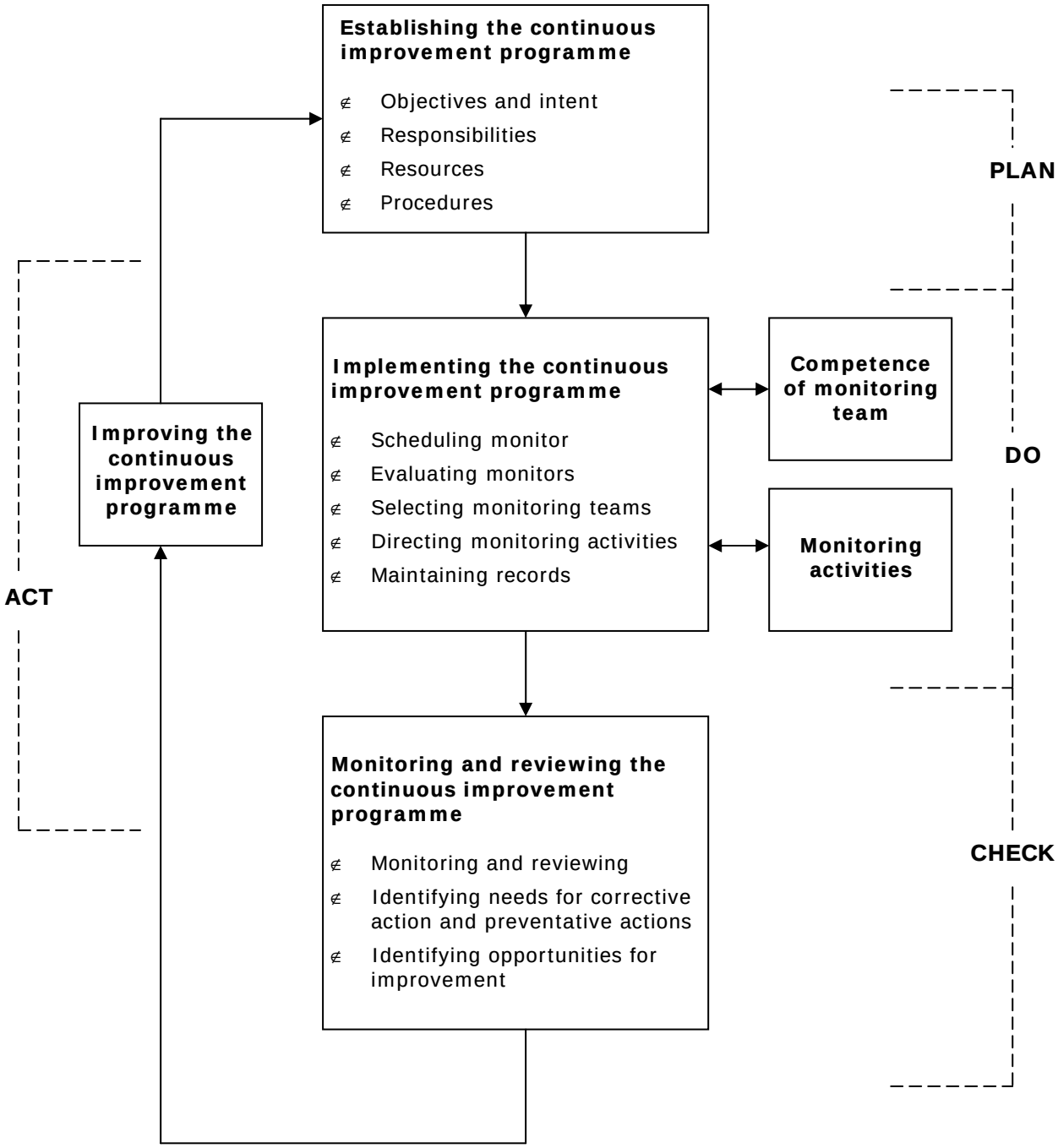
The PDCA cycle is at the heart of the continuous improvement programme. It forms the focus of continuous improvement of the RCA's SMS, by ensuring the RCA is always evaluating its SMS with respect to its ability to achieve the required end outcome, meeting its road safety strategy.

I.3 The continuous improvement process

Overview of the process

Continuous improvement is a process that should be planned and managed over a specific timeframe and directed towards a specific purpose.

A continuous improvement programme includes all the planning, organising and conducting of activities in order to determine opportunities for improvement.



I.3 The continuous improvement process, continued

The programme

The SMS continuous improvement programme is intended to assist the RCAs with the management of their SMS. This is to ensure the RCA is always striving to achieve its road safety strategy and a vision of a greater degree of consistency in how national road environments appear to road users. The continuous improvement programme comprises three separate stages, conducted over a period of time, as required by the individual RCA, in consultation with Land Transport NZ SMS sponsor. This workbook concentrates on the monitoring aspect of the continuous improvement programme.

Monitoring

The initial stage of the continuous improvement programme is monitoring. The aim of this first stage is to clarify if the RCA is following its obligations, as documented within the RCA's SMS manual, and to determine what improvements are required with the SMS.

Once the RCA's SMS has been endorsed (via the SMS stage 3 documentation review sign-off meeting) it is important to determine if the policies, procedures, systems etc, that the RCA has chosen, are actually being followed and the level to which they are followed. Monitoring seeks to obtain verification through objective evidence, ie the monitoring team will inspect documentation and records held by the RCA to confirm how the RCA implements the SMS.

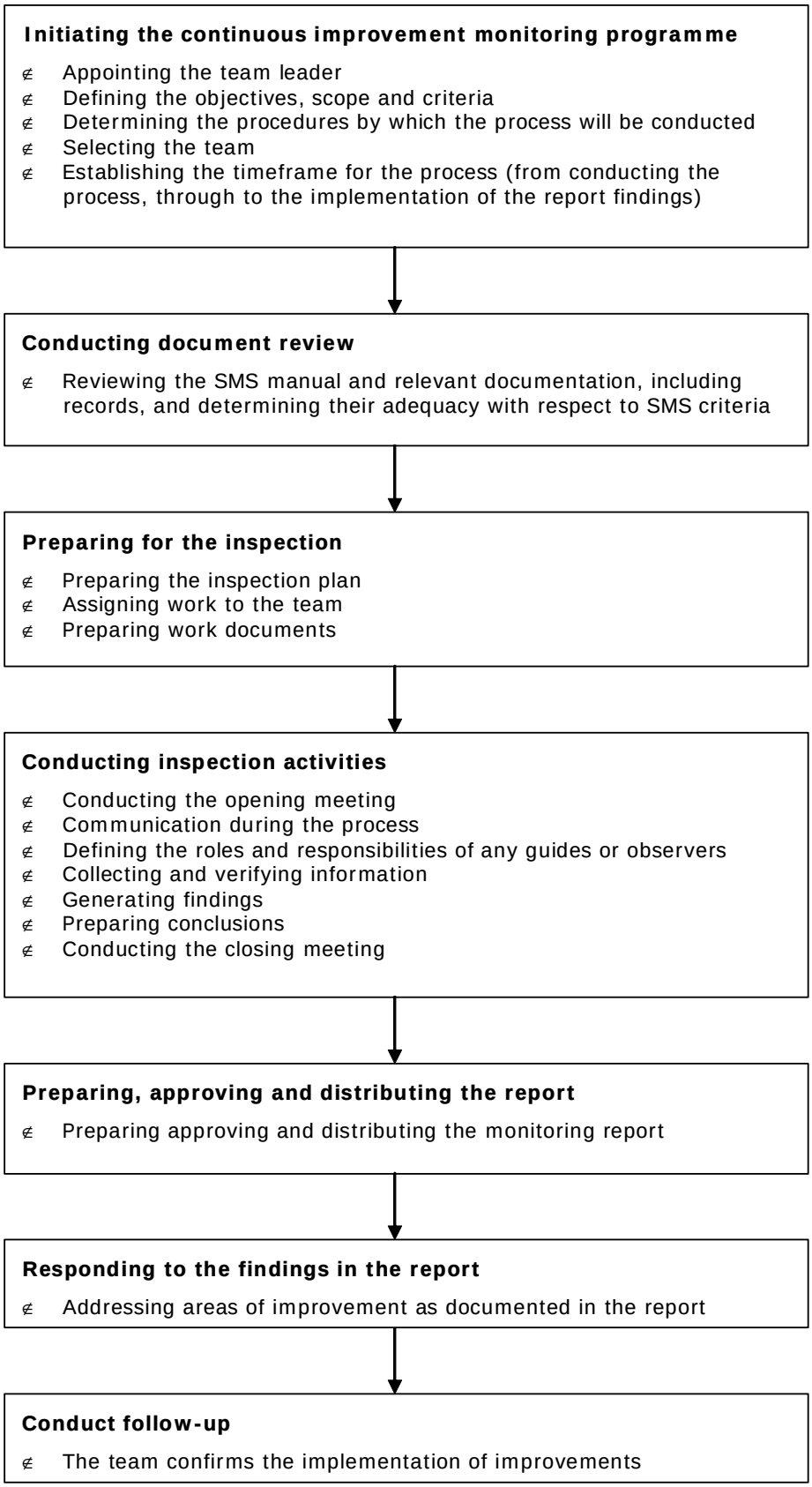
Conducting continuous improvement monitoring

The three different stages of the continuous improvement programme – monitoring, evaluation and SMS review – follow a very similar process, in terms of the manner in which they are conducted and managed. The suggested process is shown on the following page.

Suggested prompt questions are provided on pages 3I-7 to 3I-31. The monitoring team may draw on these to identify how the components included in the SMS are being delivered.

An example component status checkbox for use by the monitoring team is provided on pages 3I-32 to 3I-39. An electronic copy is also proved in part 4–F 1 and 2.

I.3 The continuous improvement process, continued



I.4 Monitoring component checklist: SMS structure

Philosophy

The background philosophy of the SMS should be defined. The SMS can be a high-level document making reference to other documents, a stand-alone document or a combination of both. The intended audience and method of use of the SMS should be defined.

- Where is the RCA's philosophy of the SMS defined?
- Who, in the RCA, uses the SMS document? (Provide examples)
- How do these people use the SMS document? (Provide examples)
- Why (for what reason) do these people use the SMS document? (Provide examples)
- When do these people use the SMS document? (Provide examples)

Linkage to other documents

The SMS will reference and complement other planning and management documents of the RCA. Some documents will be based around the outputs of the SMS, ie the annual plan and asset management plan, others will use the SMS outputs to support regular reviews, ie the district plan. The way the SMS links to other documents should be defined.

- What other RCA (planning and management) documents are referenced within the RCA's SMS documents?
- Why are these RCA (planning and management) documents referenced in the SMS?
- Are RCA (planning and management) documents cross-referenced, ie, are the relevant SMS sections referenced in these (planning and management) documents?

I.5 Monitoring component checklist: road safety strategy

RCAs have many different formats for their road safety strategies (RSSs) and road safety plans (RSPs). The most appropriate format for use in the SMS is to have an RSP that is a prescriptive document detailing specific programmes that can be referred to from the SMS if necessary. The RSS is a less detailed version of the RSP. The RSS is a policy document.

The RSS may or may not be part of the SMS. It could be a separate document that the SMS refers to or it could be a section within the SMS.

The first group of items listed are those that will define the objectives of the strategy.

Vision

The RCA should set a realistic and achievable vision for road safety. For example, it is not realistic to expect no crashes on the roads when many of the crashes cannot be controlled by the RCA.

- How does the RCA define its vision for road safety?
- Who is involved in this process to define the vision for road safety, and why?
- Why does the RCA believe its road safety vision is realistic?
- How does the RCA ensure that its road safety vision is compatible with the national road safety goals?
- How does the RCA plan to update and develop its vision to ensure it remains current?
- How does the RCA ensure that any new developments are included within the SMS and are followed?

Key stakeholders and partners in the community

These are the groups/individuals that will contribute to and benefit from the success of the RSS. The RCA may typically create or join specific community groups to promote road safety. An example is the Road Safety Co-ordination Committee.

- What groups are affected by, or could affect, the RCA's delivery of their SMS?
- How does the RCA consult with these groups, as they develop and maintain their SMS?
- Does the RCA receive any inputs from these groups, and if so, what happens to this input?
- How will the RCA ensure that these groups will be consulted with, as the SMS is developed and improved over time?
- Does the RCA have a system to receive, include, address and respond to, input from these groups?

I.5 Monitoring component checklist: road safety strategy, continued

Problem analysis

The RSS should analyse the level of road safety currently experienced within the area and identify the costs to the local community of road crashes. The analysis should be detailed enough to identify the target safety issues that the RCA considers it could make safety improvements in.

The RCA may also keep a database of crashes reported by the local community to complement the Land Transport NZ crash database. This should not subvert or duplicate the Land Transport NZ database or the scale of the safety problem will be overstated.

- How does the RCA analyse the level of the safety problem within their area?
- Does the RCA compare its analysis with any other RCAs in its peer group, or with Land Transport NZ?
- With respect to the information and data the RCA collects via such analyses:
  - How is it collected?
  - How is it utilised?
  - How is it updated over time to ensure currency?
  - How does the RCA liaise with Land Transport NZ when utilising such information or data?
  - How does the RCA relate this information to show its progress with respect to delivery of its road safety vision?

Key safety issues

Based on the problem analysis, the RSS should identify key safety issues that will influence and improve road safety. These issues should be achievable and realistic and specific to the target areas identified in the problem analysis. Other less well-defined areas such as community involvement should also be included as well as (ideally) education and enforcement issues.

- How does the RCA identify the key safety issues?
- How does the RCA prioritise the key safety issues it has identified?
- How does the RCA develop a response or plan to each of the key safety issues identified during the development and maintenance of the SMS?
- How does the RCA implement the response or plan for each of the key safety issues identified during the development and maintenance of the SMS?
- How does the RCA expect to develop and implement responses to future key safety issues that it might identify?

I.5 Monitoring component checklist: road safety strategy, continued

Scope

It is essential that certain elements are included in the initial SMS. These are the items that the RCA can directly influence. While the community elements are also considered essential, it is acknowledged that they can be more difficult to produce because of the diverse nature of the groups involved. They can be added later if necessary.

How does the RCA address the following elements within its SMS:

- Physical activities on the road reserve.
- Design of improvements.
- Land-use activities including land-use planning.
- Regulatory controls.
- Enforcement.
- Road safety education and publicity.

What other elements or areas has the RCA addressed within its SMS and how has this been achieved?

Community education initiatives

These initiatives will probably involve external organisations and the RCA's involvement with the initiative may be limited. Whether this will be fully included in the RSS or referred to as a separate document will be a matter for each RCA to resolve. Education initiatives should aim to develop a safety culture within the RCA and the wider community at large.

- How does the RCA participate in education initiatives, either on its own or in association with community groups?
- How does the RCA link these education initiatives to its SMS?
- How does the RCA promote a safety culture within its organisation?
- How does the RCA promote a safety culture within its community?

Enforcement initiatives

The RCA should have a good working relationship with all their road safety partners. An important partner is the NZ Police. Sharing knowledge of the safety problems that each is aware of will improve the ability of both organisations to carry out their respective roles in improving road safety. An example is speed management and enforcement.

- How does the RCA exercise its relationship with the Police, to ensure road safety?
- How does the RCA make recommendations on the distribution of Police hours applied to strategic outputs in the National Land Transport Programme (NLTP)?

I.6 Monitoring component checklist: delivery of the strategy

These mechanisms should deliver improved safety with a focus on the key safety issues identified in the strategy above. The order of these items does not indicate their relative importance.

Crash reduction studies

These are formal studies carried out to investigate the cause of groups of crashes at black spots based on the crash analysis system (CAS) and local information (if available). The studies generally produce engineering solutions to identified safety deficiencies at the site. They rely on past safety records to determine the problem.

Some RCAs carry out grey spot studies where a regular analysis of crash data will identify sites that could become black spots. This is a more proactive approach that attempts to prevent sites becoming black spots.

How does the RCA carry out formal crash reduction studies?

With respect to a programme for crash reduction studies:

- How does the RCA identify and address specific safety concerns?
- How does the RCA ensure it has adopted an appropriate approach to address the safety concerns that have been identified?
- How does the RCA ensure that suitable personnel (skills, experience and level of independence) undertake these studies?
- How does the RCA determine which sites are included within a crash reduction study?
- How does the RCA utilise the CAS in its crash reduction studies?

With respect to the actual crash reduction studies:

- How does the RCA determine the goals for the studies?
- How does the RCA measure the expected outcomes of the studies?
- How does the RCA prepare a response to the recommendations of the studies?

With respect to the crash reduction studies and the RCA's relationship with Land Transport NZ:

- How does the RCA liaise with Land Transport NZ throughout the development of the crash reduction studies?
- How does the RCA obtain commentary from Land Transport NZ on the studies and any solutions developed?

Technical auditing

There are a number of different types of audits. These are necessary to ensure that work is appropriately checked and at regular intervals. Some are project audits and some are systems audits. System audits carried out for the SMS are undertaken annually. A proportion of each may be completed in-house, but some must be carried out externally to ensure that in-house work and auditing is of a standard that is equal to the wider industry.

I.6 Monitoring component checklist: delivery of the strategy, continued

Technical auditing, continued

Project safety audit

With respect to the safety auditing for projects – maintenance and/or construction:

- How, and where, does the RCA define its safety auditing policy?
- How does the RCA determine which projects require safety auditing?
- How does the RCA implement its safety auditing policy?

With respect to the performance of the safety audits for projects:

- How does the RCA determine the requirements (eg, skills, experience, training) for the audit personnel?
- How does the RCA determine the scope for the audit?
- How does the RCA conduct the actual safety auditing:
  - what procedures and processes are utilised?
  - what standards or guidelines are referred to – internal and/or external?
  - what relevant documentation, such as audit guides and templates are used?
- How does the RCA manage the audit report process – the development, review of and response to the audit report?
- How does the RCA ensure an efficient and effective remedy is produced in response to issues and concerns noted in the audit report?

Existing road safety audits

How does the RCA ensure safety audits are conducted for existing roads?

How does the RCA programme these safety audits within its forward financial plans?

- *The questions noted under Project safety audit above, may be applied in this section, with a focus on the safety auditing of existing roads, instead of maintenance and construction projects.*

I.6 Monitoring component checklist: delivery of the strategy, continued

Temporary traffic management

Temporary traffic management is becoming increasingly important, as road networks are being developed and maintained with traffic growth requiring greater consideration of the needs of traffic to negotiate the works safely and efficiently. Standards for temporary traffic management have recently changed and the number of different standards consolidated into a single standard. Temporary traffic management schemes should be approved and audited on site to ensure they are safe and comply with standards.

With respect to the RCA's policy for specifying temporary traffic management standards:

- How does the RCA ensure that the policy is current?
- How does the RCA approve schemes prior to their implementation?
- How does the RCA ensure that the standard utilised for temporary traffic management and interpretations is appropriate?

With respect to the auditing of temporary traffic management on the road:

- How does the RCA determine the requirements (eg, skills, experience, training) for the audit personnel?
- How does the RCA determine the scope for the audit?
- How does the RCA conduct the actual safety auditing:
  - what procedures and processes are utilised?
  - what standards or guidelines referred to – internal and/or external?
  - what relevant documentation, such as audit guides and templates are used?
- How does the RCA manage the audit report process – development and review of, and response to the audit report?
- How does the RCA ensure an efficient and effective remedy is produced in response to issues and concerns noted in the audit report?

I.6 Monitoring component checklist: delivery of the strategy, continued

Deficiency analysis and register

The RCA needs to be aware of the specific safety deficiencies within its road network so that improvements can be programmed. Deficiencies can be identified in a number of ways including formal safety inspections. The deficiencies identified should be entered into a database for recording purposes and future ranking. Some of the deficiencies may be used to develop the minor safety programme. Others may need to be programmed for major remedial action or entered onto a maintenance programme.

- How does the RCA conduct routine safety inspections on the roads to identify specific safety deficiencies and at what frequency?
- What other methods does the RCA utilise to identify deficiencies, eg public complaints?
- How does the RCA record the deficiencies identified, to ensure they are utilised for programmes for future upgrading?
- How does the RCA analyse any identified deficiencies, prior to their inclusion in the programme?
- How does the RCA utilise the register in developing the minor safety programme?
- Why does the RCA consider that the method of prioritising the deficiency is appropriate?

Hazard register

The RCA needs to be aware of any recurring intermittent safety issues that may not be able to be remedied permanently such as ice and flooding or growing vegetation that will limit visibility, or vegetation that may fall on the road after strong winds. Other hazards may be identified that are part of a future improvement programme and need to be managed in the interim period. This is not the same as the deficiency register.

- How does the RCA identify and record recurring safety issues, eg a hazard register?
- How does the RCA ensure that contractors are aware of and use the register?
- How does the RCA update the register as new hazards are identified?
- How does the hazard register affect land-use planning?

Road hierarchy

Roading hierarchies can be created for different purposes.

With respect to a roading hierarchy:

- How does the RCA determine its hierarchy for its roading network?
- How does the RCA utilise this hierarchy when:
  - determining funding priorities
  - determining design standards
  - determining maintenance standards.

I.6 Monitoring component checklist: delivery of the strategy, continued

Traffic counting

While not a specific safety issue, it is important for the RCA to understand traffic demands and patterns on its roads.

- How does the RCA utilise its traffic counting programme to provide adequate information of traffic demands on the network?
- How does the RCA use this programme to determine priorities?

RAMM data

An up-to-date inventory system such as road assessment and maintenance management (RAMM) can contribute to road safety. It can tell where sections of the road fail to meet set standards for roads of that type as well as supplying an inventory of road furniture for future maintenance reference. The standards are set to achieve a consistent road environment.

- How does the RAMM gather data to provide information on network (as opposed to structural) deficiencies?
- How does the RCA utilise this information to determine priorities?

Speed management

Speed management should involve both enforcement and engineering to provide a consistent speed environment.

- How does the RCA determine its goals for managing speed?
- How regularly does the RCA review speed limits to ensure appropriateness?
- How does the RCA develop and document actions and strategies to manage speed?
- How does the RCA ensure it has the appropriate outcomes and performance measures to determine success in managing speed?

Maintenance of traffic control devices

Traffic control devices require a regular check to ensure that they have not been vandalised, damaged accidentally or failed due to age. This includes:

- signs
- delineation devices
- road markings
- traffic signals
- any other device the RCA may use.

- How does the RCA ensure there is regular inspection to identify and replace damaged or deficient standards of traffic control devices for each type of device?
- How does the RCA ensure these inspection periods are suitable?
- How does the RCA ensure these replacement or repair response times are adequate?

I.6 Monitoring component checklist: delivery of the strategy, continued

Traffic management facilities

Many local authorities use some form of traffic management devices. These are usually in urban areas and include local area traffic management schemes and urban/rural speed thresholds. The design of these is non-standard and varies among RCAs.

- How does the RCA implement its policies and standards for the use and design of traffic management facilities?

Land-use planning and regulatory controls

Adjacent land-uses can affect road safety if they are not controlled to be sympathetic to the road network. This includes their access points, on-street manoeuvring and parking demand and any associated site specific signage. Advertising signs fall within this category. Excessive amounts of advertising can cause distraction and sign clutter detracting from important regulatory and warning signs. Other signs such as sandwich board signs on the footpath can create a hazard for pedestrians if they are not controlled properly. Typically, these issues are controlled through the district plan and/or bylaws.

- How does the district plan address safety issues when applying for resource consent or subdivision consent?
- How do road safety staff provide input into the resource consent process?
- How do road safety staff provide input into the district plan and bylaw review process?
- How does the RCA conduct safety audits on proposed and new subdivisions?
- How does the RCA conduct safety audits as part of the resource consent process and after approval?
- How does the RCA control and approve advertising signage?

Street lighting

Street lighting has many purposes including road safety. In urban areas, it can improve drivers' vision of pedestrians, cycles and stationary vehicles. It also illuminates properties and can improve security. It can also cause a nuisance to some residents by shining into their rooms and preventing sleep so some balance must be provided between conflicting demands.

In rural areas, street lighting can identify intersections of some importance for approaching drivers and can identify changes in road environment such as at passing lane diverges and merges.

- How does the RCA ensure the AS/NZ Standard is used for road lighting in contracts and maintenance?
- How does the RCA specify the acceptable level of lighting for each road type and/or road?
- How does the RCA address flag-lighting at rural intersections?

I.6 Monitoring component checklist: delivery of the strategy, continued

Landscaping and vegetation control

Experience has shown that many RCAs have difficulty managing design, installation and maintenance of landscaping in the road reserve.

- How does the RCA determine the requirements for landscaping and vegetation control within the road reserve?
- Where does the responsibility for the landscaping lie within the RCA?
- If the responsibilities do not lie within the RCA's department, how does the RCA ensure it has effective control over its activities?

Overdimension and overweight routes

There are safety issues when trucks carrying overdimension or overweight loads use inappropriate roads damaging the road structure and/or street furniture, or may not be able to negotiate intersections such as roundabouts.

- How does the RCA address issues of overdimension and overweight routes for its network?
- How does the RCA enforce the use of these routes?

Vulnerable road users

Vulnerable road users include those with special needs that may not need to be catered for in all projects but their potential presence should be considered and evaluated in any project. These can include children, elderly, tourists, people with intellectual handicaps, sight impaired and specific facilities such as hospitals and schools where these people may congregate.

- How does the RCA ensure they are made aware of the specific needs of vulnerable road users and the facilities and routes they most commonly use?
- How does the RCA address the specific needs for each type of vulnerable road user?
- How does the RCA measure performance for each type of vulnerable road user?

Cycle facilities

Most regional transport strategies have a policy of encouraging modal switch from private passenger vehicles to public transport and cycles.

- How does the RCA encourage modal switch to cycling?
- How does the RCA provide alternative networks for cyclists in its system?
- How does the RCA consider cyclists at all stages of the road planning process?

I.6 Monitoring component checklist: delivery of the strategy, continued

Pedestrian facilities

Pedestrian facilities need to be well designed and used to ensure adequate safety for all road users. The location of the crossing is also important in that it must allow sufficient visibility for the driver to be aware of the facility's existence and intervisibility between the driver and the pedestrian. Where the facility is used at night, adequate lighting should be provided.

Where pedestrians are encouraged to cross the road, a different material from the footpath should be used so that pedestrians recognise that they are no longer on a protected footpath.

- How does the RCA use the appropriate guidelines and warrants for establishing and maintaining the pedestrian facility?
- How does the RCA monitor use of pedestrian facilities to ensure they continue to meet their warrant requirements?
- How does the RCA ensure pedestrian facilities are illuminated when they have significant night-time usage?

Footpaths

Footpaths provide separation between traffic and vulnerable road users such as pedestrians and disabled people. The standard of maintenance of footpaths is critical as they are used by people who may not be able to clear shallow obstructions and may drive mobility scooters. Mobility scooters are often unable to climb steep inclines from the footpath to the carriageway when crossing roads. Footpaths need to be kept clear of vegetation that could obstruct or injure pedestrians.

- How frequently does the RCA inspect footpaths for defects such as tree root damage?
- How does the RCA ensure that footpaths remain clear of vegetation?
- How does the RCA consider mobility scooters when providing footpath access to road crossings?

I.6 Monitoring component checklist: delivery of the strategy, continued

Drainage systems

There are a number of individual parts to any drainage system and each of these should be considered. Rural and urban drainage systems are typically quite different.

Bridges / culverts

Bridges and culverts require regular inspection to ensure that their structural integrity is intact. They also require regular maintenance to ensure that their waterways and headwalls are clear and that steel surfaces are regularly painted. The end treatments are also important to ensure that if a vehicle strays from the carriageway, it does not strike a non-frangible object such as a concrete headwall.

- How does the RCA manage its inventory of all its bridges and culverts?
- How does the RCA ensure it investigates, in a timely fashion, the structural integrity of the bridges and culverts including headwall protection using appropriately qualified personnel?
- How does the RCA ensure it inspects and clears, in a timely fashion, the vegetation in the waterways that would impede flow in the channel?
- How does the RCA ensure it inspects and repairs, in a timely fashion, steel members on bridges?
- How does the RCA protect bridges with safety barriers?
- How does the RCA address the replacement or widening underwidth bridges and culverts?

Catchpits / sumps

These range from soakholes in free draining soils to structural sumps in the carriageway. All are essential and must be maintained appropriately. If not, localised flooding can result causing damage to the roads and adjacent properties, and vehicles may lose control in flood waters. Sump gratings can cause problems for users such as cyclists whose wheels may get caught in the gratings.

- How does the RCA ensure it inspects, in a timely fashion, drainage structures to ensure they are not blocked or damaged?
- How does the RCA specify sump gratings that are perpendicular to and level with the travel path of cyclists?

I.6 Monitoring component checklist: delivery of the strategy, continued

Drainage systems, continued

Kerbs and channels

Kerbs and channels control the flow of water and protect the edge of the road from damage. They also define the trafficable portion of the carriageway and are often used in rural areas around intersections to control the path of traffic around the intersection. Over time, kerbs and channels can become rough and damaged and hold water in puddles or allow it to infiltrate under the road.

- How does the RCA ensure it inspects and replaces, in a timely fashion, kerbs and channels as they are damaged?
- How does the RCA use kerbs and channels in rural areas to define vehicle paths and protect road edges and embankments?

Deep drains and irrigation channels

Deep drains can be a hazard for pedestrians (particularly children) who may fall into them while they are in flood. They may also be close to the carriageway and often have vertical sides that will not allow a vehicle to recover if it is out of control. This is related to clear zone policy.

- How does the RCA address the issue of piping urban drains to prevent access by pedestrians?
- How does the RCA protect traffic from deep drains and irrigation channels adjacent to the carriageway?

Swale drains

These are shallow drains in rural areas that allow overland flow of water from the carriageway to drainage structures. They are usually used in flat terrain. Because of this, maintenance is important to prevent vegetation from slowing the flow of water and creating ponding.

- How does the RCA address the design of swale drains?
- How does the RCA address the maintenance of the vegetation within the swale drains?

I.6 Monitoring component checklist: delivery of the strategy, continued

Vehicle crossings and accessways

All properties are required to have frontage to a road whether or not they use it for vehicle access. Informal vehicle crossings cause damage to footpaths and berms. The structure of footpaths is not usually strong enough to accept vehicles, and damage to footpaths may impact on utilities underneath. Informal vehicle crossings may not be located in the safest location with the best visibility.

- How does the RCA ensure all property owners apply for formal vehicle access?
- How does the RCA ensure the relevant standards are utilised as part of the application process?
- How does the RCA take action against those that do not have an approved vehicle crossing?
- How does the RCA specify visibility requirements for vehicle crossings?

Stock control, crossings and underpasses

Many RCAs have areas where stock may have access to roads. This can be either for droving along the road or crossing the road to access land on the other side of the road. The occurrence of stock crossing has increased recently with the conversion to dairy farms. Control of stock movements is important to prevent uncontrolled interaction between the stock and other road users. Some RCAs subsidised stock underpasses where the movement of stock is frequent.

- How does the RCA implement its policies and bylaws to control stock access to, and movement along the road?
- How does the RCA ensure farmers comply with temporary traffic management practices while their stock are on the road?

I.6 Monitoring component checklist: delivery of the strategy, continued

Effluent disposal facilities

Effluent disposal facilities have become important since new regulations requiring stock trucks to have effluent holding tanks on their trucks have come into force. These rules were promulgated to prevent uncontrolled stock effluent being concentrated on the carriageway and splashed onto vehicles and windscreens. Stock effluent can also degrade the road surface. The effluent disposal sites are generally on high-volume, high-speed rural roads and may be near places where stock are held such as saleyards and freezing works.

- How does the RCA control stock effluent on the roads?
- How does the RCA address the need for effluent disposal sites within their area?

Weighbridges

Weighbridges are provided on the road reserve for the use of the Police. The RCA has a role in approving and usually siting the weighbridge in consultation with the Police. Demand for the weighbridges tends to be on higher-volume, high-speed rural roads and their design is critical to ensure that they are safe.

- How does the RCA address the siting and construction of weighbridges?

Rest areas

Rest areas are provided to allow drivers to stop and rest safely when fatigued. They are also located in places where there is a high natural value and drivers may want to stop to view the scenery or some other attraction without becoming a traffic hazard. Often, they are intended to cater for tourists and their design needs to allow for this.

- How does the RCA address the provision of rest areas within its area?

Safety barriers

Safety barriers have many new forms and can be applied in many situations that were previously uneconomic. However, some uses of safety barriers can create a greater hazard than the hazard they are trying to protect. Examples are when a safety barrier is short or terminates on curves without adequate flaring.

- How does the RCA manage the use of safety barriers?
- How does the RCA ensure the appropriate standards are applied to the design of safety barriers?
- How frequently does the RCA inspect safety barriers to ensure they retain their integrity?

Retaining structures

Retaining structures are generally constructed around structures such as bridges, or to prevent steep, unstable slopes from collapsing onto the carriageway. Particular maintenance requirements include draining the structure adequately to prevent pore pressure building up behind the structure and preventing scour and the loss of material from behind the structure.

- How frequently does the RCA inspect retaining structures to ensure their integrity?

I.6 Monitoring component checklist: delivery of the strategy, continued

Parking

Parking on the street can cause safety problems, particularly on arterial and other major roads. Cyclists can be endangered by parked vehicles, both angle parked and parallel parked. If insufficient width is provided for cyclists adjacent to parallel parked vehicles, drivers may open car doors in front of the cyclist. Angle parking reduces the driver's view of the approaching cyclist. This can be controlled to some extent through appropriate land-use planning and application of bylaws.

- How does the RCA control the amount of on street parking demand by requiring developments to accommodate their parking demand on site?
- How does the RCA address angle parking on streets on main roads?

Emergency response

By their nature, emergencies are unforeseen events. These can vary from vehicle crashes to land slides and water pipe explosions. The RCA must have a flexible plan that allows for an appropriate response to any problem.

- How flexible is the RCA's emergency response plan?

Road closures

Road closures must be approved and advertised prior to the closure. Closures are required for road works or events such as parades.

- How does the RCA manage road closures?
- How does the RCA ensure that its process for managing road closures complies with the legislative requirements?

Pavement maintenance

Scrim analysis

This is a system of testing the skid resistance of the pavement surface.

- How frequently does the RCA conduct testing of its sealed roads for skid resistance?
- How does the RCA specify minimum standards of skid resistance for the sealed roads under its control?
- How does the RCA address the treatment of sections of roads that have deficient skid resistance?

Potholes

While potholes may have been shown to be no more than a minor contributor to crashes, they can cause problems of widespread structural failure due to water ingress if not treated properly. They can also cause serious safety problems to cyclists and pedestrians.

- How frequently does the RCA conduct inspections of the surface for potholes?
- How frequently does the RCA repair potholes?
- How does the RCA determine which standards are to be utilised for the repair of potholes?

I.6 Monitoring component checklist: delivery of the strategy, continued

Pavement maintenance, continued

Physical defects

Long-term deterioration will be picked up by regular RAMM rating surveys. Items such as road roughness will be identified during these surveys. Systematic inspections to identify the maintenance issues should be carried out between surveys to identify visual failures such as rutting and loose material on the carriageway.

In between surveys, there may be sudden failure of the road due to unforeseen circumstances.

- How frequently does the RCA conduct RAMM rating surveys?
- How does the RCA specify systematic visual inspections of the road to identify structural road failures or distress?

Grading unsealed roads

The regular grading of unsealed roads is important to prevent minor problems escalating into larger problems that require reconstruction work.

- How actively does the RCA monitor the condition of unsealed roads prior to grading?

Clear zones

Clear zones attempt to keep the road shoulders clear of obstructions so that an out of control vehicle has some chance of recovery or stopping without striking a solid obstruction. This includes the gradient of shoulders. Only frangible objects should be placed in the clear zone and even then with caution. Where sufficiently clear zones cannot be provided, protection of the hazard may be the alternative.

- How does the RCA address the provision of clear zones?

Railway crossings

Railway crossings have been the site of many serious crashes over the years. Although the crossings are under the jurisdiction of the rail operator, the RCA has an important advocacy role to ensure that the rail operator maintains and upgrades rail crossings to an acceptable standard for road users. The RCA also provides the advanced signage.

- How does the RCA address railway crossings?
- How frequently does the RCA make contact with the rail operator to discuss concerns about rail crossings?

I.6 Monitoring component checklist: delivery of the strategy, continued

Road openings by utility and other external service authorities

The RCA is responsible for the road network and must exhibit some control over those who work on it. They can only do this effectively when they know who is working on the road and where and when they are working on the road.

- How does the RCA maintain a street openings register to be aware of where and when contractors will be working on the road so they and their work can be inspected/audited?
- How does the RCA specify the temporary traffic management requirements for external service authorities and their contractors to work on the road?
- How does the RCA ensure that these requirements are similar to those that the RCA imposes on its own internal contractors?

Road openings by other departments within the RCA's organisation

Experience has shown that the department nominated as being the RCA often has difficulty in getting the co-operation of other departments within the organisation to comply with the traffic management requirements of road openings. These include departments with assets under the road such as sewer and water pipes and those that maintain landscaping on the road reserve.

- How does the RCA manage its service agreements with other internal departments that control their and their contractors' activities in the road reserve?

Roads under the control of other RCAs

A number of other authorities can have public roads within the RCA area but not under the control of the RCA. These include:

- wharves
- airports
- railways
- Department of Conservation.

It is important that the RCA has a good working relationship with any organisation that has control of roads that will eventually affect the RCA.

Other RCAs have common boundaries. It is important that all of the RCAs regularly discuss and agree on issues that affect them, particularly at the boundaries.

- How does the RCA work with each RCA within its boundaries?
- How does the RCA manage its relationship with other RCAs that have common boundaries with it?

I.7 Standards, guidelines and policies

This section in particular, will need to be updated regularly as the RCA changes or introduces new policies, as new standards are adopted and promulgated by the Standards and Guidelines Steering Group, and others are superseded.

The standards, guidelines and policies used should include all known aspects of:

- design
- construction
- maintenance of all roading assets and road reserves.

Some important elements that should be specified are the road design elements including:

- horizontal alignment
- vertical alignment
- carriageway width
- intersection layout
- solid and flush medians.

It is essential that these are communicated easily and accurately to ensure consistency in the road network of the RCA.

Any deliberate departures from the standards, guidelines and policies should be acknowledged on each occasion and recorded for auditing purposes.

Standards

These are the national (Land Transport NZ requirements) and legal standards (government rules and regulations) that must be complied with. They cannot be modified by local decisions unless prior approval is given.

- How does the RCA ensure it is utilising the relevant standards in relation to its SMS?
- How and where has the RCA documented the appropriate standard for each asset and/or activity?
- How do users of the SMS determine which standards should be applied to each asset and/or activity?
- How does the RCA ensure that the list is updated regularly?
- How does the RCA address interpretations of the standards that may vary from the accepted norm?

I.7 Standards, guidelines and policies, continued

Guidelines

These are the national guidelines that may be complied with. There is no legal requirement to work to these guidelines but they are considered to provide appropriate solutions to some safety problems. The RCA may vary the guidelines to suit local conditions but any local variations or interpretations should be documented to ensure that they are communicated clearly to anyone working on the road network.

- How does the RCA document the guidelines to be used?
- How does the RCA formally adopt the guidelines?
- How does the RCA ensure the appropriate guidelines are listed for each asset and/or activity?
- How do users of the SMS determine which guidelines should be applied to each asset and/or activity?
- How does the RCA ensure that the list is updated regularly?
- How does the RCA address the issue of local variations and interpretations of the guidelines?
- How are these local variations and interpretations recorded and communicated properly to those who work on the roads?

Policies

These are the policies adopted by the RCA to address their specific issues that may not fall within a national standard or guideline.

- How does the RCA document the policies to be used or included in the strategy?
- How does the RCA formally adopt the policies?
- How does the RCA ensure the appropriate policies are listed for each asset and/or activity?
- How does the RCA ensure that the list is updated regularly?

Compliance with standards, guidelines and policies

It is acknowledged that there will be occasions when standards, guidelines and policies for general use cannot be applied. On these occasions, the departure from recognised standards should be documented with the reasons why they were not applied.

- How does the RCA record departures from recognised standards, guidelines and policies?
- How does the RCA check within each project (apart from the safety audits) to ensure that the appropriate standards, guidelines and policies have been complied with?

I.8 Expertise, qualifications and roles

Staff training and competence

The RCA is responsible for ensuring that staff responsible for road safety activities are competent for the task. They must be provided with sufficient resources and authority to complete the tasks successfully.

- How does the RCA ensure that the SMS manager has clearly communicated the level of delegation, with respect to the delivery of the SMS?
- How does the RCA ensure its staff comply with the SMS?
- How does the RCA ensure its external consultants and contractors comply with the SMS?
- How does the RCA ensure its staff attend seminars and training sessions to ensure that they are appropriately trained and with sufficient knowledge of state-of-the-art techniques?
- How does the RCA ensure staff development?
- How does the RCA ensure its staff meet the minimum requirements for fulfilling the position as described in the job description?
- Where no RCA staff are sufficiently skilled to meet the requirements for an aspect of the SMS, how does the RCA ensure it employs a consultant/contractor with an appropriate level of skills?
- How does the RCA ensure that the skill levels required are appropriately described and specified in the SMS?

External service authorities and other commercial road occupiers

It is important that external authorities are required to buy into and accept the requirements of the SMS as part of their authority to occupy and/or work on the road. This is an area where the RCA will need to delegate some responsibility to the external authority but must still ensure compliance with the SMS. Standards must be imposed to prevent the recent examples of a rotten wooden power pole falling on a vehicle, catastrophic blowouts of gas and water mains and other problems such as leaking pipes beneath the road causing road structural failure. Standards of maintenance and acceptable risk need to be defined as well as levels of traffic control while working on the road.

Another significant group is farmers who may use roads for crossing or driving stock, installing irrigation pipes under the roads from time to time without being aware of requirements, shelter belt trimming and tree felling.

- How does the RCA work with external service authorities regarding construction and maintenance standards of its assets that are allowed to occupy the road reserve?
- How does the RCA control irregular and informal occupiers of the road by others?
- How does the RCA specify its requirements for scheduled event management?

I.8 Expertise, qualifications and roles, continued

Appointment of consultants and contractors

Appointing consultants and contractors requires a standardised set of procedures. These procedures must comply with legislation and be transparent to avoid any question of inappropriate behaviour in appointments. Not all contracts will require an open tender process but all must have some form of evaluation and paper trail to ensure that the appointee has the credentials and ability to perform to the standard specified by the SMS.

- How does the RCA appoint consultants and contractors?

I.9 Management of the SMS

Management/ownership of road safety

The organisation must specify who is accountable for the safety of work and ensure that the SMS is complied with. The person who is accountable for the SMS will continue to be accountable even if they have passed on responsibility for managing and operating the system to others. While it may be possible for a person outside the RCA to perform the duties, it is essential that ownership of the SMS resides within the RCA. Smaller RCAs will need to pay particular attention to areas where their duties might overlap with the management and service delivery functions.

- How does the RCA select a staff member who is responsible for championing the SMS?
- How does the RCA's champion ensure compliance with the SMS over time?
- How clearly has the RCA documented the separation of responsibilities between management of the SMS and service delivery?

Monitoring of staff compliance with the SMS

The RCA will need to ensure that staff are complying with the requirements of the SMS. This can only be done with an adequate paper trail to show how the staff have complied. Staff must be able to demonstrate that in carrying out their duties, they have complied with the SMS requirements for that specific duty.

- How does the RCA review projects and staff performance in-house to ensure compliance with the SMS has been achieved?

Ongoing system development

As this is a living document, it is important to identify and rectify deficiencies in the system as soon as practical. All staff should be encouraged to participate in the ongoing development of the system. This is important to encourage ownership of the system among lower level staff.

- How are staff and external agencies provided the opportunity and encouraged to identify improvements to the SMS?

Operational/ management structure

It is important that the roles of all those involved with implementing and maintaining the SMS should be aware of the operational and management structure within the RCA. This can be most effectively communicated by using of a flow chart to show responsibilities in each area.

- How does the RCA document its organisational structure?

I.10 Monitoring and audit

The system must be regularly monitored and audited to ensure that it is appropriate, meets the needs of the RCA, complies with national standards and is successful. The system must be monitored internally for success, audited externally and perhaps internally to ensure that it meets national standards.

Monitoring and review of RSP, RSS and SMS

The RSP and RSS should be reviewed regularly to assess progress towards the goals. A minor review could be held annually with a major review periodically (perhaps every three to five years) to redefine the vision and goals. As well as these formal reviews, the RSS should be updated as new information becomes available that may affect it.

The SMS should be updated on an as-needs basis when new standards, policies, procedures etc become available.

- How does the RCA ensure it is able to maintain and develop its RSS and document these developments?
- How does the RCA record and report its progress towards achieving the vision and goals?
- How does the RCA monitor its staff's progress towards upgrading their knowledge and qualifications?
- How does the RCA control the number of copies of the SMS to ensure that all copies are current with all amendments included?

SMS audit

This is a system audit to ensure compliance with the processes of the SMS. The assumption is made that by carrying out work in accordance with the SMS, safety will be improved. If safety is not improved but the processes are being followed, it will be necessary to revise the SMS to identify specific failings. This is a circular process with the recommendations of previous audits being included to improve the SMS.

- How does the RCA manage the auditing of the SMS?
- How does the RCA identify the requirements for specified external and internal audits?
- How does the RCA monitor performance in achieving the vision and goals of the RSS?
- How frequently are internal and external audits conducted?
- How does the RCA ensure that the auditors have suitable expertise and experience?
- How does the audit determine if goals are being met and systems complied with?
- How does the RCA use the report from previous audits to make improvements to the SMS?
- How does the RCA address issues and non-compliance with the SMS?
- How wide is the scope for the RCA's audit programme (includes review of the policies, procedures, standards and guidelines for consistency, currency and relevance)?

I.11 Checkbox

This checkbox is designed to be completed by the continuous improvement monitoring team to ensure that they have considered the issues and items included in the SMS. This checklist can also be used to identify gaps in RCA's current practices that could be filled during the process of monitoring the implementation of the SMS.

This checklist includes the following:

- Land Transport NZ ranking. Land Transport NZ has identified items to be included in a SMS for it to address a normally expected level of risk. The ranking is as follows:
  - ** item normally expected to be included in the SMS
  - * item could be included if it has a safety risk greater than medium.
- The continuous improvement monitoring team is encouraged to evaluate each item and issue listed. They can be identified as:
  - item is included in the SMS:
    1. Relevant documents and records: information related to the item such as linkages.
    2. Innovation noted: information on variations from national standards and guidelines.
    3. Improvement noted: information related to the item that needs further monitoring.
    4. Recommendations made: improvement actions related to the item that the monitoring team identifies for programming for improvement.
  - item has not been included in the SMS but should/may be
  - item has not been included in the SMS but further consideration should be given to including it
  - item does not apply to this RCA or is considered a minor or insignificant safety issue.

Additional items not in the list should be included by the RCA if they consider them to be a medium or greater safety issue.

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
Endorsement of the SMS								
**	RCA							
**	Land Transport NZ							
Introduction/executive summary/philosophy								
	Introduction/glossary of terms and abbreviations							
	Cover and document structure							
	Philosophy							
	Linkage to other documents							
	Memorandum of Understanding							
Road safety strategy (RSS)								
**	Vision							
*	Key stakeholders and partners in the community and linkages							
**	Identify problems/issues for the road safety strategy to address							
**	Goals							
**	Targets							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
Road safety strategy (RSS), continued								
**	Interventions ∉ engineering initiatives ∉ community education initiatives ∉ enforcement initiatives							
**	Monitoring and measuring of performance							
**	Review date							
Expertise, qualifications and roles								
*	Staff training and competence							
**	External service authorities and other commercial road occupiers							
**	Appointment of consultants and contractors							
Management of Safety Management Systems								
**	Management/ownership of road safety							
**	Monitoring of staff compliance with SMS							
**	Ongoing system development							
	Operational management structure							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
Audit								
**	SMS internal audit							
**	SMS external audit							
	RSS review and monitoring (see road safety strategy on previous page)							
Delivery of the strategy								
**	Crash reduction studies							
**	Deficiency analysis and database							
**	Road safety hazard register of environmental items							
**	Road hierarchy							
**	Traffic counting							
**	Speed management							
*	Street lighting							
**	Landscaping and vegetation control							
*	Clear and safety zones							
	- Technical auditing including							
**	Project safety audit							
**	Existing road safety audit							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
	- Maintenance of traffic control devices including							
**	Signs							
**	Delineation, (ie, EMP, RRPM. Bridge end markers, hazard markers)							
**	Road marking							
	Traffic signals							
	Any other devices							
	- Traffic management							
	LATM							
	Land use planning controls including: ≠ District plan ≠ By-laws							
	Over dimension and overweight routes							
	Emergency response							
	Road closures							
**	Temporary traffic management including approval and auditing							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
	- Vulnerable road users							
*	Cycle facilities							
*	Pedestrian facilities							
*	Footpaths							
	- Drainage systems							
*	Bridges and culverts							
*	Catch pits and sumps							
*	Kerb and channel							
*	Deep drains and irrigation channels							
*	Swale drains							
	- Crossings							
*	Vehicle crossings and accessways							
	Stock control, crossings and underpasses							
	Rail crossings							
	- Structures and facilities							
	Effluent disposal facilities							
	Weighbridges, stations and pits							
	Rest areas							
	Retaining structures							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
	- Structures and facilities, continued							
	Safety barrier							
	Parking							
	- Pavement maintenance							
*	Scrim analysis							
	Potholes							
*	Physical defects							
	RAMM data and analysis							
*	Grading unsealed roads							
	- Road openings							
	Under control of RCA's roading dept							
	Under control of other departments							
	By utility and external service authorities							
	- Roads under the control of other RCA's including							
	Boundary issues with neighbouring RCA/s							
	Ports							
	Airports							
	Department of Conservation							

Land Transport NZ ranking	Item	Included in SMS	Not included in SMS but should/ may be	Not applicable in this SMS	Relevant documents and records	Innovation noted	Improvement noted	Recommend - actions made
	- Roads under the control of other RCA's including							
	Power/hydro authorities							
Standards and Guidelines								
**	Standards							
**	Guidelines							
**	Policies - national							
**	Policies - local							
**	Compliance with standards, guidelines and policies							
General notes								