Safety Management Plan

Prepared for

Taranaki District Councils

Appropriate District Council Logos
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**GLOSSARY OF TERMS**

ARRB  Australian Road Research Board

Crash Cluster  Site within a 200m length of route or intersection (30m radius) with 3 or more injury crashes per year.

BRIM  Bridge Inventory Management

CAS  Crash Analysis System

CSR  Customer Service Request

GIS  Geographical Information System

Grey Spot  Sites that show a sudden change in crash rate (3 in a year where there were none before), that suggest some recent changed condition for investigation.

MSI  Minor Safety Improvement

Network  The agent of the RCA responsible for managing the day to day operation of the network.

Consultant  The agent of the RCA responsible for managing the day to day operation of the network.

RAMM  Road Asset Maintenance Management

RCA  Road Controlling Authority
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roading Asset Manager</td>
<td>RCA employee responsible for managing the roading asset</td>
</tr>
<tr>
<td>Safety Manager</td>
<td>The key person from the Network Consultant’s team responsible for administering the SMS with the contractor.</td>
</tr>
<tr>
<td>SCRIM</td>
<td>Sideways Force Co-efficient Routine Investigation Machine</td>
</tr>
<tr>
<td>SDR</td>
<td>Safety Deficiency Database</td>
</tr>
<tr>
<td>SIP</td>
<td>Safety Intervention Plan</td>
</tr>
<tr>
<td>SLIM</td>
<td>Street Light Inventory Management</td>
</tr>
<tr>
<td>SMP</td>
<td>Safety Intervention Plan</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Management System</td>
</tr>
<tr>
<td>SMS Champion</td>
<td>The nominated Team Leader for the Taranaki Roads Safety Team</td>
</tr>
<tr>
<td>Taranaki Roads Safety Team</td>
<td>Safety Champions from the three participating RCA’s and their Network Consultants</td>
</tr>
<tr>
<td>TMP</td>
<td>Traffic Management Plan</td>
</tr>
<tr>
<td>XXDC</td>
<td>XXXXXXXXXXXXXXXXX District Council</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

The LAND TRANSPORT NEW ZEALAND Guidelines for Implementing a Safety Management System defines a “Safety Management Plan (SMP) as a document that provides project control for the Network Consultant, identifying the safety issues, concerns and deficiencies and prioritising them for investigation, improvement or mitigation with a recognition of the funding requirements. It should allow for the implementation and monitoring of improvements, and be reviewed jointly by the RCA, the Network Consultant and Network Contractors annually”.

The SMP is the mechanism by which the specific safety related responsibilities of the Network Consultant in relation to the roading network are documented. Included within this document are procedures for the identification, assessment and recording of safety deficiencies and the prioritization and monitoring of suitable solutions.

From the SMS Section 3.3 “Safety Management Plan “activities to be considered for inclusion are:

- Safety information databases
- Network safety inspections (day and night) – existing road safety audits
- Ongoing crash review and reporting
- Fatal and serious crash reporting
- Crash reduction and prevention studies
- Grey spot studies
- Safety deficiency database
- Road safety hazard Register
- Safety deliverables programme

Figure 1 illustrates the general procedure for identification, assessment, recording, actioning and monitoring.
2.0 REVIEW

The SMP will be refined and expanded as the Network Consultant’s experience and understanding of the intended safety outcome increases.

The SMP will be reviewed annually in conjunction with Council’s safety champion to ensure that it reflects changes in Council Policy, the SMS and “emerging best practice”.

A number of areas have been identified for improvement within the SMP. These will be separately identified under an “Improvement Plan” item within the “Safety Deliverable Programme”.

Related Worksheet SMP5 – Safety Deliverable Programme
3.0 PROCEDURES

The following procedures have been included in the SMP. Some of these are yet to be fully developed. It is anticipated that all procedures identified will be fully developed by December 2005. A number of these procedures are dependant on the completion of “action items” identified in the Improvement Plan of the SMS (Refer Table 5.1: SMS Improvement Plan).

Where procedures are specific to the RCA then they have been included in Appendix I – RCA Specifics.

3.1 Safety Inspections

The main objective of safety inspections is ‘to ensure that drivers are getting the correct messages from the road’. Safety inspections are the principal means to identify safety deficiencies and ensure consistency in design and maintenance standards.

Inspections undertaken by the Network Consultant’s Team under the framework of the Network Management Contract XXX that are specific to XXXX are incorporated in Appendix I – RCA Specifics.

Routine Safety Inspection

Routine safety inspections will take the form of a combined audit/inspection by the Network Consultant. Details of deficiencies and observations will be recorded and entered into the safety deficiency database for prioritisation, action and monitoring. The Land Transport New Zealand Safety Audit of Existing Roads inspection check sheet one will be used to record deficiencies.

    Related Worksheet SMP3 - Inspection Checksheet

Safety Response Inspections

Safety Response inspections will be undertaken on specific items that are identified via LAND TRANSPORT NEW ZEALAND Safety Reports, previous routine inspections or generated from public enquiry.

Such inspection items could include:
- Intersection Visibility and Layout
- Intersection Control
- Curve Warning.

Safety Response inspections will be undertaken on the instruction of the RCA.

Programme of Inspections

The routine safety inspection programme will primarily be determined by road hierarchy, with the initial focus on arterial and collectors roads. Crash history and emerging crash trends will also be considered in the development of the inspection programme.

Day and night (pre-winter) inspection will be carried out on all arterial routes annually. Fifty per cent of collectors and 20% of local roads will also be inspected annually. This will ensure a full coverage of the entire network within a five year period.

Note: This inspection regime is not currently covered within the network management contract and would be a variation to the Contract. Specific to NPDC & STDC.

3.2 Safety Deficiency Database

The collection and use of timely and accurate information on crashes, network deficiencies, pavement performance, condition of structures and road furniture is a key component of the SMP.
All safety deficiencies identified in safety inspections, crash analysis, queries received from the public, contractors and other sources will be entered into the database. Deficiencies include discrete locations, routes and generic safety concerns.

It is intended that this database will be the central repository of all safety deficiency information.

Monitoring and analysis of this database will enable the Network Consultant to identify and assess deficiencies and determine priorities.

The database will track actions on all safety deficiencies identified.

The process of monitoring and evaluation of the effectiveness of various road safety initiatives and projects implemented forms a key component of the SMS. This system is still to be developed.

The diagram below illustrates the variety of data sources feeding into the database and outcomes resulting from evaluation and monitoring of data.

Related Worksheet SMP1 - Safety Deficiency Database

**Figure 2: Safety Deficiency Database**
3.3 Liaison

3.3.1 Public Safety Concerns
Many safety issues raised by the public are handled through Council’s call centre. A call record is generated and forwarded to the Network Consultant or the Roading Asset Manager for action. Alternately issues can be raised by direct correspondence or email.

The Network Consultant investigates the issue to determine the nature of the safety deficiency and either issues a work instruction to the appropriate contractor to rectify or the details are recorded in the safety deficiency database for further analysis and prioritisation.

The call centre is advised of the action to be taken and when it is programmed to be completed.

3.3.2 Other Authorities
Safety deficiencies identified by other RCA’s, Police, Contractors or Road Safe Taranaki will be logged into the safety deficiency Database for further action.

3.4 Crash Review and Reporting

3.4.1 Unreported Crashes
A network of local contacts is to be developed, to enable collection of unreported crash data. Contacts to be made include rural mail, panel beaters, insurance companies, maintenance contractors, school bus operators and community boards. This schedule of contacts will be expanded over time as the system develops.

Contacts will be given crash report forms to use and return to the Network Consultant.

Related Worksheet SMP2 - Crash Report

3.4.2 LAND TRANSPORT NEW ZEALAND Road Safety Reports
A review of LAND TRANSPORT NEW ZEALAND’s Annual Road Safety Report shall be carried out by the Network Consultant. The review will analyse trends and crash grey/Crash Clusters with recommendations for further investigation.

Results of the review will be forwarded to the Roading Asset Manager annually for inclusion in the update of the SMS.

3.4.3 Fatal Crash Reporting
The Network Consultant shall provide an initial report on all fatal crashes within one month of the crash. The report shall include details of the crash location, any deficiencies of the network where they have been identified as a contributing factor and recommendation for remedial action.

Verbal advice of the crash will be made as soon as practical.

3.5 Safety Deficiency Management, Analysis and Prioritisation

3.5.1 Grey Spot
Grey spot analysis is a proactive approach which would result in the early identification and treatment of problem sites.

At quarterly intervals the Network Consultant shall carry out an analysis of network crashes using CAS and unreported data. If two crashes have occurred at the same relative location then the site will be considered a grey spot.
An analysis of the crashes will be undertaken to determine whether there are any commonalities and report to the Roading Asset Manager with recommendations for further investigation or remedial actions.

3.5.2 Crash Reduction Studies
The annual review of the LAND TRANSPORT NEW ZEALAND Road Safety Report (3.4.2) will identify blackspot sites for further investigation via a crash reduction study. The base frequency of such studies at 3 year intervals is still to be confirmed by the Taranaki Road Safety Management Team.

3.5.3 Carriageway Performance
   a) Scrims
      A list of potential sites for scrim testing has been included in the SMS. This list has been developed from sites identified in LAND TRANSPORT NEW ZEALAND’s CAS database where loss of control crashes have occurred and also from other areas identified by either the Network Consultant or the Roading Asset Manager to be high risk.

      The annual review of road safety reports and RAMM data will be the principle source of future sites for SCRIM testing.

      The Network Consultant will analyse the sites, to develop a schedule of survey routes for the Roading Asset Manager to consider.

   b) Road Asset Data
      Evaluation of asset databases (RAMM – potholes, low shoulder, roughness, signs etc, SLIM – light condition, and Bridge data base – bridge condition) will enable assessment of compliance with safety related standards.

      The SMS identifies a need to review opportunities to interface the SDR with RAMM, CAS and GIS. The Network Consultant will have some involvement in the review process and can develop analysis procedures following implementation.

3.6 Safety Audits

3.6.1 Projects
   A proactive process where by road safety issues are identified before they affect road users.

   Taranaki Roads Safety Management Team has identified the need to develop a formal system that indicates the level at which a project is to be audited. This is included in the SMS Improvement Plan.

   The Network Consultant will implement this system when it has been developed. Guidelines outlined in SMS Procedure 3.4 will be used.

   There is a need for the Network Consultant to train staff as qualified safety auditors.

3.6.2 Existing Roads
   A process whereby road safety issues of the existing network are identified.

   Council has identified the need to develop a system suitable for low volume roads within the region. This is included in the SMS Improvement Plan.

   The Network Consultant involvement is yet to be determined.
3.7 Recurring Hazard Register
This register includes a list of sites with potentially recurring hazards e.g. flooding, slips, ice, vegetation. These are sites where the network safety is at risk, but a cost effective solution is not available.

There is currently no recurring hazard register in place for XXXXXXXXXXXXXXXX.

The SMS identifies the need for the development of a consistent approach to the establishment and maintenance of the register in the Improvement Plan.

The Network Consultant will establish a register once common criteria have been established.

Related Worksheet SMP4 - Hazard Register

3.8 Temporary Traffic Control
Temporary traffic management is required wherever a work activity alters the normal operating condition of the road. This activity may occur on the carriageway, shoulder, berm or footpath.

Whilst this activity directly affects the safety of road users, deficiencies are normally of a temporary nature and are addressed immediately by the contractor on the work site. This type of deficiency would not usually be identified within the SDD.

Evaluation of contractor performance with regard to traffic management is specifically undertaken during contractor performance evaluation undertaken at the completion of any contract and a schedule of contractor performance on temporary traffic management is maintained.

The application of temporary traffic management enables safe passage of traffic and the public through the work site and creates a safe work environment for the workmen.

3.9 Prioritisation and Programming
The SMS includes a risk evaluation matrix for assessing risk exposure of safety deficiencies / hazards identified on the network and prioritising remedial works.

Currently there is software being marketed in New Zealand that undertakes risk analysis. Consideration will be given to the utilisation of this software “Road Safety Risk Manager” or equivalent to assist in the risk assessment process.

Following identification and prioritisation of sites with safety deficiencies these sites will be programmed for inclusion as either a minor safety project or for action by an appropriate contractor as a maintenance deficiency either as programmed works or as an improvement via the Safety Intervention Plan.

3.10 Safety Deliverable Programme
The “Safety Deliverable Programme” identifies what safety management tasks are to be undertaken by the network consultant and when the programme is updated annually.

The timing of specific components of the programme is still to be finalised. The timing of these is dependant on the completion of improvements identified within the Improvement Plan of the SMS.

Figure 3 shows how the various components of the SMP are linked to produce the programme.

Related Worksheet SMP5 -Safety Deliverable Programme
Safety Deficiencies
- Identification
- Investigation
- Reporting / tasking

Safety Inspections
- Arterial/collector/local
- Day/night
- Ride/Road/Intersection

Safety Management
- Initial SMP
- Initial SIP
- Updates

Safety Deliverables Programme

Crash Analysis & Review
- Review LTSA Road Safety Report
- Crash data reporting
- Annual assessment of unreported crashes

Safety Capital Works Programme
- Safety Projects
- Minor Safety Improvements
- Safety Construction Projects

SCRIM

Figure 3: Safety Planning
4.0 DEVIATION FROM STANDARDS

Procedure Templates in Appendix E (SMS) provide direction for design, operation and network management activities.

Where a significant departure from the standards or guidelines is considered necessary it must be recorded and the Roading Asset Manager notified.

Where no appropriate standard or guideline is documented then those contained in Appendix B (SMS) should be used following confirmation from the Roading Asset Manager.

The Network Consultant shall manage a register of variations. The register shall include brief details of the request and its status. This register shall be reported quarterly to the Roading Asset Manager.

   Related Worksheet SMP6 - Deviation Register
5.0 TRAINING AND DEVELOPMENT

Section 4.5 of the SMS outlines training and development requirements for staff involved with the SMS including network consultants.

The Network Consultant will undertake an evaluation of staff development needs in light of the requirements of the SMS. One area already identified for further staff development is safety auditing.

This exercise is expected to be completed by XXXX 2005.
6.0 SAFETY INTERVENTION PLAN

Section 3.4 of the SMS outlines requirements of the SIP.

This plan is to be developed jointly by the network consultant and the RCA’s network contractors by December 2005.

Reviews will be undertaken six monthly with the contractors. Review outputs will be fed back into the SMS.

Further investigation is required to determine whether other term contractors such as road marking and streetlighting should develop SIP’s.
Appendix I - RCA Specifics
Appendix II - Related Worksheets
SMP1 – Safety Deficiency Database

CRASH
Unreported
Grey Spots
Crash Clusters
Crash Monitoring
Fatal/Serious
Crash Reduction
Studies

LIAISON
Public
Stakeholders
Adjoining RCA’s
Police
Regional Road
Safety Committee

SAFETY INSPECTIONS
General
Safety Response
Safety Audits
T.M.P Audits

NETWORK CONDITION
RAMM
SLIM
BRIMM’S
SCRIM
Natural Hazards

DEFICIENCY MANAGEMENT
ANALYSIS and PRIORITISATION

IMPROVEMENT DEFICIENCY
• MSI Schedule
• Capital Works

MAINTENANCE DEFICIENCY
Safety Intervention Plan

HAZARD REGISTER
For Deficiencies Not
Suitable for
Improvement or
Maintenance

MONITOR AND EVALUATE
The purpose of this form is to identify crash locations, to identify roading problems, and hence potential improvements. It will not be used for enforcement purposes. Please enter details as accurately as possible by circling or commenting as appropriate. This is particularly important in regard to location.

<table>
<thead>
<tr>
<th>Location</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place: □ or At........... m / km N/S/E/W of</td>
<td>Worst Injury</td>
</tr>
<tr>
<td>Local Road: ....................................</td>
<td>Serious / Minor / None / Unknown</td>
</tr>
<tr>
<td>....................................................</td>
<td></td>
</tr>
<tr>
<td>(side road / feature)</td>
<td></td>
</tr>
</tbody>
</table>

**What Happened**

ie. Van travelling south on Unnamed Road lost control on right hand bend (space for diagram on following page).

**Codes**

<table>
<thead>
<tr>
<th>Object</th>
<th>Mvmt</th>
<th>V1</th>
<th>NSEW Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>.......</td>
<td>......</td>
<td>...</td>
<td>....</td>
</tr>
</tbody>
</table>

**Conditions**

(please enter / circle)

<table>
<thead>
<tr>
<th>Speed Limit (km/h)</th>
<th>Curve Advisory Speed</th>
<th>Road Type</th>
<th>Curvature</th>
<th>Surface</th>
<th>Light</th>
<th>Lighting</th>
<th>Number of lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 way / 2 way</td>
<td>StRaight / Easy / Moderate / Severe</td>
<td>Sealed / Unsealed</td>
<td>Bright Sun / Overcast / Twilight / Dark</td>
<td>On / Off / None / UnKnown</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paint Markings</th>
<th>Pedestrian Xing / Raised Island / Painted Island / Centre Line / No Passing Line / Nil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Feature</td>
<td>Bridge / Motorway / Rail Xing Flat / Hill</td>
</tr>
<tr>
<td>Junction</td>
<td>Driveway / Roundabout / Cross / Tee / Y / More than 4 legs</td>
</tr>
<tr>
<td>Control</td>
<td>Traffic Signals / Stop / Give Way / UNcontrolled / School Patrol</td>
</tr>
<tr>
<td>Weather</td>
<td>Fine / Mist / Light Rain / Heavy Rain / Frost / Strong Wind</td>
</tr>
</tbody>
</table>

Continued
### Damage
Was any damage sustained to guard rails, signs, bridges etc?

Please identify……………………………………………………………………………………………………

### Driver and Vehicle Details (if known)
Name........................................M / F     Age......     Vehicle Reg Number ..............
Address.................................................................................................................................

### Police Attendance
Did a Police Officer attend the crash?       Yes / No

### Notified by
(May be left anonymous)
Name.............................................................................................................................
Contact Phone/Address ...........................................................................................................

### Return to
(office use only)
Initial: ........................................Date: ........................................

Your assistance will potentially help to improve Road Safety.

Thank you. Roading Asset Manager, XXXXXXXXXXXXX District Council.
# SMP3 - INSPECTION CHECK SHEET

<table>
<thead>
<tr>
<th>Road Name</th>
<th>Start Position</th>
<th>Finish Position</th>
<th>AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>or description</td>
<td>(RS or side road)</td>
<td>(RS or side road)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weather</th>
<th>Date</th>
<th>Completed By</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Running Distance kms (Outgoing)</th>
<th>0.00</th>
<th>1.00</th>
<th>2.00</th>
<th>3.00</th>
<th>4.00</th>
<th>5.00</th>
<th>6.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Condition/Ride</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoulder Condition/Edge Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side Slopes/Roadside Hazards/Water Table</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage Features (culverts etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guardrails (exist) (requiring maintenance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation (obstructing visibility &amp; signs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Centreline</th>
<th>RRPMs</th>
<th>Edge Lines</th>
<th>Marker Posts</th>
<th>Curve Warning/Chevrons</th>
<th>Other Warning/Advisory</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Intersection Marking &amp; Signs</th>
<th>Destination Signs</th>
<th>Regulatory/Side Road Control</th>
<th>Lighting</th>
<th>Running Distance kms (Return)</th>
</tr>
</thead>
</table>

(Notes: Fill in before return trip)
### SMP4 – Recurring Hazard Register

<table>
<thead>
<tr>
<th>Hazard I.D.</th>
<th>Road No</th>
<th>Road Name</th>
<th>Route Position</th>
<th>Location Description</th>
<th>Monitor For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Spot</td>
<td>GS</td>
<td></td>
<td></td>
<td></td>
<td>Delineation</td>
</tr>
<tr>
<td>Flooding</td>
<td>FL</td>
<td></td>
<td></td>
<td></td>
<td>Accidents</td>
</tr>
<tr>
<td>Ice</td>
<td>Ice</td>
<td></td>
<td></td>
<td></td>
<td>Ice/Frost</td>
</tr>
<tr>
<td>Vegetation</td>
<td>VG</td>
<td></td>
<td></td>
<td></td>
<td>Overhanging branches</td>
</tr>
</tbody>
</table>
Safety deliverable programme
<table>
<thead>
<tr>
<th>Deviation I.D.</th>
<th>SMS Element</th>
<th>Description</th>
<th>Standard/Guideline</th>
<th>Description of Deviation</th>
<th>Status</th>
<th>Date</th>
</tr>
</thead>
</table>

Taranaki Roads Safety Management Plan
June 2005