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Strengthening the national road safety management capacities of selected developing countries and countries with economies in transition

INTERIM REPORT OF ROAD SAFETY PERFORMANCE REPORT

PART: ROAD SAFETY AUDIT



A. Process of implementing the road safety audit in Viet Nam

I. Process of implementing the road safety audit in the period from 2001 to 2008

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B. Situation of undertaking the Road Safety Audit activity of international countries and experience lesson

1. Situation of undertaking the Road Safety Audit activity of international countries

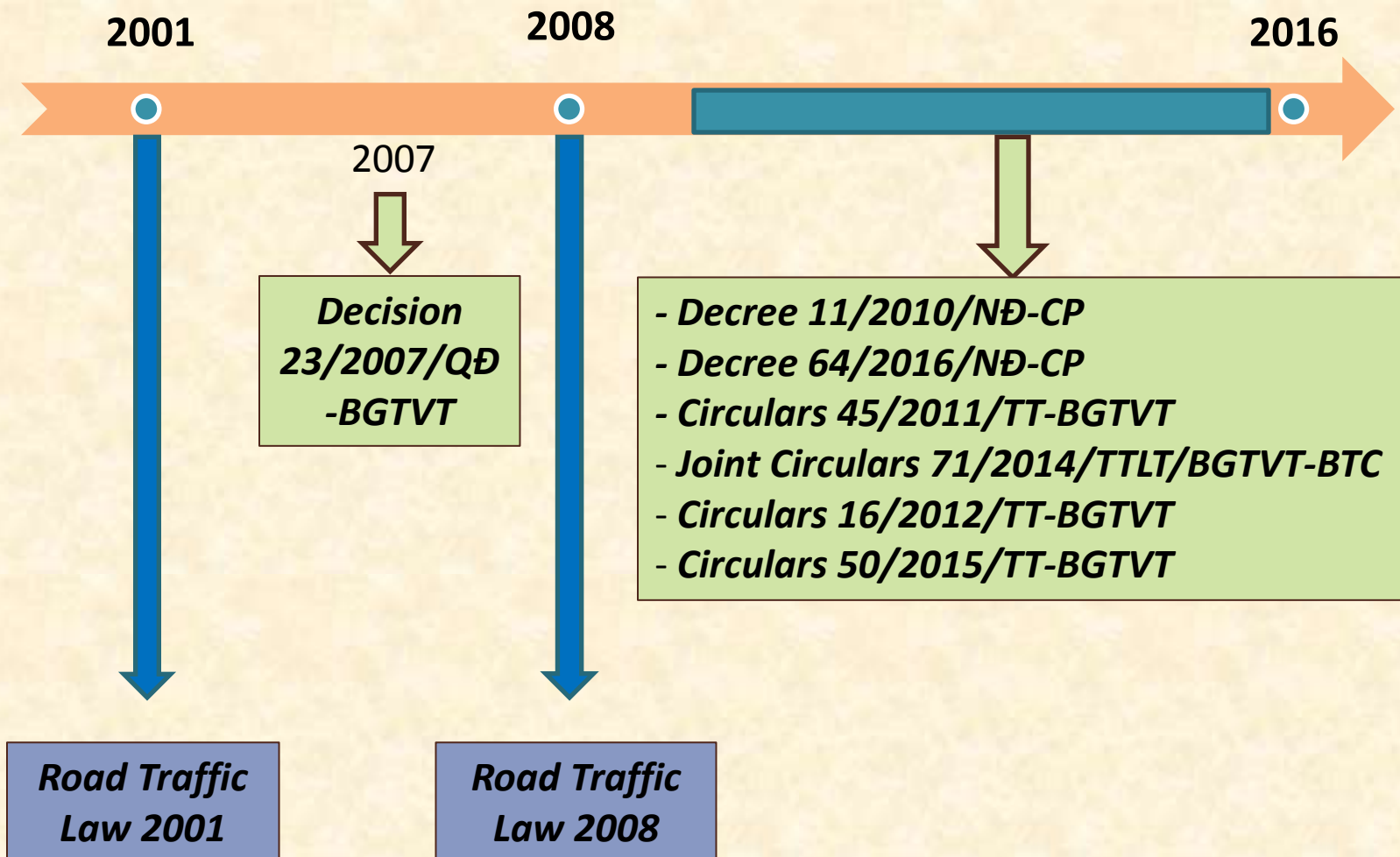
2. Conclusions and the experience lesson

C. Recommend to amend, supplement some regulations in the Circulars under the MOT about appraising, auditing the road traffic safety

1. Recommend to amend, supplement the legal documents

2. Implementing plan

A. Process of implementing the road safety audit in Viet Nam



A. Process of implementing the road safety audit in Viet Nam

I. Process of implementing the road safety audit in the period from 2001 to 2008

Road Traffic Law 2001:

“The road must be audited the traffic safety in the stage of planning, design, construction and during the process of exploitation”.

Decision number 23/2007/QĐ-BGTVT:

- *The jurisdiction to decide the road safety audit.*
- *Stages of road safety audit.*
- *Capacities condition of the organization and individual who audit the traffic safety.*
- *Expense of road safety audit.*
- *Process and content of road safety audit.*

A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

1. System of legal documents for the road safety audit

- **Road Traffic Law 2008**, Article 44: “The road construction building must be audit the traffic safety from the stages of preliminary design, design, construction, pre-opening and duration of exploitation. The Client has the responsibility in receiving the result of RSA in order to supplement the recommendations into the project”.
- **Decree 11/2010/NĐ-CP** dated 24 February 2010 about Management and protection for the road traffic facilities with the Chapter 4 including 03 articles prescribe the detail of basic issues of road safety audit.
- **Decree 64/2016/NĐ-CP** dated 01 July 2016 under Government to amend and supplement some articles of the Decree number 11/2010/NĐ-CP.
- **Circulars 45/2011/TT-BGTVT** dated 10 June 2011 under MOT prescribes the cost of auditing the traffic safety.
- **Joint Circulars 71/2014/TTLT/BGTVT-BTC** dated 10 December 2014 under MOT and MOF prescribes about the cost of RSA for the road in-service.
- **Circulars 16/2012/TT-BGTVT** dated 25 May 2012 under MOT prescribes about training, awarding and management the Certificate of RSA Auditing.
- **Circulars 50/2015/TT-BGTVT** dated 23 September 2015 under MOT prescribes about the mission in the Article 11 of Decree number 11/2010/NĐ-CP.

A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

1. System of legal documents for the road safety audit

Evaluate the appropriateness, the systematic, the sufficiency and the feasibility of the legal documents:

Basically, the system of legal documents were built by the MOT and other Ministries and submitted the authority agency to promulgate or promulgated by their authority. However, almost of documents were researched to build in the point time that the RSA activities have not implemented widely yet around the country.

Recommendation: Check and timely suggest contents which need to amend, supplement in order to complete the system of legal document for appraising, auditing the road traffic safety.

A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

For the new construction roads and the rehabilitation or improvement roads

a. System of National Highways

Some projects have been audited the road safety in the As-built Drawing Design stage; some projects have been audited in the stage of pre-opening such as: National highway No.21 in the Phu Ly – Nam Dinh section, Rehabilitation project of National highway No.1 in the Dau Giay – Phan Thiet section; National highway No.1 bypass Bien Hoa city, etc.

Undertaking the road safety appraisal and auditing in the stage of pre-opening will have many difficulties in finding the fixing option to the inadequacy of structure, the technical aspects of road, and it will be very wasteful in the investment cost because many construction items must be destroyed and reconstructed in order to be more appropriate to the design.



A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

For the new construction road and the rehabilitation or improvement road.

b. Expressways network

Many projects of construction the new expressway have not been audited, appraised the road safety in stages of Preliminary Design, Detailed Design or As-built Drawing Design.

A little number of expressway construction projects are audited the road safety in two stages of As-built drawing design and pre-opening.

A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

For roads in-service

a. System of National Highways

DRVN has promulgate documents number 3972/TCĐBVN-KCHT&ATGT dated 6 September 2013 and number 4581/TCĐBVN-KCHT&ATGT dated 10 November 2013 to direct Road Management Bureaus to organise the pilot auditing some black spots.

+ Road Management Bureau I: Km130+900/NH.6;

+ Road Management Bureau II: Km892+700 to Km893+150/NH.1;

+ Road Management Bureau III: Km1375+250 to Km1375+750/Ho Chi Minh highway;

+ Road Management Bureau IV: Km86+850 to Km88+350/NH.60.

b. Expressways network

The activities of auditing, appraising road safety have been implemented on some routes: Ho Chi Minh City - Trung Luong, Ha Noi - Lao Cai, Noi Bai - Nhat Tan Bridge, etc.

A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

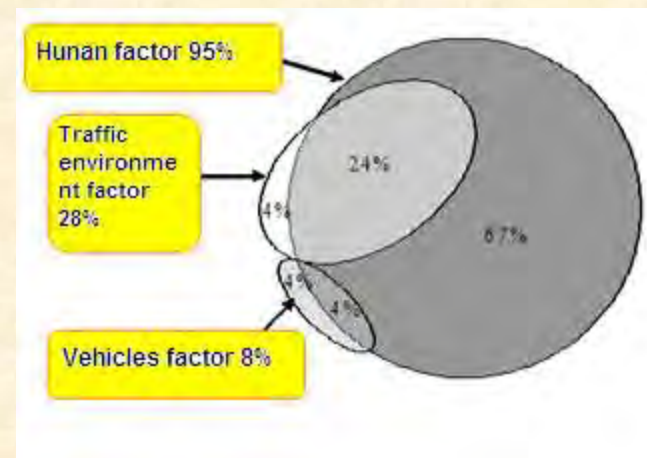
2. Organizing the road safety audit

Using the result of Road safety audit

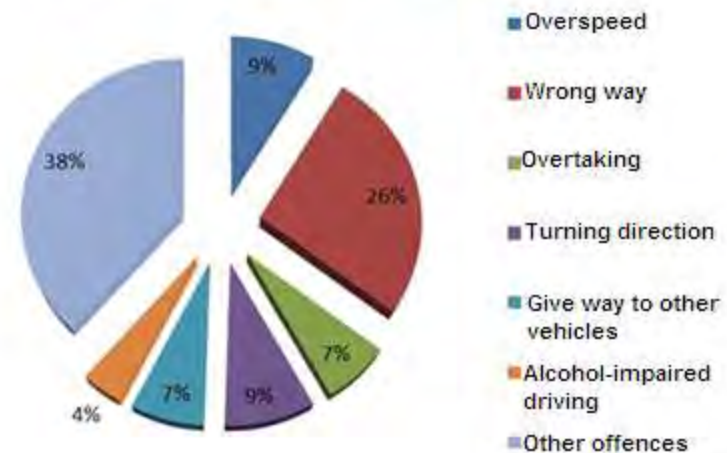
04 cause groups of road accident, including:

- (i) road infrastructure is not ensured, this is the cause by road structure – road factor;
- (ii) technical factor of traffic vehicles;
- (iii) impaction of objective cause, this is traffic environment factor;
- (iv) human factor.

=> Upon the accident causes, the road safety audit consultant will propose, recommend the fixing solution to solve the accident cause.



CAUSES OF TRAFFIC ACCIDENTS



A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

Training of Road Traffic Safety Auditor

According to Article 7 of the Circulars 16/2012/TT-BGTVT, in order to be accepted to establish the course of road safety auditors training, the training centre must fully meet following requirements:

- (i) Established according to the law regulation;*
- (ii) To have the teacher team, suitable facilities and training documents which are regulated training programs;*
- (iii) To be accepted by Directorate for Roads of Viet Nam.*

05 accepted centres with 550 auditors as follows:

- The Center of Training and Information (Institute of Transport Science and Technology): opened 14 training courses with 459 auditors.
- The National University of Civil Engineering: opened 02 training courses with 72 auditors.
- The Transport Development and Strategy Institute: opened 01 training course with 19 auditors
- The University of Transport Technology.
- Human Resources Development Company No.6.



A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

Business condition for Road safety audit service

Evaluate the capacities of business organizations that act in the Road safety audit field in present

According to article 12 of Decree 11/2010/NĐ-CP :

- i) For the project in the group A and B, the audit organization must have minimum of 10 auditors, in there, at least 04 transport construction engineers, 01 road transportation engineer and 01 RSA Team Leader;*
- ii) For project in the group C, the audit organization must have minimum of 05 auditors; in there, at least 01 road engineer, 01 road transportation engineer and 01 RSA Team Leader.*

In fact, the road safety audit work is a combination of many issues including: road design, traffic operation, road safety, road facilities maintenance (traffic control device), intelligent traffic system, etc. However, the Decree 11/2010/ND-CP just only requires about speciality of road engineer and road transportation engineer; besides, the requirements about experience in auditing the road safety of similar projects are not considered.

A. Process of implementing the road safety audit in Viet Nam II. Process of implementing the road safety audit in the period after the year 2008 2. Organizing the road safety audit

Business condition for Road safety audit service

Considering to amend, supplement the regulations about the business conditions for the Road safety audit service

- The road safety audit organization must be independent about legal relationship and finance with project stakeholders comprising the Client, the Designer and Contractors.
- Specialities in traffic operation and road safety engineering are supplemented during selecting the road safety audit consultant.
- The requirement of enhancing the speciality knowledge should be supplemented into the experience ability condition of auditor.



A. Process of implementing the road safety audit in Viet Nam

II. Process of implementing the road safety audit in the period after the year 2008

2. Organizing the road safety audit

Evaluate the effectiveness in organizing and undertaking the Road safety audit activity

Advantages

- The Government has highly taken interest in instructing the traffic safety.
- The National Traffic Safety Committee and the Ministry of Transport have strongly and comprehensively implemented groups of solutions together with practical actions in order to restrain accidents, especially road accidents.
- Until now, the system of legal documents for the activity of road safety audit are fully completed following the Government's regulation at the Decree 11/2010/NĐ-CP; whereby, the RSA's activities had the suitable legal foundation in order to be easily carried out.
- Source of RSA cost is regulated clearly at the Decree 11/2010/NĐ-CP.

Difficulties and shortcomings

- The auditor forces are still deficient, the number of audit organizations which have sufficient condition is very negligible.
- The Road Safety Audit work at pre-opening stage will difficultly find out the solving solution for inadequate problems mentioned in road technical elements, especially the investment cost will be squandered by the destroyed and rebuilt items.
- The expenditure for the traffic safety audit activity in the road in-service project is still very difficult because of the undercapitalized matter.
- In some projects, the Client usually do not establish an individual RSA Consulting package, this RSA work will be undertaken by the Design Audit Consultant.
- The dissemination of legal regulation in road safety audit does not receive the proper consideration, it leads to that relevant agencies do not clearly understand legal regulations to carry out.

B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Many countries on the world carried out the Road Safety Audit activity.



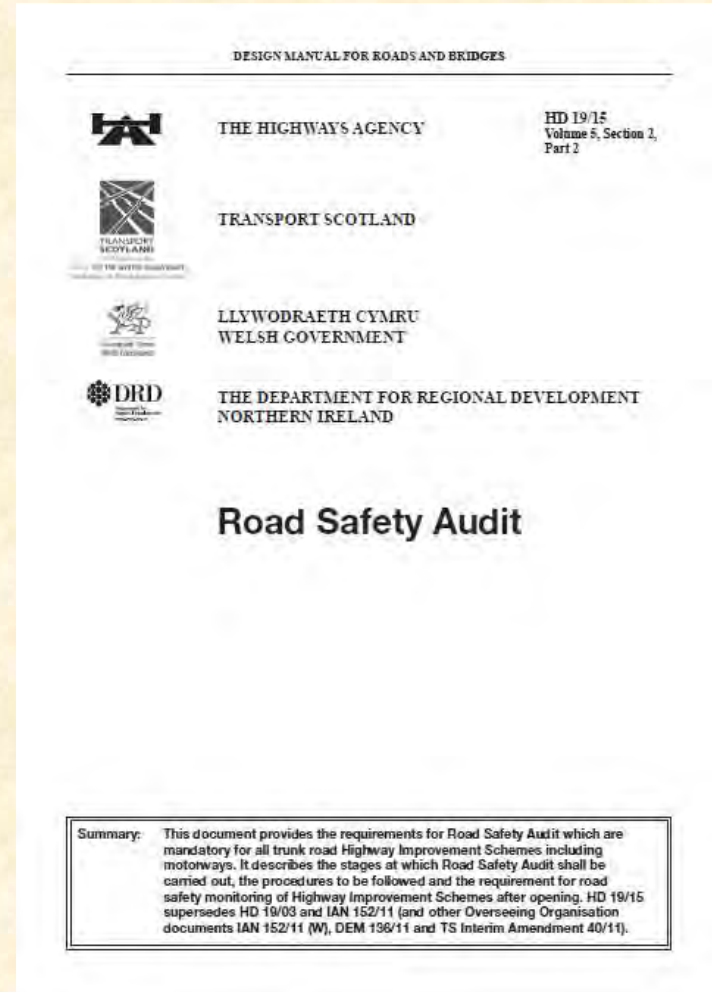
B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in United Kingdom

Stages of Road Safety Audit

- **Stage 1 Road Safety Audit:** Completion of preliminary design;
- **Stage 2 Road Safety Audit:** Completion of detailed design;
- **Stage 3 Road Safety Audit:** Completion of Construction; and
- **Stage 4 Road Safety Audit:** Monitoring. This stage is undertaken at two point times:
 - 12 months: Prepare the monitoring report using 12 months of personal injury collision data from the time Highway improvement scheme became operational.
 - 36 months: Prepare the monitoring report using 36 months of personal injury collision data from the time Highway improvement scheme became operational.



B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in United Kingdom

Road Safety Audit Process

- (i) Project Sponsor decide the scheme required Road safety audit.
- (ii) Design Team proposes RSA Team / Specialist Advisors and prepare RSA brief.
- (iii) Project Sponsor checks RSA Team/Specialist Advisors independence and competence and records decision on file.
- (iv) Project Sponsor approves RSA Brief. Project Sponsor issues RSA Brief and instructs RSA Team and Specialist Advisors.
- (v) Road Safety Audit Team carries out Audit and prepares written report.
 - + At Road Safety Audit Stage 1 and 2, all Road Safety Audit Team members must visit together the sites of Highway Improvement Schemes that involve permanent change to the existing highway layout or features; and where new offline proposals tie-in to the existing highway.
 - + At Stage 3, all Road Safety Audit Team Members must examine the scheme site together during daylight. They shall also examine the site together during the hours of darkness so that hazards particular to night operation can be identified.
- (vi) Road Safety Audit Team submit the draft RSA Report to Project Sponsor.
- (vii) Identified actions from RSA:
 - + Project Sponsor discusses draft RSA report with RSA Team Leader.
 - + RSA Team Leader to consider need to discuss with RSA Team and Specialist Advisors. RSA Team submit final RSA Report to Project Sponsor.
 - + Design Team prepares a draft RSA Response Document and sends it Project Sponsor.
 - + Project Sponsor and Design Team to agree response where possible.
 - + For contents of RSA Report accepted, Project Sponsor instructs the Design Team of any changes required. Design Team incorporates any agreed changes into the preparation / design/ construction.
 - + For the recommendations in RSA Report that should not be implemented, Project Sponsor sends Exception Report to Project Director, Director gives final decision on Exception Report. Project Sponsor sends copies of approved Exception Report(s) to Design Team Leader, RSA Team Leader and Safe Road Design Team (HA) for action and information.
- (viii) The Project Sponsor must notify the Director of the reasons if works to implement Stage 3 Road Safety recommendations or alternative measures proposed in Exception Reports, are not completed within 6 months of acceptance of the Stage 3 Road Safety Audit recommendations and/or approval of Exception Reports.

B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in United Kingdom

Contents of Road Safety Audit

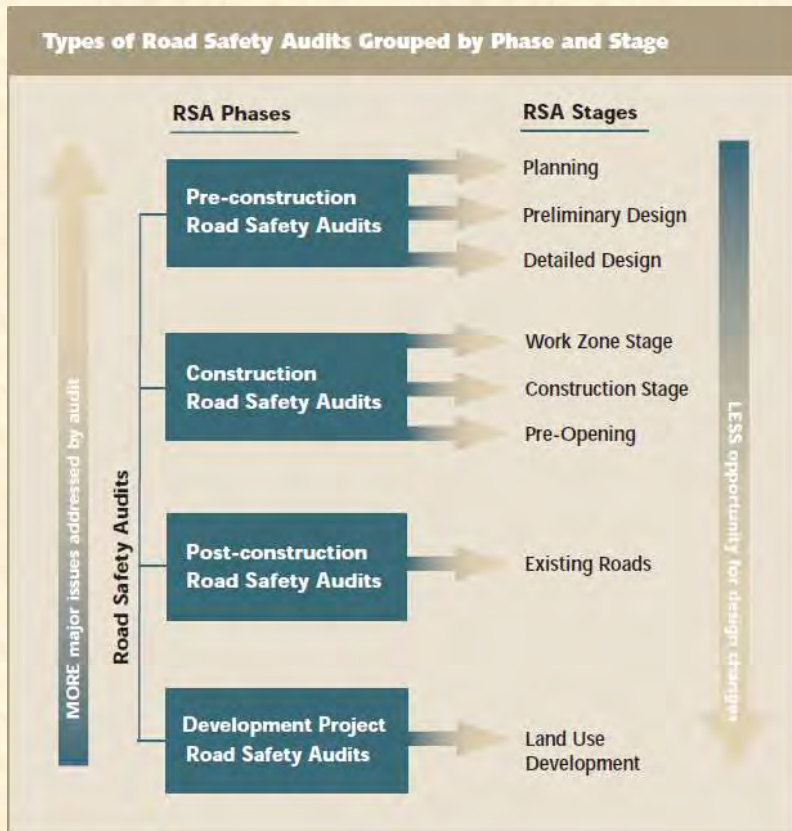
- - A description of the proposed Highway Improvement Scheme clearly identifying its objectives.
- - Details of determined and pending Departures and Relaxations from Standards, and/or the Design Strategy Record where they have been produced for an improvement to an existing motorway or trunk road.
- - Clear identification of the elements of the scheme proposals included within the scope of the Road Safety Audit to be undertaken and also those elements of the scheme that fall outside of the scope, including strategic decisions.
- - General scheme details, to help give an understanding of the purpose of the scheme and how the layout will operate, including design speeds, speed limits, traffic flows, forecast flows, queue lengths, NMU flows and desire lines. Also details of any environmental constraints on the design and how these may have affected any strategic decisions made..
- - Whole of other relevant factors which may affect road safety such as adjacent developments (existing or proposed), proximity of schools or retirement/care homes and access for emergency vehicles.
- - For on-line schemes and at tie-ins, the personal injury collision data in the form of 'stick plots' and interpreted listings. The personal injury collision data should cover both the extent of the scheme and the adjoining sections of highway.
- - At Road Safety Audit Stages 2 and 3, details of any changes introduced since the previous Road Safety Audit stage.
- - Any changes in the Highway Improvement Scheme that are not shown on the design or As-Built drawings.
- - Previous Road Safety Audit Reports, Interim Road Safety Audit Reports, Road Safety Audit Response Reports and Exception Report(s).
- - Contact details of the Maintaining Agent to whom any identified maintenance defects should be notified (by telephone and immediately confirmed in writing for serious defects) separately from the Road Safety Audit Report.
- - Details of the appropriate police contact.

B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in United States of America

Stages of Road Safety Audit



B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in United States of America

Road Safety Audit Process

Step 1: Identify project or existing road to be audited

As a result of this step, the project or existing road to be audited is determined and the parameters for a RSA are set.

Step 2: Select RSA Team

As a result of this step, an independent, qualified, and multidisciplinary team of experts suitable for the specific RSA stage is selected.

Step 3: Conduct a pre-audit meeting to review project information

The meeting brings together the project owner, the design team and the audit team to discuss the context and scope of the RSA and review all project information available.

Step 4: Perform field reviews under various conditions

The objective of project data review is to gain insight into the project or existing road, prepare for the field visit and identify areas of safety concern. The field visit is used to get further insight into the project or existing road and to further verify/identify areas of safety concern.

Step 5: Conduct audit analysis and prepare report of findings

As a result of this step, the safety issues are identified and prioritized and suggestions are made for reducing the degree of safety risk. The RSA results are then succinctly summarized in the formal RSA report.

Step 6: Present audit findings to Project Owner/Design Team

In this step, audit team orally reports the key RSA findings to the project owner and design team in order to facilitate the understanding of RSA findings.

Step 7: Prepare formal response

Once submitted, the formal response becomes an essential part of the project documentation. It outlines what actions the project owner and/or design team will take in response to each safety issue listed in the RSA report and why some of the RSA suggestions could not be implemented.

Step 8: Incorporate findings into the project when appropriate

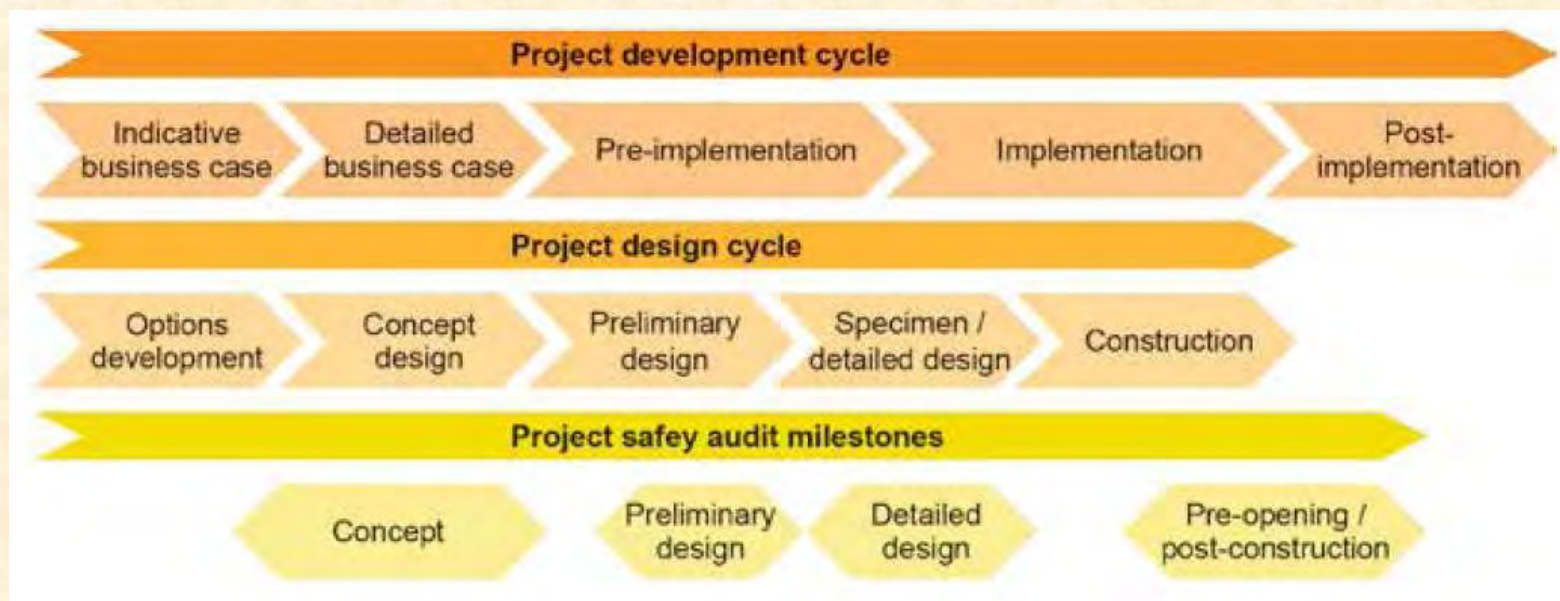
This final step ensures that the corrective measures outlined in the response report are completed as described and in the time frame documented.

B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in New Zealand

Stages of Road Safety Audit



B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

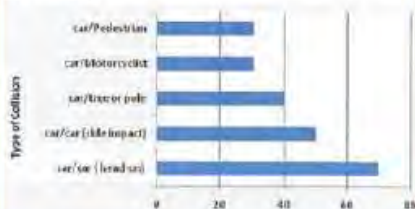
1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in New Zealand

Road Safety Audit Process

Consider safe speeds appropriate to the road environment based on the chance of surviving a particular crash type.

Survivable impact speeds for different scenarios
(source: Figure 7 – Australian Road Safety Strategy 2011–2020)



Consider intersection forms that produce safe speeds appropriate to all road users and minimise points of conflict.



Consider appropriate forgiving treatments for motorcyclists, including surfacing, sudden changes in grade and roadside hazards.



Consider using the most forgiving roadside treatments, such as flexible barriers.

Ratio of fatal and serious injuries per injury crash for various roadside hazards and barriers
(source: Austroads ST1427 Final Draft)

Hazard type	Fatal/serious injuries per run-off road injury crash (100km/h)
Poles	0.81
Tree (shrub/scrub)	0.76
Fence/Wall	0.66
Embankment	0.63
Rigid barrier	0.50
Semi-rigid barrier	0.60
Flexible barrier	0.33
No hazard hit	0.43

Road safety audit process STEPS

Party responsible



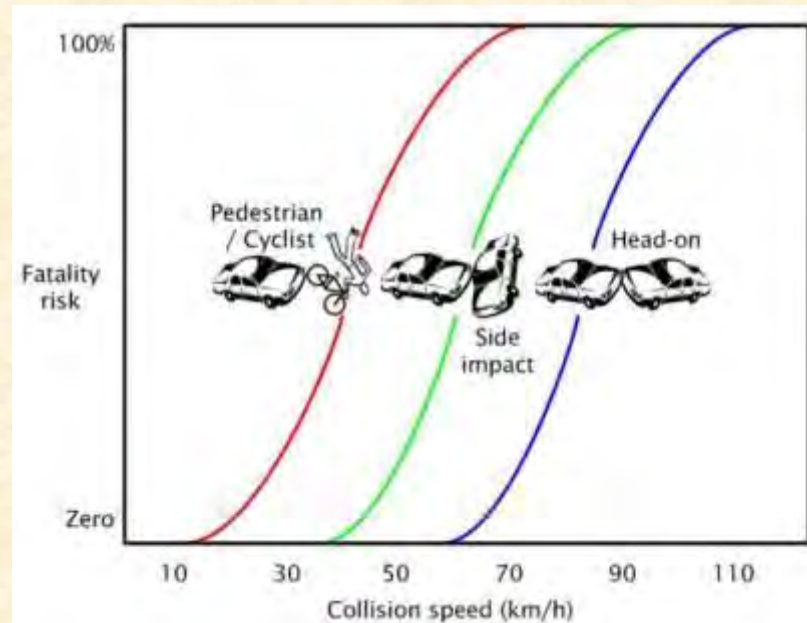
B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

1. Situation of undertaking the Road Safety Audit activity of international countries

Road safety audit in New Zealand

Contents of Road Safety Audit

- Consistency of standards with the adjacent road network, especially at tie-ins. Secondary effects on surrounding road network. Major generators of traffic. Type and degree of access to property and developments. Potential for serious crashes (side impact, head-on, hit hazards). Safe accommodation for vulnerable road users (pedestrians and cyclists). Relative safety performance between options being considered.
- Design issues: Design standards; Design speed; Design volume and traffic characteristics; Impact of standard of route on safety (ref design flows and speed); Overtaking opportunities; Consistency of intersection arrangements and access control; Location of intersections and accesses in relation of horizontal and vertical alignments; Horizontal and vertical alignments consistent with visibility requirements along the route and at intersections/accesses; Facilities for pedestrians and cyclists.
- Environmental issues: Sunrise/sunset glare, fog, ice, wind conditions.



B. Situation of undertaking the Road Safety Audit activity of international countries and experience lessons

2. *Conclusions and the experience lesson*

- ***Select the project and stage of project required to audit the road safety:***

In Viet Nam, the Government only obliges to audit the road safety at the stage of Detailed Design or As-built Drawing Design and pre-opening stage for the new construction road. For the existing road, criteria required to audit are available but not clearly or difficult to analysis, because the investigation about traffic development, road accidents and general social development situation are not regular, the data is insufficiently updated and unsystematically managed. It needs to adjust and change the criteria to identify the audited existing road by proving the RSA for whole highway routes.

- ***Condition to select organization, individuals who audit the road safety:***

Viet Nam needs to adjust the legal regulation in selecting RSA organizations and individuals. RSA agencies and individuals must have not only sufficient professional ability but also regularly trained in road safety audit in order to implement appropriately for each project and stage of project.

- ***Regular training, improvement in the speciality and quality of auditors:***

Training courses about Continuing Professional Development following advanced special subjects should be regularly organized for auditors in order to enhance their qualifications.

- ***Content of the road safety audit:***

In Viet Nam, according to Decree and Circulars, the audit content of each audit stage mention whole considered elements, but the RSA report only concentrates to traffic sign and road marking design because the road safety works are usually set up as an individual package or an individual item with the main design content relating to road marking and traffic signs. Hence, the Project Consultant proposes to supplement closer legal regulations into the content of road safety design, road safety audit and the appraisal agency's responsibility in order to control the RSA report's content.

- ***Package of road safety audit:***

According to Vietnamese legal documents, in the Detailed Design stage or As-built Drawing design stage, the road safety audit is one part of the design audit package; in the pre-opening stage, the road safety audit is usually set up as an private package. For this reason, the requirement in experience ability of organizations and individuals undertaking the design audit must be ensured similarly to the road safety audit.

INTERIM REPORT OF ROAD SAFETY PERFORMANCE REPORT PART: ROAD SAFETY AUDIT



C. Recommend to amend, supplement some regulations in the Circulars under the MOT about appraising, auditing the road traffic safety

1. Recommend to amend, supplement the legal documents

*** Selection of Project which audited the road safety**

All projects of new construction road, rehabilitation and improvement road which are in the national road network including expressways (motorways) must be audited the road safety.

*** Stage of road safety audit**

- For the new construction, rehabilitation and improvement road:

+ The road safety audit is mandatory for all stages of project, including Preliminary Design, Detailed Design (3 steps project) or As-built Drawing Design (2 steps project) and Pre-opening stage.

+ Besides of above mandatory stages, the Investment Authority Agency could decide to undertake the RSA at any point time in the process of preliminary design, design or construction if necessary.

- The road in-service should be audited in one of following cases:

+ The number of crashes increase suddenly on the rehabilitated road or crashes happen regularly following the periodic data of management agencies.

+ At the time of 12 months and 36 months after opening to become operational.

C. Recommend to amend, supplement some regulations in the Circulars under the MOT about appraising, auditing the road traffic safety

1. Recommend to amend, supplement the legal documents

* Business condition of road safety audit consultant service

- Condition for Road Safety Audit team member:

- i) The education grade is similar or higher than university level with specialities in road construction, traffic operation, traffic safety engineering;
- ii) At least 03 experienced years in road design field or 05 experienced years in traffic management, traffic operation, transport construction, transport maintenance field;
- iii) Having a validated Road Safety Auditor Certificate provided by DRVN;
- iv) Experienced in solving the traffic safety for at least 01 road project;
- v) A minimum one course of CPD in the field of Road Safety Audit, Collision Investigation or Road Safety Engineering in the past 12 months.

- Condition for Road Safety Audit team leader: Meet the demand of RSA member and other conditions follows:

- i) Experienced as road design Team Leader in at least 03 road projects;
- ii) At least 07 experienced years in road design field or 10 experienced years in traffic management, traffic operation, transport construction, transport maintenance field;
- iii) Experienced in solving the traffic safety for at least 03 road project.

- The Road Safety Audit Consultant organization has to meet following conditions:

- i) Must be independent of the Client, the Designer, the Contractor in the legal relationship and financial issues.
- ii) For the project with national importance and project in the group A and B, the consultant organization must have minimum of 10 auditors; in there, minimum of 04 engineers in transport construction, 01 engineer in traffic operation, 01 engineer in traffic safety engineering and at least 01 RSA Team Leader;
- iii) For project in the group C and the road in-service project, the consultant organization must have minimum of 05 auditors; in there, minimum of 01 engineer in transport construction, 01 engineer in traffic operation, 01 engineer in traffic safety engineering and at least 01 RSA Team Leader.

C. Recommend to amend, supplement some regulations in the Circulars under the MOT about appraising, auditing the road traffic safety

2. Implementing plan

For the new construction, rehabilitation or improvement road: Implement activities of road safety audit following the road construction plan of the road project.

For the road in-service: In the next 5 years period (from 2017 to 2022), the Ministry of Transport should build a plan to audit the road safety for all roads including national roads, provincial roads, district roads, commune roads and expressways. After this period, the activity of road safety audit shall be undertaken following the analyzed crashes data of road management agencies.



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***THANK YOU FOR
WATCHING !***

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