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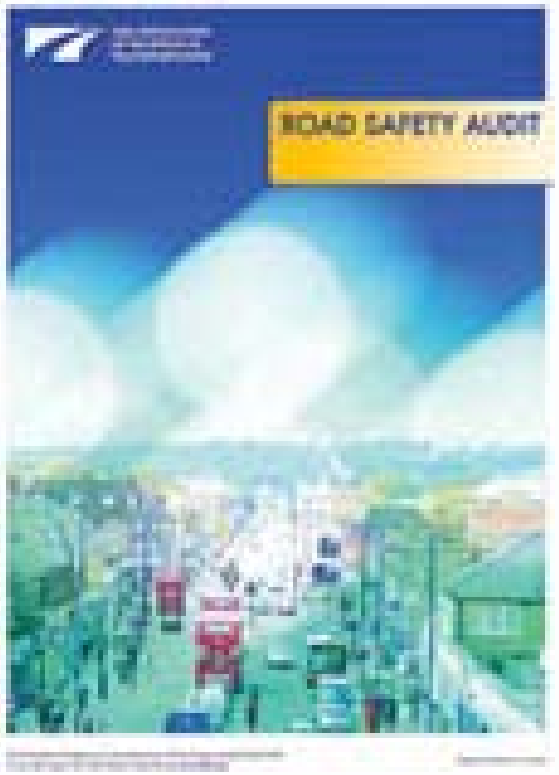
IHT
Road Safety Audit Guidelines



Kate Carpenter

Technical Director, Jacobs

Chairman,
IHT Road Safety Panel

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Acknowledgements

TMS Consultancy

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- Managing Editor
- Use of his slides and photos

Disclaimer….

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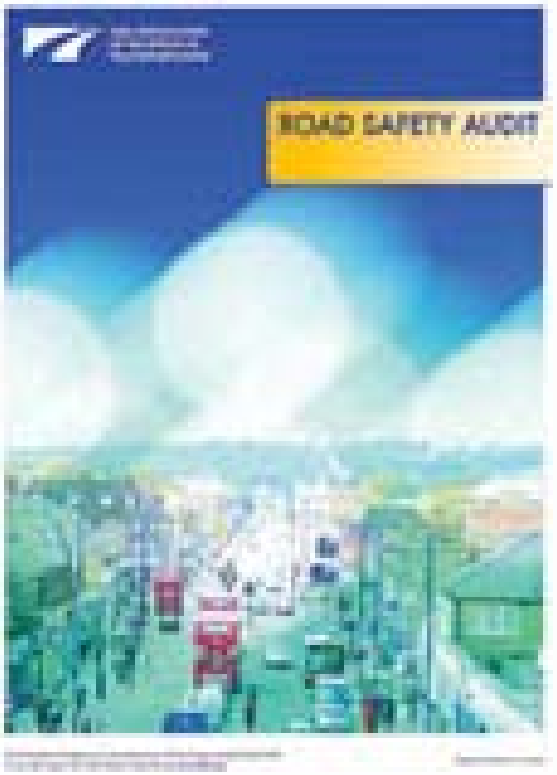
Road Safety Audit Guidelines



- Update on earlier IHT audit guidance 1990, 1996
- Sister document to CPR guidelines
- Reflect changes in process, legal developments

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Why revise?

- need to update 1996 version
- issues with delivery of HD 19/03 on schemes on local roads
- clarify role and status of RSA & other “audits”
- challenge of MfS / Risk Assessment issues
- issues in development control, inc Quality Audit and Safety Assessment
- continued concern on legal issues

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What else has changed?

Significant technical developments eg

- Passive safety / roadside restraint
- Other innovative measures from managed motorway to street lighting switch-off

Call for AIP/Audit skills in design process to evaluate complex risks and benefits.

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What else has changed?

- EU Directive (implement by Dec 2010, TERN)
  - RS Impact Assessment (planning)
  - RSA New projects (all stages)
  - Safety ranking & management of roads in operation
  - Safety inspection inc roadworks
  - investigation of fatal collisions; records kept
  - produce guidelines by Dec 2011(web-published)
  - auditors trained (design, AIP); certificated; exclusive

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- Background research to the Guidelines?
- what's in the Guidelines?
- what makes a "good" Safety Auditor?

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Background research

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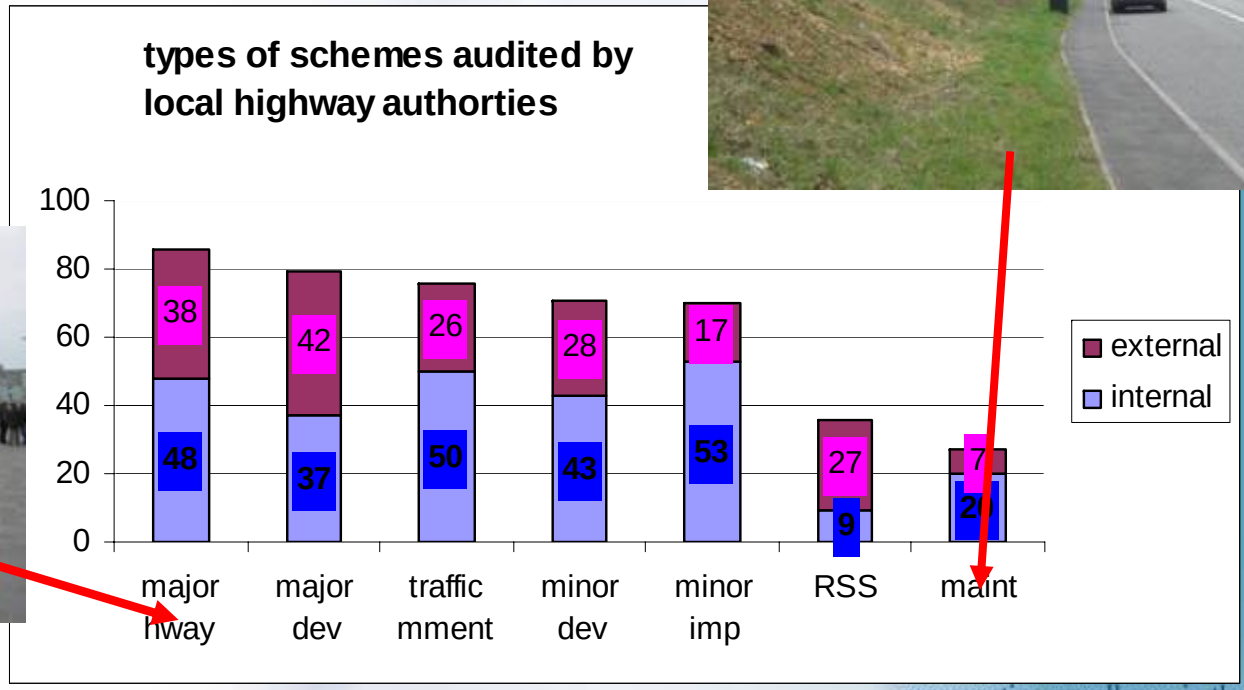
Questionnaire

- 60 UK local highway authorities responded



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Questionnaire

- 54% carry out RSA based on HD 19/03
- 14% close to HD 19/03
- 4 staff per authority carrying out RSAs
  - 3 “qualified according to HD 19/03
- but…what about those who didn’t respond?

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Questionnaire – some of the relevant issues raised

- not enough resources to audit all schemes
- not enough resources for 2 person & night visits
- RSA too late in planning process
- RSA too restrictive for innovative schemes
- not enough “qualified” auditors
- lack of appropriate information for RSA

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RSA and other audits

- Safety Audit – formal, independent assessment of road safety issues on behalf of all road users
- Safety Auditor role – "who can be hurt here and why?"…and…"what can be done to reduce risk?"
  - *highway factors key*

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- Mobility Audit
  - accessibility
- Road User Audit
  - consistency, convenience, comfort, continuity

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Challenge of MfS

- visibility
- forward SSD
- side road SSD
  - WCC local data
    - How many X and T junctions
    - How many pull out collisions
    - How many relate to visibility

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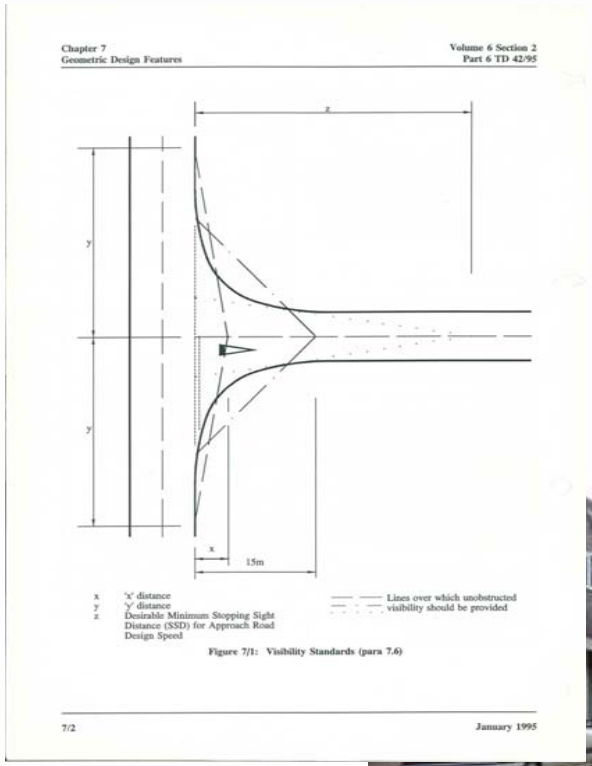
Challenge of MfS



Chapter 7
Geometric Design Features

Volume 6 Section 2
Part 6 TD 42/95

x 'x' distance
y 'y' distance
z Desirable Minimum Stopping Sight Distance (SSD) for Approach Road Design Speed

Lines over which unobstructed visibility should be provided

Figure 7/1: Visibility Standards (para 7.6)

7/2

January 1995

	DMRB	*MfS*
Reaction time	*2 secs*	*1.5 seconds*
Deceleration	*2.45m/s² 0.25g*	*4.41m/s² 0.45g*
SSD at 50kph	*70m*	*45m*
SSD at 65kph	*105m*	*66m*
SSD at 85kph	*160m*	*101m*

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Challenge of MfS

	No. junctions
>1 pull out collision each year	2
4 pull out collisions in 5 years	8
3 pull out collisions in 5 years	12
2 pull out collisions in 5 years	28
1 pull out collisions in 5 years	225

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New Issues – Challenge of MfS

- Reduction in signage, road markings
- *"start from a position of having no signs"*
- *"excessive street furniture should be avoided"*

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What about risk assessment?

- 1986-2007
- 80,000 deaths
- 6,000,000 injuries
- £120,000,000,000
- we can prevent some of this…
- …but we need to avoid being risk averse

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What about risk assessment?

- need for Risk Assessment to assess severity vs frequency

		collision	*frequency*		
		> Once a year	**Between 1-3 years**	**Between 4-7 years**	**Between 8-20 years**
severity	**Fatal**	*Very high*	*High*	*High*	*Medium*
	Serious	*High*	*High*	*Medium*	*Medium*
	Slight	*High*	*Medium*	*Medium*	*Low*
	Damage	*Medium*	*Medium*	*Low*	*Low*

Loss of control into central island "art"

Loss of control into central island signs

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RSA and development control

- Guidelines inc sample planning conditions

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Safety Assessments

- sometimes a need for comparative assessment – *which option or user is safest?*

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Safety Assessments

- sometimes a need for comparative assessment – *which option or user is safest?*

Scenario	*scheme stage*	*decision*
When there is a choice between design options, e.g. different by-pass routes, different junction type. The client wishes to know which option is "safer"	*Feasibility*	*Road Safety Assessment of each option followed by Road Safety Audit at design and post-construction stages for preferred option*
Comparative risk assessment of road user safety, e.g. an examination of elderly pedestrian road safety compared to cyclist safety in a shared use street. The client wishes to have a overview of how "safe" this will be for all road users	*Preliminary Design, occasionally detailed design*	*Road Safety Assessment of road user safety in addition to Stage 1 (or 2) Road Safety Audit*

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Quality Audit

- Quality Audit is a series of assessments including RSA
- managed by LA in conjunction with developer
- facilitated by consultant?
- to include comparative assessments of risk?

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Legal implications

- Legal concerns
  - Corporate Manslaughter Legislation
  - RDIM (2007)
  - Civil proceedings for breach of duty of care or negligence

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Legal implications

- Case law demonstrates
  - Highway Authorities may be liable for a failure to maintain
  - Highway Authorities should not create “traps”
  - Highway Authorities can defend themselves by showing they have acted “reasonably”
  - road users are largely responsible for heir own actions and should take the road as they find it

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Legal implications

- How to minimise risk
  - write local policy and apply consistently
  - document RSA process in each case
  - consistent approach to problems through all stages
  - use appropriate language in reports
  - client to appoint competent auditors, respond to reports
  - agree how long to keep records

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What's in the Guidelines?

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Chapters 1-5: information and context

1. General introduction
2. Safety Audit in context
3. Safety Audit in practice
4. Safety Audit outside the UK
5. National Standard for RSA

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Chapters 6-9: main recommendations

6. Safety Audit on local streets
7. Issues for local highway authorities
8. Local procedure and policy
9. Legal implications

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Recommendations – Principles of RSA

- RSA should be done
- by experienced staff
- in teams of two
- Independent of design team
- with a consistent report format
- and a formal response
- the client retains control
- HD 19/03 is not a legal requirement
- LHAs can vary from HD 19/03
- they should produce local policies

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Recommendations – local variations

Road Safety Audit Principle	***HD 19/03 advice***	***Can local highway authorities vary from this advice?***	***IHT Guidelines advice to local highway authority***
Which schemes *should be subject to RSA?*	***All schemes*** *that involve any change to existing layout*	***Yes, if resources do not permit*** *all schemes to be audited, or* ***if HD 19/03 is considered inappropriate*** *for some schemes*	***Review schemes carried out by type, cost, and impact on the highway network****.* ***Differentiate internal schemes from development schemes*** *designed outside the authority.* *Develop criteria for judging level of RSA required for different schemes.* *It may be appropriate to develop 2 categories of RSA –* ***(HD CAT , and local CAT),*** *and possibly a further category of* ***safety checks*** *with less onerous procedures*

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Does your local policy state?

- which schemes to Audit at what Stage?
- differences with internal vs external schemes?
- who does Audits and their competency?
- RSA process roles and responsibilities?
- RSA report writing template and pro-formas?
- the response required to RSA?
- how to monitor RSAs?
- how to gain internal/ developer acceptance?
- that this is Council Policy?

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What makes a "good" Safety Auditor?

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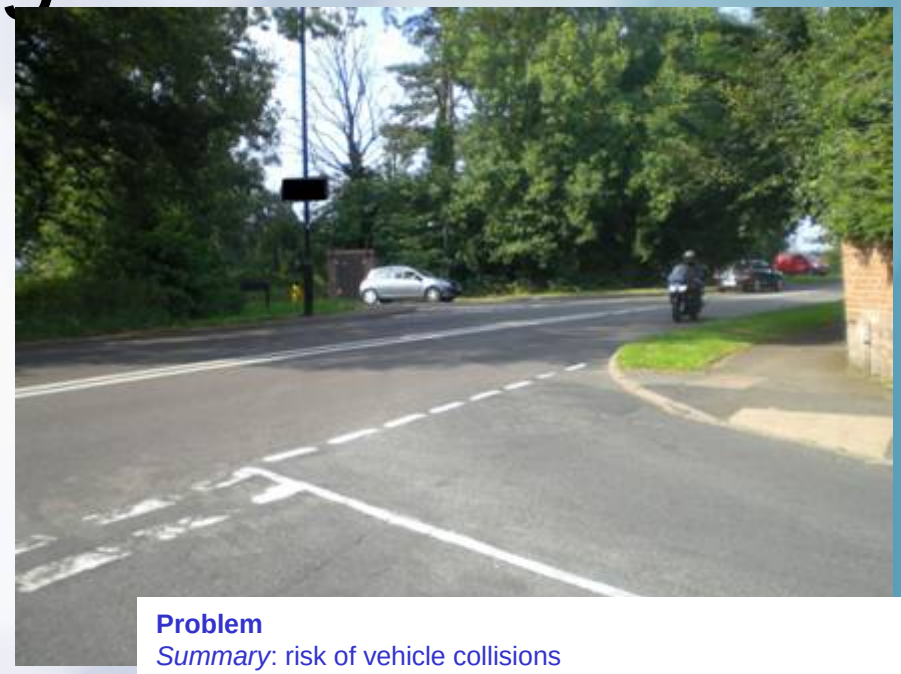
attributes of a "good" auditor….

- co-ordinate tasks, liaise with others within deadlines
- write clear, concise reports
- visualise schemes from plans, from the point of view of ALL road users
- good attention to detail
- understanding of complex schemes, memory of standards, control data



Problem
Summary: risk of vehicle collisions
Drivers at the side road give way with poor visibility to the right (less than 45m), and emerge up a hill. Despite the 30mph speed limit on the main road, 85%ile speeds are around 41mph, as the 30mph speed limit boundary is located 80m to the right of the junction. Vehicles that emerge slowly due to the hill could be struck by fast moving traffic on the main road, leading to occupant injury.
Recommendation
Speeds on the main road should be reduced.
Visibility to the right should be improved.

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attributes of a "good" auditor….

- experience of existing road safety issues
- evaluate likely collision frequency and severity
- defend a position without appearing domineering
- accept innovation without prejudice

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attributes of a "good" auditor….

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Auditors should be at the forefront of design…

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Intelligence not assumption

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In-depth understanding of all users' needs

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Engagement with policy

Tactile Paving

- Concrete blister tactile paving shall only be used to identify the location of controlled crossings e.g. zebra, pelican, and puffin crossings.
- Concrete blister tactile paving shall be laid two rows deep, and without any tails.
- Concrete blister tactile paving 400mm x 400mm shall be light grey.

Grey concrete blister tactile paving laid in line with the angle of the crossing, in accordance with DETR guidance

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At Grade Crossing Point

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Intelligence not ‘received wisdom’!

Off - Carriageway Cycle Tracks

Segregated dedicated cycle tracks are likely to provide the most successful, safe and pleasing experience for the cyclist.

The crossing of public open spaces can be considered where risk assessment does not indicate that there would be an unreasonable conflict with pedestrians, this would include parks.

Combined cycle footways should be the design of last resort and certainly only where the footpath is wide enough to comfortably accommodate both. The intensity of use of the adjacent highway will dictate how comfortable combined facilities feel, where there are large numbers of HGVs increased kerbside segregation should be considered.

Segregated footway/cycleway

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standard development: how do we feed back?

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The new lighting agenda: SOX

Street before the introduction of white light

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SON

Street after the introduction of white light

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Switch-off/dimming

Street after the introduction of white light

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Terraced residential street enhanced by established tree planting

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TTM Audit

20,000 vpd

7.3m pa