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**Title and Subtitle**

Accreditation Course for Road Safety Auditors  
Guidelines for Preparing the Course

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**Abstract**

This document provides a framework for approved tertiary institutions or other providers to prepare their own course for training road safety auditors. It provides advice on prerequisites for participants, course format, course content and means of assessment. Participants who pass the assessment will be regarded as accredited road safety auditors.

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**Keywords**

Road safety, safety audit, traffic engineering,

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Notes:

- (1) FORS Research reports are disseminated in the interests of information exchange
- (2) The views expressed are those of the author(s) and do not necessarily represent those of the Commonwealth Government
- (3) The Federal Office of Road Safety publishes four series of research report
  - (a) reports generated as a result of research done within the FORS are published in the OR series;
  - (b) reports of research conducted by other organisations on behalf of the FORS are published in the CR Series
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  - (d) minor reports of research conducted by other organisations on behalf of FORS are published in the MR series

# **Accreditation Course for Road Safety Auditors**

## **Guidelines for Preparing the Course**

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1995

# **ACCREDITATION COURSE FOR ROAD SAFETY OFFICERS**

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## Educational Philosophy

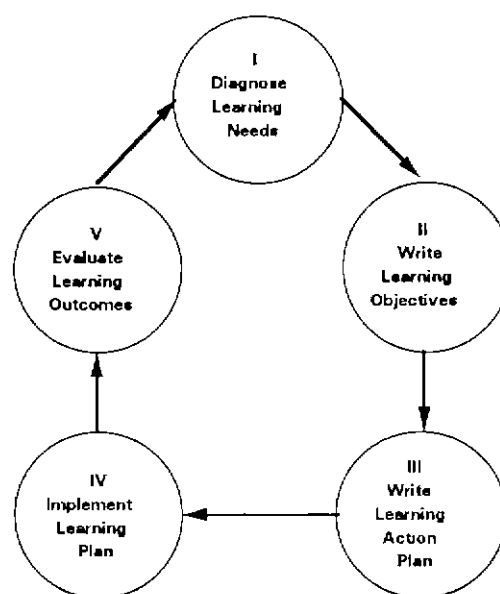
The design of the Accreditation Course for Road Safety Auditors is based on the following assumptions about how adults learn:

- When adults go about learning through being in control of their own learning processes, they become highly self-motivated.
- When learning on their own initiative, adults learn more deeply and permanently than when they learn by being taught.
- The development needs of a given professional will be different in many critical ways to the development needs of all other professionals. Thus professionals need to be free to identify and pursue the specific areas of learning relevant to their effective performance in current and/or future career roles.
- Professionals who are able and willing to diagnose what they need to learn to be effective in a given situation and take steps to fulfil the learning needs are more likely to be superior performers over time. Therefore, an effective way to approach professional development is to assist professionals to learn how to take responsibility for their own learning .....learning how to learn.

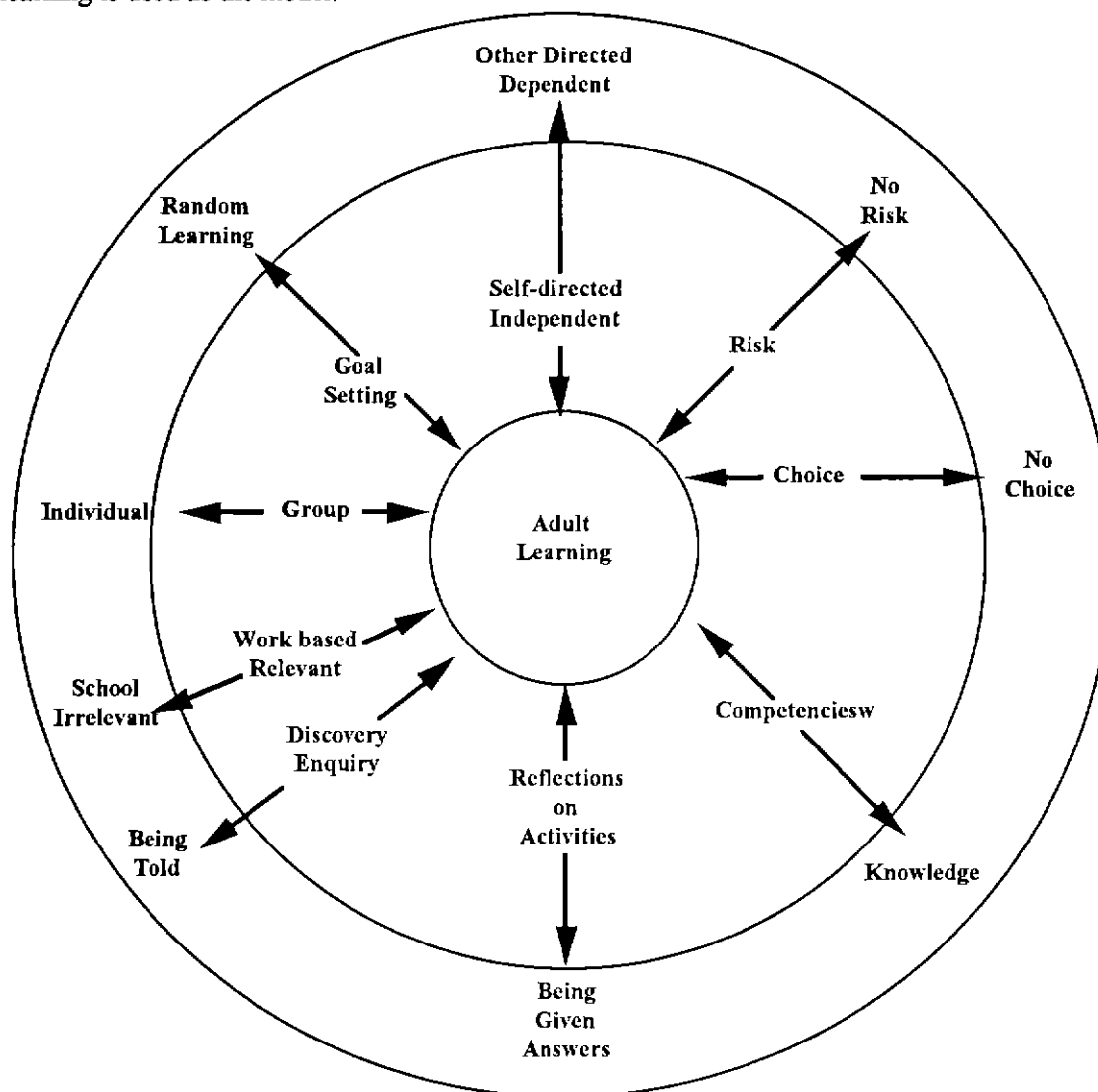
Consequently, learning processes in this program are to be:

- Work experience based
- Problem oriented
- Career relevant
- Self-directed
- Competency based
- Team based

The adult learning process is characterised by a process of involvement and implementation which places responsibility for the learning and its content on the shoulders of the learner. It might be visually illustrated as follows:



Adult learning requires a whole spectrum of new directions and has major implications for the instructors and facilitators. The following diagram summarises how the focus of the learning processes change when adults learning is used as the model.



The sources of the learning then change from being instructor based to self learning. What occurs are a number of synergies in learnings which originate in.

- Self management competencies
- Teams
- Commitments and contracts between team members
- Work based and work relevant activities

The outcomes, then go beyond the skills and knowledge of the training itself. There are developmental outcomes which include:

- Self awareness, self management
- Analytical skills
- Learning to learn
- Proactivity and vision
- Team skills
- Interactive skills

The course co-ordinator and the presenters need to keep the above strategies in mind as they deliver the program.

It is recommended that as a group is expected to undergo the training, that participant be advised of the core compulsory modules, and which are the modules which could be used to supplement the program. On the first day of the session, discussion should take place with the participants on the total program which includes core modules as well as the secondary modules.

This will result in a much more committed group who will be undertaking their training in an adult learning environment where they will be assuming responsibility for their learning and achievements.

## **EXECUTIVE SUMMARY**

Most states in Australia are focussing on accident prevention and these can certainly be minimised through Road Safety Audits which is gaining interest throughout Australia both at State and Local Government level.

In Britain, Road Safety Audit is estimated to reduce casualties over the next decade by 2 to 3% (1993). If this figure is translated to Australia, that means a saving of some \$200m per annum. Such enormous savings can be achieved, but only if fully trained, independent and Accredited Auditors are available for this work.

For Road Safety Audit to be successfully implemented, an Assessor has to be independent and be experienced in accident investigation and remedial work. This raises the need for Assessor Course duly accredited by FORS, AustRoads and Local Government.

This document provides the guidelines for preparing the Accreditation Course including resource material.

Audits are part of the design process: the aim is to identify and remove potential hazards before they are built into a road and result in increased accident numbers or severity. Audits can also be carried out on existing roads.

Effective road safety auditors must have: experience in road safety engineering; an aptitude for accident investigation and prevention (AIP) techniques, together with experience in traffic engineering and traffic management, or road design and road construction techniques.

These can only be gained through formal training in relevant disciplines, with sufficient experience to allow auditors to use their professional judgement and expertise to identify and assess potential safety hazards in a road or traffic design or existing road environment.

This document sets out training and assessment requirements for a course to enable participants to become accredited as road safety auditors. It provides a framework for tertiary institutions or other providers (eg state road & traffic authorities) to prepare their own training course. It provides advice on planning the course, participant prerequisites, course format and content and means of assessment.

It is recommended to be a four day course involving lectures, group activities and field work. At the conclusion of the course work the participant will be required to be involved in a 'real audit' and will submit a written report. The participants will be evaluated; by written exams in course material, presentation and report and a 'real audit' report.

As part of prerequisites, tertiary qualifications in traffic engineering design or road design are considered essential with 8 to 10 years of relevant experience in accident, investigation and prevention; traffic engineering and road design.

Three levels of assessor's titles are recommended: **Road Safety Audit Assistant, Accredited Road Safety Auditor** and **Senior Accredited Road Safety Auditor**. This course is aimed to provide 'Accredited Road Safety Auditor' Certificate after successfully completing the course. A course will need to be developed at a later stage for senior category focussing on specific areas of complex nature.

The course is divided into Core Modules (material that must be included in the course) and Secondary Modules (material which may be altered or substituted for other more relevant topics). The emphasis in all sessions is on the safety aspects to expand participant's awareness of the safety implications.

The detailed coverage of material for twenty Core Modules and sixteen Secondary Modules is presented and assessment processes are detailed.

This is the first document detailing the Guidelines for preparing the Accreditation Course. With more experience gained through a pilot course, comments and input from stakeholders the document could further be modified.

# ACCREDITATION COURSE FOR ROAD SAFETY AUDITORS

## GUIDELINES FOR PREPARING THE COURSE

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# **1. INTRODUCTION**

## **1.1 Road Safety Audits**

A road safety audit is "a formal examination of a future or existing road or traffic project, or any project which interacts with road users, in which an independent, qualified examiner reports on the project's accident potential and safety performance" (AustRoads Road Safety Audit guidelines, 1994).

Audits are a part of the planning, design and construction process: the aim is to identify and remove potential hazards before they are built into a road and result in increased accident numbers or severity. Audits can also be carried out on existing roads.

Every road safety audit results in a formal audit report, for consideration by the highway designer or authority/client. The management then decides on a response to the audit report. For details of the road safety audit process and responsibilities, reference be made to the AustRoads guidelines.

Effective road safety auditors must have: experience in road safety engineering; an aptitude for accident investigation and prevention (AIP) techniques; together with experience in traffic engineering and traffic management, or road design and road construction techniques.

These can only be gained through formal training in relevant disciplines, with sufficient experience to allow auditors to use their professional judgement to identify and assess potential safety hazards in a road or traffic design and expertise, or existing road environment.

## **1.2 Purpose of Document**

The purpose of this document is to set out training and assessment requirements for a course to enable participants to become accredited as road safety auditors. It provides a framework for tertiary institutions or other providers (eg state road & traffic authorities) to prepare their own training course. It provides advice on planning the course, participant prerequisites, course format and content and means of assessment.

## **1.3 Purpose of Accreditation Course**

The purpose of the course is to give accreditation for Road Safety Auditors by providing additional training for qualified and experienced practitioners in traffic engineering, road design and safety, so that they:

- understand the purpose of a road safety audit for major projects,
- understand what an audit involves,
- appreciate different skills required to audit different projects

- develop and enhance skills, knowledge and expertise necessary to conduct road safety audits for a range of applications and have these tested and verified,
- able to undertake audit by themselves or as part of a team, and
- management and assembly of an Audit team.

This course is to be conducted by relevant departments of approved tertiary institutions or other providers. It is necessary to ensure that strict and uniform control measures are adhered to. Approval will be given according to nationally agreed criteria by, or on behalf of, the Federal Office of Road Safety. This will need to be developed for consultation at the National level.

The course should only be undertaken by those with appropriate qualifications, experience and aptitude (see Section 3). A person who passes this course may refer to themselves as an Accredited Road Safety Auditor and will be regarded as a "qualified examiner" in terms of the AustRoads definition during the currency of the accreditation. The meaning and limitation of "accreditation" are explained in Section 4.

The course's purpose is to enhance the skills, understanding and awareness of those with a good foundation in, and experience of the technical areas described in Section 3. It also provides a formal assessment process to achieve consistent and reliable accreditation.

The course's purpose is not to impart basic knowledge in technical areas of road safety engineering, traffic engineering and road design. Participants will already understand what contributes to a safe road environment, through previous training and experience. Consequently, each module must be designed to enhance skills, understanding and awareness and their application in an audit context, not simply to provide technical information.

## **2. COURSE PLANNING AND MANAGEMENT**

This section lists the issues to be considered by each institution when it plans to run this course.

### **2.1 Course Organisation**

The following tasks will need to be undertaken by the organisation managing the course:-

- Establish course fees.
- Arrange enrolments.
- Put processes in place to assess applicants' prior knowledge & experience (prerequisites).
- Arrange the venue, equipment and catering.
- Arrange for distribution of background reading material so it can be read before the course commences.
- Arrange presenters.
- Give guidance to presenters on presentation style and content.
- Produce a varied and interesting course format.
- Arrange with local road/highway authorities for group case study sites to be found and related material provided.
- Have the written exam drawn up.
- Arrange for individual audits to be carried out under supervision
- Arrange to have written assessment tasks assessed.
- Assess group presentations.
- Arrange to have individual road safety audit reports assessed.
- Arrange a panel to collate marks to maintain standards and consistency and allocate distinctions/passes/fails.

This person must be experienced in technical areas covered by the course.

### **2.2 Participant Prerequisites**

Prerequisites for participants are set out in Section 3. In some cases it may not be clear whether an applicant has sufficient or relevant experience and/or qualifications. In such cases a mechanism to assess the applicant's suitability is needed.

### **2.3 Course Format**

A suggested course format is set out in Section 5. It need not be rigidly followed as experience may lead to alterations. When considering the course format, remember:

- The course is currently designed for four days of lectures and field work. Participants are more likely to be available for two separate periods of two days than one period of four consecutive days. Breaking the course into two

parts allows participants to obtain additional information, conduct surveys or write material between sessions.

- The course involves several modules where a task has to be carried out individually or in a group. To maintain participant interest and attention these should be interspersed with lecture style modules. For example, a succession of lectures on the different audit stages is likely to be unappealing without breaks to learn other aspects or to engage in practical sessions.

## **2.4 Course Content**

The course comprises four learning modes:

- Lecture-style presentations, which must be interactive and not simply one-way information transfer. For this task presenters should be selected on the basis of having a knowledge of the particular subject and their ability to provide an interesting and informative presentation. (Presenters must be given guidance about content, timing and style of presentations required, as well as the provision and development of written notes).
- Short task-based modules, where participants use previously and/or newly acquired skills in a group or individually, to assess information and use judgement to draw conclusions or make recommendations. These modules will have to be developed to meet specific objectives, a presenter found and, if needed, background reading material sent out before the course commences.
- A group activity road safety audit "case study" of an actual highway project. For this, the assistance of local road/highway authorities must be secured to select projects, provide plans, take photographs and video, provide other relevant information and to have an appropriately experienced and knowledgeable staff member available during the course to explain the projects to participants.
- A road safety audit to be undertaken by each participant by joining a genuine road safety audit under supervision after completion of the course work. Each participant is to write an audit report as part of the assessment process. The audited project is to be selected according to guidelines in the Appendices and arrangements made with the relevant highway authority for the person to participate.

## **2.5 Assessment**

Assessment is in three parts:

- A written examination.
- Assessment of the group activity audit. Assessors must be appointed and be provided with the guidelines for assessment presented in Section 7.

- Assessment of the formal report of the road safety audit, conducted under supervision at the conclusion of the course work. Examiners will be chosen and provided with guidelines regarding assessment.

A panel of at least two people is to be arranged to moderate all assessment elements and decide whether a participant has passed or failed. Participants are to be notified of their results in writing and those who have passed to be provided with a certificate of accreditation.

## **2.6 Course Fees**

When setting the fee for the course, the following may be considered:

- Venue hire costs.
- Equipment hire costs.
- Catering costs, including evening meals.
- Lecturer/presenter fees.
- Honorarium for assessing the audit report
- Printing costs for the accreditation certificate, course material etc.,
- Management & Co-ordination fees

## **2.7 Sources of Information**

Current sources of information are identified in Section 6 and Appendix 1. Each must be available to the course co-ordinator. Over time, other sources will become available (including additional material produced for the course). A knowledge of other institutions undertaking this course will assist in keeping course material topical and relevant.

### **3. Participant Prerequisites**

This course requires participants to be qualified and have substantial experience with road or traffic engineering , involving accident investigations and development of remedial treatments. People undertaking this course must be aware of the concepts behind safe design and operation of road infrastructure.

Participants must demonstrate the necessary background by the following:

#### Qualifications and Previous Training

- An appropriate tertiary qualification for traffic engineering design or road design (essential)
- Previous participation in training courses such as accident investigation and prevention (desirable).

#### Experience

Participants should have a total of eight to 10 years' experience in two or more of the following areas:

- Accident investigation & prevention.
- Traffic engineering.
- Road design.

They will also need to have participated in several audits under the guidance or supervision of accredited auditors (in the interim, experienced auditors approved by the highway and traffic authorities)

In cases where it is not clear whether the applicant's background is appropriate, the applicant should be interviewed. The interview should seek to establish:

- the scope of the applicant's experience in the above three areas,
- their knowledge of safety considerations of road and traffic design and operation, and;
- their ability to apply sound professional judgement in areas of road safety: to differentiate between road environments which might have a significant impact on safety and those which do not.

Examples of previous work and previous training courses and professional references should be provided to assist this assessment.

Any decision about an applicant's suitability must be made by a panel of at least two people meeting the requirements of Section 7.5.

#### **4. DEFINITION OF ACCREDITATION**

This course provides a basic level of accreditation for road safety auditors at the “Accredited Road Safety Auditor” classification. A person passing this course can expect to be seen as capable of auditing projects up to \$1 million (approximate) construction cost in 1995 value (as a guide) without supervision, either individually or as part of a team, depending on circumstances. They may be considered able to audit most existing roads and designs or works such as intersection treatments and road designs without complex combinations of design elements.

Some auditors will be more skilled, enabling them to be involved in audits of more complex designs such as freeway interchanges and ramps. It should be appreciated that this course is not designed to provide competency in auditing complex or major projects. At a later date a further accreditation of senior road safety auditors may be available.

As each auditor possesses differences in experience, interests and skills, authorities must recognise accreditation is an indication of general competence, which does not take into account variations in individual ability. An audit of a particular project, or project stage, may well benefit from including one particular auditor's experience, interests or skills. To benefit from these attributes, it would be useful for authorities to maintain and exchange information on the levels of experience, interests and skills of accredited auditors. Equally, an accredited auditor must recognise their own limitations and, when managing an audit, ensure the audit team has all necessary skills.

It is recommended that the following terms be used consistently, to assist clients and practitioners to understand the broad capabilities of audit staff.

##### Road Safety Audit Assistant

A person without accreditation and who may only participate in an audit under supervision by an accredited auditor.

##### Accredited Road Safety Auditor

A person who has passed this accreditation course and is capable of managing an audit of road layouts and designs which are not complex. They will be aware of their own level of skills and its limitations.

##### Senior Accredited Road Safety Auditor

A person who is an accredited road safety auditor and has additional skills and experience allowing them to participate in audits of complex road layouts and designs.



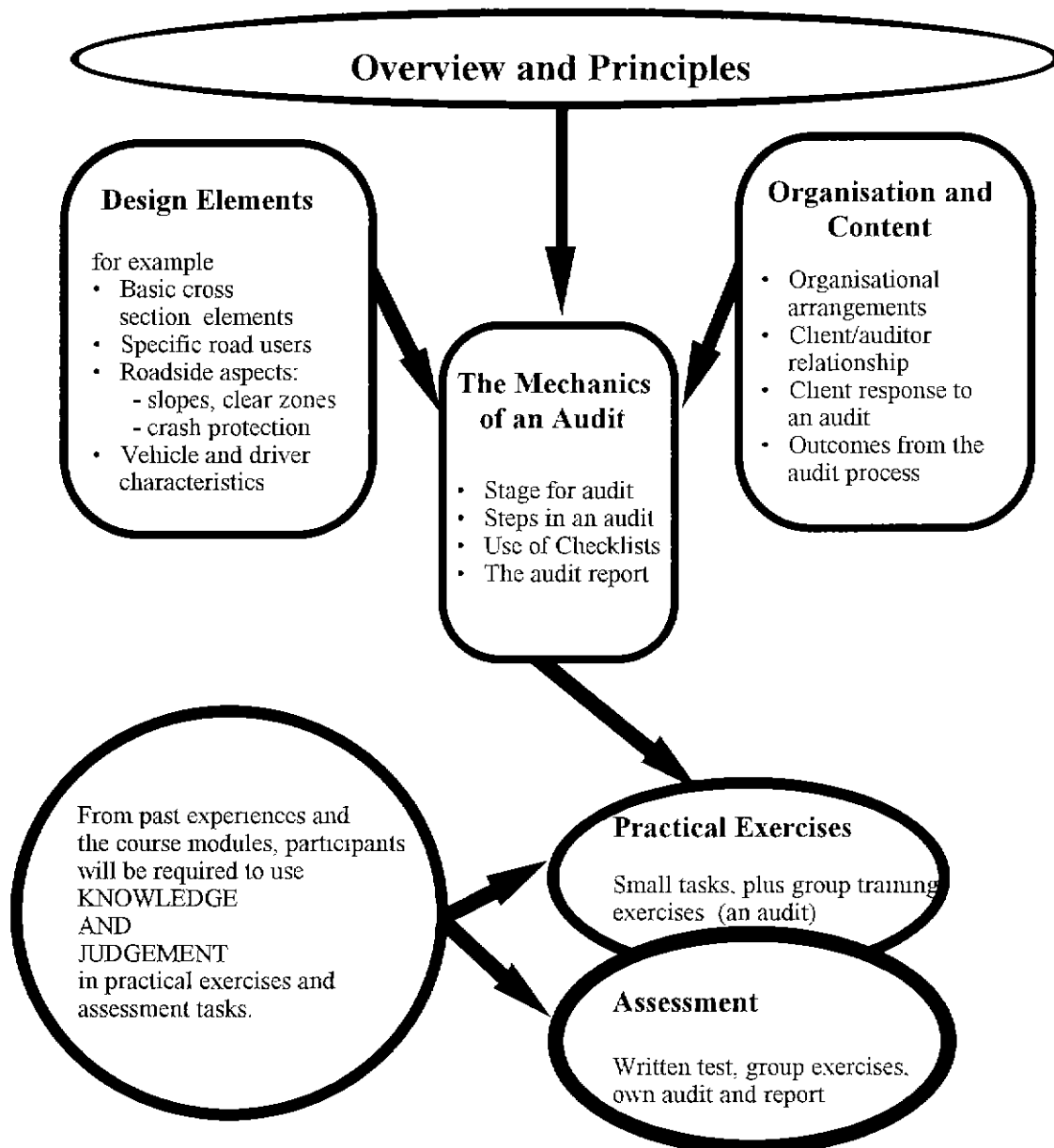
## 5. COURSE FORMAT

### 5.1 Course Structure

The course has the following structure. For auditors to successfully undertake their audit tasks, it is essential that they have an understanding of the material in each of the components, and their interrelationship

#### Scope of the Training Course

A set of training modules to be delivered by people with appropriate experience and training together with practical exercises, for the accreditation of Road Safety Auditors.



The course is currently designed to take four days of lectures and field work (followed by the conduct of an actual road safety audit under supervision). Given that the course is designed for experienced practitioners holding responsible positions in their work organisation, they are more likely to be available for two periods of two days than one continuous period of four days. The course has been designed on this basis. A break of a week between the two parts will enable participants to obtain additional information, conduct surveys, undertake exercises, write material and study/revise the course material, and study/revise the course materials:

It is recommended that class sizes should be restricted to 20 for effective communication and interaction within the group.

## **5.2 A Suggested Course Layout**

The following course layout is suggested as one way of:

- Presenting material on relevant topics.
- Arranging participants into groups at the appropriate stage.
- Providing adequate time for group case studies.
- Providing a variety and mix of activities in each day.

The topics are presented in more detail on in Section 6. There are two types of modules, those with a CM prefix which are Core Modules and must be included in all courses, and those with SM numbers which are Secondary Modules which may be altered or substituted for other more relevant topics.

The emphasis in all sessions should be on the safety aspects to expand participant's awareness of the safety implications.

### **Day One**

Start

Registration

Welcome and administrative matters

Session 1 (CM1)                      Lecture: The Basics of Road Safety Audit

Morning Tea

Session 2 (CM2)	Lecture: The Steps in an Audit
Session 3 (CM3)	Activity Task: Different Road Users and their
Safety	Needs
Session 4 (SM1)	Lecture: Roadside Hazard Management

Lunch

Announce syndicate groups and seat participants accordingly

Session 5 (CM4)	Lecture Legal Issues
Session 6 (CM5)	Lecture: Audits at Stage 1 - Feasibility
Session 7 (SM2)	Lecture: The AustRoads Road Safety Audit Guidelines

Afternoon Tea

Session 8 (SM3)	Group Task: Accident Investigation (eg of an intersection)
Session 9 (CM6)	Lecture: Audits at Stage 2 - Draft Design
Session 10 (CM7)	Overview of group audit projects, with slide presentation

Dinner

## **Day Two**

Start

Review Day One

Session 11 (CM8)	Lecture: Audits at Stage 3 - Detailed Design
Session 12 (SM4)	Group task: How to Use Checklists
Session 13 (SM5)	Lecture: Road Alignment and Design Standards

Morning Tea

Session 14 (CM9)	Lecture: Audits at Stage 4 - Pre-opening
Session 15 (SM6)	Lecture: Urban Intersections
Session 16 (SM7)	Lecture: Freeway Interchange Safety Principles

Lunch

Session 17 (CM10)	Group task: Commencement of Group Road Safety Audit <ul style="list-style-type: none"><li>- Assess documentation.</li><li>- Make daytime inspection.</li><li>- Reassess documentation.</li><li>- Obtain additional information, etc.</li></ul>
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Dinner

Session 18 (CM11)	Group task: Audit - Night Time Inspection
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NOTE: It is recommended that there should be a week's gap between the activities Day Two and Day Three (refer para 5.1)

### **Day Three**

Start

Review Days One and Two

Session 19 (SM8)	Lecture: Rural Intersections
Session 20 (CM12)	Group discussion and report back: What makes a good auditor
Session 21 (SM9)	Lecture: Organisational Arrangements to Encourage Road Safety Audits

Morning Tea

Session 22 (CM13)	Lecture: Audits at Stage 5 - Existing Roads
Session 23 (CM14)	Lecture: The Purpose and Content of a Road Safety Audit Report
Session 24 (SM10)	Lecture: Delineation and its Interaction with Designs

Lunch

Session 25 (CM15)	Assessment Task - Written Test
Session 26 (SM11)	Lecture: Safety Importance of Signs and Line Marking

Afternoon Tea

Session 27 (SM12)	Lecture: Vulnerable Road Users - Pedestrians and Cyclists
Session 28 (SM13)	Group activity: Checking an Intersection or Road Design against Design Manual Requirements
Session 29 (CM16)	Lecture: Vehicle and Driver Characteristics

Dinner

Session 30 (CM17)	Group Activity: Preparations for Tomorrow's Presentation
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### **Day Four**

Start

Review Days One, Two and Three

Session 31 (CM18)	Lecture: How to Respond to a Road Safety Audit Report
-------------------	--

Session 32 (SM14)

Lecture. Audits of Development Projects

Morning Tea

Session 33 (SM15)

Lecture: Auditing Local Streets

Session 34 (SM16)

Group activity: Checking an intersection or road design against AS1742 requirements

Session 35 (CM19)

Lecture: The Client/Auditor Relationship

Lunch

Session 36 (CM20)

Assessment Task - Presentation of Group Audit Findings

Afternoon Tea

Session 37 (CM20)

Assessment Task - Presentations continue

Panel discussion, questions, review the course

Close

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Note "Lecture" modules are to be interactive. A wide range of alternative module formats is available to satisfy participants and meet course objectives.

## **6. COURSE CONTENT**

### **6.1 Introduction**

This section describes, for each of the 36 modules listed in Section 5.2:

- the module's name (subject),
- the module's style (lecture, group task, etc.),
- the module's objective,
- the relative length of time considered appropriate for the module,
- the topics to be included when preparing module content, and
- the sources of information, where available or known.

The modules are categorised as "Core", which are of critical importance and must be included in the course, and as "Secondary ", which complement core modules, but which may be modified or substituted with other course matter, should other material be considered more relevant. The numbering of modules provides a guide to sequencing and permits information in this section to be cross-referenced to Section 5.2.

A great deal of information on the subjects covered in this course has already been produced. The sources of this information are listed in Appendix One. References to sources of information in Sections 6.2 and 6.3 are abbreviated: see Appendix One for an explanation.

The duration for each module is as follows. This may change with experience:

- |          |   |                        |
|----------|---|------------------------|
| • Brief  | - | 10 to 15 minutes       |
| • Short  | - | 30 minutes approximate |
| • Medium | - | 45 minutes approximate |
| • Long   | - | One hour approximate   |

## **6.2 Core Modules**

### **Module CM1**

<b>Lecture:</b>	The Basics of Road Safety Audit and its relationship to broader aspects of road safety engineering and road/traffic design.
<b>Objective:</b>	To provide a course introduction and reminder about road safety audits
<b>Duration:</b>	Long
<b>Topics:</b>	The origins of road safety audits, from accident investigation and prevention The definition of an audit The objectives of road safety audit Why audits are necessary The stages of design and construction when audits are undertaken The audit process The independence of auditors Costs and benefits Some examples where audits have produced benefits
<b>Information sources:</b>	Monash 1993 Paper No. 1; VicRoads 1993 Paper No. 1; ACT 1994 Papers No. 1 & 2; QDOT 1994 Paper No. 1, ITE Journal February, 1995.

### **Module CM2**

<b>Lecture:</b>	The Steps in an Audit
<b>Objective:</b>	To explain the sequence of steps in an audit, the importance of each step and who is responsible for each
<b>Duration:</b>	Short
<b>Topics:</b>	The sequence of steps The iterative nature of document examination and site visits The need for the client to provide the auditor with adequate information The purpose of each step Overview of the audit report Client response to audit report.

Information sources: AustRoads guidelines Section 6; QDOT 1994 Paper No. 4.

### Module CM3

**Activity task:** Different Road Users and Their Safety Needs

**Objective:** To understand the different requirements of different road user groups from the safety viewpoint.

**Duration:** Medium

**Task and topics:** The objective can be met in several ways. Participants are required to use information in the background material to point out the different characteristics and/or safety needs of different road users, and to relate these needs to a particular example location or locations (eg an intersection, a local street, a shopping street, etc.). Participants will need to relate these safety needs to the tasks each user (or user group) may need to perform in that particular environment.

Road users include pedestrians (young & elderly), motor cyclists, bicyclists, public transport patrons, bus and truck drivers as well as car drivers.

Road user eye heights  
Road user capabilities  
Vulnerable road users (pedestrians and cyclists)  
Accident reducing techniques relevant to each group

The activity can involve different participants looking at aspects of different road users, then reporting back to the whole group.

Information sources:	Pedestrians, public transport users	Monash 1993 Paper No. 3; t ACT 1994 Paper No. 0
	Cyclists	Monash 1993 Paper No. 4; ACT 1994 Paper No. 9
	Motor cyclists	No specific source
	Buses and truck drivers	VicRoads Trucks on Roads Design Guide 1994: ACT 1994 Paper No. 12
	Car drivers	No specific source
	General	Traffic Engineering Practice "Ogden & Bennet" Section 1.7 (page 20)



This information must be distributed to participants for them to read prior to the course, so they are prepared to carry out the task in this module.

The essential objective in road and traffic engineering is to help road users to make better control, navigation or guidance decisions. Knowledge of human decision making characteristics is thus vital.

#### **Module CM4**

<b>Lecture:</b>	Legal Issues
<b>Objective:</b>	To ensure that auditors understand their personal and corporate legal obligations and their relationship to road safety audit processes and practices
<b>Duration:</b>	Long
<b>Topics</b>	The duty of care Limitations on the immunity of public authorities Failure to take reasonable care Negligence as it applies to road safety audits Rejecting audit recommendations A negligent audit (implications) Role, rights and responsibilities of auditors
<b>Information Sources:</b>	AustRoads guidelines, Section 4; QDOT 1994 Paper No. 2

#### **Module CM5**

<b>Lecture:</b>	Audits at Stage 1 - Feasibility
<b>Objective:</b>	To ensure that auditors possess knowledge and information concerning the important elements of audits at this stage of design
<b>Duration:</b>	Short
<b>Topics</b>	Why audit at this stage What can be achieved at this stage What cannot be achieved at this stage Examples of design problems to be alert to Information which will be needed How to conduct the audit at this stage
<b>Information Sources:</b>	AustRoads guidelines Sections 2.3 and 9; ACT 1994 Paper No. 8; QDOT 1994 Paper No. 4

## **Module CM 6**

Lecture:	Audits at Stage 2 - Draft Design
Objective:	To ensure that the auditors understand the important elements of audits at this stage of design
Duration:	Short
Topics:	Why audit at this stage What can be achieved at this stage What cannot be achieved at this stage Examples of design problems to be alert to Information which will be needed How to conduct the audit at this stage
Information Sources:	Aust Roads guidelines Sections 2.3 and 9; ACT 1994 Paper No. 8; QDOT 1994 Paper No. 4

## **Module CM7**

Lecture:	Overview of group audit projects, with slide presentation
Objective:	To familiarise each syndicate or group with the site they are to audit during the course
Duration:	Short
Topics:	Highway Authority representative to describe the site Indicate the stage the design or works has reached Indicate the stage of audit to be undertaken Advise Occupational Health & Safety requirements for the site inspections
Information Sources:	Highway Authority - plans, photographs (or slides or video recording), accident data, traffic volumes; QDOT 1994 Paper No. 5

## **Module CM 8**

Lecture:	Audits at Stage 3 - Detailed Design
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Objective:	To ensure that the auditors understand the important elements of audits at this stage of design
Duration:	Short
Topics:	Why audit at this stage What can be achieved at this stage What cannot be achieved at this stage Examples of design problems to be alert to Information which will be needed How to conduct the audit at this stage
Information Sources:	AustRoads guidelines Sections 2.3 and 9; ACT 1994 Paper No. 7; QDOT 1994 Paper No. 4

### **Module CM 9**

Lecture:	Audits at Stage 4 - Pre-opening
Objective:	To discuss the important elements of audits at this stage of a project
Duration:	Short
Topics:	Why audit at this stage What can be achieved at this stage What cannot be achieved at this stage Examples of design problems to be alert to Information which will be needed How to conduct the audit at this stage
Information Sources:	AustRoads guidelines Sections 2.3 and 9; QDOT 1994 Paper No. 4.

### **Module CM 10**

Group Task	Group Road Safety Audit:
Objective:	To enhance skills by undertaking road safety audit as a group and to appreciate that a range of skills is required
Duration:	An afternoon
Topics:	Assess the documentation Make a daytime inspection Reassess the documentation Use the checklists Work as part of a team with various skills

Information Sources: AustRoads guidelines; the information provided in Model CM7; QDOT 1994 Paper No. 5

### **Module CM 11**

Group Task: Audit - Night Time Inspection

Objective: To enhance skills by undertaking a night time inspection after a daytime inspection

Duration: An evening

Topics: Make a night time inspection  
Appreciate elements not evident in daylight

Information Sources: See Module CM10; QDOT 1994 Paper No. 5.

### **Module CM 12**

Group discussion and talk back: What Makes a Good Auditor

Objective: To ensure that auditors understand the range of skills that are important in auditing and their application

Duration: Short

Topics: Each group to report on experience during the case study inspections and document review  
Appreciation of the value of team work  
List the fields of professional training, the areas of experience and the other skills which have been used during the group exercise.

Information Sources: Experience in Modules CM10 and CM11.

### **Module CM 13**

Lecture: Audits at Stage 5 - Existing Roads

Objective: To ensure that the auditors understand the important elements of audits at this stage

Duration: Short

**Topics:** Why audit at this stage  
 What can be achieved at this stage  
 What cannot be achieved at this stage  
 Examples of design problems to be alert to  
 Information which will be needed  
 How to conduct the audit at this stage  
 The difference between an audit and an accident reduction approach.

**Information Sources:** AustRoads guidelines Section 2.3 and 9; ACT 1994 Paper No. 6; QDOT 1994 Paper No. 4

#### **Module CM 14**

**Lecture:** The Purpose and Content of a Road Safety Audit Report

**Objective:** To ensure that auditors know what needs to be included in a road safety audit report

**Duration:** Medium

**Topics:** The function of the report  
 Who the report is directed to  
 The responsibilities of the auditor (report writer) and the client (respondent)  
 Project information details  
 Background information  
 Findings and recommendations, including format and style  
 Formal statement in conclusion

**Information Sources:** AustRoads guidelines Section 6.6

#### **Module CM 15**

**Assessment Task:** Written Test

**Objective:** To assess participants knowledge, skills and understanding of the basic principles and practices of road safety audit

**Duration:** Long

**Topics:** See Section 7.2 of this document

**Information Sources:** Section 7.2 of this document

## **Module CM 16**

Lecture:	Vehicle and Driver Characteristics
Objective:	To ensure that auditors understand capabilities and limitations of road users and vehicles and their implications for the safe operation of road system.
Duration:	Short
Topics:	The driving task Expectancy Reaction time Information needs Design and check vehicles Vehicle characteristics
Information Sources:	Monash University Department of Civil Engineering (1989) Traffic Engineering Practice 4th Ed. Chapters 1.2 and 1.3 (Ogden, K.W. and Bennett, D.W. Eds).

## **Module CM 17**

Group Activity:	Preparations for Group Presentations
Objective:	To develop skills in presentation and to use those skills to share findings from case studies with other course participants
Duration:	An evening
Topics:	Each group is to prepare its verbal presentation and supporting plans, charts, etc.
Information Sources:	Material from Modules 17 and 18; QDOT 1994 Paper No. 5

## **Module CM 18**

Lecture:	How to Respond to a Road Safety Audit Report
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Objective:	To ensure that auditors understand the role of the client, client/auditor relationship, and the actions and decisions which may follow from submission of the auditor's report.
Duration:	Medium
Topics:	<p>An audit report is a formal report</p> <p>A response is needed and needs to be in writing</p> <p>The response needs to be a considered one</p> <p>The assessment of issues other than safety</p> <p>Remaining detached from the findings/recommendations (not taking it personally)</p> <p>Programming adopted recommendations</p> <p>Dealing with recommendations which are not agreed to</p> <p>On going interaction between the audit and design teams</p> <p>This subject can be addressed by a lecture followed by an example audit. For example, the course participants can be split into groups of auditors and designers, giving them the opportunity to feel what it is like to receive an audit report and think about how to respond in an objective manner.</p>
Information Sources:	No current sources

## **Module CM 19**

Lecture:	The Client/Auditor Relationship
Objective:	To ensure that the auditors understand the responsibilities and interactions between the auditor and client
Duration:	Short
Topics:	<p>The potential for misunderstanding and conflict due to project "ownership"</p> <p>How to write recommendations which may appear critical</p> <p>How to view recommendations which appear critical</p> <p>The responsibilities of client and auditor in each step of an audit (who does what)</p>
Information Sources:	AustRoads guidelines Sections 2.6 and 2 7

Duration:	Long
Topics:	<p>Cross section, including road standard, access control and medians</p> <p>Lane and shoulder width</p> <p>Sight lines and sight distance</p> <p>Horizontal and vertical alignment, including their combination</p> <p>Shoulder treatments</p> <p>Pavement crossfall and superelevation</p> <p>Overtaking lanes</p> <p>Parking and stationary vehicles</p>
Information Sources:	Monash 1993 Paper No. 4. This is an excellent source of information and further references.

### **Module SM 6**

Lecture:	Urban Intersections
Objective:	To ensure that auditors understand the principles of design of urban intersections in relation to safety
Duration:	Medium
Topics:	<p>Types of road users</p> <p>Types and locations of intersections</p> <p>Road geometry</p> <p>Glare and distraction</p> <p>Signposting</p> <p>Sight distance</p> <p>Delineation</p> <p>Traffic Control devices and application</p> <p>Preventing conflicts</p> <p>Reducing accident severity</p> <p>Avoiding complexity or misinterpretations</p> <p>Application and safety effectiveness of a range of urban intersection treatments</p>
Information Sources:	Monash 1993 Paper No. 7; VicRoads 1993 Paper No. 6

### **Module SM 7**

Lecture:	Freeway interchange safety principles
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Otherwise no current sources.

### **Module CM 20**

Assessment Task:	Presentation of Group Audit Findings
Objective:	To show to assessors that the audit process is understood and judgements about the safety potential of road elements are appreciated
Duration:	An afternoon (total for all groups)
Topics:	Participants to make verbal presentations Use support materials Make clear presentations Show clear judgements about safety issues Use the different skills of team members effectively
Information Sources:	See Section 7.3 of these notes; QDOT 1994 Paper No. 5

## **6.3 Secondary Modules**

### **Module SM 1**

Lecture:	Roadside Hazard Management
Objective:	To ensure that auditors understand what roadside hazards are and how they can be reduced
Duration:	Medium
Topics:	The concept of a forgiving roadside Clear zones Removal, relocation or protection of hazards Elements which can be hazards: embankments, cuttings, poles, fences, longitudinal drains, drainage, structures, kerb types How to ameliorate these hazards The relative hazard of different locations and roadside features The different types of traffic barriers (crash barriers) The mechanics of failure of steel beam guardrail and necessary construction details

Information Sources: VicRoads 1993 Paper No. 9; ACT 1994 Paper No. 5, QDOT 1994 Paper No. 3

## **Module SM 2**

Lecture: The AustRoads Road Safety Audit Guidelines

Objective: To ensure that participants are familiar with the contents of the guidelines and how to use them.

Duration: Short

Topics: The purposes of the guidelines, with Part A being a general introduction and Parts B, C and D being for practitioners  
Where to find each piece of information  
The practical examples  
The safety principles in Section 10 and the safety hints throughout the document: gaining from the experience of others  
The checklists

Information Sources: AustRoads guidelines; ACT 1994 Paper No. 2

## **Module SM 3**

Group task: Accident investigation (eg of an intersection)

Objective: To ensure that the auditor understands the skills and processes involved in accident investigation which seeks to use accident data to develop remedial treatments and programs.

Duration: Medium

Topics: Look at a plan which shows the location and details of accident at a site  
Look for trends in accidents  
Look at the format of accident data  
Postulate any causes of accidents  
Selected groups to report verbally on their findings  
(This task provides an opportunity for participants to notice any other potential hazards from the photographs).

**Information Sources:** This exercise requires accident data with details of accident types, times, orientations, numbers, etc., a plan of the site with accidents plotted and slides or photographs of the site.

#### **Module SM 4**

**Group Activity:** How to Use Check lists

**Objective:** To ensure that participants understand the AustRoads checklists and are able to use them

**Duration:** Medium

**Topics:** The objective of this module can be achieved by a short (15 minute) introductory lecture and an exercise to be carried out in syndicate groups. For the road safety audit case study site, the group can establish which checklists they are to use and review which parts are likely to be relevant or where there may be deficiencies in the checklists or how they need to “reinterpret” checklist wording to make it relevant to their particular case. A full group discussion can allow this knowledge to be exchanged between all participants.

The lecture should cover:

Safety principles behind the checklists  
The purpose of checklists  
When to use checklists  
How to use checklists  
Checklists for the five stages of audit  
Repetition in the checklists  
Limitations in using checklists

**Information Sources:** AustRoads guidelines, Section 11 and checklists  
Participants must be advised to read Section 11 of the AustRoads guidelines prior to the course.

#### **Module SM 5**

**Lecture:** Road Alignment and Design Standards.

**Objective:** To ensure that the auditors understand the principles of design of road alignment in relation to safety emphasising consistency and driver expectations.

Objective:	To understand basic safety principles behind interchange design
Duration:	Medium
Topics:	<p>The nature and human demands of merging and diverging movements</p> <p>The need for consistent treatments along a route</p> <p>Mixing the function of access road/ramps</p> <p>Unexpected layouts</p> <p>How motorists are likely to use ramps</p> <p>The intersection of interchanges with nearby land uses and intersections</p> <p>Interchange signing and delineation</p>
Information Sources:	VicRoads 1993 Paper No. 4

### **Module SM 8**

Lecture:	Rural intersections
Objective:	To ensure that auditors understand the principles of designs of rural intersections in relation to safety
Duration:	Long
Topics:	<p>Types of road users</p> <p>Types and locations of intersections</p> <p>Road geometry</p> <p>Night time driving</p> <p>Signposting</p> <p>Delineation</p> <p>Traffic control devices</p> <p>Prevent conflicts</p> <p>Reducing accident severity</p> <p>Avoiding complexity or misinterpretations</p> <p>Sight distance</p> <p>Application and safety effectiveness of a range of rural intersection treatments.</p>
Information Sources:	Monash 1993 Paper No. 6; VicRoads 1993 Paper No. 6

### **Module SM9**

Lecture:	Organisational Arrangements to Encourage Road Safety Audits
Objective:	To appreciate that auditing requires organisational support for its success
Duration:	Short
Topics:	The need for a road safety strategy for the organisation Budgeting and planning to conduct audits Organisational commitment Following through on audit recommendations Programs to include audits
Information Sources:	No current sources

### **Module SM10**

Lecture:	Delineation and its Interaction with Design
Objective:	To ensure that auditors can assess existing delineation arrangements and the contribution effective delineation can make to safety
Duration:	Medium
Topics:	What is delineation? The effects of delineation on driver behaviour Combining types of delineation Types of situations where delineation techniques can improve safety Enhancing safety through various delineation devices. Application and safety effectiveness of a range of delineation devices
Information Sources:	Monash 1993 Paper No. 9

### **Module SM11**

Lecture:	Safety Importance of Signs and Line Marking
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Objective:	To ensure that auditors can assess existing signs and line markings and the value and limitations of signs and line marking to safety
Duration:	Medium
Topics:	The benefits of standards and their relevance to road safety audit Necessary and unnecessary signs Signs and lines in an urban context; what drivers comprehend Signposts as hazards Techniques to enhance safety through signing and marking Application and safety effectiveness of a range of signs and markings
Information Sources:	Monash 1993 Paper No. 10

### **Module SM12**

Lecture:	Vulnerable Road Users - Pedestrians and Cyclists
Objective:	To ensure that auditors understand safety issues relating to pedestrians and cyclists and how to apply these in an audit situation
Duration:	Medium
Topics:	The types of accidents those road users are involved in sub-categories of pedestrians and their characteristics Locations of hazards Types of hazards Safety versus accessibility Techniques to reduce accident frequency Techniques to reduce accident severity Application and safety effectiveness of pedestrian and cyclist devices
Information Sources:	Monash 1993 Papers No. 3 & 4, ACT 1994 Papers No. 9 & 10.

### **Module SM13**

Group Activity:	Checking an intersection or road design against design manual requirements
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Objective:	To ensure that auditors understand the purpose of a road design manual and their use in enhancing road safety.
Duration:	Medium
Topics:	Provide a real or fictitious road design Use a road design manual Check design elements against the manual's requirements Assess whether safety is adequately addressed in the manual's requirements
Information Sources:	Relevant State Road Authority Design Manual

#### **Module SM 14**

Lecture:	Audits of Development Projects
Objective:	To enable the auditor to apply road safety audit principles to off road projects.
Duration:	Medium
Topics:	Looking beyond the boundary of the development Issues for different scales of development The need for strong links between town planning and highway authority activities Who is responsible for considering the audit report Institutional issues A case study
Information Sources:	AustRoads guidelines Section 8; QDOT Paper No. 4

#### **Module SM15**

Lecture:	Safety on Local Streets
Objective:	To ensure that the auditor is able to apply road safety audit principles to local streets
Duration:	Short
Topics:	Local area safety objectives

Types of road users  
 Network configuration  
 Intersections  
 Parked vehicles  
 Trees and other fixed objects  
 Signposting  
 Sight distance  
 Night time visibility  
 Application and safety effectiveness of traffic  
 calming devices

Information Sources: VicRoads Paper No. 7

### **Module SM16**

Group activity: Checking an intersection or road design against AS1742 requirements

Objective: To familiarise participants with some of the requirements of the Manual of Uniform Traffic Control Devices (AS1742) and relate this to safety in design

Duration: Medium

Topics: Provide a real or fictitious road design use AS1742 (Part 2 in particular)  
 Check design elements against the Standard's requirements  
 Assess whether safety is adequately addressed in the Standard's requirements  
 The safety benefits of consistency in signing, line marking and delineation

Information Sources: AS1742 Part 2; Monash 1993 Papers No. 9 & 10

**ACTION:** Where there are 'No current sources' of information for a module, as the courses are presented, sources will be sought, identified, used, updated. Information sources for all modules will also be updated periodically.



## **7. ASSESSMENT**

### **7.1 Overview**

Assessment must be at a level and to a standard which allows clients to trust that anyone passing this course will be a capable and competent road safety auditor.

There are to be three assessment tasks, as set out below.

A person will be judged to have passed the course (and be an accredited road safety auditor) if:

- their mark in each assessment task is at least 60% of the maximum possible mark, and
- their total marks for all three assessment tasks are at least 70% of the total possible marks.

A person will be judged to have passed with distinction, and have that indicated on their certificate if:

- their mark in each assessment task is at least 70% of the maximum possible mark, and
- their total marks for all three assessment tasks are at least 80% of the total possible marks.

The assessment tasks and the approximate apportionment of marks to these tasks are to be:

1. (a) A written exam/test during the course, which tests participants' understanding of the meaning and purpose of a road safety audit, issues of audit processes, what to consider during an audit and where to find information on standard practice. (20% of total marks)  
  
(b) A written test indicating (across a broad field) that the auditor knows what constitutes a safe road environment and what aspects detract from safety and what can be done about them? (30% of total marks)
- 2 A group exercise, involving an audit of recent or imminent road works or a traffic project. The task involves audit of design plans and other documents, together with a daytime and night-time inspection. The audit results will be presented to the whole group of participants. A formal group report is required. (15% of total marks)

3. A "real life" audit to be carried out after the course work. For this task the participant will be under supervision of an accredited auditor on a genuine audit of a highway authority project. The task involves participating in the audit and (separately from any requirements of the audit team's "real life" client) writing up a report on the audit. Assessment will be based on the audit report prepared by the participant. (35% of total marks)

## **7.2 A Written Test**

The written test should be a combination of well constructed multiple choice questions and descriptive questions.

The test's purpose is to assess the participant's understanding and knowledge with reference to 7.1, 1(a) & 1(b) above covering the following areas:

- The definition of a road safety audit. What are the key elements in the definition? What do some of the elements mean or how can they be achieved?
- The stages in the design process at which an audit is appropriate.
- The steps in conducting a road safety audit. Who is responsible for each step?
- The skills required by a road safety auditor.
- The purpose and objectives of a road safety audit.
- Types and sources of information. What information does an auditor require in particular circumstances? What are the sources of information about the road, design criteria and appropriate standards of safety?
- The audit report. What does it contain and why? What types or degrees of problems should it include?
- Audit outcomes. What is the outcome of an audit? What is required in response to an audit report?

It is necessary to ensure that the questions be so framed that they test the understanding of the auditor and are applied in nature.

It may not be possible to cover all these topics in depth, in which case it is preferable to cover a significant number of items in some way and seek in - depth responses to a few. The test may be "open book" with access to relevant material.

50% of the assessment is allocated to this task. (7.1, 1(a) & 1(b))

## **7.3 A Group Exercise**

Course participants should be grouped into syndicates or groups which consist of three to four members with a diversity of experience. Each group will be required to undertake a case study road safety audit and make a presentation of their results during the period of the course. The audit should include a night time inspection, after a daytime inspection.

Guidelines for selection of case study sites are given in Appendix 2.

Assessment of case studies should be based on the following:

- The extent of participation of all the group members in the presentation and/or preparations for the presentation.
- The clarity of the presentation (succinctness, logical sequence, clarity of explanation, effective use of presentation aids to assist clarity)
- The extent to which the presentation focuses on the more significant safety issues (the ability to discern between significant and minor safety issues)
- The relevance of the recommendations to the nature of the problems
- The extent to which all the significant problems are identified
- The ability of the group to respond to questions after their presentation.
- The written report

15% of the assessment is allocated to this task since this is a Team approach each member may be asked to assess the others including him/herself.

#### **7.4 A Road Safety Audit Conducted Under Supervision**

The major task for assessment is a "real life" road safety audit in which the course participant must participate in, under supervision of an accredited road safety auditor, (or under the supervision of an experienced Auditor recommended by the State Road Traffic Authority) and submit a report within three months of completing the course.

Assessment will be based on the road safety audit report which will be written by the participant. This report should be written independently from the "official" audit report and without reference to it, although it will be necessary for the audit issues to be discussed with the other auditor(s). Guidelines for selection of an appropriate audit site and guidelines for assessment of the audit report are contained in the Appendices.

The course co-ordinator will need to arrange for an independent person to assess the participant's audit report. The fee to be paid to the assessor can be determined from established payment for casual academic teaching.

Guidelines for examiners of this task are given in Appendix 4.

35% of the assessment is allocated to this task.

## **7.5 Overall Assessment**

The co-ordination of marks from the three assessment tasks and a decision regarding pass or fail should be undertaken by a panel of at least two persons each with 10 or more years relevant experience in at least two of the following fields:

- Engineering education
- Road safety engineering
- Road design
- Traffic engineering

A decision not to award accreditation must be accompanied by written reasons with recommendation as to when can they redo the program. The assessment panel's decisions should be advised to the course co-ordinator, who will be responsible for advising each participant of their result and, in cases of a pass or pass with distinction, providing the person with a certificate.

Once the program is established, the frequency and methods of review/reassessment of Accredited assessors should be reviewed.

## Appendix One

### Sources of Information

The following sources of information are referred to in this document. It is likely that additional papers on relevant topics will be written from time to time, particularly for this courses and therefore this segment should be updated periodically.

#### 1. Abbreviations

The following abbreviations are used in Section 6 of these notes to refer to the documents and papers listed in this appendix.

AustRoads guidelines	Document 2.1 below AustRoads (1994) Road Safety Audit, 100p. plus checklists (AustRoads, Sydney)
Monash 1993	Document 2.2 below Monash University (1993) Papers from the Workshop on Road Safety Audit, Clayton Campus, April 1993
VicRoads 1993	Document 2.3 Below VicRoads (1993) Papers from the Road Safety Review Workshop, Blackburn, November 1993
ACT 1994	Document 2.4 below Andrew O'Brien & Associates Pty Ltd, in association with Hughes Trueman Ludlow (1994) Road Safety Audit Training Manual papers prepared for a workshop for City Services, Department of Urban Services, Canberra, November 1994.
QDOT 1994	Document 2.5 below Queensland (Department of) Transport (1994) Papers from the Road Safety Audit Workshop, Brisbane and Townsville, May 1994

#### 2. Referenced Documents

- 2.1 AustRoads (1994) Road Safety Audit, 100p. plus checklists (AustRoads, Sydney).

This document provides the basic guidelines for understanding and conducting road safety audits.

It is available from State Road and Traffic Authority bookshops, Australian Road Research Board publications service (03-9881 1555) or AustRoads, Sydney, (02-9264 7088).

2.2 Monash University (1993) Papers from the Workshop on Road Safety Audit, Clayton Campus, April, 1993.

- Paper 1: An Overview of Road Safety Audit by Phillip Jordan, VicRoads
- Paper 2: Safety Audit at the Planning Stage by E. V. Barton, VicRoads
- Paper 3: Road Users with Special Needs: Pedestrians by Phillip Jordan, VicRoads
- Paper 4: Road Users with Special Needs: Cyclists by Gary Veith, VicRoads
- Paper 5: Road Alignment by K. W. Ogden, Monash University
- Paper 6: Safety Audit for Rural Intersections by Andrew O'Brien, Andrew O'Brien and Associates
- Paper 7: Urban Intersections by Fred Schnerring, Roads & Traffic Authority of New South Wales
- Paper 8: Safety Audit on Local Streets by Robert Morgan, Consultant
- Paper 9: Delineation in the Safety Audit Process by Peter Cairney, Australian Road Research Board
- Paper 10: Safety Audit: Signs and Pavement Markings by K. D. Freeman, Standards Australia
- Paper 11: Roadside Hazard Management by J. A. Cunningham, VicRoads
- Paper 12: The AustRoads Road Safety Audit Project by Phillip Jordan, VicRoads
- Paper 13: Safety Review Within VicRoads by J. A. Cunningham, VicRoads
- Paper 14: Current Road Safety Audit Practice in NSW by Fred Schnerring, Roads and Traffic Authority of New South Wales

Available from the Department of Civil Engineering, Monash University, Clayton, Victoria, 3168, (03-9905 4000).

2.3 VicRoads (1993) Papers from the Road Safety Review Workshop, Blackburn, November 1993

- Paper 1: An Overview of Road Safety Audit by Phillip Jordan, VicRoads
- Paper 2: Road Safety Review Within VicRoads - Current Practice and Future Direction by Ron Gowan, VicRoads
- Paper 3: Safety Review at the Planning Stage by John Cunningham, VicRoads
- Paper 4: Freeway Interchanges by Richard Yeoman, VicRoads
- Paper 5: Road Design Elements by Ross Gordon, VicRoads
- Paper 6: Safety Audit of Intersections: Rural and Urban by Gary Veith, VicRoads
- Paper 7: Road Safety Audits for Safer Local Streets by Robert Morgan, Consultant
- Paper 8: Signs and Markings by Neville Schmidt, VicRoads
- Paper 9: Roadside Hazard Management by John Griffith and Raj Muthusamy, VicRoads
- Paper 10: Safety for Pedestrians and Cyclists by Michael Tziotis, VicRoads

- Paper 11: Towards a Safer Worksite by Cliff Lawton, VicRoads
- Paper 12: Network Performance and Network Standard by Michael Tziotis, VicRoads

Available from the Road Safety Department, VicRoads, 60 Denmark Street Kew, Victoria, 3101, (03-9854 2666).

- 2.4 Andrew O'Brien and Associates Pty Ltd, in association with Hughes Trueman Ludlow, Road Safety Audit Training Manual, prepared for City Services, Department of Urban Services, ACT, November, 1994.

- Paper 1: The Principles of Road Safety Audit by Mark McKenzie, Department of Urban Services, ACT
- Paper 2: AustRoads Road safety Audit Guidelines and Background to Road Safety Audit by E. V. Barton, Consultant
- Paper 3: Road Safety Audit Processing and Auditing by Mark McKenzie, Department of Urban Services, ACT
- Paper 4: Experiences of a Junior Road Safety Auditor by Jemima Macaulay, Andrew O'Brien and Associates
- Paper 5: Roadside Hazard Management by John Cunningham, VicRoads (1993 paper, edited and revised)
- Paper 6: Stage 5 Audits by Mark McKenzie, Department of Urban Services, ACT
- Paper 7: Stage 3 Audits by Andrew O'Brien
- Paper 8: Stage 1 and 2 Audits by Andrew O'Brien and E. V. Barton
- Paper 9: Road Users with Special Needs: Cyclists by Gary Veith, VicRoads (1993 paper, edited and revised)
- Paper 10: Road Users with Special Needs: Pedestrians by Phillip Jordan, VicRoads (1993 paper, edited and revised)
- Paper 11: Risk Management (a technique for use in the ACT) by Mark McKenzie, Department of Urban Services, ACT
- Paper 12: Road Users with Special Needs: Heavy Vehicles by E. V. Barton

Available from Andrew O'Brien and Associates Pty Ltd, Unit 3, 59 Avenue Road, Camberwell, Victoria, 3124, (03-9882 9955).

- 2.5 Queensland (Department of) Transport (1994), Papers from Road Safety Audit Workshop, Brisbane and Townsville, May, 1994.

- Paper 1: The Basics of Road Safety Audit by Gordon Lee, Queensland Transport
- Paper 2: Legal Liability Issues for Road Safety Audit by Judd Epstein, Monash University
- Paper 3: Road Environment Safety by Gordon Lee, Queensland Transport
- Paper 4: Various Stages of Road Safety Audit by Brian Donaghey and Dennis Walsh, Queensland Transport
- Paper 5: Case Study Exercises - Notes

Available from Road Transport and Safety Division, Queensland Transport,  
Boundary Road, Spring Hill, Queensland, 4000, (07-3834 2770).

### 3. Other Relevant Documents

For additional reading on the subject of road safety audit, the following documents cover the essential elements of the subject.

Institution of Highways and Transportation (1990) Guidelines for the Safety Audit of Highways, London.

Ogden, K.W. and Jordan, P.W. (1993) Road Safety Audit: an Overview, Proceedings of the Pacific Rim Transport Technology Conference, Seattle, July.

Roads and Traffic Authority (1993) Road Environment Safety Guidelines, Sydney.

Ogden, KW, Safer Roads, A Guide to Road Safety Engineering, 1995 (in publication)



## **Appendix Two**

### **Guidelines for Selecting Case Studies**

Case study sites are to be selected for the group assessment project described in Section 7.3 and carried out in Modules 17, 18, 30 and 36.

Sites should be selected on the following basis:

- The number of sites should be half that of the number of groups, so each site is audited by two groups.
- There should be a mixture of audit stages amongst the sites.
- Sites should be relatively close to the course venue, ideally within 15 minutes driving time.
- Except in the case of Stage 5 audits, the sites should have plans available which are of sufficiently good quality to audit. For example, a Stage 3 audit will require a signs and line marking plan to be available.
- Sites should have other necessary data available, such as traffic counts and accident data.
- Sites should contain an amount of design consistent with the time available to conduct the audit. It is often difficult to assess the extent of problems until an audit is conducted, but sites should not be so short of simple issues that they offer no scope for participants to use judgement regarding safety hazards and risk.
- A person from the highway authority should be available to introduce the site and the project. Better value can be gained from the exercise where the highway authority personnel are keen to receive the audit results.

## **Appendix Three**

### **Guidelines for Selecting Individual Audit Projects**

The individual audit project is carried out by each participant after the course work. The assessment allocated to this project is 35% of the total assessment mark for the course. It is therefore vital that an appropriate site, or project, be selected.

The project should be selected on the following basis:

- The project to be audited should be at Stage 2 (Draft Design), Stage 3 (Detailed Design) or Stage 4 (Pre-opening). An audit of an existing road (Stage 5 ) is not acceptable. It is also unlikely, that a Stage 1 (Feasibility) audit will involve sufficient detail for the exercise.
- The highway authority and the personnel involved in the audit should be encouraging in their attitude to the process.
- As the audit is a genuine one being undertaken in any event by the highway authority, adequate plans and information are likely to be available, but this should be confirmed
- The sites should contain an amount of design detail consistent with the purpose of the exercise. Accreditation is for projects which do not have a great deal of complexity, so a project like a freeway to freeway interchange would be inappropriate, due to the high level of complexity in the combinations of design elements. Similarly, the project should not be so short or simple or devoid of issues that it offers no scope for the participant to use their judgement regarding safety hazards and risk.
- A person from the road/highway authority with knowledge of the specific project should be available for discussions with both the participant and course supervisor, as required. This person could also be a consultant as appropriate to the project.

## **Federal Office of Road Safety Approved Training Course for the Accreditation of Road Safety Auditors**

### **Notes for the Guidance of Examiner of the Report Resulting From the Road Safety Audit Conducted Under Supervision**

The accreditation course for road safety auditors is a four day course undertaken by persons with previous training and of eight to 10 years' experience in the areas of road safety engineering, traffic engineering, road design and/or accident investigation and prevention. The report to be examined results from a "real life" audit of a project of appropriate complexity, conducted under supervision after the four days of course work were completed.

The purpose of an audit report is to list identified safety problems, explain the nature of problems, assess risks and to make recommendations regarding action to overcome the problem. In some cases a solution may not be apparent. Rarely is it necessary for the audit report to offer a detailed and specific solution. An audit report is handed to the designer or client and it is they who are responsible for deciding what action to take in response to identified safety deficiencies. The report should, where possible, offer guidance on the direction of a solution.

The audit report is expected to be written to a standard which would permit it to be used as the official report from the audit. It should be well presented, include all identified safety issues and reflect a mature judgement regarding the nature of identified safety problems and the extent of their effect on the project's safety potential. A mark out of 100 is required for the audit report and this constitutes 35% of the total marks for the course.

The audit report is considered to be a very important part of the course assessment, as participants who pass (or pass with distinction) are able to be referred to as an "Accredited Road Safety Auditor" and be accepted as capable of undertaking alone or participating with others in a road safety audit of a project up to \$1 million (approximate) in 1995 values. The assessment must be at a level and to a standard which allows the industry to trust anyone passing this course to be a capable road safety auditor.

Items to be considered in the assessment are:

#### **1. Format and Style**

- Is the format and sequence of information clear and logical?
- Does the report include all relevant elements such as project name, audit stage, purpose of the project, names of auditors, dates, referenced documents and a final formal statement, as well as the audit findings and recommendations?
- Does the report contain sufficient diagrams, photos and/or detailed location references to permit comprehension of the issues and recommendations?
- Is there reference to any previous stages of audit?

## **2. Technical Content**

- Does the report show an understanding of the safety aspects of road or traffic design?
- Are the issues and recommendations technically sound?
- Are all likely safety problems addressed?

It is most important that the report is relevant and technically sound. To satisfy yourself about these matters and to give yourself a "reference point" from which to assess the report, you may wish to discuss the audit with the supervising auditor or see the other ("official") audit report on the project

## **3. Relevance to Safety**

- Does the report confine itself to safety aspects of any identified deficiencies?
- Are identified problems actually potential problems?
- Are recommendations appropriate to the problem and likely to result in improved safety (bearing in mind that the recommendations are not intended to find specific solutions, but rather to suggest the direction of a possible solution)?

## **4. Reference to Accepted Standards and Practices**

- Does the report make adequate reference to accepted Standards or safety practices? Are the sources of technical query obvious?
- Where reference is to "accepted practice", rather than a written Standard or guideline, does the report show adequate understanding and judgement? (The opposite might be reference to "hearsay" which is not based on safety experience or is not appropriate to this particular application)

## **5. Appropriateness of Recommendations**

- Are recommendations appropriate for the identified problem?
- Are they restricted to the safety of road users (taking a broad perspective of safety, but excluding other issues such as environment)?
- Are recommendations likely to improve safety?
- Is the scale of recommendations in keeping with the scale of the accident potential?

Marks should be allocated in the following proportions:

Format and Style	10 points
Technical Content	30 points
Relevance to Safety	20 points
Reference to Accepted Standards and Practices	20 points
Appropriateness of the Recommendations	20 points
Total	100 points