

1 Introduction

1.1 Purpose

This guide provides procedures for the treatment of traffic crash locations in New Zealand. It outlines practices and policies specific to New Zealand and forms a companion document to Austroads *Guide to traffic engineering practice. Part 4. Treatment of crash locations* (Austroads Pt 4).

While the procedures outlined in this document will allow an experienced traffic or road safety engineer to lead a team of people to undertake a crash reduction study (CRS), it should be read in conjunction with Austroads Pt 4. The Austroads document gives additional information on road safety engineering, the crash scene in general and the CRS process. It also includes nine practical examples (including one from New Zealand) and documents a complete case study of a crash location and its suggested treatment. The relationship between sections of the two documents is shown in Figure 1.1 overleaf.

This guide also draws strongly on the road safety engineering workshop (RSEW) which is a highly recommended training course for engineers, planners, analysts, police and others who wish to undertake a CRS or a safety audit and improve their road safety knowledge and skills. The five-day course is run jointly by Transit, Land Transport NZ and local authorities, and includes a worked practical example of a CRS (and of a safety audit).

CRSs are an important part of the New Zealand government's *Road Safety to 2010* strategy, which includes action to improve engineering, education and enforcement. They are an integral part of safety management systems (SMSs) which road controlling authorities (RCAs) are progressively introducing, and in developing low cost solutions to crash problems on the state highway and local road networks. CRSs can also assist in improving safety for pedestrians and cyclists and improving road safety expertise among transportation planners and road designers. They provide desirable background information for planning and prioritising medium to high cost transport improvement projects. CRS teams are encouraged to assist RCAs in developing road safety programmes where they see a need for improvements in engineering, education and/or enforcement.

Figure 1.1 Corresponding chapters in Austroads Pt 4 and *A New Zealand guide to the treatment of crash locations* (NZ Guide)

Austroads Pt 4 chapters		NZ Guide chapters	
1	Purpose	1	Introduction
2	Road crash situation	2	Context
3	Components of traffic system		
4	Taking action to improve road safety		
5	Road crash data		
6	Steps in the crash location treatment process	3	Initiating a CRS
7	Identifying the crash locations	4	Identifying the crash locations
8	Diagnosing the crash problems	5	Investigation procedures
9	Selecting the countermeasures	6	Developing solutions
10	Designing a safe remedial treatment		
11	Justifying the expenditure		
12	Writing the report	7	Reporting
13	Ranking treatments to include in works programme		
14	Implementing the treatment	8	Implementation
15	Monitoring treated locations and evaluating treatment programme	9	Monitoring

1.2 Definition of CRSs

CRSs are the process of identifying treatable crash problems by the analysis of historical crash data, inspection of the site and the selection, implementation and monitoring of appropriate countermeasures to relieve those identified problems.

While the treatments have traditionally been low to medium cost engineering measures, consideration also needs to be given to enforcement and education solutions.

The key principles of CRSs are that they are:

- systematic processes with a common methodology
- crash data driven
- undertaken by a multi-disciplined team that may involve a number of key stakeholders
- focused on low to medium cost recommendations for road improvement
- monitored and evaluated.

1.3 Crash reduction vs prevention

Refer to Austroads Pt 4, section 1.2.

The treatment of crash locations and the process of a road safety audit both involve the application of road safety engineering knowledge and experience to make roads safer.

- The **treatment of crash locations** is a 'reactive' process, responding to an existing crash problem where countermeasures are implemented to reduce the incidence and severity of similar crashes.
- A **road safety audit** is a 'proactive' process, which assesses a project before or immediately after it is built (before crashes happen), or assesses the state of existing roads to identify any feature which could be altered to reduce the likelihood or severity of a crash.

Both processes are needed. The **treatment of crash locations** is as important as conducting road safety audits, and possibly more so. In the United Kingdom, with its long history of road authority accident investigation and prevention (AIP) programmes, experience has shown that an effective road safety engineering programme requires three times as much effort (ie in treatment of crash locations) as is put into a road safety audit of new road and traffic designs (Austroads Pt 4, 1.2 and 4.1).

1.4 History of CRSs

CRSs, in their present form, were initiated in the mid-1980s with a visit to New Zealand by Ms Barbara Sabey {Transport Research Laboratory (TRL), UK}. As at March 2003, over 4,100 crash locations had been studied with remedial works being completed at approximately 2,400 of these. These works have resulted in an overall 34 percent reduction in the expected number of injury crashes (50 percent reduction in fatalities) with an estimated social cost saving of \$3 billion.

The original intention was to repeat the studies throughout RCAs on an average of five-yearly intervals. In recent years SMSs, and the safety monitoring requirements of many network management contracts, have resulted in the approach to CRS being varied by many RCAs. Furthermore, emphasis on cluster sites (formerly referred to as black spots) has reduced somewhat in favour of route, area wide, theme and corridor studies. However, the fundamentals of CRS remain, irrespective of the how or by whom they are instigated and carried out.