

STATE HIGHWAY CLASSIFICATION

SUBMISSION TO THE NZ TRANSPORT AGENCY

31 MARCH 2011

INTRODUCTION

IPENZ and Roothing New Zealand (“we”) appreciate the opportunity to comment on the proposed State Highway Classification. We believe that classification of New Zealand roads can simplify determining required funding levels, assist in the formulating of District Plans, and provide road users with an indication of what levels of service to expect.

BACKGROUND TO IPENZ

The Institution of Professional Engineers New Zealand (IPENZ) is the lead national professional body representing the engineering profession in New Zealand. It has approximately 12,000 Members, including a cross-section from engineering students, to practising engineers and senior Members in positions of responsibility in business. IPENZ is non-aligned and seeks to contribute to the community in matters of national interest, giving a learned view on important issues, independent of any commercial interest.

IPENZ has had limited Membership comment on the draft submission, but considered it appropriate to provide some alternative perspectives on the Consultation Draft, even with this limited Member interest.

BACKGROUND TO ROADING NEW ZEALAND

Roothing New Zealand represents contractors who build and maintain New Zealand’s land transport infrastructure. While Roothing New Zealand members carry out the majority of the country’s roading work, they are also substantially involved in the construction and maintenance of other infrastructure, such as rail, airports, ports, utilities and energy. The combined turnover of Roothing New Zealand members is approximately \$3 billion per annum. Roothing New Zealand members have a direct interest in this Consultation Draft as those who build and maintain this country’s infrastructure networks.

SUBMISSION

EXECUTIVE SUMMARY

IPENZ and Roothing New Zealand make the following keys points in this submission.

- The purpose of the classification system needs to be clarified.
- The state highway classification system needs to be simplified and use common road classification nomenclature.
- The state highway classification system needs to be seen as part of a national roading classification system.

- The state highway classification system needs to recognise urban state highways as being considerably different from rural state highways.
- It is unclear why the state highway classification system takes into account traffic generators when the function of a road is determined by the demand characteristics of the traffic on it.
- The levels of service need to be measurable.

QUESTION 1: DO YOU HAVE ANY COMMENTS ABOUT THE WAY THE STATE HIGHWAYS HAVE BEEN CATEGORISED?

The purpose of classification

We consider there needs to be increased clarity about the purpose of the classification system. The Consultation Draft states it is a tool to help determine strategic fit, and to better target funding to roads that need to be brought up to the agreed levels of service. We think this purpose is unclear and needs further consideration.

We believe the purpose should be amended to be “to define and categorise the functions of roads, enabling derivation of the required levels of service to deliver those functions”. This amended version provides a direct link between the purpose of the classification system and the criteria for it. The Consultation Draft currently appears to have no analysis around the design of the classification system.

The words “classification” and “category” are both used in the Consultation Draft. Wikipedia¹ describes a “hierarchy of roads that categorizes roads according to their functions and capacities. It states “while sources differ on the exact nomenclature, the basic hierarchy comprises freeways, arterials, collectors, and local roads”.

We believe it should more clearly state that it is a classification system and hence suggest significant changes that align with common road classification language and nomenclature.

We note that the Road Safety Strategy² recommends developing a classification system for the roading network – i.e. the entire network. (Table 1, page 3). This raises the question as to why the NZ Transport Agency is developing a classification system that does not cover local roads. Local road classifications are discussed further below.

State highways are part of a network

State highways are part of New Zealand’s wider roading network. They are generally planned as a network through regional land transport planning and programmes, and as such are not isolated networks in their own right. The Government’s vision for transport in the (still current) New Zealand Transport Strategy 2008³ is that: “People and freight in New Zealand have access to an affordable, integrated, safe, responsive and sustainable transport system”. The purpose of the Land Transport Management Act 2003 is to “contribute to the aim of achieving an affordable, integrated, safe, responsive, and sustainable land transport system”.

We consider that the Consultation Draft does not reflect this integrated approach. In particular it does not reflect the following.

- Align with the classifications for the balance of the roading network.

¹ Wikipedia – available at: http://en.wikipedia.org/wiki/Hierarchy_of_roads

² Safer Journeys – New Zealand’s Road Safety Strategy 2010-2020

³ The New Zealand Transport Strategy 2008

- Adequately reflect that many state highways are part of the urban networks of cities and towns.
- Reflect the high level of connectivity of many urban state highways to local roads and direct access to property, and reflects a “corridor” frame of mind.

The artificial distinction between state highways and local roads needs to be recognised and is due to the different ownership, funding and management responsibilities for these roads. This artificial distinction is not relevant to road users and should not be reflected in road classifications.

Alignment with urban road classifications

We note there does not seem to be any alignment of the roading classifications in NZS 4404:2010⁴ published in October 2010. This Standard not only considers classifications, but also criteria including traffic volumes. The lack of alignment is shown in the following table.

Road Type	Categories	Approx traffic volume (vehicles per day)
State highways	National strategic	> 30,000
	National strategic high volume	> 35,000
	Regional strategic	>10,000
	Regional connector	>3,000
	Regional distributor	<3,000
Rural, suburban, urban, centre (NZS 4404:2010)	Motorway	
	Major arterial	Rural > 5,000
		Urban >20,000
	Minor arterial	Rural 1,000 - 5,000
		Urban 8,000 - 20,000
	Connector/collector	8,000
	Local	1,000
Lane	200	

⁴ NZS 4404:2010 Land Development and Subdivision Infrastructure – October 2010

Alignment with international practice

The Intergovernmental Committee on Surveying and Mapping is an Australian based committee with a New Zealand representative (the Surveyor General). That Committee commissioned a report on road classifications in 2006⁵ which contained a useful table of international categories (Appendix A, B and C). In summary these appendices include the following typical categories.

NZ	NSW	Victoria	Canada		UK
			Rural	Urban	Urban/rural
Arterial	Motorway	Freeway	Freeways	Major arterial	Motorway
Minor arterial	Primary	Highway		Minor arterial	A road
Collector	Arterial	Arterial	Arterial		B road
Local	Sub-arterial	Sub-arterial			C road
	Distributor	Collector	Collector	Collectors	
	Local	Local	Local	Local	Local
	Service lane				Alley

Suggested classifications

The terms “national” and “strategic” are not commonly used in other jurisdictions. It is self-evident that this is a national system (state highways) and we consider the word “strategic” should be avoided as it is an overused, undefined and unhelpful term.

We suggest that the subcategory for high volume routes should not be used. This is because while traffic volume is an important parameter to determine function, it is only one of the criteria (as is demonstrated in the criteria in the Consultation Draft).

It may not be feasible to be in complete alignment with NZS 4404:2010, or with international practice, but we consider there are some useful improvements that could be made to the proposed classifications to improve alignment. It is notable that other jurisdictions often have a motorway category and a distinction between urban and rural roads. This functional difference is highlighted by the proposed criteria - the road user experience and the levels of service are very different between motorways and other roads, and between rural and urban roads. The classification system needs to reflect these differences. Hence we suggest that the following classifications be used.

⁵ Assessing the Feasibility of a National Road Classification – Report to ICSM on National Road Classification Developments, October 2006.

NZTA proposal for SH	IPENZ suggestion for SH	
	Rural	Urban
	Motorway	Motorway
National strategic	Major arterial	
National strategic high volume		
Regional strategic	Minor arterial	
Regional connector		
Regional distributor	Connector/collector	

It should be noted that we suggest combining the proposed classifications. If Australia and the United Kingdom are able to use three to four classifications (between the motorway and local classifications), then it does not seem sensible for New Zealand, with generally lower traffic volumes, to have six categories. As shown in the above table, IPENZ and Roading New Zealand suggest three would be appropriate.

The terms “connector” and “collector” are debateable. We note NZS 4404:2010 uses both – connector seems more appropriate as these state highways generally connect to other state highways or to ports and airports. The few that are single branches function more as distributors. On balance we have suggested a combination of terms to align with NZS 4404:2010, as at this level of the roading hierarchy there is significant overlap with local urban road networks.

QUESTION 2: DO YOU HAVE ANY COMMENTS ON THE CRITERIA OR THRESHOLDS?

The proposed thresholds are as follows.

- Freight highway volumes.
- Annual average daily traffic.
- Centres of population.
- Freight tonnes and value at ports, airports and inland ports.
- Airport passenger numbers.
- International tourist flows on highways.
- Other strategically important issues.

As discussed in our response to Question 1, the purpose of the classification system is to define and categorise the function of a road and to enable derivation of the appropriate levels of service to deliver.

The above list has a lot in common with the criteria used in the past to assess proposals for state highways to make decisions whether to declare or revoke the status of a road. This is essentially a “who funds” decision rather than an allocation of funds decision. An example is “centres of population” which was used to decide whether the road has a wider national interest or served local needs. We suggest this assessment process is not directly relevant to the function of the road or its levels of service.

The proposed criteria in the Consultation Draft relate to the generators of traffic volumes and traffic types. Rather than the generators of traffic, we believe it is more valuable to simply state the function in terms of traffic volumes and type to enable an understanding of the consequential demands these place on the road.

For example, high volume (criteria) is relevant to travel time (level of service), while high freight volume is relevant to pavement quality, and high tourist traffic is relevant to signage. Another important point to consider is the needs of passenger traffic – commuter buses, school buses and rural school buses.

We consider some traffic related criteria for determining the function of the road could include the following.

- Traffic volume (average annual daily traffic - all vehicles).
- Freight tonnage (not freight value as this has little relevance to the physical demands placed on the road).
- Freight traffic volumes.
- Tourist volumes (domestic and international).
- Passenger transport volumes.

We note that what appears to be missing is the access function of roads. Some possible criteria for this might include the following:

- Density of side development - this creates side friction; and a central business district has quite a different impact from rural farmland.
- Numbers of access points to properties per kilometer.
- Number of intersections per kilometer.

A further point is that in determining classifications based on a number of criteria, there are likely to be overlaps of traffic volumes between classifications. Thus the table shown on page 4 of the Consultation Draft should show ranges of traffic volumes rather than a specific number e.g. 8,000–14,000 vehicles per day (vpd), rather than 10,000 vpd. We note this type of approach is used in Appendices 4, 5, 6, and 8 of the Consultation Draft.

QUESTION 3: WHAT ROAD USER EXPERIENCE OR LEVEL OF SERVICE DO YOU THINK IS APPROPRIATE FOR EACH CATEGORY OF ROAD AND WHAT IS THEIR IMPORTANCE?

The proposed levels of service or road user are as follows.

- Travel time.
- Predictable trips.
- Safety.
- Good quality roadside facilities like rest areas.
- Road signage.
- Road maintenance.
- Road design (passing lanes etc).
- Environmental impacts of a road (noise pollution, stormwater runoff, etc).
- Pleasant landscape.

We note that the levels of service relate to the road user interests, not to pavement management issues.

Levels of service need to be measurable, so the levels of service for road maintenance, road design, environmental impacts, and pleasant landscape measures need to be developed and used, rather than the general term “road maintenance”. Some elements of road maintenance such as roughness, rutting and surface friction will be important for the road user, but, for example, the surface condition index is not generally relevant to them. Some of these parameters appear to be very difficult to measure (e.g. landscape) and if they are continued with, some form of grading system will need to be developed.

A useful guideline on developed measurable levels of service has been created by the National Asset Management Steering Group⁶. We recommend NZTA review this document.

Some of the levels of service proposed relate to the adjoining environment. We consider the adjoining community might be interested in environmental impacts (including vibration), whereas the road user may have no interest. If the intention is to consider the adjoining community, there may need to be some distinction between these two interests. The road user and the adjoining community might both be interested in a pleasant road landscape (road side and medians). Obviously the road owner can have little influence on the wider landscape and therefore the levels of service should relate to those things the road user can actually influence.

As discussed above, this classification is relevant to the road user, and not adjoining owners. Also it must be in the power of the road owner to deliver. Hence there is a need to understand the distinction and confine this level of service issue to the immediate road landscape.

We consider some additional levels of service might include the following.

- Information systems – to what extent road information is conveyed to motorists (passive signage, variable messaging, and radio information).
- Road side facilities – while rest areas have often been provided to assist in combating driver fatigue, there has never been any recognition of the need for toilet facilities, where the road user is the only customer. In a number of high profile cases local ratepayers have had to fund a facility that is only used by state highway users.

QUESTION 4: DO YOU HAVE ANY OTHER COMMENTS?

Influence of topography

The Consultation Draft (page 3) suggests that consideration of function and levels of service leads to road design. However previous design guides suggest that in deciding the appropriate design, the nature of the topography is relevant – and these guides have used the terms flat, rolling and mountainous topography.

Clearly the feasible horizontal and vertical geometry of a new road or existing road realignment is strongly influenced by topography, and a number of state highways traverse difficult country. We note that these roads, with compromised geometry, can have good safety records.

We believe this issue might be considered as part of the design process.

⁶ Developing Levels of Service & Performance Measures Guidelines

Utilities

Another issue to consider is the presence of underground services. These services have a considerable impact on road roughness, and have maintenance access requirements with corresponding traffic management issues. One of the functions of urban State Highways is to serve as corridors for both underground and overhead utilities. This issue needs addressing when further consideration is given to urban state highways.

CONCLUSION

IPENZ and Roothing New Zealand appreciate the opportunity to make this submission. We would also like the opportunity to meet with representatives of the NZ Transport Agency to speak to our submission.

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