



Land Transport **NZ**
Ikiiki Whenua Aotearoa



Draft National Road Hierarchy for SMS

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What is a National Road Classification System (NRCS)?

- Defines a series of functional road classes for use in NZ
- Each road and street is classified into one of the classes
- Transport planning, traffic engineering, road safety and asset management are managed accordingly

What is the purpose of NRCS?

- Helps with consistency of driver experience within & between districts
- Supports “self explaining” roads
- Helps with road network performance analysis by RCAs and Land Transport NZ
- Helps identify and encourage best practice

Background to project

- NRCS project commenced in 2003 under LTSA as a road safety tool
- Already implemented within CAS
- Merger of Land Transport NZ and Transit will provide added opportunities for development of NRCS
- A key component of SMS

Opportunities within SMS

- Consistent SMSs will lead to self-explaining roads
- NRCS developed since 2003 is now ready for trial within SMS
- Will provide a benchmark for existing road hierarchies

Existing Hierarchies

- NZS 4404 – Subdivision Standard
- “Transfund” Maintenance Guidelines
- Transit SH Geometric Design Manual
- All councils have hierarchies in district plans

NZS 4404 – Urban

Class (Urban)	Traffic Volume
Local roads	< 750
Local distributor roads	200 – 1,000
Collector roads	1,000 – 3,000
Secondary (district) arterials	3,000 – 7,000
Primary (regional) arterials	> 7,000

- Mostly non-overlapping volume ranges

NZS 4404 – Rural

Class (Rural)	Traffic Volume
Minor local	< 300
Sub-collector	300 – 700
Minor collector	700 – 1,000
Major collector	1,000 – 2,500
Arterial	> 2,500

- Non-overlapping ranges

“Transfund” Maintenance Hierarchy

Environment	Group Name	AADT
Urban	E	<200
	D	200 – 1,000
	C	1,000 – 5,000
	B	5,000 – 10,000
	A	>10,000
Rural	F	<50
	E	50 – 200
	D	200 – 1,000
	C	1,000 – 5,000
	B	>5,000

- Non-overlapping ranges

SH Geometric Design Manual

Class	Traffic Volume
Local Road	< 1,000
Collector Road	< 5,000
Arterial Road	< 12,000
Expressway	> 8,000
Motorway	> 8,000

- No urban/rural distinction
- Overlapping ranges

Determining Road Class

- AADT is seen as the most objective (and quantifiable) method of determining road class
- Other characteristics may result in roads being classified and managed differently from the initial AADT assessment

Proposed NRCS

- Consists of 4 urban classes and 5 rural classes (plus motorways)
- Based on 9 characteristics
- AADT is the primary determinant

Local Authorities

- Whangarei District
- Rodney District
- Manukau City
- Hamilton City
- Kapiti District
- Tasman District
- Marlborough District
- Hurunui District
- Waimakariri District
- Christchurch City
- Southland District
- Invercargill City
- Plus Transit

9 Characteristics of the NRCS

- AADT (traffic volume)
- Traffic function/land access
- Flow characteristics
- Desirable operating speed
- Desirable connections
- User types
- Pedestrians
- Cyclists
- Public transport

NRCS traffic volumes (AADTs)

Urban Road Classes ¹		Rural Road Classes ²	
AADT		AADT	
Local	≤ 2,000	Class F	≤ 50
		Class E	51 – 200
Collector	2,001 – 8,000	Class D	201 – 1,000
Minor arterial	8,001 – 20,000	Class C	1,001 – 5,000
Major arterial ³	> 20,000	Class B ³	> 5,000
¹	Urban roads are generally those with speed limits of 70 km/h or less, although motorways and expressways may have higher limits	²	Rural class names are from Transfund's road maintenance group guidelines – no Class A exists in this system.
³	Includes motorways and expressways		

- Non-overlapping ranges

AADT Comparison – Urban

Class	NRCS	NZS 4404	“Transfund”	SHGDM
Local	2,000	<200	<200	< 1,000
		200–1,000	200–1,000	
Collector	2,000–8,000	1,000–5,000	1,000–5,000	< 5,000
Minor Arterial	8,000–20,000	5,000–10,000	5,000–10,000	< 12,000
Major Arterial	> 20,000	>10,000	>10,000	

- Each system uses slightly different names
- NZS 4404 & Transfund have more classes

AADT Comparison – Rural

Class	NRCS	NZS 4404	“Transfund”	SHGDM
F - Local	≤ 50	< 300	<50	< 1,000
E - Local	51 – 200	300 – 700	50 – 200	
D – Collector	201 – 1,000	700 – 1,000	200 – 1,000	< 5,000
C – Minor Arterial	1,001–5,000	1,000 – 2,500	1,000 – 5,000	<12,000
B – Major Arterial	> 5,000	> 2,500	>5,000	

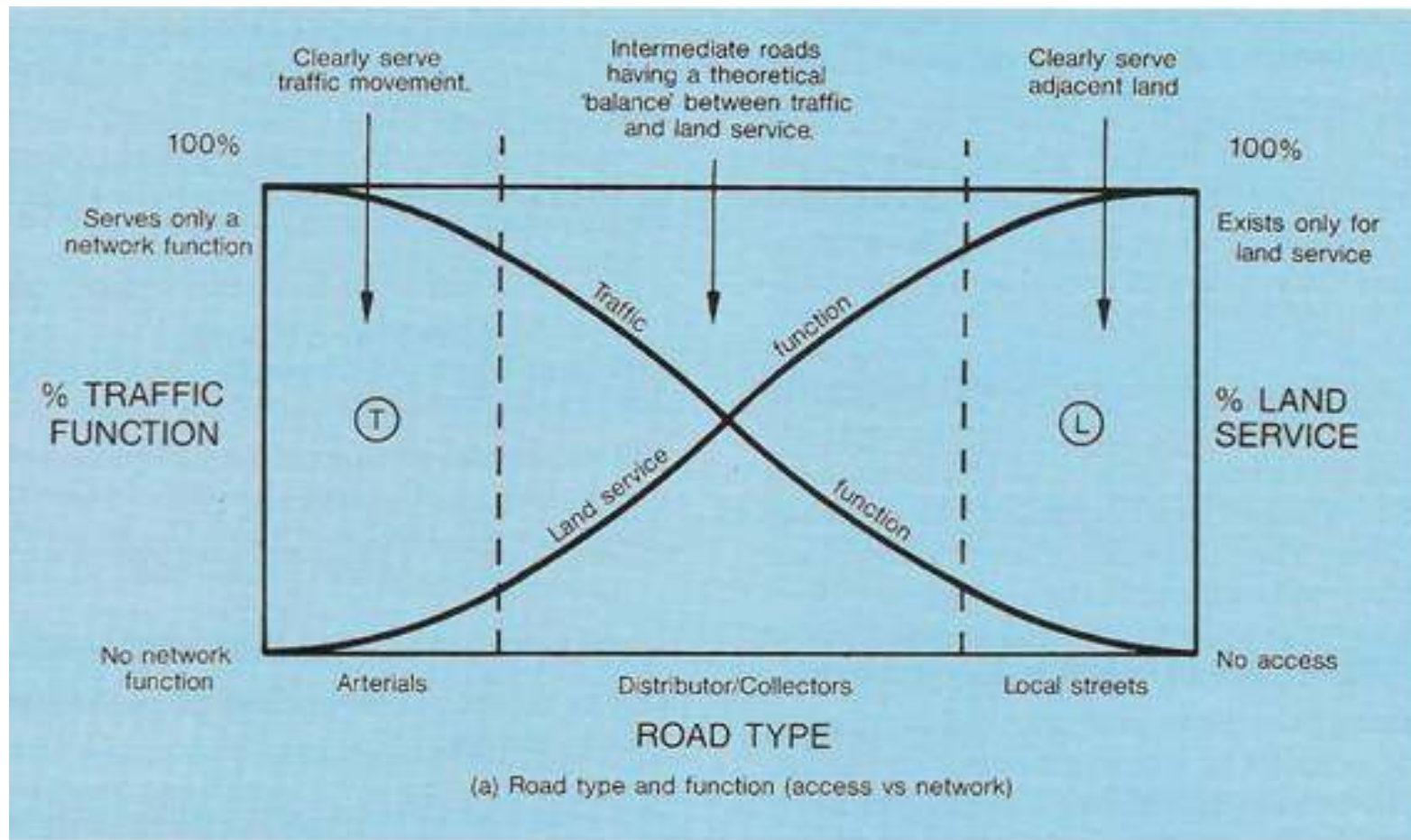
- NRCS is same as Transfund

NRCS relative to 12 Districts

	Length (km)	Down (km)	%	Same (km)	%	Up (km)	%
Urban	4,695	795	17%	3,642	78%	259	6%
Rural	15,819	2,135	13%	10,467	66%	3,162	20%
TOTAL	20,460	2,930	14%	14,109	69%	3,421	17%

- “Down” means NRCS has a lower class than TLA
- For example, a TLA collector might be a local in NRCS

Traffic vs Land Service Functions



Flow characteristics

- Interrupted or uninterrupted flow
- Stop and Give Way signs
- Traffic signals
- Grade-separation

Desirable operating speed

- Increases with increasing road class
- 30 – 50 km/h for urban local roads
- 60 – 80 km/h for rural local roads
- 80 – 110 km/h for motorways

Desirable connections

- Locals join to locals and collectors
- Arterials join to arterials and collectors
- Roads generally connect to between one class above and one class below

User types

- Trucks may be prohibited on some urban local roads
- Bus routes generally not on local roads
- Pedestrians and cyclists prohibited on motorways except on special facilities

Pedestrians

- Footpaths on at least one side of urban local roads
- Both sides of urban collectors and arterials
- Separate paths with grade separation at intersections on motorways

Cyclists

- Special facilities generally not required on urban local or collector roads (speed management may be required)
- Cycle lanes and/or off-road paths likely to be beneficial on urban arterials
- Separate paths with grade separation at intersections on motorways

Public transport

- Bus routes generally not on urban local roads
- Bus routes more appropriate on urban collectors and above

Conclusions

- A hierarchy within an RCA's SMS improves consistency of road design & management
- The proposed NRCS allows benchmarking across the country
- Propose to evaluate NRCS (within SMSs) during 2007/08