

**Framework for Transport Related Technical and
Engineering Advice and Research Lot 2
Task Ref: 479(4/45/12)ATK**

**Task Title: Maintain and Update the Road Safety Audit
Database**

**QUARTERLY REPORT
January 2016 to March 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*



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Author	Neil Hutchings
Owner	Nicholas Bentall
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Nicholas Bentall	Reviewer

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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 January 2016 and 31st March 2016**.

This review should be read in conjunction with the **Quarterly Factsheet - January-March 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.

1.2. Scope

During this quarter, a total of 148 RSAs were submitted, of which 144 were carried out to HD 19/15. From the HD 19/15 reports, 14 sample reports were selected 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 HD 19/15.

- Stage 1 RSAs 2 reports of 6 submitted in quarter
- Stage 2 RSAs 2 reports of 4 submitted in quarter
- Combined Stage 1 & 2 RSAs 2 reports of 31 submitted in quarter
- Interim RSAs 2 reports of 2 submitted in quarter
- Stage 3 RSAs 2 reports of 47 submitted in quarter
- Stage 4 RSAs (12 months) 2 reports of 32 submitted in quarter
- Stage 4 RSAs (36 months) 2 reports of 22 submitted in quarter

The principal purpose of the quarterly review, together with explanations of the sampling process; measures of HD 19/15 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.

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, the project has updated previously entered records as far back as 1st January 2014 and it is 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.

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

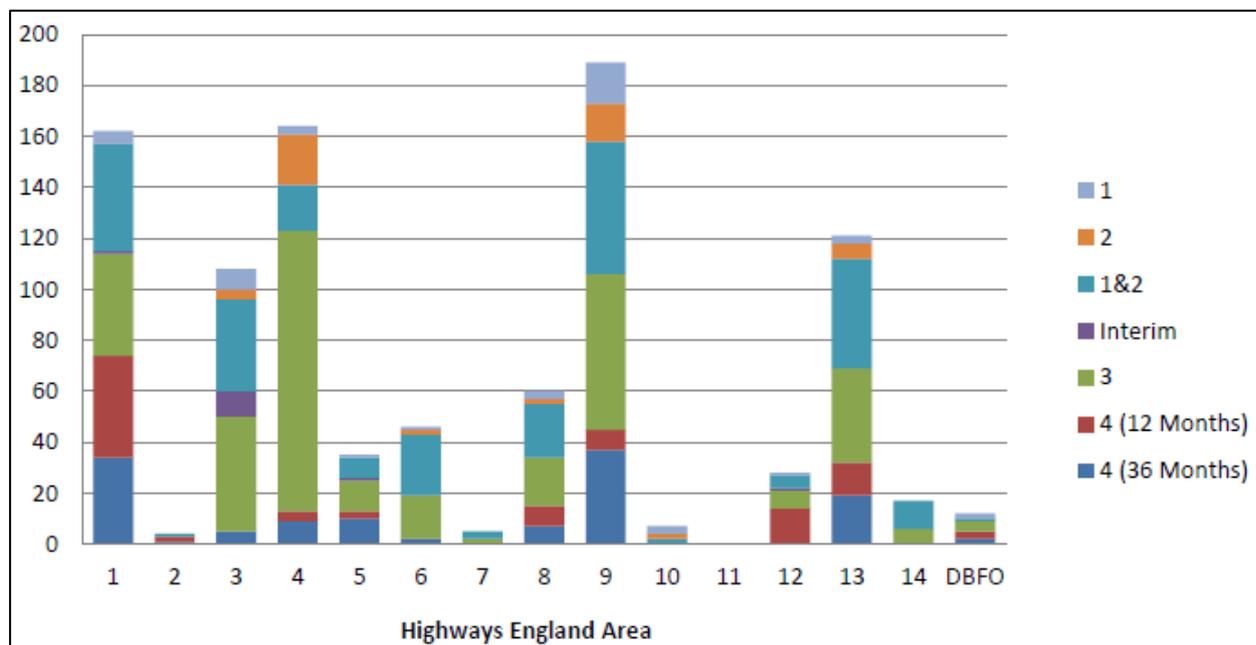
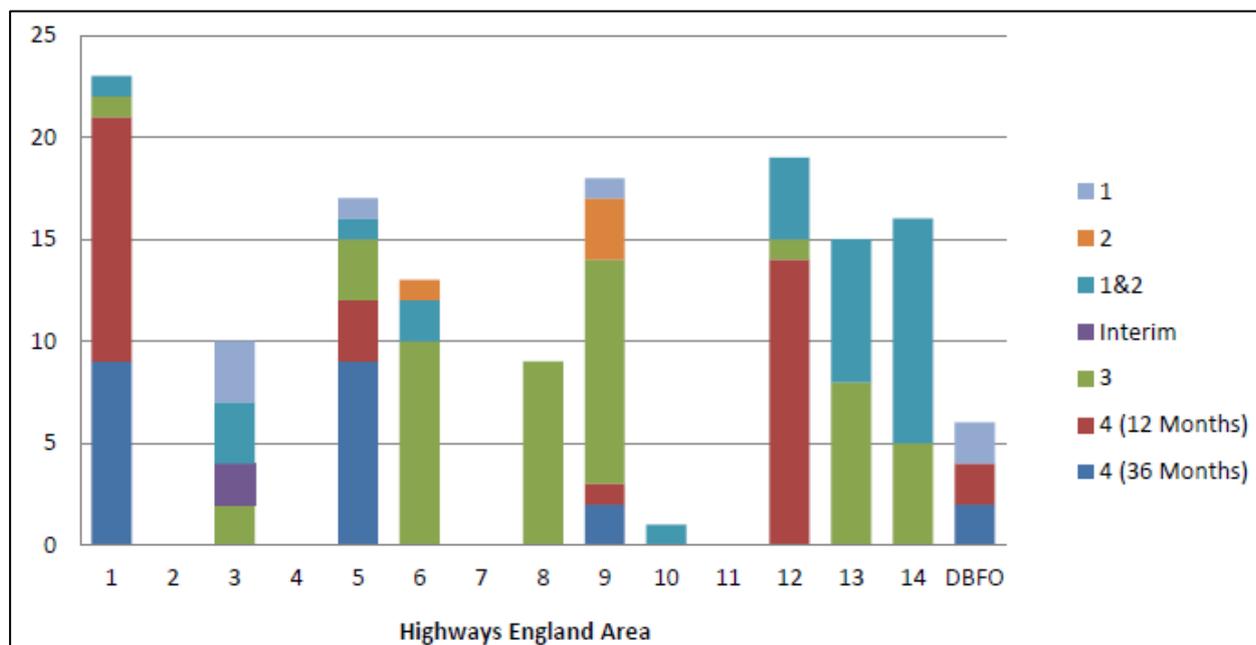


Figure 1-2 below illustrates all RSAs submitted to the SRDT inbox during this quarter, 1st January 2016 to 31st March 2016.

Figure 1-2 RSA submitted this quarter (January to March 2016)



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 107 road safety problems covering 142 Issues. These include previously raised problems not resolved at the time of each of the sample RSAs.

This gives an average of 1.33 Issues per Problem reported which represents an increase from 1.05 and 1.06 in the preceding quarterly reports (‘July 2015 to September 2015’ and ‘October 2015 to December 2015’ respectively). It is not clear whether this increase in Issues per Problem is significant or is just the result of random variation.

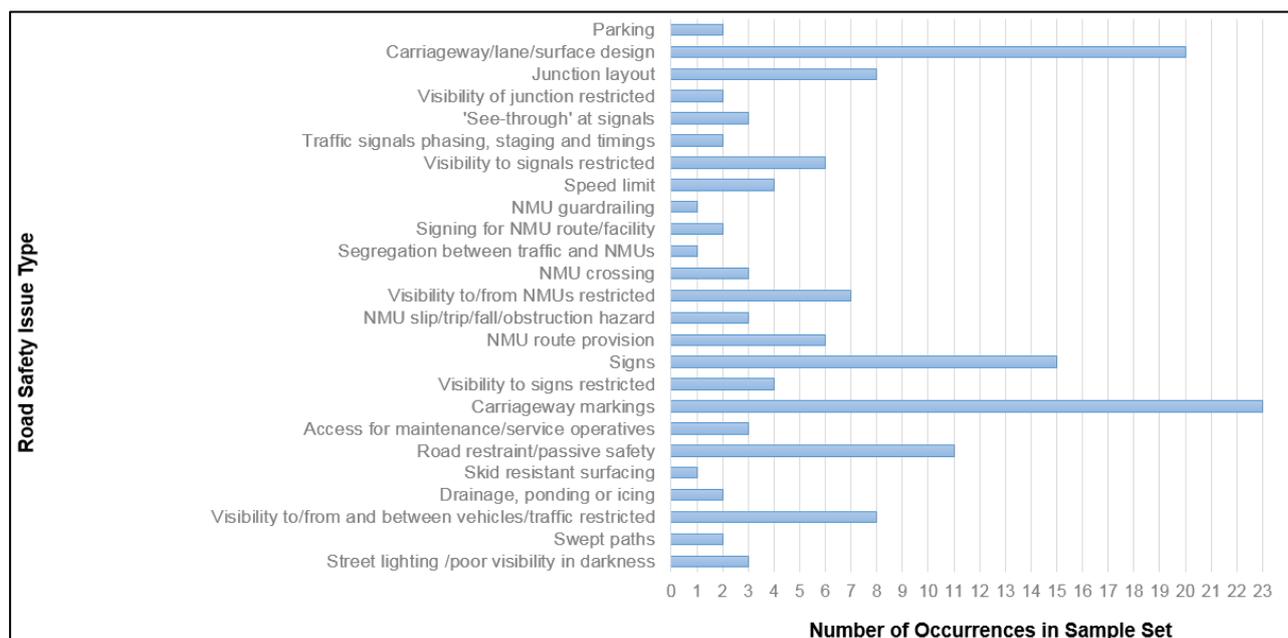
For the purpose of this quarterly report, the high level categorisation of the problems and Issues identified within the sample group have been expressed as follows:

- **Parking** [the scheme encourages, or does not sufficiently discourage, illegal / injudicious parking]
- **Carriageway/lane/surface design** [alignment / surfacing (not including HFS) / road width / tie-ins / taper lengths / radii]
- **Junction layout** [design / principle / tie-ins / approach speeds / turning speeds / queuing / stacking / restricted movements]
- **Visibility of junction restricted** [by vegetation / street furniture / infrastructure / buildings]

- **'See-through' at signals** [contradictory signals visible / green signal seen by wrong traffic streams]
- **Traffic signals phasing, staging and timings** [conflicts / gap opportunities / queuing / stacking / junction clearing]
- **Visibility to traffic signals restricted** [by vegetation / street furniture / infrastructure / buildings]
- **Speed limit** [too high / too low / extents / inappropriate for environment]
- **NMU guardrailing** [absence / inappropriate / inadequate / clearance between]
- **NMU route/facility signs** [poorly located / inconsistent / absent / obscured / incorrect / inadequate / confusing]
- **Segregation between traffic and NMUs** [inconsistent / absent / inadequate]
- **NMU crossing** [inconspicuous / inconsistent / absent / inadequate / confusing / tactile paving]
- **Visibility to / from and between NMUs restricted** [by vegetation / street furniture / infrastructure / buildings]
- **NMU slip / trip / fall / obstruction hazard** [poor surface / unprotected drops / street furniture / upstands / service and drain covers]
- **NMU route** [inconsistent / inadequate / inappropriate / narrow / confusing / tactile warning surfaces]
- **Signs** [poorly located / inconsistent / absent / incorrect / inadequate / confusing]
- **Visibility to signs restricted** [by vegetation / street furniture / infrastructure / buildings]
- **Carriageway markings** [poorly located / inconspicuous / inconsistent / absent / incorrect / inadequate / confusing]
- **Access for maintenance/service operatives** [poorly located / inconspicuous / absent / unsafe / inadequate / confusing]
- **Road restraint / passive safety / kerbs** [absent / inadequate / working width compromised / risk of 'launch']
- **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]
- **Swept paths** [overrunning footways or cycleways / conflicts between vehicles / collision with infrastructure or furniture]
- **Street lighting / poor visibility in darkness** [inadequate / absence of lighting / confusing]

The 142 Issues covered in the sampled reports are categorised in Figure 2-1 below 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.

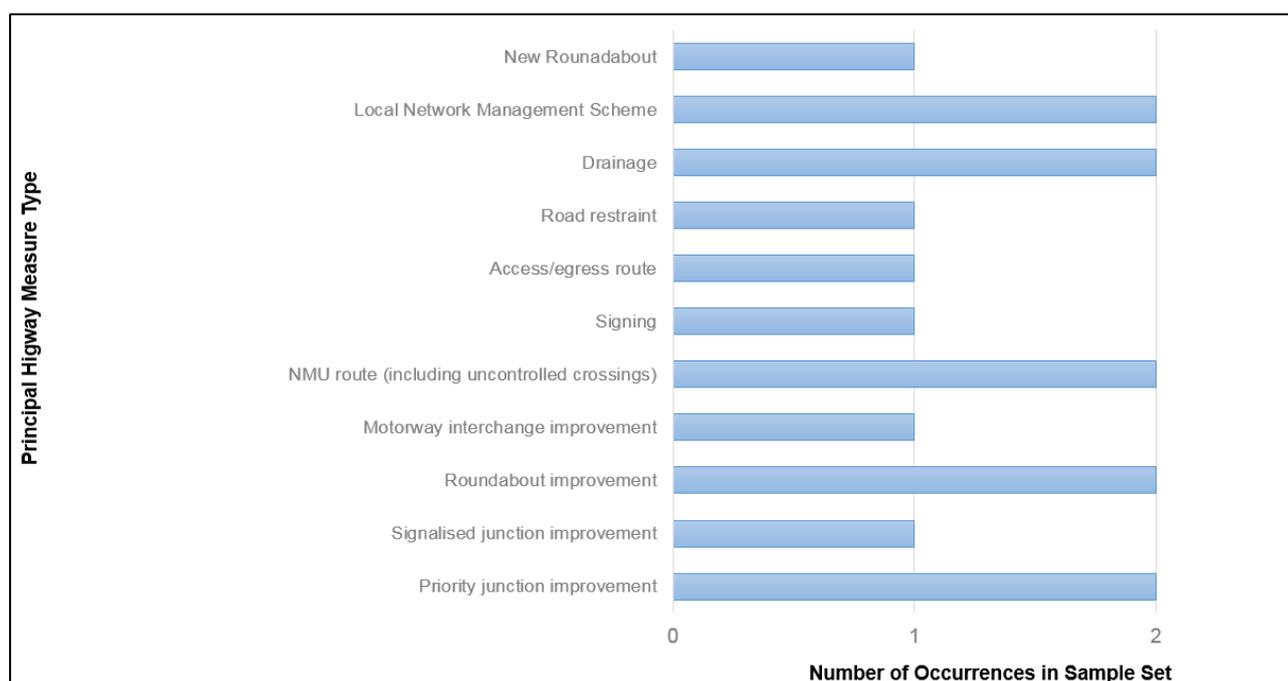
Figure 2-1 Road safety issues by number of occurrences



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 considered to be the highway measures representing 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' in Figure 2-2, means that the associated scheme was principally a signing scheme and does not include other schemes, such as 'Roundabout improvement', which may have included signing measures.

Figure 2-2 Principal highway measures by number of occurrences



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 further detail under subsequent headings in this quarterly report

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 (July to September 2015 and October to December 2015), 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 (July-September 2015, Heading 2.3.3)**

A total of 31 Combined Stage 1 & 2 RSA were submitted to the SRDT inbox this quarter compared to only six Stage 1 and four Stage 2 RSAs submitted. The two Combined Stage 1 & 2 RSAs in the sample group of reports did appear to be on schemes of a nature that would be appropriate for a combined report. However, the apparently 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 HD 19/15 instruction.

- **Non-problem 'Comments' (July-September 2015, Heading 2.3.11)**

The July-September 2015 review observed that one of the sampled reports include a 'Comment' at the end of the 'Problems' section. The comment pertained to difficulties faced by drivers on entry to a roundabout and a related collision problem but included no recommendation.

In this January-March 2016 quarter, reports from the same supplier were included in the review sample. One of these (a Stage 1 RSA) included three such 'Comments', indexed at the end of the Problem and Recommendation list. The report contains a statement:

"Problems' are reported in the first part of the following section and 'Comments' on matters of lesser importance are dealt with after that."

One of the 'Comments' criticises the drawing title blocks and scaling information and one remarked on the absence of a lighting design. Of most concern however is the last comment which states:

"Addressing all of the 'Problems' alerted in this audit will require quite comprehensive re-design of the signalised junction scheme. Whilst accommodating all of the audit recommendations would produce a signalised junction scheme with better safety parameters than the 'base' proposal, the Auditors would feel that even such modified

scheme would be out-of-keeping with the area and potentially fall short of the safety performance that could be achieved with a different style of junction.”

The inclusion of such comments is considered to be outside the scope and terms of reference of an RSA and, in the case of the final comment, challenges the strategic design fundamentals in conflict with paragraph 2.21 of HD 19/15.

- **Pre-opening Collision Data (October-December 2015, Heading 2.3.3.1)**

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.

- **Stage 4 RSA Site Visits (October-December 2015, Heading 2.3.3.3)**

In Stage 4 RSA reports sampled, it appears common that the decision about whether or not to carry out a site visit is being based largely on whether or not post-construction collisions appear to be attributable to the scheme. The criteria set out in HD19/15 for determining the need for a site visit are higher than expected numbers of collisions; an increase in collision rate or severity; or unexpected common trends in collision characteristics. However, it is not generally evident in the sampled reports that comparisons are being made with control data or collision expectation norms. It is recommended that Stage 4 RSA reports should very clearly detail the rationale behind any decision not to visit the site and that this rationale should be based wholly on the terms of HD 19/15 paragraph 2.50.

A number of specific examples (anonymised) are given in further detail under subsequent headings in this quarterly report.

- **Information Not Provided (October-December 2015, Heading 2.3.6)**

It remains common for RSA reports to refer to information not provided as having not been considered or as the very basis of problems themselves. In one of the reports sampled this January to March 2016 quarter, one problem relates to post, foundation and mounting height detail not being provided and expresses concern about the passive safety of a sign and potential obstruction to visibility to/from pedestrians. The recommendation is stated as *“Provide further details to ensure that the sign is erected on a suitably passively safe post, at an appropriate mounting height”*. It would have more productive had the RSA Team Leader requested the information about post dimensions/type and sign mounting height. If the information is not forthcoming but the RSA Team have cause to think that the proposed sign might be problematic, the reasoning should be detailed and the recommendation should focussed on resolving the identified issue and not just providing the information.

- **Post-RSA Process (October-December 2015, Heading 2.3.7)**

A number of RSA reports submitted during this January-March 2016 quarter HD 19/15 continue to detail previously raised problems along with designer’s responses, Highways England (or Highways Agency) responses

It is recognised that this practice is becoming more common but careful consideration needs to be given to the appropriateness of this approach. There is concern is that, by repeating any unresolved (and un-expected) problem along with an RSA Team response to the designer’s response (or similar) is opening a dialogue which falls outside the terms of reference of HD 19/15. This can lead to Project Sponsors expecting that designers and RSA Teams will debate the issues until 'closed out', thereby minimising the Project Sponsor's) involvement.

It is also recognised that the rationale behind this approach is to preserve and document an 'Audit Trail'. This might be attractive to Project Sponsors and Overseeing Organisations but it implies a policing or adjudication role for the RSA Team and so might undermine the post-RSA process now detailed in HD 19/15.

A number of specific examples (anonymised) are given in further detail under subsequent headings in this quarterly report.

2.3.2 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.

2.3.3 Change in Collision Rate/Severity Not Reported

One of the sampled Stage 4 RSAs (12 month monitoring report) details five slight injury collisions in three years before the scheme became operational. In the 12 months after opening, a total of four collisions were recorded, three of which involved serious injury. The site was not visited. It is acknowledged that it is often not possible to form firm conclusions after only 12 months but it seems apparent in this case that the significant increase in collision rate and severity index would have warranted a site visit.

Furthermore, the predominant pattern in the pre-scheme collisions was nose-to-tail collisions involving slowing or queuing traffic. The post-scheme collisions show an apparently significant change in this pattern with all four collisions involving vehicles crossing the centre line and colliding with on-coming vehicles.

The level of analysis carried out does not appear to have been commensurate with what looks like a significant and adverse change in collision risk at the site. It is recognised that the apparent increase in collision rate and severity might not necessarily be related to the scheme changes but it is surprising that these increases were not acknowledged by the report or reflected in its conclusions.

2.3.4 Stage 4 RSAs (36 months)

The illustrative 36 month monitoring report given in Annex H of HD 19/15 details a much more thorough analysis of collision and flow data. It is a concern, therefore, that none of the Stage 4 (36 month) RSAs reviewed this January-March 2016 quarter follow the illustrative report. Instead, they are presented identically to the 12 month monitoring reports submitted by the same supplier.

It is recommended that the Stage 4 RSA analysis methods and outputs illustrated in Annex G and Annex H should be taken as best practice and emulated where practicable. The 36 month reports should be demonstrably more detailed than the preceding 12 month reports.

2.3.5 Process Advice

There appears to be an increasing tendency for RSA Teams to include HD 19/15 process advice in RSA reports. This has possibly arisen as a result of repeated poor practice on the part of design teams and Project Sponsors in terms of the creation and issue of RSA Briefs and the execution of the post-RSA processes.

It should be noted, however, that such advice lies outside the scope of RSAs and should not be included in the RSA report. Correspondingly, it would be considered good practice for the industry to seek opportunities to educate Project Sponsors, designers, other project managers and stakeholders with regards to their roles and, importantly, their responsibilities with regard to the initiation and management of the RSA processes.

2.3.6 Problem Descriptions, Sense Checking

During the report drafting process, it is recognised that one team member will usually write the RSA report following a desk-top study, site visit and RSA Team discussion about the inclusion or exclusion of potential issues. It then seems sensible that the other RSA Team member(s) should carry out a thorough check of the draft RSA report to ensure that the problems are clearly and accurately described and that nothing has been missed.

From typographical errors and unclear wording in a number of the submitted reports, it is not clear that this process is being put rigorously into practice. Some examples of poorly worded Problems or Recommendations (anonymised where appropriate) follow:

- *“The proposed segregated shared use facility appears to show cyclists on the side of the facility closes to the lay-by carriageway. This could result cyclists and people exiting vehicles.”*
- *“The **indivisibility** between signal heads could result in side swipe or rear end shunt type incidents”*

2.3.7 Excessive Number of Problems at Construction Stage

One of the RSA reports sampled described itself as an Interim Stage 3 RSA. Notwithstanding comments made in previous reviews about the nomenclature of Interim RSAs, this report detailed 27 problems which seems to be a higher number of problems than would be expected a construction-period Interim RSA. This is not to suggest that the latest RSA Team have been in any way over-zealous (most of the problems seem well-reasoned) but may suggest that the RSA process has broken down somewhere. A number of problems raised previously in the RSA process, might have been closed out by the issue of exceptions but, as the RSA Brief list does not detail any exceptions, it suggests maybe that the RSA Team should have asked for them.

Alternatively, the large number of problems raised might also be a symptom of insufficient detail provided for the previous Stage 2 RSA. The report details no Stage 1 RSA and it is possible that the scheme was accelerated straight to Stage 2 with an insufficiently detailed design.

It is recommended that when an RSA carried out during construction or post-construction raises a high number of problems, Project Sponsors should examine the RSA trail to date to ensure that this is not a symptom of poor application of the RSA process.

2.3.8 Changes Following Issue of Draft

One problem in the sampled reports is cross-referenced to the report introduction which goes into fine detail of the submission of the draft and subsequent issue of the final. It details an alteration to the original problem’s recommendation but seems to retain the original recommendation in the main body of the report. This means that the final, agreed recommendation is only stated in the introduction of the report and separate to the actual problem text.

This approach is highly likely to cause confusion about the currency of the problem and its corresponding recommendation.

In such cases where a problem and/or recommendation has been discussed and, maybe, amended during the drafting process, it is acknowledged that the RSA Team might want to record discussions and outcomes in the report introduction. Alternatively, the problem and recommendation text might describe how any changes came about. In either case, it is important that the most current problem/recommendation is clearly described in the main Problem/Recommendation section.

2.3.9 Multiple Locations within One Problem

On occasion, an RSA Problem will apply to multiple locations. Multiple locations for a single problem are often dealt with a bullet list within the problem text but this can result in cluttered problem-location plans with repeated labels for each various location. It is therefore recommended that where multiple locations apply, a sub-list be used in the Problem text instead of bullet points. In a previous review, it was recommended that a simple system be used for Problem indexing (i.e. Problem 1, 2, 3 or Problem A, B, C etc.) be used instead of paragraph numbering. This would mean that multiple locations could be labelled on plans as Problem 1(i), Problem 1(ii) etc.

It should be noted though, that for some Problems, locations might be so numerous as to warrant referring to the problem as ‘general to the scheme’ or similar.

Appendix A

Quarterly Factsheet
1st January 2016 to 31st March 2016

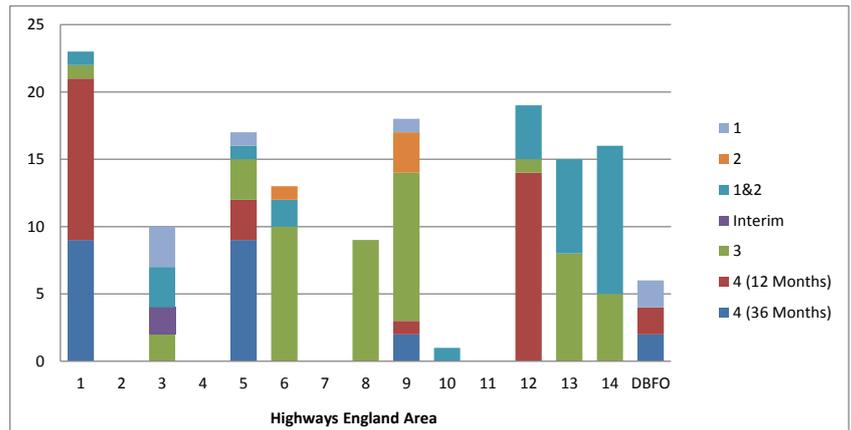
Quarterly Factsheet - 1st January 2016 to 31st March 2016 (Rev. 2)

Basic Information

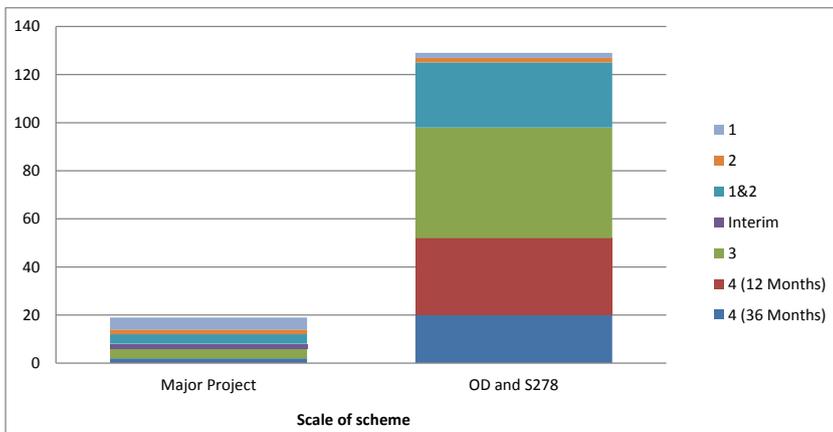
	This Quarter	Database Since Jan 2014
Number of RSAs submitted	148	959
RSA Team Leader specifically identified	100%	90%
Project Sponsor specifically identified	99%	89%

	This Quarter	Database Since Jan 2014
Average number of problems recorded	1.4	1.7
Response Report issued	1%	2%
Exception Report issued	0%	0%

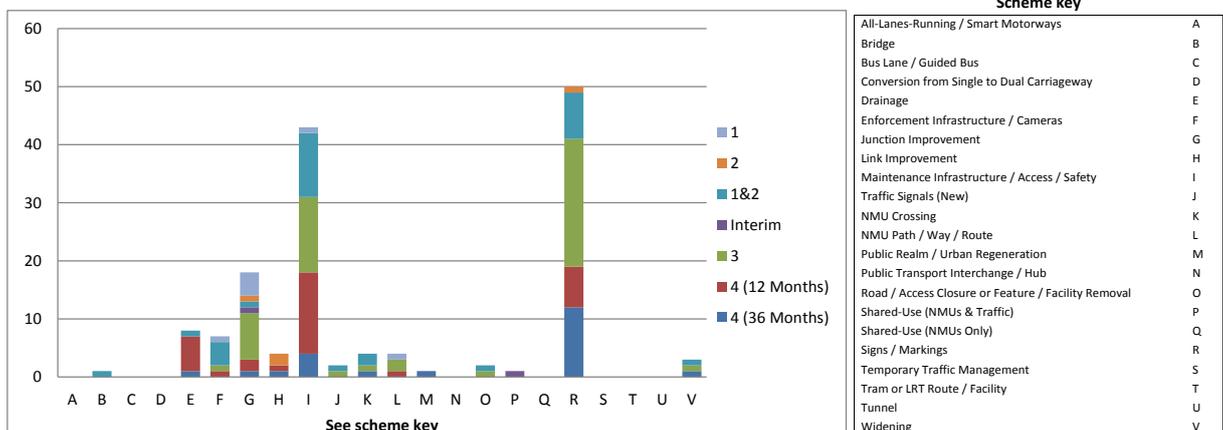
RSAs By Highways England Area - This Quarter



RSAs By Scale of Scheme - This Quarter



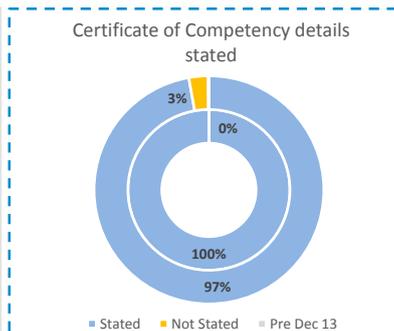
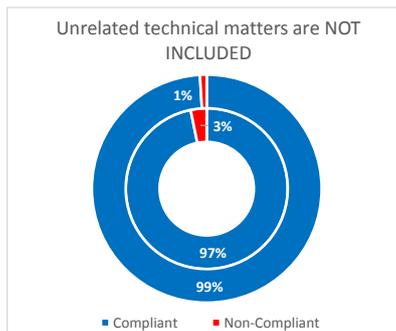
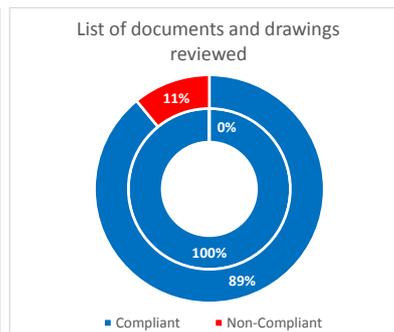
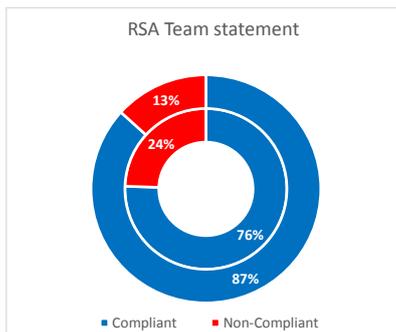
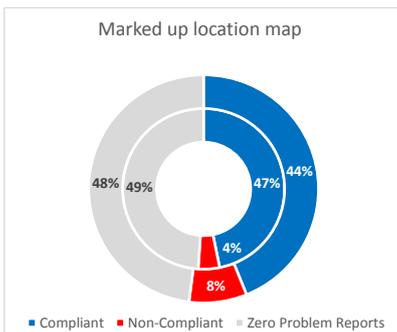
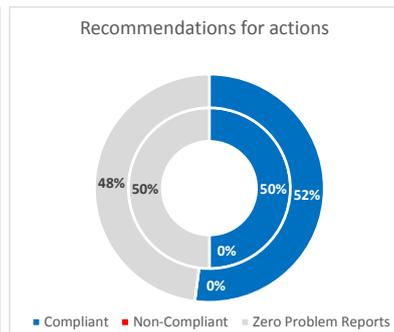
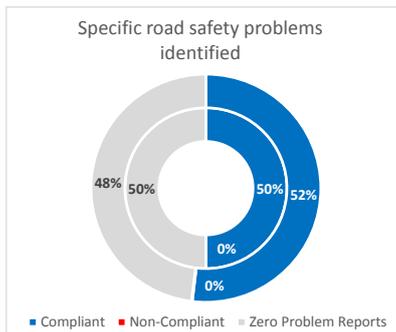
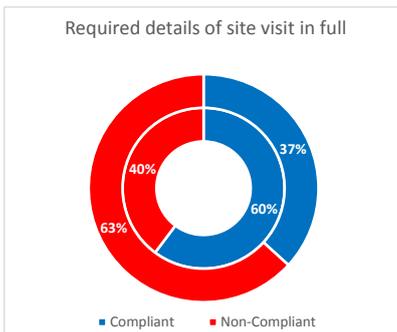
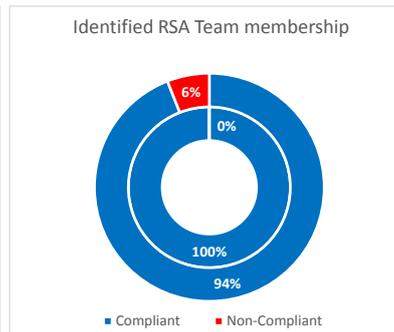
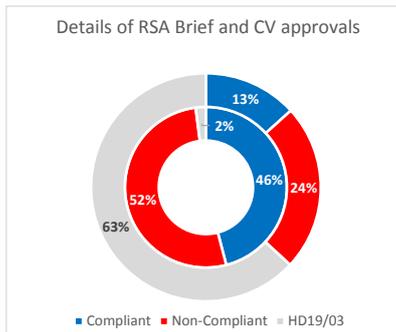
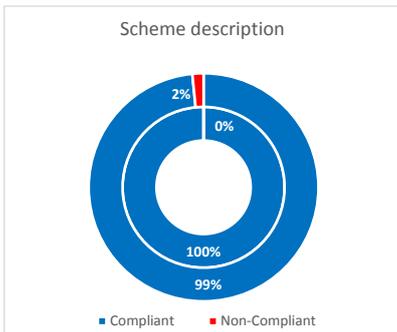
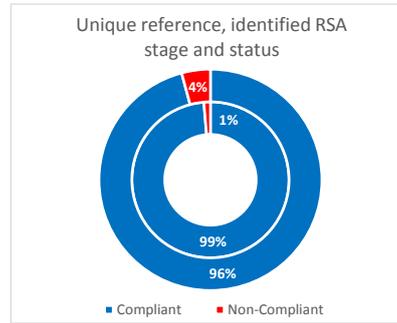
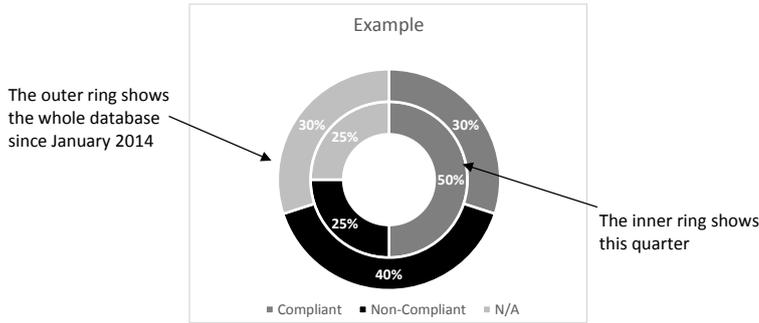
RSAs By Scheme Type - This Quarter



Scheme key	
All-Lanes-Running / Smart Motorways	A
Bridge	B
Bus Lane / Guided Bus	C
Conversion from Single to Dual Carriageway	D
Drainage	E
Enforcement Infrastructure / Cameras	F
Junction Improvement	G
Link 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 (NMUs & Traffic)	P
Shared-Use (NMUs Only)	Q
Signs / Markings	R
Temporary Traffic Management	S
Tram or LRT Route / Facility	T
Tunnel	U
Widening	V

Quarterly Factsheet - 1st January 2016 to 31st March 2016 (Rev. 2)

RSAs by Compliances - This Quarter - Stage 1, 2, 1&2, 3 & Interim (Stage 4 RSAs excluded as compliances not directly comparable)



Inclusion of Certificate of Competency details is not mandatory