

Appendix F: Road Hierarchy

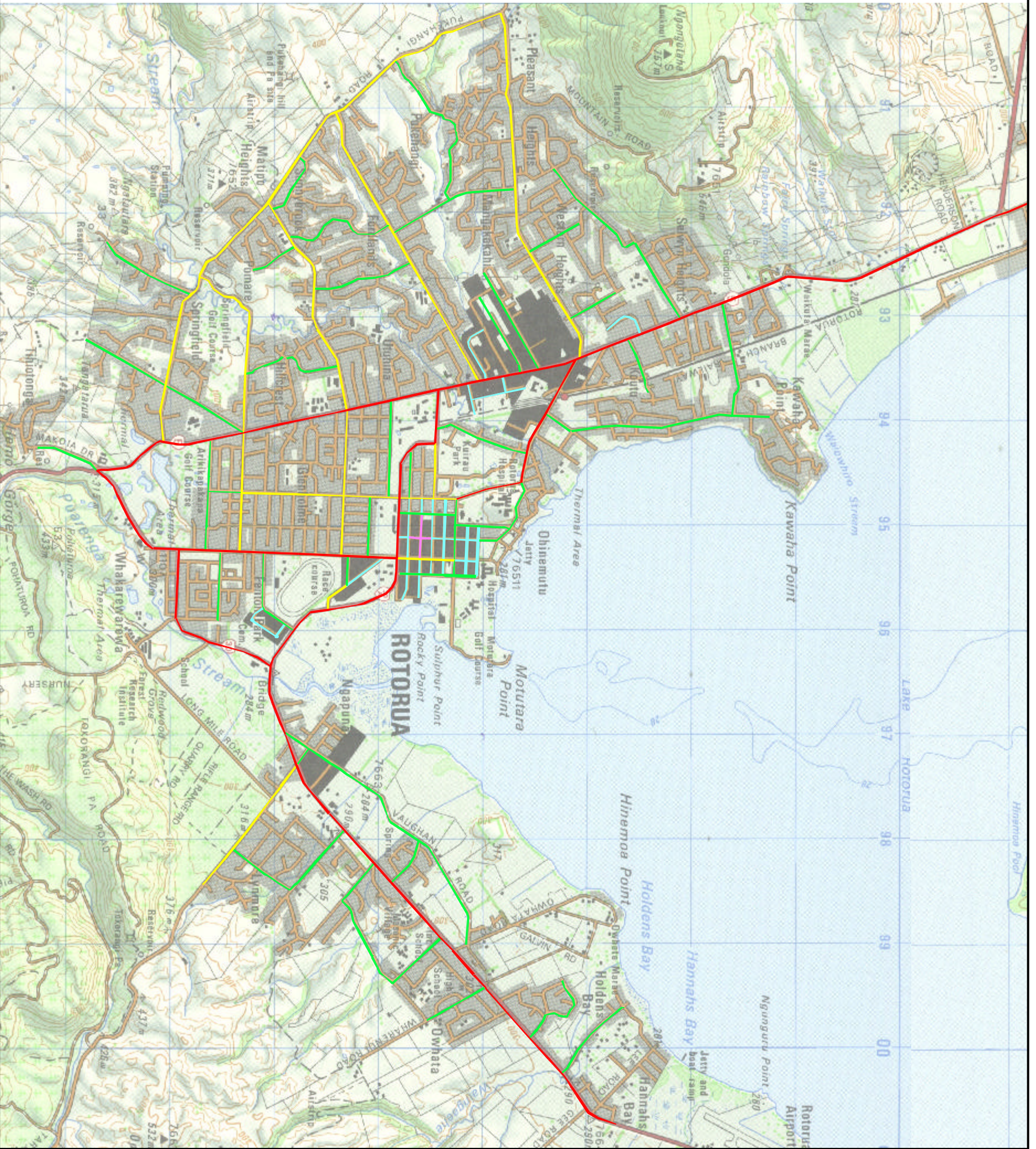
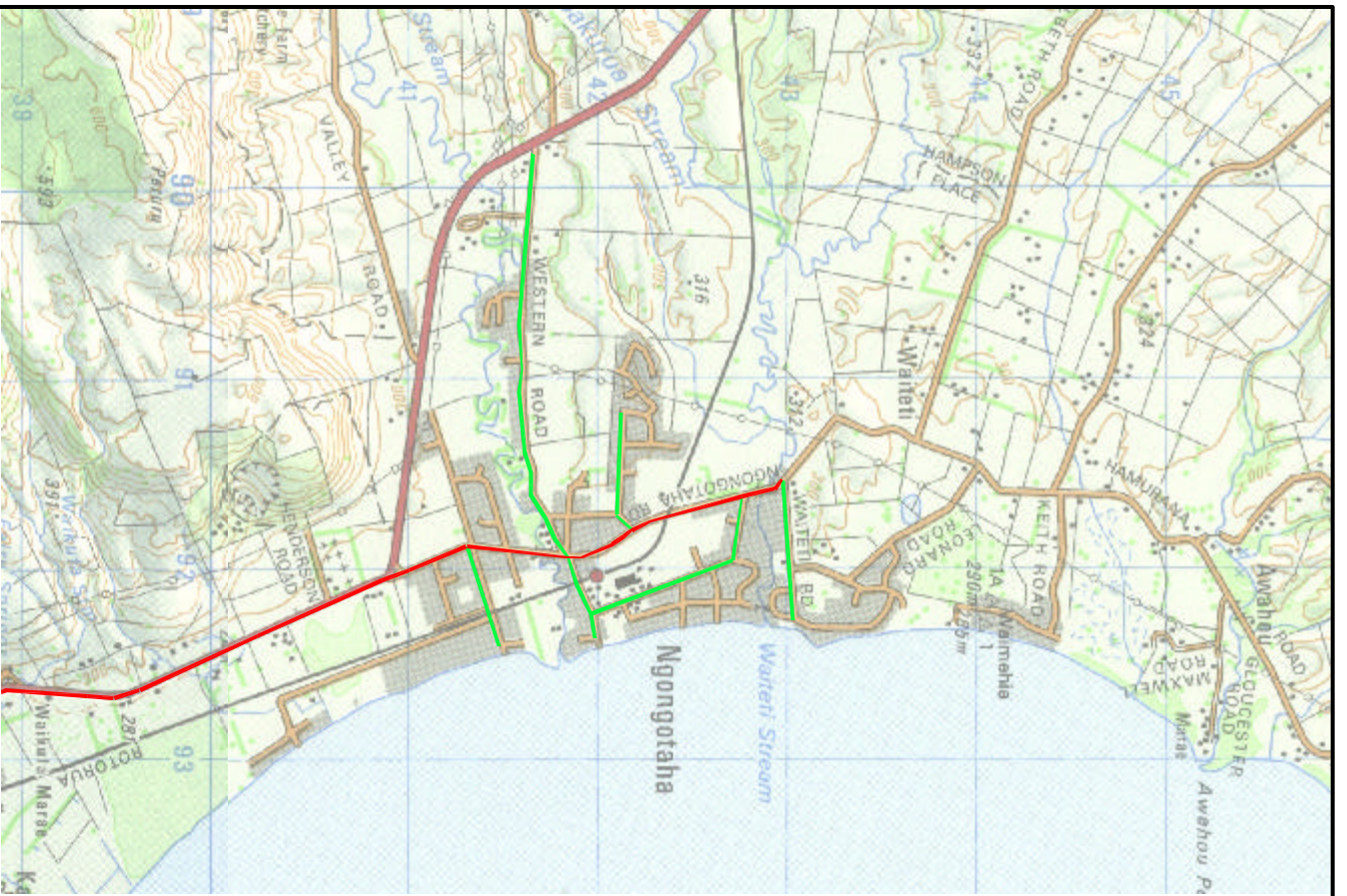
- Assignment to Opus Recommended Road Hierarchy (2003)
- Existing and Gabites Porter Recommended Hierarchy (2000)
- Examples of Hierarchy Classifications

Opus Recommended Hierarchy

Note: Roads not listed are classed as “Local – Residential” roads.

Road	Subsection
Major Arterials	
Amohau Street (SH30A)	
Fairy Springs Road (SH5)	
Fenton Street	Meade Street to Amohau Street
Hemo Road (SH30)	Old Taupo Road to Meade Street
Lake Road	Fairy Springs Road to Ranolf Street
Ngongotaha Road	
Old Taupo Road (SH5)	
Pukuatua Street	Old Taupo Road to Amohau Street
Ranolf Street	Lake Road to Arawa Street
Sala Street (SH30)	
Te Ngae Road (SH30)	
Minor Arterials	
Clayton Road	
Devon Street	
Devon Street West	
Fenton Street	Amohau Street to Arawa Street
Malfroy Road	
Malfroy Road West	
Pukehangi Road	
Pukuatua Street	Amohau Street to Ranolf Street
Ranolf Street	Arawa Street to Devon Street
Springfield Road	
Sunset Road	
Tarawera Road	
Te Ngae Road	Ti Street to Amohau Street Extension
Collectors	
Amohia Street	Amohau Street to Arawa Street
Arawa Street	Hinemaru Street to Ranolf Street
Aurora Street	
Basley Road	Te Ngae Road to Morey Street
Beaumonts Road	
Bennetts Road	Lake Road to Koutu Road
Blomfield Street	
Brent Road	
Brookland Road	
Edmund Road	
Eruera Street	Ranolf Street to Amohau Street
Ford Road	
Goldie Street	Blomfield Street to Homedale Street
Gordon Road	Old Quarry Road to Thomas Cres
Hinemaru Street	
Homedale Street	
Hood Street	
Huia Street	
Iles Road	Te Ngae Road to Selwyn Road
Jervis Street	
Kawaha Point Road	Fairy Springs Road to Grand View Road
Koutu Road	
Lake Road	Ranolf Street to Tutanekai Street
Marguerita Street	
Marino Road	

Road	Subsection
Mokoia Drive	
Morey Street	
Old Quarry Road	
Otonga Road	
Pandora Avenue	
Pegasus Drive	Pukehangi Road to Aurora Street
Pererika Street	
Petrie Street	
Pohutukawa Drive	
Rangiuru Street	
Ranolf Street	Devon Street to Sophia Street
Robinson Avenue	
Russell Road	
Selwyn Road	
Sophia Street	
Steeles Lane	
Tallyho Street	
Tarewa Road	
Tau Street	Ngongotaha Road to Wikiraka Street
Tennyson Drive	
Ti Street	
Utuhina Road	
Vaughan Road	
Victoria Street	
View Road	
Waiteti Road	
Ward Avenue	
Western Road	
Wharenui Road	Te Ngae Road to Porikapa Road
Wikiraka Street	
Local – Commercial/Industrial	
Biak Street	
Depot Street	
Eruera Street	(Lake) to Ranolf Street
Fenton Street	Arawa Street to Whakaue Street
Gilltrap Street	
Haupapa Street	
Hinemoa Street	(Government Gardens) to Ranolf Street
Maisey Place	
Pukaki Street	
Pukuatua Street	Hinemaru Street to Ranolf Street
Pururu Street	
Te Ngae Road	Fenton Street to Ti Street
Tutanekai Street	Lake Road to Pukuatua Street
Tutanekai Street	Eruera Street to Amohau Street
Whakaue Street	
White Street	
Special Roads	
Hinemoa Street	Amohia Street to Fenton Street
Tutanekai Street	Eruera Street to Pukuatua Street



Legend

- Major Arterial
- Minor Arterial
- Collector
- Local
- Industrial/Commercial
- Special

DESIGN	DATE	BY	CHECKED	DATE
DESIGN		JM		
DRAWN				
APPROVED				

APPROVED: _____

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ORUS
INFRASTRUCTURAL CONSULTANTS

Hamilton Office
 1 Phone Bay 3167
 1 Arkenon New Zealand
 Tel: +64 7 838 8114
 Fax: +64 7 838 8324

PROPOSED ROAD HEIRARCHY

SCALE	DATE	BY	CODE	SHEET	REVISION
30/10/03 @ 1:6.25					

FILE: ROTORUA DISTRICT COUNCIL
 ROTORUA URBAN TRANSPORT STRATEGY PHASE 2

**Previous Gabites Porter Recommended Hierarchy and Existing RDC District
Plan Classification**

Previous Proposed Hierarchy

Road	Section	Gabites Porter Recommended Hierarchy	1996 Traffic Volume	2006 Traffic Volume	2011 Traffic Volume	2021 Traffic Volume	RDC District Plan Classification
Amohau Street	All	Major Arterial	21892	19905	22302	25034	High Density Urban
Fairy Springs Road	at Commercial D Zone	Major Arterial	23947	27106	29868	32982	Major Arterial Routes Urban
Fenton Street	Part	Major Arterial	15250	17816	16698	20104	High Density Urban
Fenton Street	Part	Major Arterial	13021	15291	14709	17596	Major Arterial Routes Urban
Lake Road	All between Fairy Springs Road and Ranolf Street	Major Arterial	21287	25481	26974	28291	High Density Urban
Ngongotaha Road	at Commercial C Zone	Major Arterial	19888	23358	26498	29918	Major Arterial Routes Urban
Old Taupo Road	at Commercial C Zone	Major Arterial	23766	24924	25664	30073	Major Arterial Routes Urban
Old Taupo Road	at Commercial E Zone	Major Arterial	31737	34236	34349	40138	Major Arterial Routes Urban
Old Taupo Road	at Commercial D Zone	Major Arterial	13760	15249	16026	17775	Major Arterial Routes Urban
Sala Street	All	Major Arterial	8184	10101	10927	13716	Major Arterial Routes Urban
Te Ngae Road	at Commercial D Zone	Major Arterial	36732	44248	24201	59434	Major Arterial Routes Urban
Arawa Street	All	Minor Arterial					High Density Urban
Devon Street	All except Residential B Zone	Minor Arterial					Major Arterial Routes Urban
Devon Street	at Residential B Zone	Minor Arterial					Major Arterial Routes Urban
Malfroy Road	at Commercial D Zone	Minor Arterial	7379	8661	10233	9747	Major Arterial Routes Urban
Malfroy Road	All except Commercial D Zone	Minor Arterial	7019	8149	9101	9233	Major Arterial Routes Urban
Pukuatua Street	All except SH30A	Minor Arterial	9178	8747	9429	9316	High Density Urban
Pukuatua Street	All except SH30A	Minor Arterial	22911	25588	25863	29799	Major Arterial Routes Urban
Ranolf Street	All except Residential B and Commercial C Zones	Minor Arterial	21287	25481	26974	28291	High Density Urban
Ranolf Street	at Residential B Zone	Minor Arterial	10325	10135	13948	11106	Major Arterial Routes Urban
Ranolf Street	at Commercial D Zone	Minor Arterial	7163	8239	8925	8722	Major Arterial Routes Urban
Sunset Road	All except Commercial C Zone	Minor Arterial	9437	10657	11001	11680	Major Arterial Routes Urban
Te Ngae Road	All except Commercial D Zone	Minor Arterial	25356	31020	10395	24647	Collector
Amohia Street	All	Collector					High Density Urban
Basley Road	All	Collector					Collector
Clayton Road	at Commercial D Zone	Collector	11878	13644	13458	14981	Major Arterial Routes Urban
Eruera Street	All	Collector					High Density Urban
Ford Road	at Commercial D Zone	Collector					Major Arterial Routes Urban
Ford Road	All	Collector					Collector
Gordon Road	All	Collector					Collector
Hood Street	All	Collector					Collector
Iles Road	All	Collector					Collector
Kawaha Point Road	at Commercial D Zone	Collector					Major Arterial Routes Urban
Lake Road	All west of Ranolf Street	Collector					Major Arterial Routes Urban
Marguerita Street	All	Collector					Collector
Mokoia Drive	All	Collector					Collector
Morey Street	All	Collector					Collector
Old Quarry Road	All	Collector					Collector
Otonga Road	at Commercial Zone	Collector					Major Arterial Routes Urban
Paradise Valley Road	All	Collector					Collector
Pererika Street	at Commercial D Zone	Collector					Major Arterial Routes Urban
Robinson Avenue	All	Collector					Collector
Selwyn Road	All	Collector					Collector

Red traffic > 14,000vpd
 Orange Traffic >10,000vpd
 Yellow Traffic >4,000 vpd

Previous Proposed Hierarchy

Road	Section	Gabites Porter Recommended Hierarchy	1996 Traffic Volume	2006 Traffic Volume	2011 Traffic Volume	2021 Traffic Volume	RDC District Plan Classification
Springfield Road	at Commercial Zone	Collector					Major Arterial Routes Urban
Springfield Road	All except Commercial Zone	Collector					Major Arterial Routes Urban
Sunset Road	at Commercial D Zone	Collector	9437	10657	11001	11680	Major Arterial Routes Urban
Tau Street	at Commercial C Zone	Collector					Major Arterial Routes Urban
Tau Street	All	Collector					Collector
Tennyson Drive	All	Collector					Collector
Waiteti Road	All	Collector					Collector
Ward Avenue	All	Collector					Collector
Wharenui Road	All	Collector					Collector
Wakaraka Street	All	Collector					Collector
Alison Street	All	Local					Collector
Brookland Road	at Commercial D Zone	Local					Major Arterial Routes Urban
Edmund Road	All	Local					Collector
Froude Street	at Resort C Zone	Local					Major Arterial Routes Urban
Gibson Street	at Resort B Zone	Local					Major Arterial Routes Urban
Hall Road	at Commercial C Zone	Local					Major Arterial Routes Urban
Hamuera Street	at Commercial D Zone	Local					Major Arterial Routes Urban
Haupapa Street	All	Local					High Density Urban
Hilda Street	at Resort B Zone	Local					Major Arterial Routes Urban
Hinemoa Street	All	Local					High Density Urban
Hinemura Street	All	Local					High Density Urban
Homedale Road	All	Local					Collector
Huia Street	All	Local					Collector
Jarmey Place	at Commercial D Zone	Local					Major Arterial Routes Urban
Jervis Street	All	Local					Collector
Kawaha Point Road	All except Commercial D Zone	Local					Collector
Kea Street	at Commercial D Zone	Local					Major Arterial Routes Urban
Koutu Road	at Commercial D Zone	Local					Major Arterial Routes Urban
Koutu Road	All except Commercial D Zone	Local					Collector
Lee Road	All	Local					Collector
Leonard Road	All	Local					Collector
Lynbert Road	at Commercial D Zone	Local					Major Arterial Routes Urban
Lynmore Road	at Commercial D Zone	Local					Major Arterial Routes Urban
MacIntyre Avenue	All	Local					Collector
Miro Street	at Commercial C Zone	Local					Major Arterial Routes Urban
Mountain Road	All	Local					Collector
Otonga Road	at Commercial E Zone	Local					Major Arterial Routes Urban
Otonga Road	All Except Commercial Zone	Local					Collector
Porikapa Road	All	Local					Collector
Pukaki Street	All	Local					High Density Urban
Tryon Road	at Resort C Zone	Local					Major Arterial Routes Urban
Tutanekai Street	All	Local					High Density Urban
Vaughan Road	at Commercial D Zone	Local					Major Arterial Routes Urban
Wallace Crescent	corner at Commercial D Zone	Local					Major Arterial Routes Urban

Red traffic > 14,000vpd
 Orange Traffic >10,000vpd
 Yellow Traffic >4,000 vpd

Options For a Road Hierarchy

In determining an appropriate road hierarchy for the Rotorua District, a number of different hierarchy options were considered. These are detailed below.

Gabites Porter Recommended 4 Level Hierarchy

The Gabites Porter report recommends a 4 level road hierarchy for Rotorua:

- Major arterials
 - to provide for major regional movements
 - strict access control
 - traffic > 10000
- Principal Roads (Minor arterials)
 - to provide for major district movements
 - some access control
 - traffic < 14000
- Collector roads
 - to link arterial network to local roads
 - movement and land access equal
 - traffic < 4000vpd
- Local roads
 - to provide direct access to abutting properties
 - traffic movement secondary to access
 - traffic < 1000vpd

Appendix B lists Rotorua roads other than local roads with their classifications under the Gabites Porter recommendation.

Gabites Porter suggest cross section standards relating to volume:

- | | |
|--------------------------------|--|
| • <14,000 vehicles/day | 2 lane road |
| • 14,000 – 20,000 vehicles/day | 2 lane road with flush median |
| • >20,000 vehicles/day | 4 lane road with flush or solid median |

The traffic volumes for the cross sections are indicative, inferred from the Level of Service Boundaries (Table 3), service flow rates and inferred intersection right turn manoeuvring requirements.

Existing RDC District Plan and Rotorua Civil Engineering Industry Standard

The RDC District Plan states that during the plan period, a road hierarchy will be introduced by way of plan change, with rules regarding the relevant standards and controls. Appendix 18M of the Plan classifies roads under the following hierarchy split:

- High density (urban area only)
- Rural arterial routes
- Major arterial routes (urban)
- Collector
- Local (by inference, roads not listed are local)

The RDC District Plan Subdivision and Development Standards use a different classification from the RDC Rotorua Civil Engineering Industry Standard that sets out “Characteristics of Roads and Streets” (RD-01) for:

- Urban
 - Primary Arterial

- Primary Principal
- Secondary Distributor
- Secondary Local (incl cul-de-sac)
- Rural
 - Zones A, B, D, E
 - Cul-de-sac

TNZ Draft Geometric Manual and Planning Policy Manual Systems

The TNZ Planning Policy Manual suggests a different 4 level hierarchy:

- State highways
- District arterials
- Collectors
- Local roads

The draft TNZ Geometric Design Manual has a 5 level road hierarchy classification system:

National Routes

Motorways, expressways and major two-lane roads which:

- form a nationally important strategic road network,
- are significant elements in the national economy,
- have the highest degree of access standard and control, and
- provide a high level of user service at all times.

Primary (Regional) Arterials

Major roads which:

- form strategic links between regions, or within regions and between districts,
- are significant elements in the regional economy, and
- have some access controls and standards for permitted activities, which are determined mainly on the basis of strategic function and traffic volume.

Secondary (District) Arterials

Roads which:

- form strategic links within, or between, districts,
- are significant elements in the local economy, and
- often also serve as local roads.

Access standards for district arterial roads are determined by the careful consideration of:

- form (the physical alignment of the road),
- function (the present and future role of the road), and
- traffic volumes.

Collector Routes

Locally preferred routes between, or within, areas of population or commercial activity which:

- complement district arterials but have property access as a higher priority, and
- have standards suitable for the safe operational requirements of the traffic volume on each section.

Local Roads

All other roads. The standards for these roads are those considered appropriate by the road controlling authority for local traffic operation and land access requirements.

Australian Standard Definitions

The Australian Standard 1348.4:1987 Road and Traffic Engineering – Glossary of Terms, Part 4 – Transport Planning, includes 4 basic functional definitions for roads:

- “**Arterial road** – a road that predominantly carries through traffic from one region to another, forming principal avenues of communication for traffic movements.
- **Sub-arterial road** – a road connecting arterial roads to areas of development, and carrying traffic directly from one part of a region to another.
- **Collector road (distributor road)** – a non-arterial road that collects and distributes traffic in an area, as well as serving abutting property.
- **Local road** – a road primarily used for access to abutting properties.”

NAASRA Functional Road Classification

Austrroads (1989) describes the NAASRA (National Association of Australian State Road Authorities) road classification system that has an arterial/local split with different classes for urban and rural, and for access function. It results in a 9-class system presented in Table F1 below.

	Rural	Urban
Arterial	CLASS 1: Those roads which form the principal avenue for communications between major regions of Australia, including direct connections between capital cities.	
	CLASS 2: Those roads, not being Class 1, whose main function is to form the principal avenue of communication for movements between: <ul style="list-style-type: none"> • a capital city and adjoining states and their capital cities; or • a capital city and key towns; or • key towns. 	CLASS 6: Those roads whose main function is to perform the principal avenue of communication for massive traffic movements.
	CLASS 3: Those roads, not being Class 1 or 2, whose main function is to form an avenue of communication for movements: <ul style="list-style-type: none"> • between important centres and the Class 1 and Class 2 roads and/or key towns; or • between important centres; or • of an arterial nature within a town in a rural area. 	CLASS 7: Those roads, not being Class 6, whose main function is to supplement the Class 6 roads in providing for traffic movements or which distribute traffic to local street systems.
Local	CLASS 4: Those roads, not being Class 1, 2 or 3, whose main function is to provide access to abutting property (including property within a town in a rural area).	CLASS 8: Those roads not being Class 6 or 7, whose main function is to provide access to abutting property.
Other	CLASS 5: Those roads which provide almost exclusively for one activity or function which cannot be assigned to Classes 1 to 4.	CLASS 9: Those roads which provide almost exclusively for one activity or function and which cannot be assigned to Classes 6, 7 or 8.

Table F1: NAASRA Functional Road Classification

LTSA Proposed National Road Classification System

The LTSA (2003) has recently proposed a National Road Classification System based on surveys and research carried out in New Zealand and overseas. Consultation occurred during July-August 2003, with a final report targeted for release by the end of August 2003.

The hierarchy separates roads into “Urban” and “Rural” categories, as follows:

Urban	Rural
Motorway	Motorway
Expressway	Expressway
Major Arterial	Arterial
Minor Arterial	
Collector	Collector
Local	Local

Table F2: LTSA Proposed National Road Classification System

Appendix G: Proposed Upgrades Plan, Designations and Road Widening from RDC District Plan

Plans of Proposed Upgrades

Old Taupo Road 4-Laning – Pukuatua Street to Malfroy Road

Devon Street/Old Taupo Road Intersection

Malfroy Road/Ranolf Street Intersection

Malfroy Road Extension

SH5 Fairy Springs Road 4-Laning

Lake Road 4-Laning

Eastern Arterial

Old Taupo Road/Malfroy Road Intersection

Ngongotaha Road 4-Laning

Victoria Street Arterial

The following proposed upgrades currently do not have plans available:

Ranolf Street/Pukuatua Street Intersection

Old Taupo/Clayton/Lake/Fairy Springs Intersection

SH30/Te Ngae Road Intersection

Ranolf Street 4-Laning – Arawa Street to Victoria Street

Ranolf Street 4-Laning – Lake Road to Arawa Street

Designations and Road Widening from RDC District Plan