Roads of National Significance

Graham Taylor
National Network Optimisation Manager
May 2010

Government GPS May 2009

- Strong focus on economic growth and productivity
- Focus on Value for money
- Safety, environment, transport choice and public health as other desired impact
- Clear national direction
- Identifies seven Roads of National Significance (RoNS)

Proposed State Highway 30-year Concept

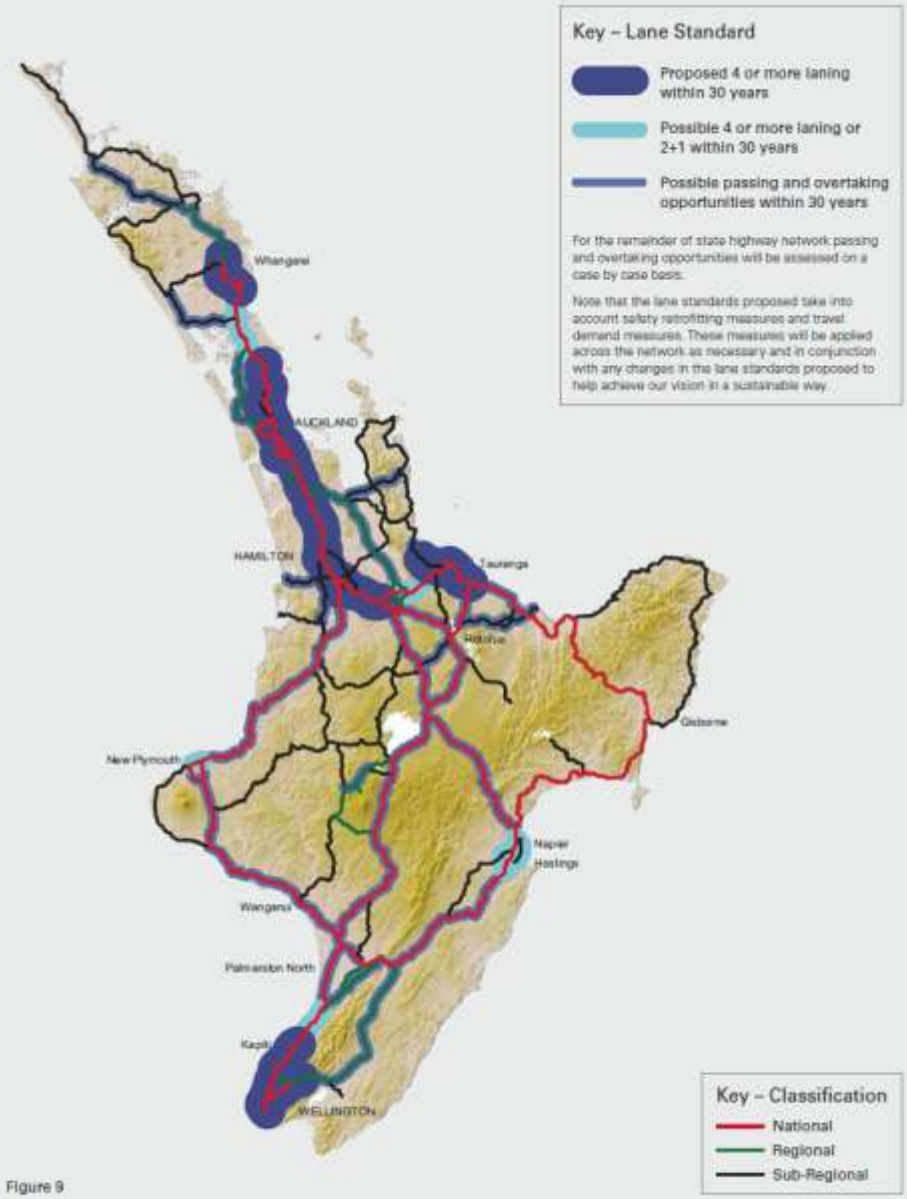


Figure 9

Proposed State Highway 30-year Concept

Figure 10

National State Highway Strategy June 2007

Seven roads of national significance

- Puhoi to Wellsford
- Victoria Park tunnel
- Waterview
- Waikato expressway
- Tauranga eastern corridor
- Wellington northern corridor
- Christchurch motorway

Government's position

"These are seven of New Zealand's most essential routes that require significant development to reduce congestion, improve safety and support economic growth…..Further Roads of National Significance may be added over time"

Hon Steven Joyce

GPS May 2010

Lead Infrastructure

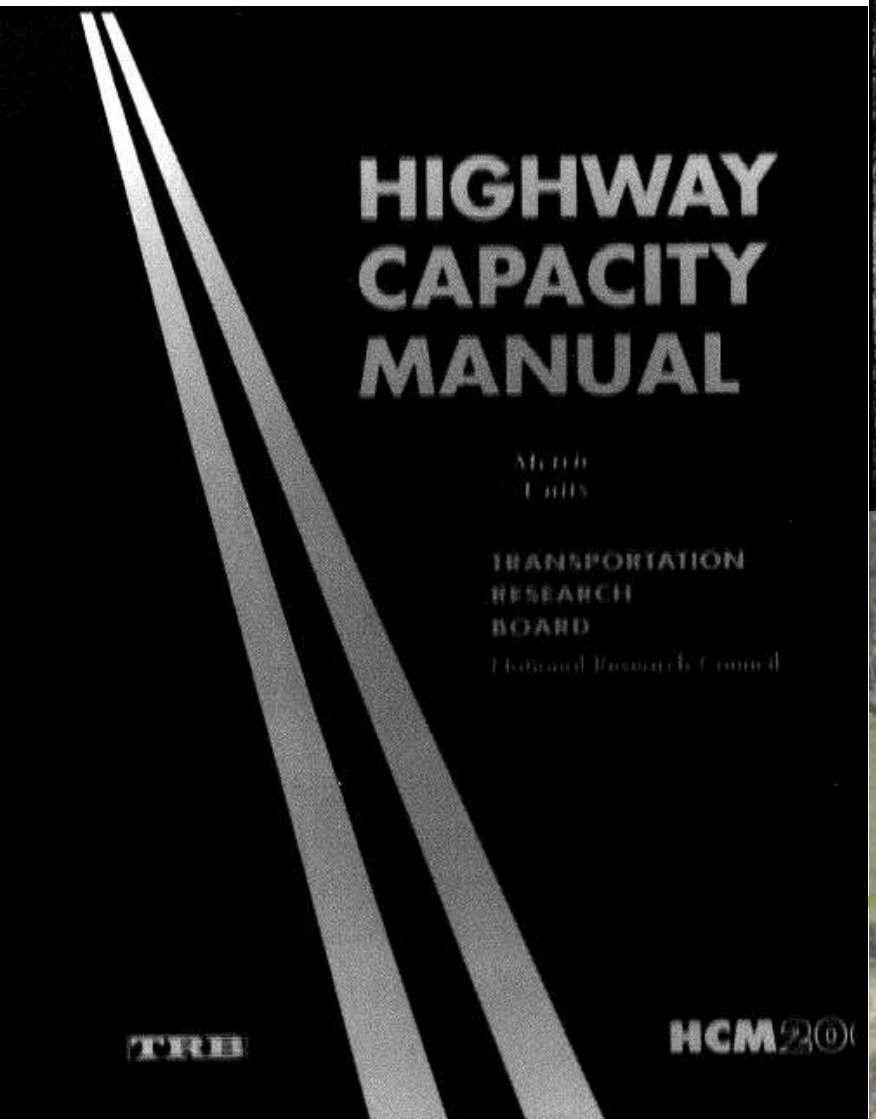
- A new concept for New Zealand
- What form does it need to take to support national economic growth and productivity, and encourage the efficient movement of freight and people
- Little solid evidence of the connection

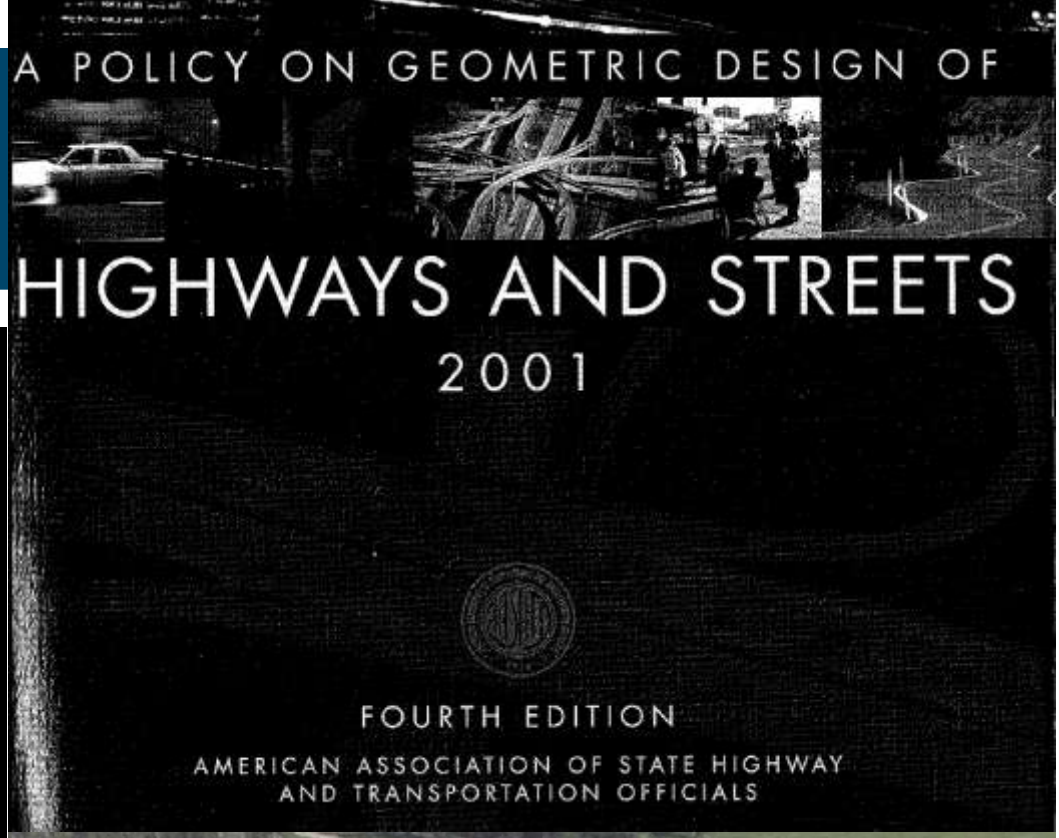
Level of Service Concept

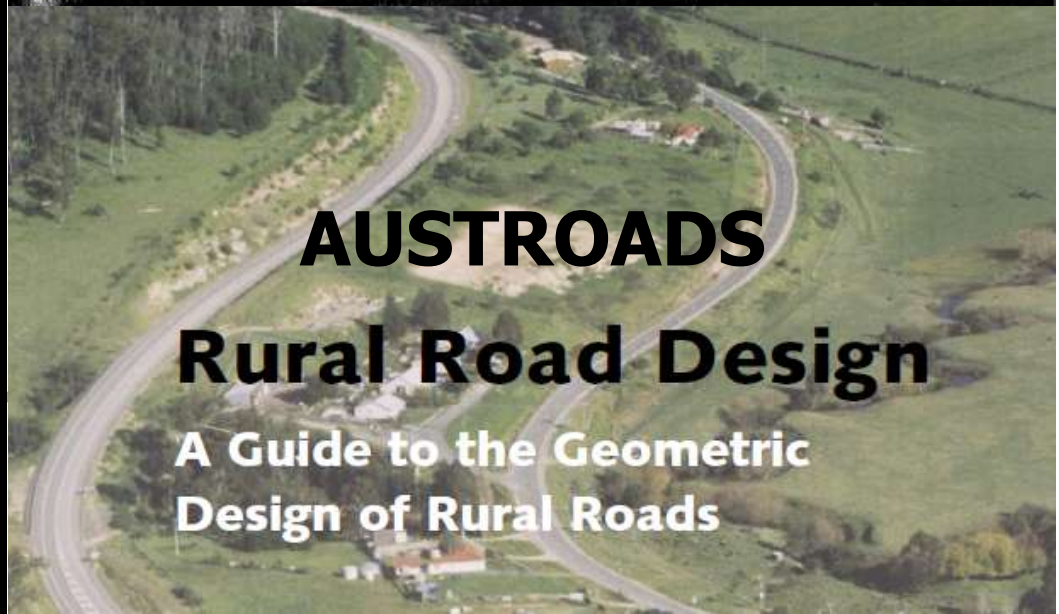
Developed in order to define

- Efficient movement of freight and people
- Value for money
- Contribution to reduction in the number of fatalities and serious injuries
- Economically efficient modal shift

HIGHWAYS AGENCY







US Federal Highways Administration

	Type of Area and Appropriate Level of Service			
Highway Type	Rural Level	Rural Rolling	Rural Mountainous	Urban and Suburban
Freeway	B	B	C	C
Arterial	B	B	C	C
Collector	C	C	D	D
Local	D	D	D	D

LOS Definition

- A – free flow virtually unaffected by other vehicles
- B – free flow but some reduction in comfort level
- C - Stable flow but comfort and convenience decreases
- D – Close to the limit of stable flow
- E – Unstable flow with minor disturbances causing breakdown

TRB Highway Capacity Manual - Expressway

		LOS				
Free flow Speed 100km/h	**Criteria**	**A**	**B**	**C**	**D**	**E**
	Max density (pc/km)	7	11	16	22	25
	Average speed (km/h)	100	100	98.4	91.5	88
	Maximum volume to capacity ratio (v/c)	0.32	0.50	0.72	0.92	1.00
	Maximum service flow rate (pc/lane/h)	700	1100	1575	2015	2200
	4-lane road capacity (1000's pcu per day)	25-30	40-50	60-70	75-90	80-100
	Gap between vehicles (secs)	5.0	3.1	2.1	1.6	1.4

S7 Alfriston Rd

Alfriston Rd looking north

Takanini - Hill Rd (N/bd)
Free Flow

Hill Rd - Takanini (S/bd)
Free Flow

Level of Service A 700 vehicles/lane/hour (5 second spacing)

Freedom to select desired speed

Excellent comfort and convenience

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N5 Onewa

Onewa Rd onramp looking south

Stafford Rd - Esmonde Rd (N/bd)
Free Flow

Harbour Bridge (S/bd)
Moderate

Level of Service B (far lanes)1100 vehicles/lane/hour (3 second spacing)

Reasonable ability to select desired speed

General level of comfort and convenience

S2 Market Rd

Southern Motorway at Newmarket looking south towards the Market Rd Overbridge

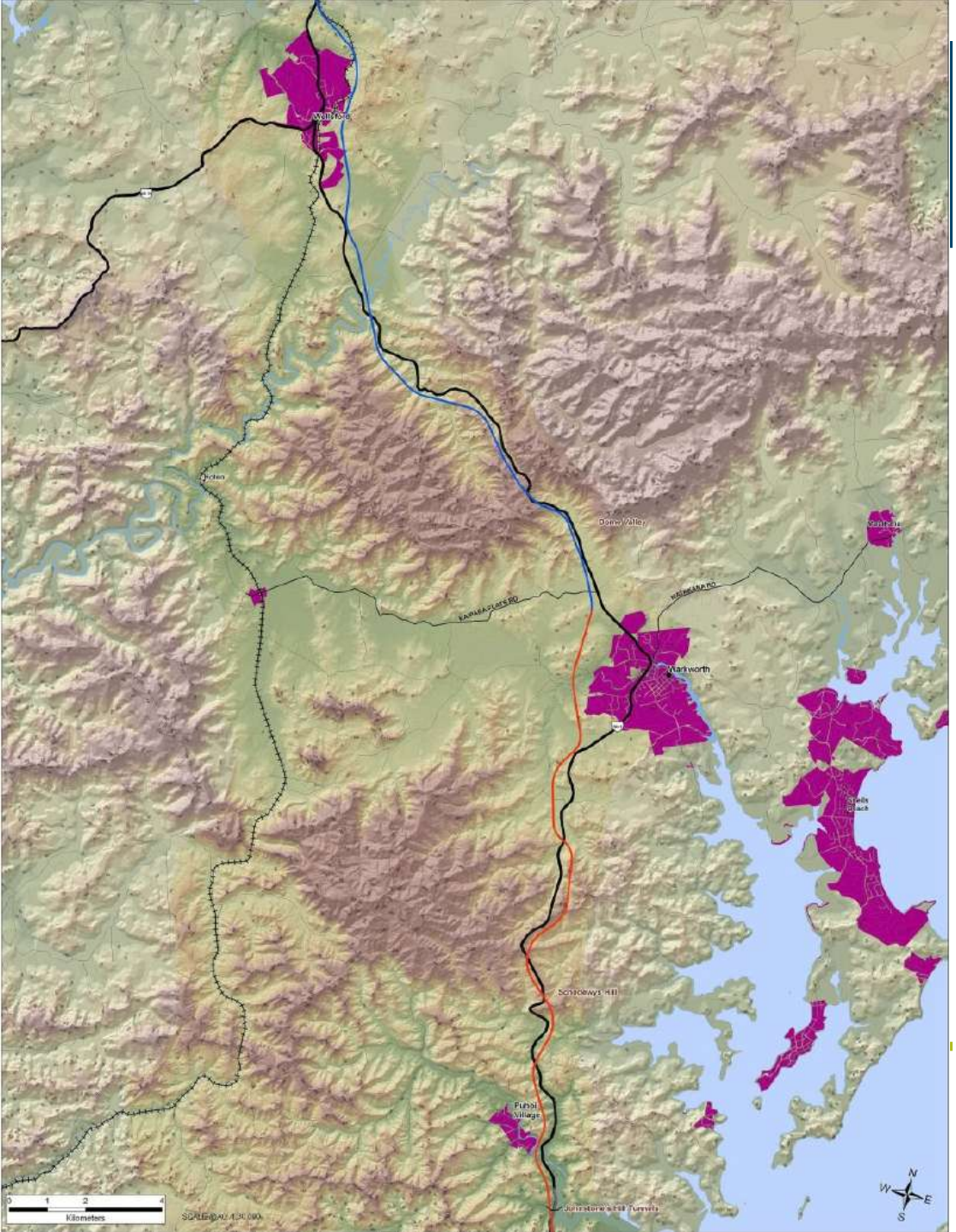
Gillies Ave - Greenlane (S/bd)
Free Flow

Greenlane - Gillies Ave (N/bd)
Free Flow

Level of Service C/D 1575 – 2015 vehicles/lane/hour (1.8 - 2 sec spacing)

Restricted/severely restricted in selection of travel speed

General level of comfort and convenience low to poor



Puhoi to Wellsford

Extends 38 km from end of Northern Gateway Toll Road to north of Wellsford. Provides significant improvement in journey time, reliability and safety

Victoria Park Tunnel

Reduces peak hour journey time by up to 20 minutes

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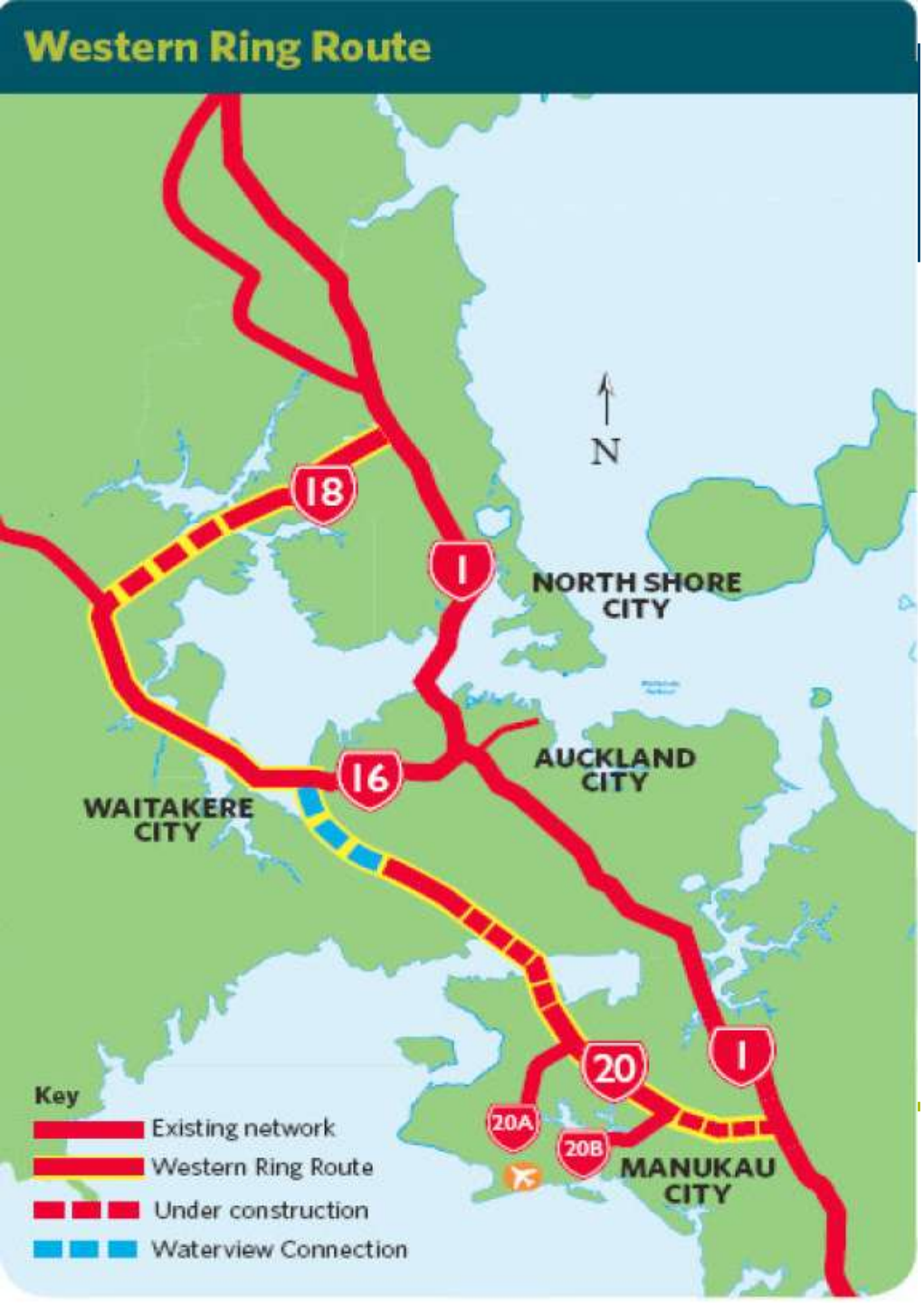
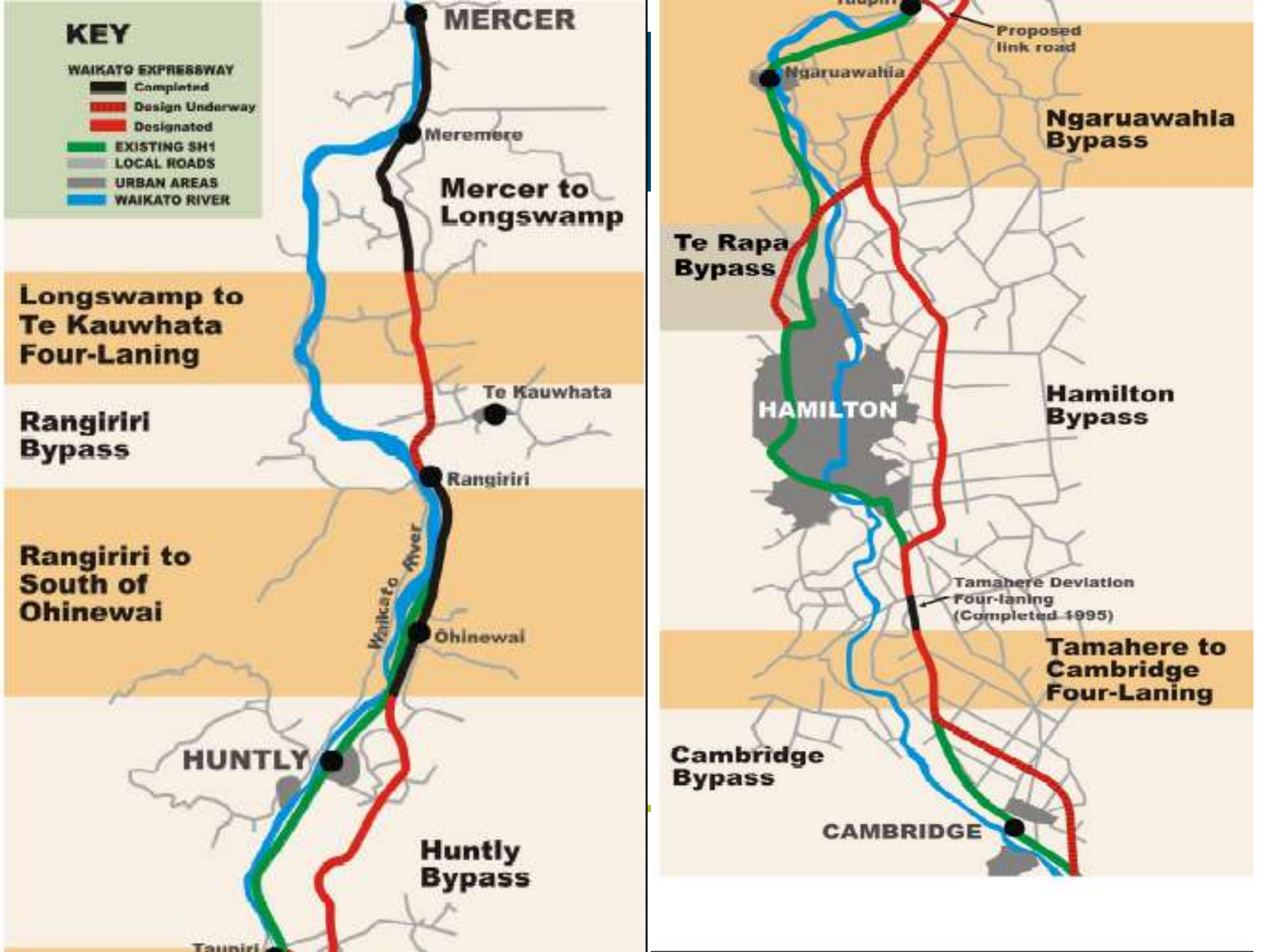
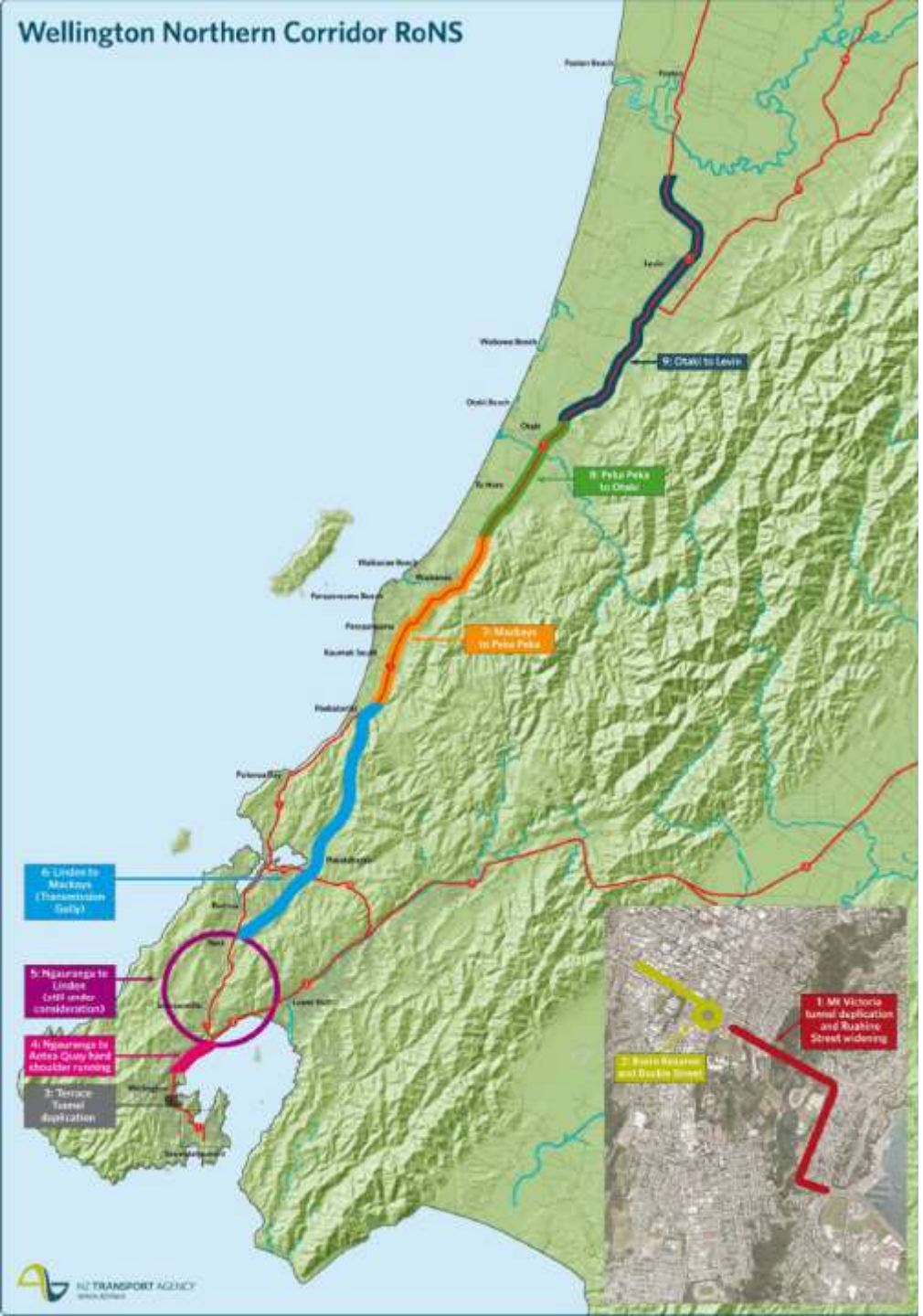


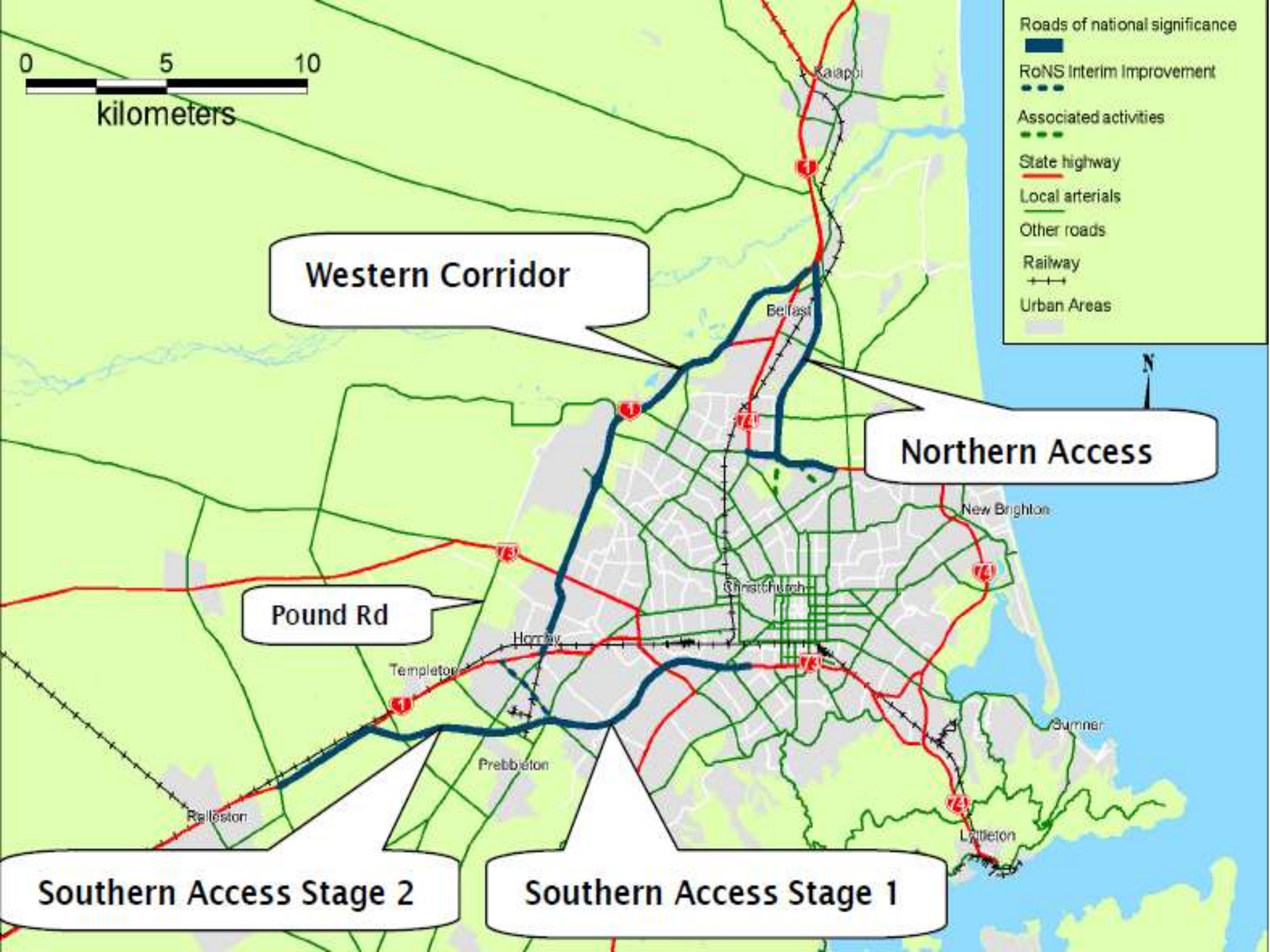
Improves reliability and reduces travel time by 20 to 30 minutes from West Auckland to the Airport and from 5 to 15 minutes on other parts of the network


KEY
WAIKATO EXPRESSWAY
Completed
Design Underway
Designated
EXISTING SH1
LOCAL ROADS
URBAN AREAS
WAIKATO RIVER
MERCER
Meremere
Mercer to Longswamp
Longswamp to Te Kauwhata Four-Laning
Te Kauwhata
Rangiriri Bypass
Rangiriri
Rangiriri to South of Ohinewai
Waikato River
Ohinewai
HUNTLY
Huntly Bypass
Proposed link road
Ngaruawahia
Ngaruawahia Bypass
Te Rapa Bypass
HAMILTON
Hamilton Bypass
Tamahere Deviation Four-laning (Completed 1995)
Tamahere to Cambridge Four-Laning
Cambridge Bypass
CAMBRIDGE

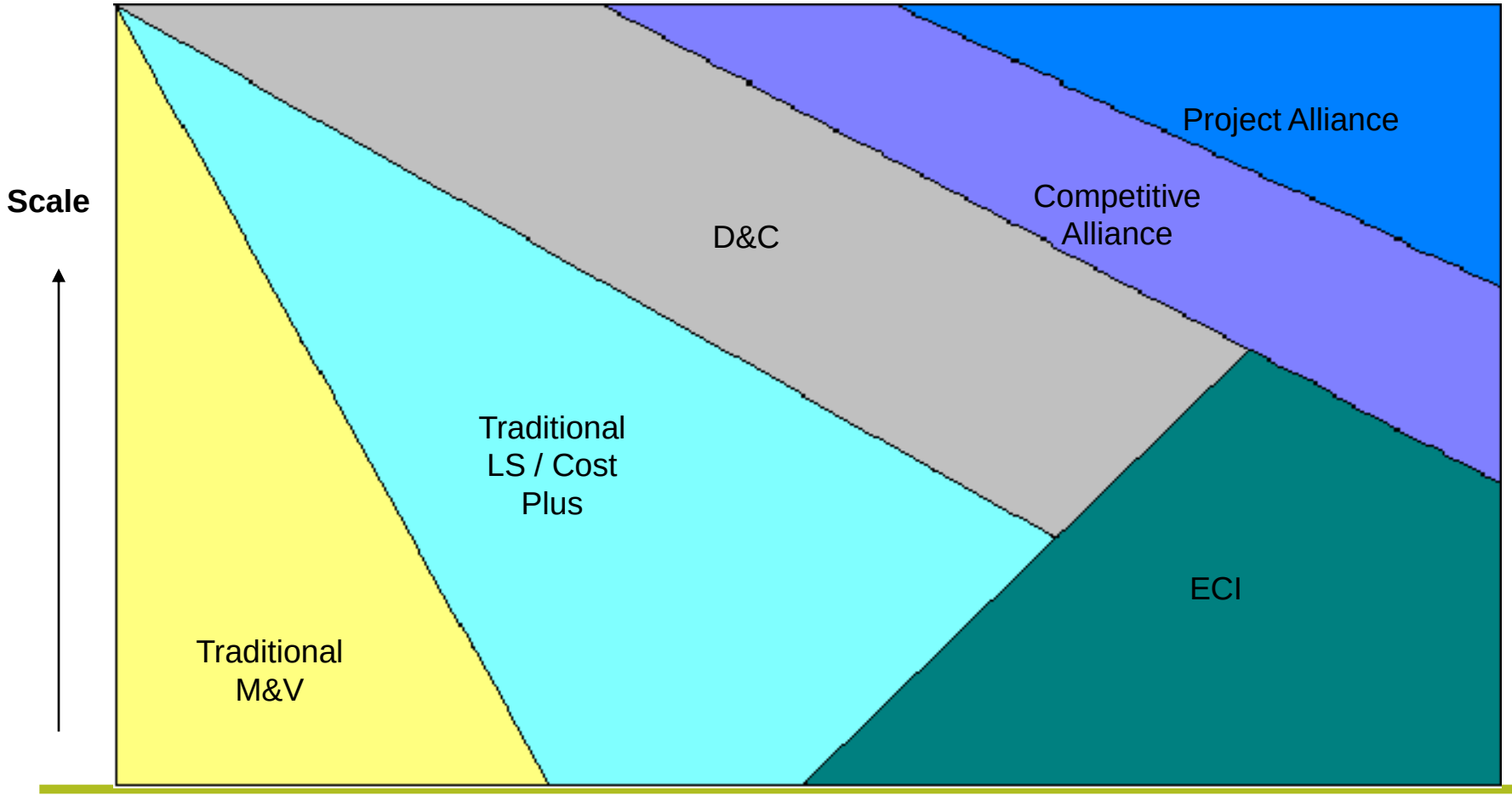

MOUNT MAUNGANUI
Port of Tauranga
29
Girven Road
Bayfair
Sandhurst Drive Interchange
Papamoa Beach Road
Bayfair Stadium
PAPAMOA
Domain Road
Papamoa Beach Road
Future Papamoa East Interchange
100
2A
SH2 to Katikati
2
TAURANGA
Takitimu Drive
Domain Road Interchange
Tauranga Eastern Link
100
Kaituna River
Welcome Bay
Existing SH 2
Proposed toll gantry
29
SH29 to Hamilton
100
Proposed Rangiuru Business park
50
TE PUKE
70
WAITANGI
SH2 to Whakatane
SH33 to Rotorua
33
Proposed Tauranga Eastern Link (tolled section)
Non tolled section
Existing state highways
The Tauranga Eastern Link will provide a much safer and direct route for vehicles traveling between Tauranga and Paengaroa.
The Tauranga Eastern Link will also provide the necessary road infrastructure to support planned residential and commercial development at Papamoa East and Rangiuru Business Park.



Improves reliability and reduces travel time by 20 to 30 minutes between Levin and the Airport in the peak and 15 to 20 minutes during the day. Reduces crash costs by 35%


0
5
10
kilometers
Roads of national significance
RoNS Interim Improvement
Associated activities
State highway
Local arterials
Other roads
Railway
Urban Areas
Western Corridor
Northern Access
Pound Rd
Southern Access Stage 2
Southern Access Stage 1
Kaiapoi
Belfast
New Brighton
Christchurch
Hornby
Templeton
Prebbleton
Sumner
Lyttelton
Rolleston
N

Contracting Model



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Investigation considerations
D & C Contract

- Location and form of road improvements
- Social impacts such as noise, air quality and the effect on the local community
- Tangata whenua and the cultural impacts of potential routes
- Property impacts
- Geotechnical and topography considerations
- Ecological impacts
- Affect on historic areas
- Connections to the local roading network
- Walking and cycling access
- Potential construction staging of the work
- Cost of the route
- Constructability
- Opportunities for acceleration of the project

Principal's Requirements (1)
D & C Contract

Converts the Level of Service concept and Investigation results to a brief of the required deliverables for the project in terms of:

- General requirements
  - Contractor's Design and Construction
  - Completion of the works
  - Health and Safety
  - Environmental aspects
  - Reporting

Principal's Requirements (2)
D & C Contract

- Specific Requirements
  - Contract Scope and Description
  - Site Information
  - Design Criteria
  - Utilities
  - Quality Assurance
  - As Built requirements
  - Design and Certification Procedure
  - Maintenance Requirements

Principal's Design Criteria
D & C Contract (Appendix A 152 pages)

- Standards, Manuals and Publications
- Geotechnical Design Criteria
- Road Layout and General Lane Arrangements
- RoNS Standards and Guidelines
- Structures
- Urban Design
- Testing and Inspection
- Intelligent Traffic Systems
- Maintenance During Construction

The Blank Canvas

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The Finished Product

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Closer to Home
•Ahead of Time
•Under Budget
Happy Client
Happy Contractor