Scientific Professional and Technical Services Framework
Task Ref: 1-021

Task Title: Road Safety Audit - Maintain & Develop the Road Safety Audit Database

QUARTERLY REPORT
October 2016 to December 2016

To be read in conjunction with ‘QUARTERLY REPORTING AND FACTSHEETS, GUIDANCE NOTES’ published at the front of the July 2015 to September 2015 Quarterly Report (T-TEAR Task 479(4/45/12)ATK)
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Reviewer List

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<td>Nicholas Bentall</td>
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1. Introduction

1.1. Quarterly Reporting

This report comprises the quarterly qualitative review of Road Safety Audit (RSA) reports submitted to the Highways England Safer Roads - Design Team (SRDT) inbox at roadsafetyaudit@highwaysengland.co.uk between 1st October 2016 and 31st December 2016 (inclusive).

This review should be read in conjunction with the Quarterly Factsheet - July-October 2016 (Rev. 2) contained in Appendix A of this report; and with ‘Quarterly Reporting and Factsheets, Guidance Notes’ published at the front of the July 2015 to September 2015 Quarterly Report (T-TEAR Task: 479(4/45/12)ATK).

1.2. Scope

During this quarter, a total of 106 RSAs were submitted, of which 97 were carried out to HD19/15. From the HD19/15 reports, 12 sample reports were selected as suitable for review.

The list below details the numbers of each stage of RSA forming the study sample together with totals submitted for the quarter. All figures in the list relate to RSAs carried out HD19/15.

- Stage 1 RSAs: 2 reports of 4 submitted in quarter
- Stage 2 RSAs: 1 report of 2 submitted in quarter
- Combined Stage 1 & 2 RSAs: 2 reports of 18 submitted in quarter
- Stage 3 RSAs: 2 reports of 28 submitted in quarter
- Stage 4 RSAs (12 months): 2 reports of 19 submitted in quarter
- Stage 4 RSAs (36 months): 2 reports of 22 submitted in quarter
- Interim RSAs: 1 report of 2 submitted in quarter

The principal purpose of the quarterly review, together with explanations of the sampling process; measures of HD19/15 compliance and of the rationale behind the charting used in the corresponding quarterly factsheets are all described in the Guidance Notes in the pre-amble to the July to September 2015 report (T-TEAR Task: 479(4/45/12)ATK).

1.3. Potential Discrepancies

As the update of the Highways England’s RSA Database continues there may remain some unavoidable discrepancies between data for this quarter under review and those recorded previously. Accordingly, comparisons detailed in this quarterly report should be taken as indicative only.

In order to minimise the effect of discrepancies on data comparisons, the database has been retrospectively updated as far as is practicable. For this purpose, previously entered records were updated, by a previous project, as far back as 1st January 2014. It is only those backdated records that have been used where comparisons are made. It is expected that discrepancies between recent data and those entered previously, and any resulting errors, will lessen as the data record grows.

It should be noted that a number of draft RSA reports have been issued to the SRDT inbox. HD19/15 only requires the submission of final reports and so drafts submitted since 1st January 2014 have been removed from the database.
1.4. RSAs Submitted by Highways England Areas

Figure 1-1 below illustrates all RSAs submitted to the SRDT inbox since 1st January 2014 by each Highways England area.

**Figure 1-1** RSA submitted since 1st January 2014

![Chart showing RSA submissions by Highways England areas from January 2014 to December 2016.]

Figure 1-2 below illustrates all RSAs submitted to the SRDT inbox during this quarter, 1st October 2016 to 31st December 2016.

**Figure 1-2** RSA submitted this quarter (October to December 2016)

![Chart showing RSA submissions this quarter (October to December 2016).]

*It should be noted that, since 2009, Area 11 is no longer in use. It is retained in the database outputs, however, for the purpose of historical research.*
2. Qualitative Review of RSA Reports

This section comprises a qualitative review of RSAs sampled from those recorded in the main database. The sample selection is described under heading 1.2 above. The sampled reports have been used as the principal source for this review but occasionally, reference is made to the database as a whole for context.

As far as is practicable, this quarterly report seeks to feed discussion on:

- Common road safety problems raised by audit teams with a view to providing information which might be used by the SRDT and others in the industry to identify and inform potential changes to Requirements and Advice Documents (RADs). This comprises a high-level categorisation of the problems raised;
- Inconsistencies between problems and recommendations raised for similar designs elements; and
- Good practice and areas for potential improvement as evident from the sampled RSA reports.

2.1 Common Road Safety Problems

This section comments on common road safety problems identified by RSAs in the sample set (see details under heading 1.2).

For clarity, this section uses the following terms of reference:

- Problems – indexed text (i.e. ‘Problem A’) detailing road safety concerns in the standard RSA Problem/Recommendation format;
- Issues – individual elements of distinct road safety concern contained within a problem related to but different in nature to other Issues within that same problem; and
- Recommendations – remedial recommendations made by the RSA Team in relation to the problem (and related Issues) raised.

Where appearing in quoted text, the words “problem”, “issue” and “recommendation” may have been used differently.

The sampled reports detailed a total of 50 road safety problems covering 55 Issues. These include previously raised problems not resolved at the time of each of the sample RSAs.

This gives an average of 1.10 Issues per Problem reported which represents a slight decrease from 1.17 in the preceding quarterly report (July 2016 to September 2016) but no obvious significance can be attached to this decrease. The Issues per Problem ratio has remained around this magnitude in recent quarters.

For the purpose of this quarterly report, the high level categorisation of the problems and Issues identified within the sample group have been expressed as follows:

- Parking [the scheme encourages, or does not sufficiently dissuade, illegal / injudicious parking]
- Carriageway/lane/surface design [alignment / surfacing (not inc. HFS) / chamber covers (skid risk) / road or lane width / taper lengths (not inc. junctions) / tie-ins]
- Visibility to traffic signals restricted [by vegetation / street furniture / infrastructure / buildings]
- Traffic signals phasing, staging and timings [conflicts / gap opportunities / queuing / stacking / junction clearing]
- NMU guardrail[ing [absence / inappropriate / inadequate / excessive / clearance between]
• **NMU route/facility signs or signals** [poorly located / inconsistent / absent / obscured / incorrect / inadequate / confusing]

• **NMU crossing** [inconspicuous / inconsistent / absent / inadequate / layout / confusing / tactile paving]

• **NMU slip / trip / fall / obstruction hazard** [poor surface / unprotected drops / street furniture / upstands / service and drain covers]

• **NMU route** [inconsistent / inadequate / inappropriate / obstructed / narrow / gradient / confusing / tactile warning surfaces]

• **Unsafe gradients for NMUs** [physically or visual impairment / crossing places / routes / junctions]

• **Carriageway markings** [poorly located / inconspicuous / inconsistent / absent / incorrect / inadequate / confusing]

• **Signs** [poorly located or incorrectly mounted / inconsistent / absent / incorrect / inadequate / confusing]

• **Visibility to signs restricted** [by vegetation / street furniture / infrastructure / buildings]

• **Carriageway markings or studs** [poorly located / inconspicuous / inconsistent / absent / incorrect / inadequate / confusing]

• **Road restraint / passive safety** [safety fence / bridge parapet / kerbs absent / kerbs inadequate / working width compromised / risk of 'launch' / passive safety]

• **Skid resistant or high friction surfacing** [poorly located / inconsistent / absent / incorrect / inadequate / confusing]

• **Drainage and related ponding and icing** [NMU crossings / carriageways / footways / cycleways / other]

• **Visibility to / from and between vehicles / traffic restricted** [by vegetation / street furniture / infrastructure / buildings]

• **Street lighting / poor visibility in darkness** [inadequate / absence of lighting / confusing]

The 55 Issues covered in the sampled reports are categorised in Figure 2-1 overleaf which indicates the frequency of occurrence. The categories of these are shortened to fit the figure dimensions and the chart should be read in conjunction with the bullet list above for a fuller description.
As context for the road safety issues by number of occurrences given in Figure 2-1, a chart detailing the principal highway measures covered by the RSA reports by number of occurrences in the sample set is given in Figure 2-2.

It should be noted that the measures described in Figure 2-2 are the highway measures considered to represent the principal focus of the schemes as described in the sample group report titles or in scheme descriptions therein. Some schemes may have involved more than one principal measure and an attempt has been made to represent that. However, the list is not intended to detail every single measure. For instance, the principal measure categorisation ‘Signing and/or Markings’ in Figure 2-2, means that the associated scheme was a signing scheme in the main and does not include other schemes, such as ‘Roundabout improvement’, which may have included signing measures.
2.2 Inconsistencies

One of the project aims is to identify any inconsistencies in the way that similar RSA problems are dealt with across different RSA reports.

In the sample reports examined, there is very little commonality between specific Issues and so recommendations are not generally comparable between reports this quarter.

There are a number of differences and inconsistencies regarding the various styles of describing problems and related recommendations evident in the sampled reports. These are discussed in general under heading 2.3, ‘Good Practice and Area’s for Improvement’ below.

2.3 Good Practice and Areas for Improvement

This section identifies areas of good practice along with other areas of potential improvement as evident from the RSAs sampled for the purpose of this quarterly report.

Text and other materials quoted or copied from real RSA reports have been anonymised. Accordingly, all road, scheme and location names and descriptions, together with the names of persons and organisations involved, should be taken as fictional and not associated with any actual scheme, location, organisation or person.

2.3.1 Previously Raised Areas for Improvement still Prevalent

In addition to the identification of areas of good practice, the quarterly reports identify areas where the application of the RSA process and reporting might benefit from some improvement. Some key areas, as identified by the previous quarterly reports, remain prevalent in the current sample group and so are summarised here and cross-referenced (in brackets) to the report in which the issue was first identified:

- **Combined Stage 1 & 2 RSAs**
  A total of 25 Combined Stage 1 & 2 RSAs (including those carried out to HD19/03) were submitted to the SRDT inbox this October-December 2016 quarter compared to only four Stage 1 and two Stage 2 RSAs submitted. One of the sampled Combined Stage 1 & 2 RSA reports was on a scheme comprising multiple improvements on a section of dual carriageway including junction improvements, signing, sightline and traffic calming measures. This scheme would, almost certainly, have warranted separate Stage 1 and Stage 2 RSAs. The high proportion of Combined Stage 1 & 2 reports delivered remains a concern and suggests that decisions to combine these RSA stages might be based on commercial and programming considerations contrary to HD19/15 instruction.

- **Pre-opening Collision Data**
  All four of the Stage 4 RSA reports sampled this quarter (all from the same provider) include consideration of collisions during construction periods. This may skew the collision analysis due to potential changes in traffic speeds, flows and queues; temporary traffic management and various methods of control for examples.

- **Information Not Provided**
  A significant number of RSA reports still refer to information not provided as having not been considered or as the very basis of problems themselves. If the RSA Team have cause to think that missing information should have been provided, they are required to ask for that information.

  One report submitted this quarter makes a comment in the introduction as follows:

  "It was considered that the information provided was sufficient for the purpose of carrying out this Road Safety Audit."
However, in a problem about whether or not certain trees were to be removed, the report asserts:

“… the Audit Team cannot be sure, from the provided information, whether these trees are to be removed or not.”

Another problem relating to the potential removal of a barrier in the same report states:

“To enable these works the barriers will need to be removed, whether temporarily or permanently. The Audit Team is therefore unsure what the full proposals for either the markings or barrier in the completed scheme.”

These clearly represent contradictions of the statement that the information provided was sufficient. The first of these contradictions could be symptomatic of a Combined Stage 1&2 RSA being commissioned before completion of the detailed design but in either case the RSA Team should have detailed whether or not they had requested additional information.

- **Draft Reports Issued to SRDT Inbox**
  A number of reports submitted to the SRDT Inbox are demarcated as ‘Draft’. HD19/15 does not require drafts to be submitted in this way and only final reports should be sent to the SRDT email address. There is concern that this is indicative of RSA reports not being finalised. RSA Team Leaders will usually wait for confirmation from the Project Sponsor that the draft issued meets the scope and Terms of Reference but sometimes that instruction is not forthcoming. It is common for draft RSA reports to be kept on file and draft versions are often issued to subsequent RSA Teams as part of the brief for the next stage of audit (even if a final RSA was issued). Project Sponsors should instruct issue of the final report when they are satisfied that the draft meets the scope and Terms of Reference and when they have discussed potential changes to recommendations with the RSA Team (as described by HD19/15). When issuing the draft, the RSA Team Leader should perhaps give a reasonable deadline for comments (‘reasonable’ would vary from scheme to scheme) and should chase instruction or issue the report as final when that deadline is reached. See comment under heading 1.3, paragraph 3.

- **Site Visit Conditions**
  It appears to be increasingly common for RSA Teams to use ambiguous descriptions regarding site visit conditions, particularly when describing traffic flows and congestion. For example, a number of the sampled reports cite:

  “Traffic conditions were considered free flowing”

  Free-flowing traffic could comprise either high or low volumes but the quoted phrase does not give any indication to volume.

- **Stage 4 RSA Site Visit Deliberations**
  It seems common for Stage 4 RSA Teams to visit sites regardless of whether there has been an increase in collisions or a change in trends since scheme opening.

- **Inadequate collision analysis**
  There is continued concern that the level of collision analysis carried out for Stage 4 RSAs (particularly the 36 month reports) is inadequate or not detailed enough. One of the sampled Stage 4 RSA reports this October-December 2016 quarter cites:

  “Detailed analysis has not been provided individually for these thirteen sites because none of the collisions within the 36 month period after completion of the works is relevant to the scheme.”

  This implies that the RSA Team decided that scheme-effect on the collision population is negligible before they have carried out any significant analysis.

- **Police not invited to Stage 3 RSA site visit**
  It is common for Stage 3 RSA reports to make no reference to the police being invited to
the site visit. Whilst it is recognised that some police forces now decline RSA site visit invitations, inviting them is nevertheless a requirement of HD19/15.

- **Post-RSA process not adequately implemented**
  Some Stage 3 RSA reports contain a high number of problems carried forward to, or created by, construction. In a number of cases, the number of RSA problems increase between Stage 2 and Stage 3. This suggests that something has gone seriously wrong with the RSA process either at Stage 3 or at a previous stage. Project Sponsors should actively engage in the RSA and post-RSA processes to ensure that recommendations are robustly and effectively implemented or that detailed Exception Reports are produced as appropriate. One of the Stage 3 RSA reports submitted this October-December 2016 quarter details 24 Problems (including 11 problems unresolved from the preceding Stage 2 RSA).

  Furthermore, one of the recommendations in the aforementioned Stage 3 RSA was to increase a merge length to protect cyclists (a previously existing 1m hard-strip had been removed). This had been raised at Stage 2 but the absence of an Exception resulted in the necessary repetition of the recommendation which would represent a major amendment to the built scheme and is unlikely to be feasible.

- **Recommended Removal of Provision**
  One RSA submitted this quarter included a problem regarding the provision of SLOW markings. The report asserted that the marking might cause drivers to reduce speed unnecessarily but it seems unlikely that the markings were proposed for no reason. The description given was unclear about why the SLOW markings might have been unnecessary or why the RSA Team thought they might cause drivers to suddenly and significantly decrease their speed. The recommendation to remove such features in the absence of a clear problem description or rationale might lead to removal without proper consideration of the likely risks.

### 2.3.2 Process Timescales

A number of reports submitted this October-December 2016 were signed up to two full years after the site visit. This suggests that the post-RSA process has taken an excessively long time to be implemented. The signing of the RSA report is not dependent on the issue of an RSA Response Report or Exceptions. Accordingly, following the issue of the draft report, RSA Teams should be instructed to sign the report as final as soon as the Project Sponsor is happy that the RSA has been carried out in accordance with the scope and terms of reference. The Project Sponsor might, of course, request the RSA Team to reconsider certain recommendations but that should not significantly delay finalisation of the RSA.

### 2.3.3 Standard Cited

A number of the reports cited in 2.3.2 above stated that they were carried out to HD19/15 but in some cases, the site visits pre-date the issue of that standard. If the brief was issued while HD19/03 was still in force, then it would have been permissible for the RSA to be carried it to that standard. However, there is concern that, due to the considerable delay in receipt of approval, the RSA team might have simply changed the reference to the standard without actually having followed the new process.

### 2.3.4 Problems Not Included in RSA Report

Two of the sampled RSAs submitted (by the same supplier) include covering letters bound into the report which detail several issues they describe as follows:

> “may not [be] considered to be a direct compromise to road safety but concern the general appearance, maintenance and quality of the highway provision within the area subject to the above audit. Alternatively, it may be a safety problem that falls outside of the terms of reference for the audit.”
A number of the issues detailed, however, would appear to have been appropriate for inclusion in the body of the RSA reports themselves. Examples include a sign obscured by an established tree; low-mounted signs and signal 'see-through' problems. RSA Teams should take to include such problems in the body of the report so that the appropriate considerations can be made in accordance with the standard.

2.3.5 Unclear Problem Descriptions

One Problem in a Stage 3 RSA, in its entirety, states:

"When crossing the [A1234] from the west to east the red man was not lit, this could lead to cyclist/pedestrian and vehicular conflict."

It is entirely unclear what the RSA Team means by this and what collision type they think might result.

Furthermore, the recommendation in its entirety states:

"The red man of the crossing should be visible at all times."

From these comments, it is not clear whether the issue is a matter of visibility of the signal or that the signal is not functioning. This report is one of those which listed a number of issues they felt were out of scope (see 2.3.4 above). If the issue is about the signal not functioning, perhaps this issue should have been included in that covering letter. If it’s a matter of visibility, then a clearly worded description of the circumstances and likely conflicts should have been given together with an unambiguous recommendation.

A number of the other sampled reports have poorly worded problems and recommendations and appear not to have been through a very rigorous checking or review process by RSA Teams. One states:

"The direction sign at the junction has been constructed such that it lies within the visibility of right turning vehicles, especially for HGVs. This will increase the likelihood of right turning vehicles entering into the path of southbound vehicles, especially at any time where the signals have failed or during a power cut."

The wording of this problem is nonsensical and the recommendation has a serious typographical error which apparently was not picked up by any of the three-person RSA Team. It states:

"Either relocate the sign out of the central island or increase the mounting height so all motorist have obscured [sic] views beneath it."

2.3.6 Delegated Responsibility

It is clear from a number of the sampled RSA reports that the RSA Brief and/or RSA Team are approved by persons other than the Project Sponsor. HD19/15 does not require the RSA Team to provide evidence of delegated responsibility so it is hoped that Project Sponsors ensure that persons to whom responsibilities are delegated are duly qualified as described by paragraph 2.7 of HD19/15. RSA Teams should ensure that Project Sponsors have confirmed delegations in writing as required by paragraph 2.8 of HD19/15.

2.3.7 Clear Problem Location Plans

Problem location plans in RSA reports are often unclear and hard to decipher. This is often because a low resolution copy of a design drawing has been used and, with location labels, the resulting plan can be very cluttered. One of the sampled reports submitted this quarter contained a particularly clear plan with no design labels (see Figure 2-3). As a good practice, RSA Teams should consider requesting an unlabelled copy of the scheme layout for use as the problem location plan. For the purpose of this quarterly report, major road names have been removed from Figure 2-3 to maintain scheme anonymity. However, such plans should include road names and key locational features when used in RSA reports.
2.3.8 General Design Advice

One of the sampled reports detailed a problem as follows:

“It is proposed to provide pedestrian guard rail around the radius from [A1234] into [Side Road]. Inappropriate guard rail provision may restrict visibility for drivers emerging from [Side Road] which could then result in conflict and collisions with [A1234] traffic.”

This wording does not specifically explain why the RSA Team felt that the guardrailing proposals might restrict visibility (e.g. location, alignment or product type). It is not for the RSA Team to offer general design advice but only to point out elements of proposed design which might be improved to address clearly stated concerns.

2.3.9 Scheme Descriptions and RSA Scope

One report introduction describes a number of measures at various locations but contains a comment saying “This Stage 4 (36) Road Safety Audit only considers the [A1234 Ambridge Square] location, as this was the only site at which works were carried out.”

The inclusion of this statement makes it appear as though the RSA Team might have made this decision themselves and it would have been better had they explained whether or not this was an instruction within the RSA Brief which should dictate the scope and geography of the RSA.
3. Signs and Markings Issues

At the request of the Project Sponsor for this task, this quarterly report contains a more detailed review of signing and marking issues raised in all RSA reports submitted to Highways England.

This quarter, reports submitted to the database included a total of **72 Problems or Recommendations** detailing or including a total of **96 Issues** related to signs or markings.

In this summary of signing and marking issues raised, it has not been practicable to give consideration to the merit or validity of the issues described.

In summary, the most prevalent issue type (27 occurrences in total) relates to signs of various types being obscured by other signs, signal heads, other street furniture/infrastructure or vegetation.

The most prevalent single issue (21 occurrences) relates to signs or markings (particularly for NMU guidance) being absent from the design or the built scheme where the RSA Team felt they would be beneficial.

The sign or marking types (where specified) that feature most under various issues are direction signs (15), lane destination signs (10) and lane destination markings (10).

Figure 3-1 overleaf details the sign types and issues in matrix form.
Figure 3-1  Signing and Lining Issues recorded this Quarter

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<td>SLOW markings (carriageway)</td>
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</table>
Appendix A

Quarterly Factsheet
1st October 2016 to 31st December 2016
Basic Information

<table>
<thead>
<tr>
<th></th>
<th>This Quarter</th>
<th>Database Since Jan 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of RSAs submitted</td>
<td>106</td>
<td>1313</td>
</tr>
<tr>
<td>RSA Team Leader specifically identified</td>
<td>100%</td>
<td>93%</td>
</tr>
<tr>
<td>Project Sponsor specifically identified</td>
<td>91%</td>
<td>91%</td>
</tr>
<tr>
<td>Average number of problems recorded</td>
<td>1.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Response Report issued</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Exception Report issued</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

RSAs By Highways England Area - This Quarter

RSAs By Scale of Scheme - This Quarter

RSAs By Scheme Type - This Quarter

Scheme key:
- A: All Lanes Running / Smart Motorway
- B: Bridge
- C: Bus Lane / Guided Bus
- D: Conversion from Single to Dual Carriageway
- E: Drainage
- F: Enforcement Infrastructure / Cameras
- G: Junction Improvement
- H: Maintenance Infrastructure / Access / Safety
- I: Traffic Signals (New)
- J: NMU Crossing
- K: NMU Path / Way / Route
- L: Public Realm / Urban Regeneration
- M: Public Transport Interchange / Hub
- N: Road / Access Closure or Feature / Facility Removal
- O: Shared-Use (Walls & Traffic)
- P: Shared-Use (Walls Only)
- Q: Signs / Markings
- R: Temporary Traffic Management
- S: Train or LRT Route / Facility
- T: Tunnel
- U: Widening

See scheme key
RSAs by Compliances - This Quarter - Refers to all RSA Stages unless indicated (see key)

- Inclusion of Certificate of Competency details is not mandatory
- Example
  - The outer ring shows the whole database since January 2014
  - The inner ring shows this quarter
- Charts marked by this symbol exclude data for Stage 4 RSAs as those compliances are not directly comparable

1. Scheme description
2. Details of RSA Brief and CV approvals
3. Identified RSA Team membership
4. Required details of site visit in full
5. Specific road safety problems identified
6. Recommendations for actions
7. Marked up location map
8. RSA Team statement
9. List of documents and drawings reviewed
10. Items such as correspondence are NOT INCLUDED
11. Unrelated technical matters are NOT INCLUDED
12. Certificate of Competency details stated

- Inclusion of Certificate of Competency details is not mandatory