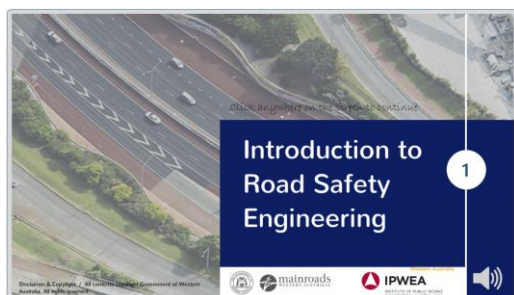# Road Safety Engineering – Treatment of Crash Locations Modules

This module provides a broad introduction to road safety engineering principles. The module also discusses road safety engineering within a Safe System and explains the essential elements of 'Road Safety Engineering' and the difference between 'reactive' and 'proactive' approaches.

The module also explains how to develop a program to treat high risk locations and provides an outline of the steps in the crash location treatment process.

Module completion time approximately: 0:50 mins

This module provides an outline of the Austroads Safe System Assessment Framework.

The module explains how the framework can assist road agencies to methodically consider Safe System objectives in road infrastructure projects and provides an explanation of the process and a worked example of its application.

Module completion time approximately: 0:50 mins

This module provides an explanation of what a road crash is, and outlines the various sources of crash data in Western Australia.

The module explains the categories of crash severities and crash coding, outlining the limitations of the available crash data.

Information is also provided about the tools available to analyse crash data in Western Australia.

Module completion time approximately: 0:40 mins

This module provides an explanation of Main Roads Western Australia's fatal crash investigation policy and guidelines, and explains how the policy aligns with the aims outlined in the National and State Road Safety Strategies.

The module explains in detail the principles of conducting and assessing preliminary fatal crash investigations and outlines the warrants for preparing a Fatal Crash Location Report in Western Australia. The module also includes an interactive exercise to assist practitioners to understand how to prepare Crash Location Report findings.

Module completion time approximately: 0:50 mins
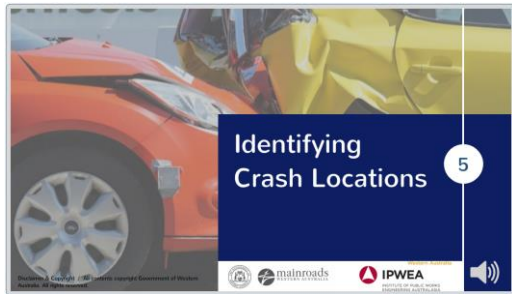
This module outlines the various methods available for the identification of crash locations and explains the principles of:

- single site treatment;
- intersection treatment;
- route treatment;
- area treatment; and
- mass action treatment.

The module also explains how crash locations are identified in Western Australia for the preparation of nominations for the Federal and State funded Black Spot programs, and outlines the effects of chance variation when considering crash locations.

Module completion time approximately: 0:45 mins

This module explains in detail the steps that must be followed when analysing crash problems and selecting effective treatments including:

- understanding detailed crash data;
- methods of analysing and interpreting crash data;
- an explanation and examples of how to create collision diagrams and the identification of crash patterns;
- things to consider when conducting site inspections;
- understanding the difference between Crash Reduction Factors (CRF) and Crash Modification Factors (CMF); and
- an overview of countermeasure selection and design.

Module completion time approximately: 1:50 mins

This module explains the objectives of conducting economic appraisals of proposed treatment of crash location projects.

This module also explains how to calculate the costs and benefits, and provides examples and exercises for the economic appraisal of proposed treatment of crash location projects. This includes projects with single and multiple treatments using both Benefit Cost Ratio (BCR) and Net Present Value (NPV) methods.

It is explained how economic appraisal tools can be applied to route, area and mass treatments and how to prioritise treatment of crash location projects.

Please be advised that you will need a scientific calculator to complete this module.

Module completion time approximately: 1:30 mins

This module outlines the purpose of monitoring and evaluating treatment of crash location projects and provides practical examples of statistical analysis methods including the chi-squared test.

This module also provides an explanation of the regression-to-mean concept and demonstrates practical examples of its application when evaluating treatment of crash location projects.

Other methodical issues are discussed, including crash migration and risk compensation, and how they may be considered when evaluating treatments.

Please be advised that you will need a scientific calculator to complete this module.

Module completion time approximately: 1:30 mins
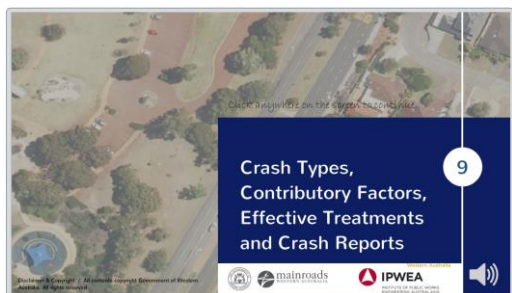
This module provides examples of contributory factors and countermeasures for the most prominent crash types in Western Australia and relates this to the crash history in Western Australia.

The survivability speed thresholds for each of the predominant crash types are also outlined and Safe System treatments are set out for each of these high severity risk crash types.

This module also provides guidance on the information to include when preparing a crash location investigation report and includes an example report.

Module completion time approximately: 1:30 mins
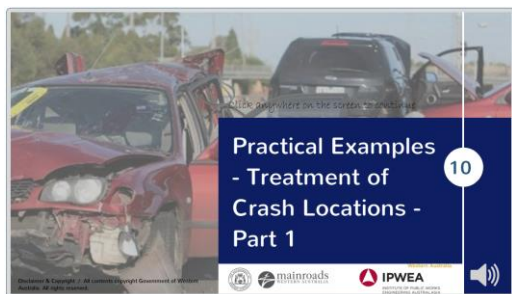
This module provides a number of detailed examples to demonstrate the complete treatment of crash locations process. Examples are outlined for the crash types that are likely to result in high severity outcomes and other predominant crash types in Western Australia.

In this module you will be required to complete exercises to demonstrate your detailed understanding of the treatment of crash locations process.

Please be advised that you will need a scientific calculator to complete this module.

Part 1: Right angle crash problem - module completion time approximately: 0:45 mins

Part 2: Opposing directions right angle crash problem - module completion time approximately: 1:05 mins

Part 3: Head on crash problem - module completion time approximately: 1:05 mins

Part 4: Off path crash problem - module completion time approximately: 1:00 mins

Part 5: Vulnerable road users crash problem - module completion time approximately: 0:50 mins

Part 6: Rear end crash problem - module completion time approximately: 1:00 mins