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TII Publications

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Road Safety Impact Assessment Guidelines

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PE Planning & Evaluation

Standards

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For all documents that existed within the NRA DMRB or the NRA MCDRW prior to the launch of TII Publications, the NRA document reference used previously is listed above under 'historical reference'. The TII Publication Number also shown above now supersedes this historical reference. All historical references within this document are deemed to be replaced by the TII Publication Number. For the equivalent TII Publication Number for all other historical references contained within this document, please refer to the TII Publications website.

An tÚdarás um Bóithre Náisiúnta
National Roads Authority

Volume 5 Section 2
Part 2
NRA HA 18/16

Road Safety Impact Assessment Guidelines

January 2016

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Summary:

This Standard provides guidance on undertaking Road Safety Impact Assessments on National Roads. It describes the stage at which the assessment shall be carried out and the procedures to be followed. It is intended to be read in conjunction with the Standard NRA HD 18 Road Safety Impact Assessment.

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VOLUME 5 ASSESSMENT AND PREPARATION OF ROAD SCHEMES

SECTION 2 PREPARATION AND IMPLEMENTATION

PART 2

NRA HA 18/16

ROAD SAFETY IMPACT ASSESSMENT GUIDELINES

Contents

Chapter

1. INTRODUCTION

Scope

1.1 These Guidelines set out the procedures required to implement Road Safety Impact Assessments on Infrastructure Projects affecting National Roads. They define the relevant schemes and stages in the design at which assessment shall be undertaken.

1.2 This Guidance should be read in conjunction with NRA HD 18, EU Directive 2008/96/EC and Statutory Instrument 472/2011.

Definitions

1.3 Road Safety Impact Assessment (RSIA), as defined by the European Directive, is a strategic comparative analysis of the impact of a new road or a substantial modification to the existing network on the safety performance of the road network.

1.4 *Director*: The Head of Safety (Roads and Tunnels) TII or equivalent in the Overseeing Organisation.

1.5 *Road Safety Impact Assessment Report*: The report submitted by The Impact Assessment Team to the Director.

2. ROAD SAFETY IMPACT ASSESSMENT

Infrastructure Projects to be Assessed

2.1 Any new infrastructure project realignment or change to existing infrastructure that substantially affects the performance of the national road network shall be assessed. Network performance can be affected not only by amendments to the physical layout of road and transport networks, but also by the introduction of a new or changed source of traffic generation.

2.2 Road safety impact assessment is required only where the anticipated effect on the national network is substantial. Smaller projects will not require assessment.

RSIA shall be done for:

- Any major new road project.
- Road realignment of which a continuous section is greater than 2km.

2.3 Projects which do not meet the above criteria may also benefit from RSIA. If there is any doubt the Safety (Roads and Tunnels) section of TII should be consulted in order to determine the requirement for RSIA for each specific scheme.

When to Assess

2.4 Assessment shall be carried out at the initial planning stages of a project and shall be used as one of the tools for project selection. This assessment shall consider the safety implications of the different alternatives as well as the option to not proceed with the project

2.5 As the project design progresses the road safety impact assessment should be regularly reviewed to ensure that the road safety implications of all design revisions are considered.

2.6 It is recommended that a Road Safety Impact Assessment should be considered during the preparation of County Development Plans where an asset is being proposed on to a national road or associated junction. Refer to Spatial Planning on National Road Guidelines for Planning Authorities (DoELG, 2012)

Assessment Team

2.7 Road Safety Impact Assessment is an integral part of the design process and is carried out within the design team. The assessment team shall comprise at least two individuals, both of whom are competent in road safety impact assessment. The assessment team shall include at least one experienced road design engineer and at least one experienced road safety auditor. The names of the assessment team members shall be submitted to the Director for approval.

2.8 In the absence of competence in road safety impact assessment within the design team, an assessment team shall be sourced from elsewhere and shall join the design team for this specific task. This assessment team, where possible and in order to provide continuity, shall carry out all further road safety impact assessments as the project progresses.

2.9 It is important to note that a road safety impact assessment is not a separate audit of the project carried out by an independent team; it is an on-going task within the design process and carried out within the design team. If an external assessment team is brought in to provide road safety expertise then that team shall be viewed as temporarily part of the design team.

Road Safety Audit

2.10 Road Safety Impact Assessment does not replace or preclude Road Safety Audit, which is carried out by a team independent of the design process. The requirements for road safety audit are set out in NRA HD 19.

Initial Assessment

2.11 The initial road safety impact assessment shall be carried out while the project is still at concept stage. At this stage the assessment explores the road safety implications of each option being considered, including the Do-Nothing and Do-Minimum options. The assessment shall provide all relevant information necessary for comparison of the options and selection of the solution, including a comparative analysis of the road safety implications of each alternative considered and an evaluation of the road safety benefits and dis-benefits arising from each alternative.

- In the case of a major road scheme the initial assessment shall be carried out during Phase 1 "Scheme Concept & Feasibility Studies" of the NRA Project Management Guidelines.
- In the case of minor road improvements, new junctions or junction improvements, the initial assessment shall be carried out as part of the Preliminary Design Report in accordance with NRA TA 85.

Further Assessment

2.12 The road safety impact assessment should be reviewed whenever a design revision may have road safety implications.

2.13 Where a project goes through more than one process of selection in its initial stages it is essential that a road safety impact assessment is done as part of each of these selection processes.

2.14 Reviews should be done whenever a substantial change is made to the design and at significant milestones throughout the design process.

2.15 In practice it is advisable to consider a review of the assessment at the following stages:

- In the case of a major road scheme, during Phase 2 "Route Selection" and whenever a substantial design change is made during Phase 3 "Design" of the NRA Project Management Guidelines.
- In the case of minor road improvements, whenever a substantial design change is made.

2.16 Each review must consider the entire project when examining the road safety implications of any design change or of any additional or amended data and information.

2.17 The report at each review should address only the changes to the assessment since the previous review, and should be added to any previous reports to be read in conjunction with them.

3. ROAD SAFETY IMPACT ASSESSMENT PROCESS

Assessment Team Approval

3.1 The Road Safety Impact Assessment is an integral part of the design process and is to be produced by the Design Team.

3.2 The project manager of the design team shall appoint the road safety impact assessment team from within the design team. The assessment team shall meet the qualifications and experience requirements as set out by TII. The project manager shall submit the names of the assessment team members to the Director for approval.

3.3 The Safety (Roads and Tunnels) section of TII shall be consulted if clarification of the assessment team requirements is needed, or if there is any difficulty in sourcing individuals with the requirements.

Principles of Impact Assessment

3.4 The objective of road safety impact assessment is to consider the proposed project from a road safety point of view, to compare the impact on road safety of each proposed option and to determine which would give the best road safety outcome. With every project there is the possibility that the existing situation would be preferable to any of the options considered, and so it is essential that this alternative is also considered in the assessment as per the following examples:

A proposed road realignment may have as its objective the elimination of poor horizontal alignment. The existing alignment may not have any collision history at all, yet the surrounding topography may dictate that each of the proposed alternative alignments create road safety problems, perhaps by positioning a busy junction on a straight stretch or by severing a village from its hinterland. In this case a Do-Minimum option would rank highest in the road safety impact assessment.

A proposed redesign of a busy junction may have as its objective an increase in its capacity. If the existing arrangement does not have a collision history, and each of the proposed changes are likely to increase speed through the junction then it is likely that a Do-Nothing option would rank highest in the road safety impact assessment.

3.5 Road safety impact is only one of the aspects considered by a design team when selecting the preferred option. It is important that the reasoning behind the conclusions of the impact assessment is made clear, so that it is given due weight in the selection process. This should minimise the risk of collisions occurring in the future either as a result of planning decisions or as a result of unintended effects of the design of road schemes

Impact Assessment Methodology

3.6 The road safety impact assessment should follow the methodology below. All projects may not require consideration of all the elements listed, but the process described should be applicable to every type of project. The designer is also referred to Annex I of the EU Road Infrastructure Safety Management Directive 2008/96/EC.

3.7 *Define the project and its objectives*.

- Clarify the objectives of the project. To increase capacity, to remove traffic from a village, to eliminate poor alignment, to provide an amenity, etc.
- Clarify whether the major objective of the scheme is to address road safety issues.

- Establish the expected date of completion of the project. Forecast traffic flows are dependent on this, and other infrastructural improvements underway in the area may be complete by this time and affect forecast flows.

3.8 *Define the study area and the area of influence of the project.*

- Clarify the extents of the surrounding road network where any of the proposed options would affect the operation of the network. Check the likely changes to drivers' route choice and choice of travel mode or time, and thus the likely effects on traffic patterns.
- The entire study area shall be examined when assessing each proposed option, so that like can be compared with like.

For instance the proposed options for a realignment of a series of bends may have varying tie-in locations. One option might only address the worst bend, leaving the remainder of the bends on their existing alignment; another might be extended to cover not only all of the bends but also a neighbouring junction. The study area shall be based on the option with the longest realignment, and for each shorter option the existing collision rate on any length of road inside that which is to remain as existing shall be included in assessing the road safety impacts.

3.9 *Establish the existing road safety problems.*

- Examine existing collision statistics and carry out an analysis.
- Establish any patterns in the collisions and any high collision locations, either stretches of road or single sites at junctions or other conflict points.
- Establish any patterns over time of day or year, or any patterns involving road user type. Examine any road safety reviews that may have been carried out previously on all or part of the area.
- Collision statistics from Garda records are available from the local authority, the Road Safety Authority or Transport Infrastructure Ireland. However there may be other unrecorded incidents that are not easily validated. It is recommended to contact the local services such as the area engineer or the fire service who might have information on incidents that they have attended.

3.10 *Road safety objectives*

- Define the road safety objectives of the scheme.
- This will usually include addressing the existing road safety problems, but there may be further objectives, such as improving pedestrian access to an amenity or improving public transport access. Such issues may not be currently manifesting in collision statistics, but may either address suppressed demand and latent road safety problems or may indirectly affect the existing road safety problems.

3.11 *The options, including Do-Nothing and Do-Minimum*

- Examine the drawings of each proposed option for the project.
- Include the existing Do-Nothing situation which would prevail if no works at all were to be implemented.
- Include the Do-Minimum situation, where the very minimum possible is to be implemented, such as provision of signs, surface overlay and any committed schemes.
- Visit the site to visually establish the alignment of each proposed option and the surrounding topography. A site visit is important as it may identify existing arrangements or patterns of use that may not be evident in the drawings and other information examined. If the assessment team

are from within the project design team and have all visited the site previously, a separate site visit for this purpose might not be necessary.

- Examine both existing and proposed traffic flows, including pedestrian and cycle flows and use of public transport. It may be necessary to establish peak times of use for certain parts of the network, such as access to schools or sports grounds or weekly markets, so that the appropriate flows can be examined.
- Patterns of use of all road users must be considered. In general pedestrians and other vulnerable road users are affected more acutely than other road traffic by both changes in road alignment and changes to available routes of travel.
- The presence of safe parking areas should be noted, including the TII strategy for provision of safe rest stops for drivers in the wider region surrounding the proposed scheme location.

3.12 *Analysis of impacts on road safety of the proposed alternatives*

- The main element of the assessment is the comparison of the road safety effects of each alternative proposal. This must include Do-Nothing and Do-Minimum options.
- The effects on the entire study area must be examined for each proposed option. Where proposed alternatives differ in scale and cover differing lengths or areas of the existing network, the remainder of the road network outside the proposed works must be included in the analysis. The assessment area must be the same for all options being compared.
- An assessment of the effects of each alternative must be carried out in terms of predicted collisions. Quantitative indicators can be used such as collision rates and collisions per junction type.
- To assess the likely collision occurrence in the proposed options, it is recommended to use established local collision rates in the surrounding area for equivalent road types or junction types. If these are unavailable then the collision rates for road types and junction types given in the COBA manual should be used.
- To establish the economic collision cost of each option the collision costs given in the COBA manual should be used.
- All effects on traffic flow and traffic patterns must be considered. Any projected change in modal split as a consequence of the proposals is important as this may not only affect the mix of vehicle category within the traffic flow, but may also impact on patterns of pedestrian and cycle travel and locations where conflicts with other vehicles occur.
- Seasonal and climatic conditions such as the likelihood of flooding and foggy conditions should be considered, as this might differ between options.
- The possibility of seismic activity should also be considered.

3.13 *Comparison and ranking*

- Comparison of the alternatives should not only give a qualitative list of benefits and dis-benefits, but should also include a cost benefit analysis of the road safety aspects.
- The options, including the Do-Nothing and Do-Minimum option, should be ranked in terms of road safety considerations, giving an order of preference and an indication of the magnitude of difference between options. If one option, or a group of options, shows considerably more or less benefit than the others then this should be highlighted. Conversely, if there is little difference in road safety terms between two or more of the proposals then these should be given the same ranking.

3.14 *Impact Assessment Report*

- The road safety impact assessment report should stand alone as a separate document without the need to reference other reports on the project. This is likely to necessitate the inclusion of drawings, photographs and a summary of collision records, all of which should be included as appendices.
- The main body of the report should broadly follow the outline given below.

a) Problem definition

Define the objective of the proposed project and list any existing road safety problems.

Indicate if a major part of the stated project objectives is to address a road safety problem.

b) The area of influence

The geographical extents of the entire area of road network where route choice and traffic patterns would be affected by the proposals.

c) Road safety objectives

Define the road safety objectives of the scheme.

d) The options

Describe each proposed option for the project, including Do-Nothing and Do-Minimum.

e) Analysis of impacts on road safety of the proposed alternatives

Examine each option (including Do-Nothing and Do-Minimum) and consider its road safety impact.

f) Comparison of the alternatives

A qualitative description of the road safety benefits and disbenefits of each option.

A quantitative cost benefit analysis of these road safety benefits and dis-benefits.

g) Presentation of the range of possible solutions.

Rank each option (including Do-Nothing and Do-Minimum) in order of its net road safety benefits. Give a clear description of the net benefits of each option as well as the relative quantitative net benefit so that these conclusions can be given proper consideration in the selection process for the project.

3.15 *Subsequent Actions to the Report*

The Road Safety Impact Assessment report should be submitted to the Director for comment and review. The report must clearly identify the project concerned and safety impact assessment team membership.

The final recipient of the Road Safety Impact Assessment report shall be the Design Project Manager, who shall use it to inform the option selection phase.

4. REFERENCES

NRA Design Manual for Roads and Bridges

NRA HD 18 Road Safety Impact Assessment

NRA HD 19 Road Safety Audit

NRA TA 85 Guidance on Minor Improvements to National Roads

NRA TD 19 Safety Barriers

NRA Documents

National Roads Authority, 2012. Impact Assessment Team Qualifications for Road Safety Impact Assessment - (as per NRA HD 18).

National Roads Authority, 2011. Project Appraisal Guidelines. Unit 6.2 Guidance on Using COBA.

National Roads Authority, 2010. 2010 Project Management Guidelines.

Other Documents

European Parliament and the Council of the European Union, 2008. Directive 2008/96/EC of the European Parliament and of the Council of 19th November 2008 on Road Infrastructure Safety Management.

European Transport Safety Council, 1997. Road Safety Audit and Safety Impact Assessment

Department of the Environment, Community and Local Government, 2012. Spatial Planning on National Roads. Guidelines for Planning Authorities.

Statutory Instrument No. 472 of 2011. European Communities (Road Infrastructure Safety Management) Regulations 2011.

The Institution of Highways and Transportation, 2008. Road Safety Audit.

5. ENQUIRIES

5.1 All technical enquiries or comments on this document or any of the documents listed as forming part of the NRA DMRB should be sent by e-mail to infoDMRB@tii.ie, addressed to the following:

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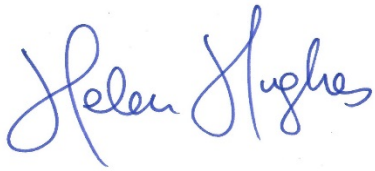

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