Road Safety Audit Implementation – an international inquiry

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Abstract

The performance of Road Safety Audits (RSAs), either in the design or rehabilitation of new infrastructure projects, or for assessing the safety level of existing roads (RSIs), has great potential to improve transport safety and reduce the both crash rates and crash severity indices. The scope of the present study is to review and provide insights on the international experience on the implementation of RSAs, focusing on countries that are pioneers in this field and have established clear and robust procedures. The present study is based on a questionnaire survey addressed to road safety experts from several countries, along with a comprehensive review of RSA guidelines and manuals on the procedures followed in the UK, Australia, USA, European countries, as well as Gulf States. Moreover, European Commission Directives 2008/96/EC and 2019/1936/EC on road infrastructure safety management are also examined. The study presents interesting combined findings from both the questionnaire survey and the review of guidelines in order to provide an overall synthesis of international experience in Road Safety Audit implementation, leading to the identification of related best practices. The paper aims to introduce RSA procedure in countries where it is not applied and improve the existing RSA procedures.

Keywords: Road Safety Audit; Road Safety Inspection; Infrastructure; Guidelines; Questionnaire.

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1. Introduction

According to the Safe System approach to road safety, it is acknowledged that human error within the transport system is inevitable, and therefore the system should make allowance for such errors by minimizing the risk of serious injury or death. The identification and treatment of road infrastructure elements which may contribute to crash occurrence or crash severity is therefore a key component of the Safe System approach [1].

Within this context, the measure of Road Safety Audit (RSA), either in the design or rehabilitation of new infrastructure projects, or for assessing the safety level of existing roads, has great potential to improve transport safety and reduce the burden of human lives lost or injuries sustained. The measure has long been systematically and effectively applied in several countries worldwide, with most outstanding examples the United Kingdom (UK), Australia and some European countries.

The scope of the present study is to provide a comprehensive review of international RSA implementation procedures and to identify international best practices. The paper aims to provide insights on institutional and practical aspects of RSA implementation, which are handled in different ways by different countries and therefore, introduce RSA procedure in countries where it is not applied or improve the existing RSA procedures.

2. Methodology

International RSA guidelines and manuals are a valuable source of information on the procedures followed in each country regarding several aspects of the RSA process. In the following paragraphs, a review of such guidelines is presented, highlighting the RSA framework and the procedures currently followed in the UK [2], Australia [1,3], USA [4, 5], European countries [6, 7], as well as Gulf States [8, 9]. As far as Europe is concerned, European Commission Directives 2008/96/EC [10] and 2019/1936/EC [11] on road infrastructure safety management are also examined, besides national guidelines and legislatory acts.

In many cases however, information on practical aspects of RSA implementation is not adequately provided in the respective guidelines. Therefore, in order to collect additional information on institutional and practical aspects, a questionnaire was designed and dispatched to road safety experts from several countries and responses from the following eleven countries were collected: Australia, Austria, Belgium, Germany, Greece, Italy, Portugal, Qatar, Slovenia, Spain and USA.

The selection of countries to dispatch the questionnaire was made on the basis not of a comprehensive geographical coverage but on the tradition and experience on the implementation of RSA. Emphasis was placed on European Countries that are currently implementing RSAs very extensively, following relevant European Union Directives. United States of America was also included, to investigate the attempts for the measure's implementation. Within the survey, a response from the State of Kentucky has been examined, whereas common overall practices, as defined in the relevant FHWA guidelines [4, 5], are discussed.

3. Analysis and Results

In the following chapters the various aspects of RSA implementation are presented combining input from both the questionnaire survey and the review of guidelines.

3.1 Projects requiring a Road Safety Audit

An overview of international practice in the examined countries regarding the type of road projects that are mandatorily audited is presented in Table 1 below.

It is evident that, although there are differences in the defined road types, RSAs are mostly implemented on the design of motorways and major interurban road projects. The road significance is also applied as a criterion (e.g. roads belonging in the trans-European road network in the EU), as well as the project cost (used in Australia and Abu Dhabi).

Regarding audits on existing roads (Road Safety Inspections - RSIs), emphasis is also placed on motorways; however, specific time intervals are set only in Austria (at least once every 10 years), Slovenia (every 5 years), Italy (every 2 years) and Belgium (several inspections per year). In Figure 1, the results of the questionnaire survey are presented, regarding the compulsory conduct of RSIs.

Table 1: Overview of projects requiring a RSA.

Road types	UK	AU	US	AT	BE	DE	GR	IT	PT	QA	SI	ES	Abu Dhabi
Motorways	X	X (2)	(3)	X	X	X	X	X	X	X	X	X (4)	X (6)
Primary rural road network	X (1)	(2)	(3)			X	(4)	X	X	X			X (6)
Secondary rural road network		(2)	(3)						X	X			
Primary urban arterials	X (1)	(2)	(3)				(4)		X	X			X (6)
Urban roads and streets		(2)	(3)						(5)	X			

Notes:
1. *RSA is mandatorily performed on all trunk Highway Improvement Schemes.*
2. *The decision is made by jurisdictions.*
3. *RSA implementation is a State DOT's decision.*
4. *EU Directive 2008/96/EC defines as mandatory the implementation of RSAs on roads of the trans-European road network.*
5. *Only for interurban roads crossing small villages.*
6. *All "new major road projects" are audited.*

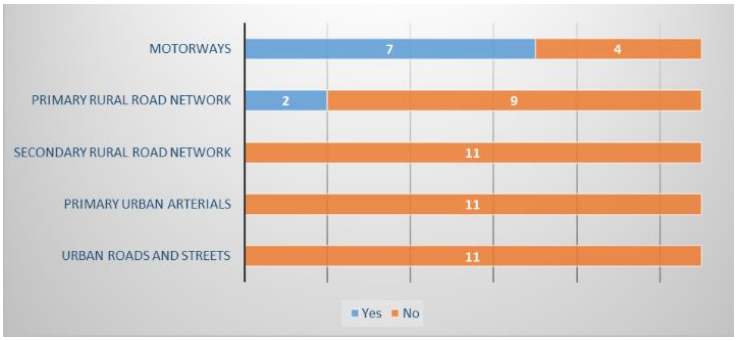

Figure 1: Road types where the conduct of Road Safety Inspection is obligatory

3.2 Stages of Road Safety Audit

RSAs are performed in various stages of a project's development, from design stages to construction, pre- and post opening as well as on temporary traffic management schemes (e.g. on work zones) and on existing roads (RSIs). The number of RSA stages mentioned in the reviewed international guidelines ranges from four (4) in the European Union Directive DIR 2008/96/EC to eight (8) in the American FHWA guidelines.

A compendium of all identified stages of RSA, categorized according to the stage of the project's lifecycle, is presented in Table 2 below.

According to the review, the most commonly implemented stages of RSA during the development of a road infrastructure project are the Preliminary Design Stage Audit, the Detailed Design Stage Audit, and the Pre-Opening Audit.

Regarding RSIs, the measure is more common in some EU countries and Australia. In the UK and several other countries with sufficient and high quality crash data (also including Germany and USA), it is considered more cost effective to systematically identify hazardous locations based on crash data, and apply appropriate interventions. Within this context, the measure of RSIs is probably more meaningful for countries that do not have sufficient time series of crash data, with accurate georeferencing of the crash location, and can benefit from a proactive assessment of safety in the existing road network.

Table 2: Compendium of RSA Stages, as defined in international guidelines.

Project Lifecycle Stage	RSA Stage	Country
Planning	Feasibility Stage or Preliminary Planning Stage	AU, DE, USA, QA, Abu Dhabi
Design	Preliminary Design	AU, UK, EU, DE, GR, USA, QA, Abu Dhabi
	Detailed Design	AU, UK, EU, DE, GR, USA, QA, Abu Dhabi
Construction	Changes in design during construction	USA
	Temporary (Work zone) traffic management schemes	AU, GR, USA, Abu Dhabi
	Pre-Opening	AU, UK, EU, DE, GR, USA, QA, Abu Dhabi
	Opening or Early Operation	AU, EU, DE, Abu Dhabi
Monitoring	Post Opening, on 12 months and 36 months (mostly crash investigation)	UK, Abu Dhabi
Existing Roads	RSI	AU, EU, DE, GR, USA, QA, Abu Dhabi
Other	Land Use Development RSAs	AU, USA

3.3 Agencies involved in the training and certification of candidate auditors

The questionnaire survey provided an insight on how the roles and responsibilities related to the RSA training and accreditation, including registry management, are divided amongst organisations and agencies.

As far as **providing the training** is concerned, in most countries academic organisations assume this role, such as universities and research institutes. In a few countries (Australia, Germany) state road authorities are also involved, in Spain it is performed by the relevant Ministry, and in Greece also by the Ministry but with the support of academic members (Professors) from several Universities. In Qatar the training is provided by International Road Federation (IRF), which is a Non Governmental Organisation.

The **certificate**, in most cases, **is awarded by** the relevant Ministry or state agency. It is clarified that in Portugal, the responsible body Institute for Mobility and Transport is also a public institute integrated in the indirect administration of the State. Exceptions are identified in Belgium (by an evaluation commission), and Germany (by the main training providers).

Overseeing the certification process and **maintaining the registry** of certified road safety auditors is performed by the relevant Ministry or state agency, with the sole exception of Belgium, where these roles are performed by an evaluation commission consisting of several road safety experts and representatives of different organisations.

3.4 Roles and responsibilities

According to the questionnaire survey, in most of the countries (64%), public authorities are responsible for performing RSAs or RSIs. In Australia, Austria, Italy and Portugal, both private road operators (mostly concessionaires in public-private partnership schemes) and public authorities are responsible for RSA/ RSI implementation.

According to the review of the guidelines the roles and responsibilities of the parties involved in the RSA Process have many aspects in common, but there are also noticeable differences. Specifically:

- The **RSA Team** is responsible for examining all relevant documentation and drawings, inspecting the site, preparing the audit report, participating in meetings to inform the Project Owner / Developer / Road Authority, and providing feedback on the Audit Response Report (or Exception Report).
- The **Design Team** is commissioned to perform the various design stages of the audited project. Regarding RSA implementation, the design team is responsible for:
  - providing the required information to the audit team,
  - considering carefully and objectively the RSA comments and recommendations,
  - assisting the Project Owner in preparing the Audit Response Report (or Exception Report), and
  - after final decisions are made on the RSA outcome, incorporating all necessary changes in the design.

For RSIs, there is often no design team, and the required information and assistance in responding to the audit report is usually provided by the Project Owner or the Road Operator.

- The **Client / Project Owner / Project Sponsor** is the organisation responsible for the project development. In most cases, it is also the "Overseeing Organisation". The Client is responsible for initiating the RSA procedure, selecting the audit team, and implementing the agreed improvements in the design or the project, depending on the stage of the audit.
- The **Overseeing Organisation** represents the organisation that is responsible for implementing the RSA. The review of international experience has revealed the following main approaches:
  1. In most of the examined countries (Australia, UK, Austria, Belgium, Germany, Italy, Qatar, Spain and Abu Dhabi), the overseeing organisation is the road authority responsible for the audited road project.
  2. In four countries, there is a specific public authority responsible for RSAs on all roads. These countries are: Qatar (Ashghal Public Works Authority), Slovenia (Slovenian Traffic Safety Agency), Portugal (Instituto da Mobilidade e dos Transportes), and Greece (Road Infrastructure Safety Agency).
  3. In the State of Kentucky (USA), RSAs are performed only for projects initiated specifically for the improvement of road safety (and not on new infrastructure projects). In that case, responsible for the audit is Kentucky Office of Highway Safety, which is also the organisation initiating the project.
  4. In some cases, more commonly for motorways operated by concessioners, the overseeing organisation is the Road Operator.

  The Overseeing Organisation is responsible for:
  - identifying and commissioning an audit team,
  - liaising with the Design Team and the Audit Team,
  - keeping the Client informed, especially with respect to any concerns,
  - seeking specialist input, where required, from other disciplines,
  - considering and responding to the audit findings, and
  - closing out the RSA, by (1) either implementing agreed actions, or otherwise accepting the ownership of risk if no treatment is implemented, (2) monitoring the performance of the RSA process, and (3) keeping and retaining records of the audit and its findings.

3.5 Audit team requirements

The size, required qualifications and selection process of the audit team are a critical part of the RSA implementation procedure. In Table 3, a synopsis of the provisions of reviewed guidelines is presented [1, 2, 4, 6, 8, 9, 10, 11, 12, 13]. Considerable differences can be observed between countries regarding several aspects of the audit team.

In almost all of the reviewed guidelines, specific requirements for the qualifications, training and experience of audit team members, and leader are defined, besides the relevant certificate of competence. Detailed related information, complemented with feedback from the questionnaire survey, is presented in Table 4.

Table 3: Audit team characteristics, as depicted in international guidelines.

	UK	**AU**	**US**	**EU**	**DE**	**QA**	**GR**	**Abu Dhabi**
Minimum size (no. of persons)	2	2	3	-	1	2	2	2
Certificate required	Yes, at least by one	Yes, by all	Not specified	Yes, at least by one	Yes, by all	Yes, by all	Yes, by all	No, only registration
Presence of Team Leader	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Presence of Observers	Yes	Yes	No	No	No	Yes	No	Yes (2 max.)

Table 4: Requirements for audit team members and leader (besides certificate of competence).

UK	Members	a) ≥2 years experience, b) attendance of a 10-day course, c) ≥5 RSAs in the past 24 months, d) ≥2 days of related Continuing Professional Development (CPD) in the past 12 months.
	Leader	a) ≥4 years experience, b) attendance of a 10-day course, c) ≥5 RSAs in the past 12 months, d) ≥2 days of related CPD in the past 12 months.
Australia	Members	Not specified.
	Leader	In addition: a) ≥5 years of experience, b) ≥5 audits, of which at least 3 at design stages, c) ≥one audit per year.
USA	Members	a) background in road safety, traffic operations and/or road design, b) ≥one member should be an independent local representative, c) additional requirements as per State DOT decision.
	Leader	In addition: a) thorough understanding of the RSA process, b) excellent communications and leadership skills, c) additional requirements as per State DOT decision.
Europe (DIR2008 /96/EC)	Members	a) relevant experience or training b) not involved (at the time of the audit) in the conception or operation of the audited project c) RSA training program
Germany	Members	a) relevant University Diploma, b) typically 3 - 5 years of relevant experience, c) participation in regular training seminars
Greece	Members	a) Relevant University Diploma (at least 5 years ago) b) enlisted in the registry of public works designers c) ≥5 years experience d) RSA training program
	Leader	a) Relevant University Diploma (at least 5 years ago) b) enlisted in the registry of public works designers c) ≥8 years of experience d) RSA training program e) ≥2 RSAs during the last 3 years, f) ≥one follow-up RSA training course
Qatar	Members	Certificate of competence only
	Leader	In addition: Significant experience in RSAs
Abu Dhabi	Members	a) ≥2 years of experience, b) attendance of a 10-day course, c) ≥5 RSAs in the past 12 months, d) ≥2 days of related CPD in the past 12 months, e) well-rounded knowledge of Highway Design.
	Leader	a) ≥5 years experience, b) attendance of a 10-day course, c) ≥5 RSAs in the past 12 months d) ≥2 days of related CPD in the past 12 months, e) well-rounded knowledge of Highway Design

In several countries (UK, Australia, Qatar, Abu Dhabi), observers participate formally in the audit team, as part of the training and accreditation process for candidate road safety auditors or in order to maintain the validity of the certificate of competency. The minimum requirements for audit team observers are presented in Table 5.

Table 5: Requirements for audit team observers.

UK	a) ≥1 years experience, b) attendance of a 10-day course,
Australia	Not specified.
Qatar	Not specified.
Abu Dhabi	a) ≥1 years experience, b) ≥2 days of related CPD in the past 12 months

As far as the selection process of an audit team for a specific project is concerned, the following approaches have been identified:

- Sometimes, road safety auditors are authority delegates. This approach is typically described in the US guidelines [4] and has been verified in the response to the questionnaire survey from Kentucky. Audits performed by authority delegates are also common in Germany, as indicated in the survey response. In these cases it is important to ensure the independency of the audit team from the project development / supervision team, particularly when these are within the same organisation.
- More commonly, road safety auditors are external road safety experts. This approach better ensures their independency from the Project Owner and the Overseeing Organisation. According to the responses in the questionnaire survey, in order to select an appropriate team, two options are being followed internationally:
  - auditors are **directly selected** by the responsible authority **from a list of certified auditors** that are typically qualified for this particular type of project. This option is more commonly followed in Belgium, Germany (when not using authority delegates), Greece, Italy, Portugal (mostly private concessionaires), Qatar and Slovenia.
  - **a request for tenders / bidding procedure** is initiated and offers are submitted by interested certified auditors. This option is followed in Austria, Portugal and Spain.

3.6 Steps of Road Safety Audit process

In the following paragraphs, a synthesis of international practices on each step of the RSA process is presented, based on both the survey results and the review of guidelines.

3.6.1 Preparing Background Information and Audit Brief

This step refers to the gathering of all required information for the audit, depending on the project type and the audit stage. This information, along with a clear statement of the expected outcome from the audit, constitute the Audit Brief. The Audit Brief is prepared by the Client or the Overseeing Organisation, in liaison with the Design Team.

3.6.2 Selecting the Road Safety Audit Team

The essential criteria for selecting the RSA Team are road safety engineering experience and independence from the project design and development. A team of at least two persons is preferable, with the exception of very small projects. Depending on the stage of the design, different skills may be required, e.g. an experienced road design professional in feasibility stage audits, someone with local knowledge of road user activities in preliminary design audits, etc.

3.6.3 Assessing the Audit Brief

This step, performed in parallel with the site visit(s), refers to the examination of the information provided within the Audit Brief, to scan for road safety deficiencies. An initial assessment is suggested before undertaking the site visit to locate potential safety problems that may be identified on site. A second review of information after the site visit, exploiting the insight gained from the visit, may reveal additional road safety issues for consideration.

Most RSA Guidelines (from Australia, UK, Germany, Greece, Qatar and USA) as well as the EU Directive, at a higher level, include RSA checklists (also mentioned as prompt lists). These checklists have been developed for

each stage of the audit and include a list of topics to be examined, in order to assist auditors in considering all relevant issues.

The use of crash data in RSAs largely depends on the type of project and stage of the audit. Based on the review of international RSA guidelines:

- The use of crash data is mandatory in the UK and Abu Dhabi in Post Opening RSAs (Monitoring in the UK) on 12 months and 36 months from opening. It is mandatory also in Germany, for phases of audit for which crash data are available.
- In guidelines of other countries and in other stages of audit in the UK and Abu Dhabi, the use of crash data is either encouraged or no relevant recommendation is provided.

3.6.4 Site Visit

A daytime site visit is required for all audit stages, to realise any problems relating to the present arrangements and, if appropriate, to visualise design proposals and their effects. For design stage audits, the focus should be on the adjacent land uses, the likely road user types, and especially the connections of the new project to the existing road network. A night time inspection is generally required for pre-opening and post-opening stage audits, as well as for RSIs.

3.6.5 Writing the Road Safety Audit Report

Based on the assessment of the Audit Brief information, the site visit(s) and any other input, the Audit Team compiles the RSA Report. The report includes a separate statement for each identified problem describing the location and nature of the problem and the type of crashes considered likely to occur because of the problem, along with proposed recommendations. The recommendations should indicate the nature or direction of a solution, rather than precise details, as the Client and the Design Team have the responsibility for determining the countermeasure details. The report essentially provides the formal documentation on which decisions about corrective actions will be based.

3.6.6 Responding to the Audit Report

Since the audit is a formal process, it is important that each safety concern and recommendation is formally responded to in writing. The procedure is described below, derived mainly from practices implemented in the UK and Australia, which are countries with great application of RSAs.

The Project Owner, upon reception of the Audit Report, requests a RSA Response Report from the Design Team. In this report, each finding and recommendation mentioned in the Audit Report is considered with the following outcomes:

- the finding and the recommendation made by the RSA Team is accepted, or
- the finding is accepted, but an alternative recommendation is suggested with appropriate reasoning, either fully resolving the road safety problem or partially, due to other constraints, or
- the finding is not accepted and therefore also the recommendation, giving appropriate reasoning for rejecting both.

The Response Report is forwarded to the Audit Team to provide feedback, in the form of comments. Taking into account both the Response Report and the Audit Team comments, where there are no disagreements between the RSA team and the Designer, the Project Owner instructs the Designer to implement the agreed suggestions in the project. In cases where the finding and/or recommendation is not accepted in the Response Report, or if it is accepted by the Design Team but the Project Owner does not agree with the RSA Response Report, the requirement for an Exception Report is initiated. This is also valid if the Project Owner considers any finding to be insignificant or outside the scope of the Audit Brief, or any recommendations to be not technically feasible or appropriate according to the project's constraints (environmental, economical, etc.).

The Exception Report is prepared by the Project Owner, giving reasons and proposing alternatives for submission to the Overseeing Organisation. The final decision rests with the Overseeing Organisation. If the Exception Report is approved, a record of all reports, feedback and approvals is kept in the project file. If it is not approved, the Project Owner will either implement the RSA recommendation(s) or amend the Exception Report to the satisfaction of the Overseeing Organisation.

3.6.7 Closing the Audit

Once the corrective actions have been finalised, the Design Team has to develop the required design changes to address the safety problems. Actions taken are fully recorded, in order to close out the RSA findings as well as to document what works were completed. Reasons for any variations from the proposed actions must also be set out in writing.

If significant changes have been decided, a further audit of the revised design may be appropriate, rather than waiting for the next design stage's audit, especially for the detailed design stage.

4. Discussion - Conclusions

Within the present paper, the international experience on the implementation of RSAs (or RSIs) has been reviewed, mostly focusing on countries that are systematically using this measure and have established clear and robust procedures. The review incorporates the findings of a questionnaire survey addressed to road safety experts from such countries, along with a comprehensive investigation of relevant RSA Guidelines and Manuals, leading to the identification of related best practices.

Regarding projects mandating RSA, emphasis should be placed on the design of major road infrastructure projects: motorways, major interurban roads and major urban arterials. In such roads, the early improvement in the safety of the design will not only affect a large number of road users, but also will prove more cost efficient since subsequent changes to the road project will require much more resources.

Furthermore, early auditing of a project can assist in the timely elimination of road safety deficiencies, leading to a minimisation of wasted design time at later stages. Especially the design stage after which expropriation limits are set (usually preliminary design) is critical for the RSA process.

As for the selection of the RSA Team, particular emphasis should be placed on the independence of the RSA Team from both the design team and the team responsible for the project development, with the aim to safeguard its integrity so that objective, impartial and credible judgement is provided. Audit team being independent of the design team can be quite easily managed and controlled; yet dependences between the audit team and the Client team should also be recognised and avoided, particularly if the auditors are authority delegates.

According to relevant international practice, the organisation commissioning, supervising and responding to the RSA can be either the respective roads authority, road operator or a dedicated road safety agency, with all approaches considered equally effective, provided that the independence of the audit team is not compromised.

In case the overseeing organisation is the respective road authority or road operator, best practice suggests that a specific person, with appropriate road safety training, skills and experience should be defined to handle the RSA process. In case the overseeing organisation is a road safety dedicated agency, the respective road authority or road operator should participate in the preparation of the audit brief and should be responsible for formally responding to the audit report, prior to final decisions from the Overseeing Organisation.

In order to exploit the full potential of RSAs in improving road safety, it is essential that roles and responsibilities are very clearly and unambiguously defined. It should be absolutely clear which organisation / person is responsible for providing the required information, performing the audit, responding to the audit report, making final decisions and implementing the decided changes. All reports, suggestions and related decisions should be formally documented in writing and maintained as information related to the project, in case liabilities are investigated in the future, as a result of a crash.

Regarding the RSA team size, it is preferable that it consists of at least two persons (leader and member). Only for very minor projects should it be considered to have a single member audit team.

Furthermore the most important requirement in any RSA team is road safety engineering knowledge and experience. A relevant university diploma is commonly required for audit team members, along with some (typically 3-5) years of experience in road design, road safety engineering and/ or crash analysis. Participation in road safety training courses, either dedicated to RSA or more general road safety engineering training, is also commonly required (with or without formal accreditation).

For audit team leaders, a more extensive and robust experience is generally required (indicated by more years of experience, typically 5-8), as well as participation in a specified minimum number of RSAs in recent years, in order to ensure a thorough understanding of the RSA process.

The inclusion of observers in the audit team assists in closing the training loop and properly disseminating and exploiting the knowledge gained in every audit. It also enables experienced auditors to keep their knowledge up-to-date. The number of observers in each team should not be high, and the observers should have a minimum level of road safety training, in order to ensure the smooth and unobstructed operation of the audit team.

The RSA is not a check of compliance with standards. Although design standards are an essential part of any design, they do not guarantee safety, as they could be outdated, not applicable to the specific project, or, more commonly, they are a minimum requirement and combining a series of minimum values in a design could result in an unsafe result. It is also noted that checklists are intended to be used as an assistance that all factors have been considered; they are not exhaustive and they do not cover every detail. Auditors should rely mainly on their individual judgement, based on their knowledge and experience.

As for the use of crash data, although where available and relevant, crash data may offer an additional insight to the reasons why crashes occur, care should be taken to ensure that the auditors do not treat their task as a crash analysis or investigation. Attention should be placed on the potential for future crashes along the examined road, and consideration of past crashes may focus attention away from other potential hazards.

Regarding the reporting on road safety findings, auditors should try to be as specific as possible when describing the identified safety deficiencies. The Design Team needs guidance about the nature and source of the identified problem, and the auditors should focus on describing the path that could lead to crashes. In addition, the auditors should pay attention not to frame findings in terms of a solution. A recommendation included in a RSA Report should indicate the direction in which a solution should be sought, rather than specifying the solution itself.

Concluding, the present paper presents a brief overview of RSA implementation practices and experience, based on a questionnaire survey and guidelines review in eleven countries and the EU. An obvious limitation is the extent of countries considered; nevertheless, the study effectively provides an insight of practices in the most advanced countries in RSA, as well as some Gulf countries, and is informative for road safety practitioners in countries now performing their first steps in auding road projects.

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