Transport Roads & Maritime Services

# Consistency of the Noise Criteria Guideline with the Road Noise Policy

## Purpose of fact sheet

This fact sheet walks the reader of the Noise Criteria Guideline (Roads and Maritime Services, 2014) through each section and describes how the Guideline meets the intentions in the NSW Road Noise Policy (Environment Protection Authority, 2011). This fact sheet is not intended to be a stand alone document and should not be used on its own to implement the Noise Criteria Guideline or Road Noise Policy.

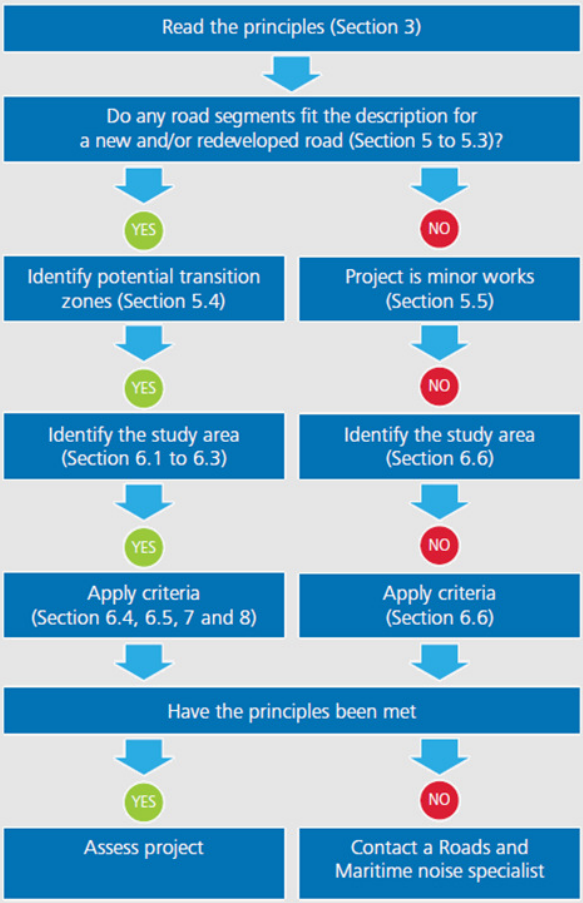
It is intended for people who are interested in understanding the subtle differences in how Roads and Maritime Services assigns road criteria using the Noise Criteria Guideline compared with the Road Noise Policy. Roads and Maritime provides separate guidance on the application of feasible and reasonable noise mitigation in the Noise Mitigation Guideline. The Noise Mitigation Guideline supersedes the Environmental Noise Management Manual which is referenced in the Road Noise Policy.

## Overview

Roads and Maritime Service's Noise Criteria Guideline (NCG) has been developed to provide a consistent approach to identifying road noise criteria for Roads and Maritime projects and practical implementation of the NSW Road Noise Policy's (RNP) intent. The NCG uses the same values for noise criteria as the RNP and is driven by common underlying principles (See Section 3 of the NCG).

An overview is provided in Section 4 of the NCG on the steps taken to assign criteria to sensitive receivers. A flow chart showing these steps is repeated below.

**Figure 1 NCG flowchart**



# Identifying road type

After the overarching principles have been understood the next task, using Sections 5.1 to 5.4 of the NCG, is to identify the road development type by whether the:

- volume or composition of traffic flows would change substantially
- road project is in a new or existing road corridor
- road project involves the construction of a new road or substantial changes to the alignment or function of an existing road.

The road development type can be new, redeveloped or a combination of both. Each development type has different criteria.

The approach to identifying road development types is consistent with that given in Sections 2.1 to 2.3 of the RNP. For example, a road is new if the project proposes road construction in an undeveloped corridor or has been substantially realigned. A road is redeveloped if the project proposes to increase traffic carrying capacity by widening without substantial realignment of the existing road.

Note that the definition of substantial realignment is not given in the RNP. Roads and Maritimes interpretation of substantial realignment is defined in the NCG. Roads and Maritime's definition aims to relate to community perception of substantial realignment and also gives some tolerance to allow for minor curve straightening of an existing road without it being considered substantially realigned .

Not all road development types are covered by the RNP. For example some works completed by RMS that are either minor or required to improve safety use the RNP criteria for redeveloped roads as guidance. This procedure is defined in the NCG in Sections 5.5 and 6.6.

# Criteria

Once the road development types have been identified across the project, the next step is to apply assessment criteria at affected receivers within the study area by assessing the location of the residence relative to the road.

## Study area

The study area used by Roads and Maritime is described in Sections 6.1 to 6.3 of the NCG. In general, the study area width where criteria apply for a new or redeveloped road would be 600 metres from the subject road, consistent with Section 3.4 of the RNP. However, under some circumstances, such as a new road in rural areas, criteria may still be exceeded beyond 600 metres on Roads and Maritime projects. The NCG takes on board RMS project experience and takes the study area beyond 600 metres where exceedence of the criteria can be demonstrated. Furthermore, the NCG also allow the study area to be reduced in highly urban situations as a boundary width either side of the project of 600 metres may include areas where noise levels are dominated by other significant roads not relevant to the project.

The reduced highly urban study area produces the same mitigation outcome as if a 600m boundary had been used. The benefit is that the noise modelling and reporting requirements have been reduced to only include sensitive receivers affected by the project. Approaches to determine feasible and reasonable noise mitigation are described in the RNP under Section 3.3 of the RNP and Roads and Maritime's Noise Mitigation Guideline. The NCG uses the highly urban situation as an initial check at the start of the assessment process to reduce processing and reporting requirements by excluding receivers that would not be mitigated as part of the project with noise levels dominated by other roads.

## Assigning criteria to receivers

Criteria are assigned to receivers using Sections 6.4, 6.5, 7 and 8 of the NCG. For residences, the NCG defines criteria based on the road types the receiver will be affected by in the 'build' year post opening. For example, if a receiver is most affected by a new road it gets new road criteria and similarly for redeveloped road.

Some residences will be in regions affected by new and redeveloped road types within the same project or roads within the project and another existing road. These regions are called transition zones. The challenge is to assign noise criteria to receivers in these regions and provide a smooth change between the different criteria associated with each road type based on what the receivers is affected by.

The concept of transition zones are explored in both the RNP (Section 3.6) and NCG (Section 7), but with different implementation approaches. If receivers are affected by both a new and redeveloped road then the NCG evaluates the proportion of noise contribution from each road type at the residences location to identify the transition zone criteria. This can be visualised as a sliding scale in 1dBA increments between the new and redeveloped criteria (see Figure 2) depending on the proportion of noise at the receiver that comes each road type before mitigation has been applied. This approach ensures that the transition zone is located at the physical junction between the two road categories.

**Figure 2** **Example NCG transition zone criteria**

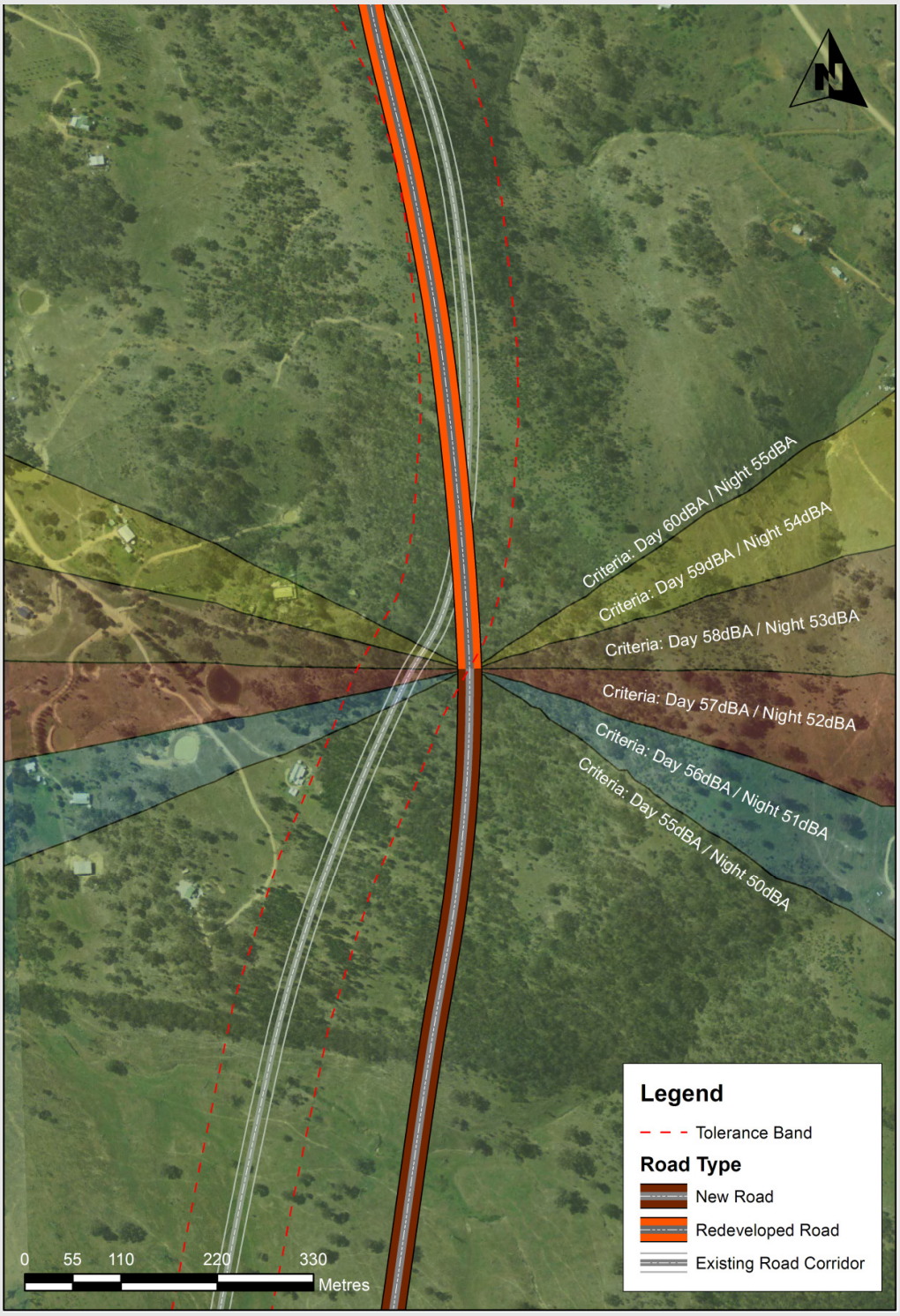
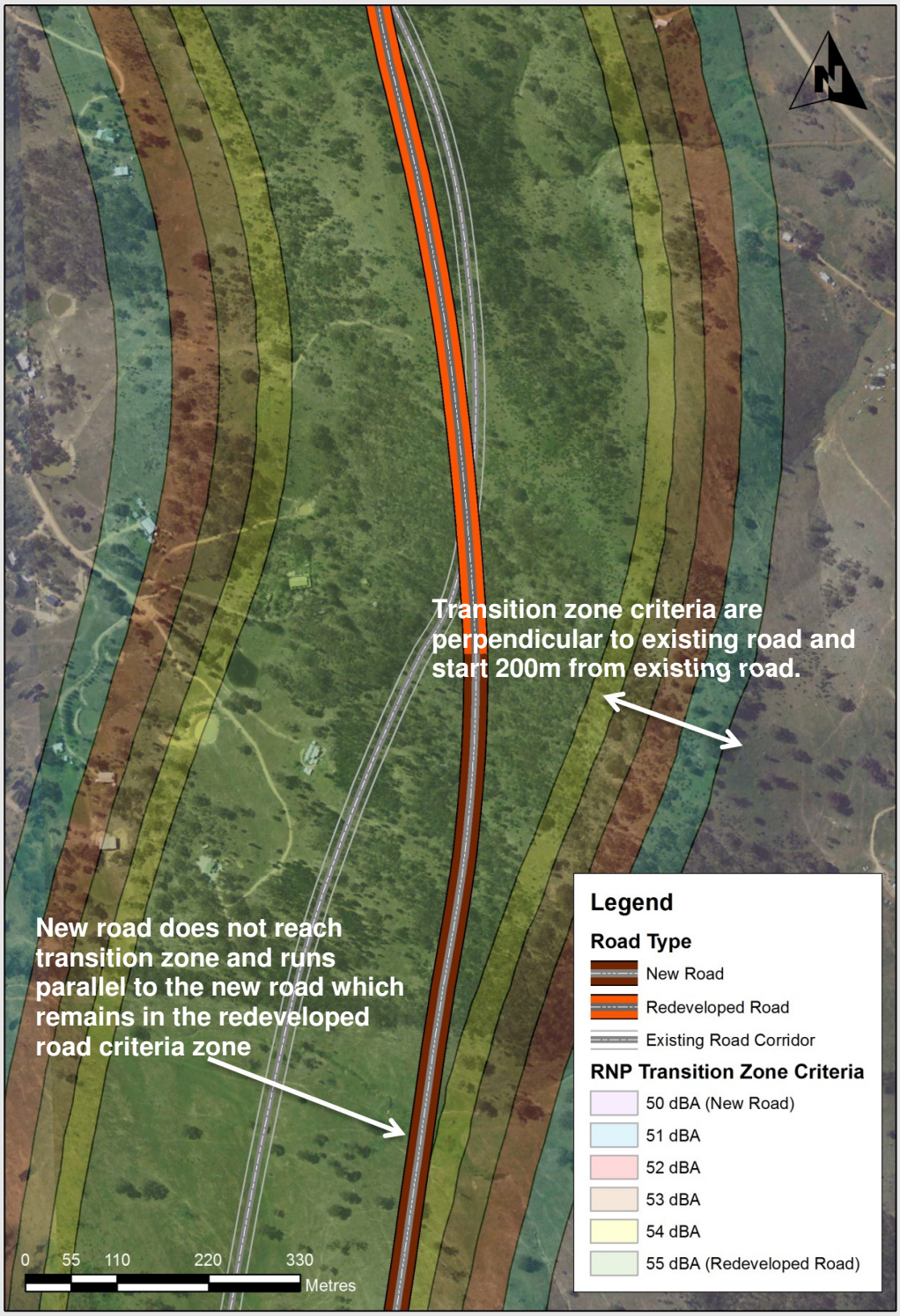


**Figure 3** **Example RNP transition zone criteria (Night) based on existing noise levels**




On the other hand, the RNP (see Figure 3) takes existing noise levels into consideration when setting transition zone criteria. This can result in new road criteria not being assigned for 150m to 900m from the physical junction between the two road types on Roads and Maritime projects. This is because existing noise levels near State and Federal roads are often much higher than new road criteria or often the road project alignment is significantly different to the existing road and associated noise pattern.

Under the Roads and Maritime approach in the NGG the existing noise level has no effect on setting new and redeveloped criteria. The approach documented in the NCG is easier to explain to the community as the transition aligns with the physical junction between the new and redeveloped road and follows the project road geometry. It also treats people more fairly as it ensures that criteria and opportunities to reduce noise relate to the project road design rather than what they had before.

Existing noise levels are only considered in setting more stringent criteria in very low traffic noise environments (NCG adopts RNP's relative increase criteria) where achieving the new and redeveloped criteria would still create a large impact and where a road project generates significant additional traffic near receivers on the surrounding and road network.

Note that for receivers with new road criteria Roads and Maritime assesses the total noise level from all roads against the new road criteria. This differs from the RNP where consideration is only given to the noise levels contributed by the new road. We believe this is an important difference and Roads and Maritime's approach ensures that noise mitigation reduces road traffic noise levels at the receiver rather than just the noise level coming from the new road. This approach also ensures that noise from the new road, even if it complies with criteria under the RNP approach, cannot unreasonably add to existing noise levels without the receiver qualifying for mitigation.

# Review of criteria

After criteria have been assigned under the NCG a check is completed that asks the question 'have the principles been met?' The NCG notes that the use of the procedures in the NCG do not guarantee that the principles will always be met for all situations as there is always an exception to a rule. In cases where there is doubt that the procedure has met the principles then it is the principles rather than the procedures that are paramount. Where the principles are not met the procedure may be varied through consultation with RMS noise specialists. This ensures that the intention of the RNP is met.

All in all, the principles behind the NCG are consistent with the RNP. Criteria are based on the road development type a residence is affected by due to the road project. Residences may be assigned new, redeveloped or transition zone noise criteria depending on what part of the project they are affected by and assigned relative increase criteria for the project or existing noise criteria on the surrounding road network depending on how the built project will change noise levels.