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Transport Infrastructure Ireland

TII Publications



Road Safety Impact Assessment Guidelines

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**Updates to TII Publications resulting in changes to
Road Safety Impact Assessment Guidelines PE-PMG-02005**

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Amendment Details:

This Standard supersedes the October 2016 version of PE-PMG-02005. The principle changes are outlined below:

- a) The Definitions section has been removed, all relevant definitions are included in the Standard PE-PMG-02001 Road Safety Impact Assessment.
- b) Revisions throughout to bring in line with the revisions within the December 2017 version of Standard PE-PMG-02001 Road Safety Impact Assessment.

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1. Introduction

1.1 Scope

These Guidelines set out the procedures required to implement Road Safety Impact Assessments on schemes affecting national roads that result in a substantial modification to the existing road network. They define the relevant schemes and stages in the design at which assessment shall be undertaken.

This Guidance should be read in conjunction with PE-PMG-02001 Road Safety Impact Assessment, EU Directive 2008/96/EC and SI 472 of 2011.

2. Road Safety Impact Assessment

2.1 Schemes to be Assessed

Road Safety Impact Assessment shall apply to Major Schemes on national roads as defined in PE-PMG-02041 Project Management Guidelines, which result in a substantial modification to the existing national road network. Smaller projects will not generally require assessment but if there is any doubt the TII Roads and Tunnels Safety section should be consulted in order to determine the requirement for Road Safety Impact Assessment for each specific scheme.

2.2 When to Assess

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.

An initial assessment should be done at the concept and feasibility stage of planning a project. At this stage it should be established whether the net road safety benefits of the proposed project exceed those of the Do-Nothing or Do-Minimum situations.

The principal assessment should be done as part of the option selection stage, where several alternative options for the project are being considered and closely examined. At this stage the road safety benefits of each alternative will be examined and set out in the Road Safety Impact Assessment Report.

It is recommended that a Road Safety Impact Assessment should be undertaken during the preparation of County Development Plans and Local Area Plans, where zoning objectives may require a new junction or access on to a national road or modifications to an existing junction on to a national road. For policies on accesses onto national roads please refer to Spatial Planning and National Road Guidelines for Planning Authorities (DoELG, 2012).

2.3 Assessment Team

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 Local Authority Contact shall submit the names and CVs of the assessment team members to the Director for approval. Details of the proposed scheme, including scheme extents, and a site location map shall also be submitted.

In the absence of competence in road safety impact assessment within the design team, competent individuals shall be sourced from elsewhere and shall join the design team for this specific task. Whenever the road safety impact assessment is reviewed through the option selection process the same competent individuals should do this task.

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 integral part of the design process and carried out within the design team. Any external individual brought in to provide road safety expertise shall be viewed as temporarily part of the design team.

2.4 Road Safety Audit

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 detailed within GE-STY-01024.

2.5 Initial Assessment

The Design Team should initially go through the process of Road Safety Impact Assessment at the concept and feasibility stage of planning a project. At this stage the assessment explores the road safety implications of each option being considered, including the Do-Nothing and Do-Minimum options, and it should be established whether the net road safety benefits of the proposed project exceed those of the Do-Nothing or Do-Minimum situations. 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 considered in the initial assessment.

In the case of a national road scheme, the initial assessment shall be carried out during Phase 1 Concept & Feasibility Studies of the Project Management Guidelines as outlined in PE-PMG-02041.

If Road Safety Impact Assessment is deemed appropriate for a minor road improvement, new junction or junction improvement, both the initial assessment and the principal assessment shall be carried out as part of preparations for the Preliminary Design Report in accordance with DN-GEO-03030 Guidance on Minor Improvements to National Roads.

2.6 Principal Assessment

The principal assessment will be presented in the Road Safety Impact Assessment Report. This report will be produced at the stage where several alternative options for the project are being considered and closely examined. The assessment should be undertaken early in the process of option selection, as the extent of the road safety benefits or disbenefits of each option will be an important input to the process.

For national road projects, the assessment should take place before the 3-stage Option Selection process in Phase 2 of the Project Management Guidelines.

The principal 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.

The Road Safety Impact Assessment should be reviewed as necessary during the option selection process, whenever new alternatives or changes in conditions arise. 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.

3. Road Safety Impact Assessment Process

3.1 Assessment Team Approval

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

The Design Project Manager shall nominate 2 individuals from within the Design Team to form the Road Safety Impact Assessment Team. The assessment team must meet the qualifications and experience requirements as set out in PE-STY-02003.

If it is not possible to form the Impact Assessment Team from the within the Design Team due to a lack of qualifications and experience, then the project manager may source one or both individuals from outside the Design Team, who will join the Design Team during the initial planning phases to form all or part of the Road Safety Impact Assessment Team.

The Local Authority Contact shall submit the names and CVs of the assessment team members to the Director for approval. Details of the proposed scheme, including scheme extents, and a site location map shall also be submitted.

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

3.2 Principles of Impact Assessment

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.

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.

3.3 Impact Assessment Methodology

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.

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.

3.4 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.

3.5 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.

3.6 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.

3.7 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.

3.8 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 PE-PAG-02030 National Parameters Values Sheet should be used.
- To establish the economic collision cost of each option the collision costs given in PE-PAG-02030 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.

3.9 Comparison and ranking

Comparison of the alternatives should not only give a qualitative list of benefits and dis-benefits, but should also include an analysis of the monetary benefits and disbenefits from a road safety aspect.

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.

3.10 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 report must clearly identify the project concerned and the Road Safety Impact Assessment team membership
- The main body of the report should broadly follow the outline given below.
 - c) 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.
 - d) 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.
 - e) Road safety objectives
Define the road safety objectives of the scheme.

- f) The options
Describe each proposed option for the project, including Do-Nothing and Do-Minimum.
- g) 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.
- h) Comparison of the alternatives
A qualitative description of the road safety benefits and dis-benefits of each option.

A quantitative analysis of these road safety benefits and dis-benefits.
- i) 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.

3.11 Subsequent Actions to the Report

The Local Authority Contact shall submit the draft Road Safety Impact Assessment report to the Director for review and comment. The Director shall liaise with the Local Authority Contact regarding the draft report. The Local Authority Contact shall convey any comments to the Road Safety Impact Assessment Team.

If changes are required, the Local Authority Contact shall submit a revised report to the Director. Once the Director is satisfied that all comments have been addressed, the report can be finalised.

The final Road Safety Impact Assessment report shall be used by the Design Team to inform the option selection phase of scheme design.

4. References

4.1 TII Publications (Standards) References

GE-STY-01024 Road Safety Audit

PE-PMG-02001 Road Safety Impact Assessment

DN-GEO-03030 Guidance on Minor Improvements to National Roads

4.2 TII Publications (Technical) References

PE-PAG-02020 Project Appraisal Guidelines for National Roads Unit 6.1 - Guidance on conducting CBA

PE-PAG-02030 Project Appraisal Guidelines for National Roads Unit 6.11 – National Parameters Values Sheet

PE-PMG-02041 Project Management Guidelines

PE-STY-02003 Road Safety Impact Assessment - Impact Assessment Team Qualifications

4.3 Other Miscellaneous References

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 and 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.



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