



Austrroads Bridge Assessment Guideline: Heavy Vehicles

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Abstract: The Austroads *Bridge Assessment Guideline: Heavy Vehicles* was published in September 2025 and is freely available at the Austroads website.

This presentation will introduce the audience to the Guideline, give a brief overview of content and philosophy and discuss application in the New Zealand context. It is intended to demonstrate how the Guideline contributes to better risk-informed decision-making for heavy vehicle access, asset management, planning and investment in a sustainable network.

The objectives of the Guideline are to:

- Promote risk-informed decision-making
- Reduce conservatism and enhance the sustainability and productivity of the road transport network
- Provide background to fundamental engineering principles for all levels of engineering experience
- Improve transparency in decision-making
- Provide the technical support which can be justified and consistent with the international practice
- Promote harmonisation with international practice for assessment of bridges and structures
- Clarify the roles of road agencies and assessors

Rather than being a guideline to undertaking a bridge assessment in accordance with AS 5100:2017 *Bridge design* or the *NZTA Bridge manual*, the Guideline focusses on decision making, reflecting the more holistic nature of managing bridges and access over them.

The Guideline adopts the decision-making hierarchy set out in AS 5104:2017 *General principles on reliability for structures*, which is identical with, and has been reproduced from ISO 2394:2015. The hierarchy includes the three decision making approaches illustrated in Figure 1. All decision making must satisfy the risk-informed approach which considers all aspects of decision-making including consequences of failure, economic, environmental and social and the uncertainties associated with those aspects. A business case for a new bridge is an example of risk-informed decision making.

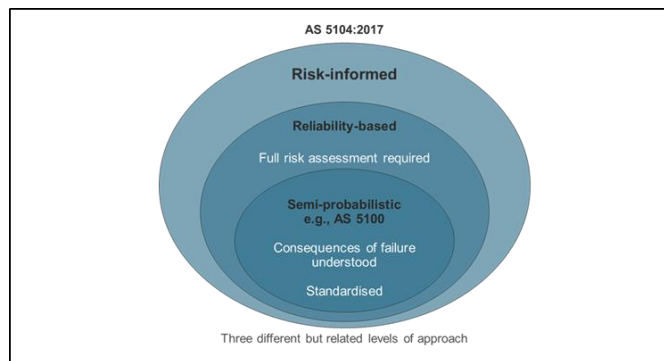


Figure 1. Decision making hierarchy

The reliability-based approach may be adopted following a risk assessment and is lower in the hierarchy. The semi-probabilistic approach may be adopted when the consequences of failure are well known and standardisation is possible and is below the reliability-based approach in the hierarchy. AS 5100 and the NZTA Bridge Manual are examples of the semi-probabilistic approach. The semi-probabilistic approach is often adopted due to its simplicity, however, the simplifying assumptions must be understood if the approach is to meet the risk-informed approach.

The Guideline provides a basis for assessing risks due to heavy vehicles accessing existing bridges. Based on an assessed level of risk, an annual target reliability index or margin between the load and strength of a bridge may be chosen. Load factors consistent with this margin are provided to use in the semi-probabilistic approach. Hence the Guideline provides a transparent linkage between the application of the semi-probabilistic approach as set out in AS 5100 and the NZTA Bridge Manual, and risk-informed decision making.

In addition to providing an assessment of the reliability index achieved by the current Bridge Manual evaluation factors, the Guideline can be used to assist with the assessment of what increased level of risk is associated with bridges that do not meet the current Bridge Manual assessment standard.

This information can be used to assist New Zealand asset owners faced with the dilemma of aging bridges that do not meet the Bridge Manual assessment standard for the loads they are currently carrying and are increasingly expected to carry heavier loads. The presentation briefly outlines how the Guideline has been used to support the development of new management guidelines for bridges and heavy vehicle loads for NZTA.