



**State Highway Bridges – Likely Impact of Land Transport Rule: Vehicle Dimensions and Mass Amendment [(No 2) 2009]**

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#### Revision Schedule

Rev. No	Date	Description	Prepared by	Reviewed by	Approved by
1	15/6/2009	Draft	Nigel Lloyd	Rudolph Kotze	Dave Bates
2	6/7/2009	Revised	Nigel Lloyd	Rudolph Kotze	Dave Bates

## **Executive Summary**

In advance of the introduction of Amendment No. 2 2009 to the Vehicle Dimensions and Mass rule, the NZ Transport Agency has done further analysis on the likely impact on state highway bridges of permitting up to 53 tonne vehicles.

The study looked at the most heavily used routes by heavy commercial vehicles and assessed the ability of the bridges on those routes to carry up to 53 tonne vehicles repeatedly. It should be noted that those routes only comprise some 37% of the network by length. The balance of the network has not been similarly analysed yet.

The study shows that most of the state highways surveyed have structures which require strengthening works to varying degrees. On those routes, around 300 bridges will need to be upgraded, at a rough order cost of \$85M. Of the suite of highways assessed, State Highways 1N (SH2 to Tirau), 2 (SH1 to Paeroa), 2B, 5 (Rotorua to Taupo), 15A, 18, 20, 30 (SH1 to Rotorua), 30A, 34, 50A, 73 (SH74 to SH1), 74 (SH73 to Lyttelton Port) and 88 appear to be free of restrictions.

## Introduction

*Land Transport Rule: Vehicle Dimensions and Mass Amendment [(No 2) 2009]* proposes Rule changes that will broaden the grounds on which a heavy motor vehicle can operate in terms of weight and, in some cases, length. The amendment Rule would also introduce a third type of permit - the 'high-productivity' motor vehicle permit.

Whilst the current legal limit is a gross mass of 44 tonnes, most of the bridges on the state highway network and indeed the local road network were designed and constructed to carry lower loads. However, they continue to perform beyond expectations because of the conservative nature of some designs, material strengths that are higher than allowed for or ongoing upgrades and strengthening programmes.

It became clear during the processing of requests for the recent trials for the running of vehicles 50 tonne mass and higher that available bridge strength was likely to be a significant issue if higher mass limits were to be permitted, both on state highways and local roads.

In March of this year NZTA's Highways and Network Operations Group was asked by the MOT to:

- Identify bridges on freight routes that would require strengthening for higher mass limits; and
- Provide an indication of costs.

This report summarises the findings of the work undertaken.

## Methodology

### Routes

Route selection started with freight routes identified by high tonnages in the Transit 2006 National State Highway Strategy. These were checked against the latest data and trends identified in the MOT/MED National Freight Demands Study 2008. Finally, the routes were agreed with the MOT. Maps in Appendix 1 show those routes that were selected.

The following table indicates the proportions of the state highway network and the state highway bridge stock that were included in the study.

	By length	By no. of bridges
All State Highways	37%	43%
North Island SH	48%	56%
South Island SH	23%	24%

### Vehicles

A range of vehicles were used based upon the Pearson 2007 report to MOT and the current 50 T trials. These were R22T22 Truck Trailer and A224 Tractor Semi-Trailer. Gross weights were 50-53 tonnes.

### **Identification of Restrictions**

NZTA's consultants used the TOPS/Bridgecheck permit administration system to determine bridge restrictions for the selected vehicles on the routes chosen. The results were checked by each of the Regional Bridge Consultants for any significant errors or omissions.

TOPS/Bridgecheck was not the ideal tool for doing this, but it was the best available for the given timeframe. It also tends to provide optimistic, rather than conservative, outputs for larger bridges. Nevertheless, the output is believed to present a reasonable picture of what would be produced by more detailed analysis.

### **Screening and Analysis**

Bridges were categorised into strengthen or further investigation required. Cost estimates were developed from similar work undertaken recently.

## **Results**

These are shown in summary form in Appendix 3 and in detail on maps by region in Appendix 4. This initial study has shown that for the routes investigated:

- 306 state highway bridges would require strengthening, or detailed investigation; and
- An estimated \$85M would be required to fund the work over a period of several years.

Of these bridges, only 13 have already been included on the approved 09/12 Bridge Replacement and Upgrade Programme due to their current condition. The results have not been studied in detail to determine if any of the bridges should be replaced rather than strengthened.

Bridges that are included in the bridge replacement programme and those that are included in the Block or Capital Programmes are shown in Appendix 4. Significant constraints on the network such as urgent replacements and single lane bridges are also shown on the maps in Appendix 4.

Other more detailed points to consider pre-implementation are:

- SH3 Manawatu Gorge is something of an unknown. There are 65 half bridges in the gorge for which there is no structural data and there are no drawings. Currently the bridges are considered adequate on the basis of observation and engineering judgement. Any increase of load would however most likely require significant investigation work.
- Auckland Harbour Bridge has not been considered yet. The current strengthening works to the outer box girders of AHB is not intended to permit them to carry the increased loading. It is anticipated that the original truss bridge would be able to carry the increased loading.
- There are four structures requiring significant expenditure over \$2m (e.g. Rakaia River, Whirokino Trestle) and a further nine that require expenditure between \$1m and \$2m.
- There will most likely be longer term fatigue issues on steel structures from the extra loading that have not yet been considered.

The following routes were found to have no restrictions in this study:

State Highway	Between
1N	SH2 and Tirau (SH5)
2	SH1 and Paeroa (SH26)
2B	Full length
5	Rotorua and Taupo
15A	Full length
18	Full length
20	Full length
30	SH1 and Rotorua
30A	Full length
34	Full length
50A	Full length
73	SH74 and SH1
74	SH73 and Lyttelton Port
88	Full length

These routes are shown on maps in Appendix 2. This equates to only 11% of the length of state highway studied or 4% of the total state highway length.

## Current Status

At present there are no bridge strengthening schemes in the draft National Land Transport Programme or draft State Highway Plan as a result of the Rule change. (SH5 Mohaka Bridge is likely to receive strengthening because of fatigue issues and SH44 Huatoki Stream Bridge had previously been identified for strengthening.)

There are however some 25 bridges of the bridges identified as requiring strengthening that are in the State Highway Plan for replacement or upgrade as either standalone projects or as part of larger schemes. Of these 20 appear in the Capital programme and five are block projects. A further 11 bridges are included in the Bridge Upgrade and Replacement Programme. Details of these bridges can be found on the maps in Appendix 4.

The next steps required in this project are confirmation of the lengths of state highway that are to be designated freight routes; detailed analysis of the bridges on those routes; programming, prioritisation and costing of the bridges found to require strengthening; and then design and construction of the strengthening works.

## Bridge Study Routes

# STATE HIGHWAY NETWORK NORTH ISLAND

PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005

0 50 100 150 200 250  
Kilometres



State Highways  
included in 50T  
Vehicle Study  
(Highlighted in yellow)

Whangarei

Auckland

Hamilton

Tauranga

Rotorua

Gisborne

New Plymouth

Napier  
Hastings

Wanganui

Palmerston North

Wellington

**TRANSIT**  
NEW ZEALAND  
ARARAU AOTEAROA

Transit Region Boundary

State Highway

Cartography by Critchlow Associates Ltd Ph 0800 Mapping



# STATE HIGHWAY NETWORK SOUTH ISLAND



PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005



0 50 100 150 200 250  
Kilometres

State Highways  
included in 50T  
Vehicle Study  
(Highlighted in yellow)



Transit Region Boundary

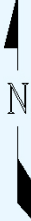
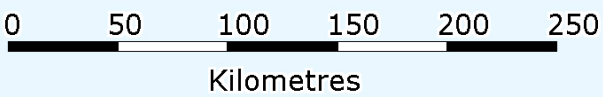
State Highway

Cartography by Critchlow Associates Ltd Ph 0800 Mapping

**Bridge Study Routes with No Restrictions Identified**

# STATE HIGHWAY NETWORK NORTH ISLAND

PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005



State Highways  
with no  
restrictions  
found in 50T  
Vehicle Study  
(Highlighted in blue)



Cartography by Critchlow Associates Ltd Ph 0800 Mapping



# STATE HIGHWAY NETWORK SOUTH ISLAND



PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005



0 50 100 150 200 250  
Kilometres

State Highways  
with no  
restrictions  
found in 50T  
Vehicle Study  
(Highlighted in blue)



- Transit Region Boundary
- State Highway

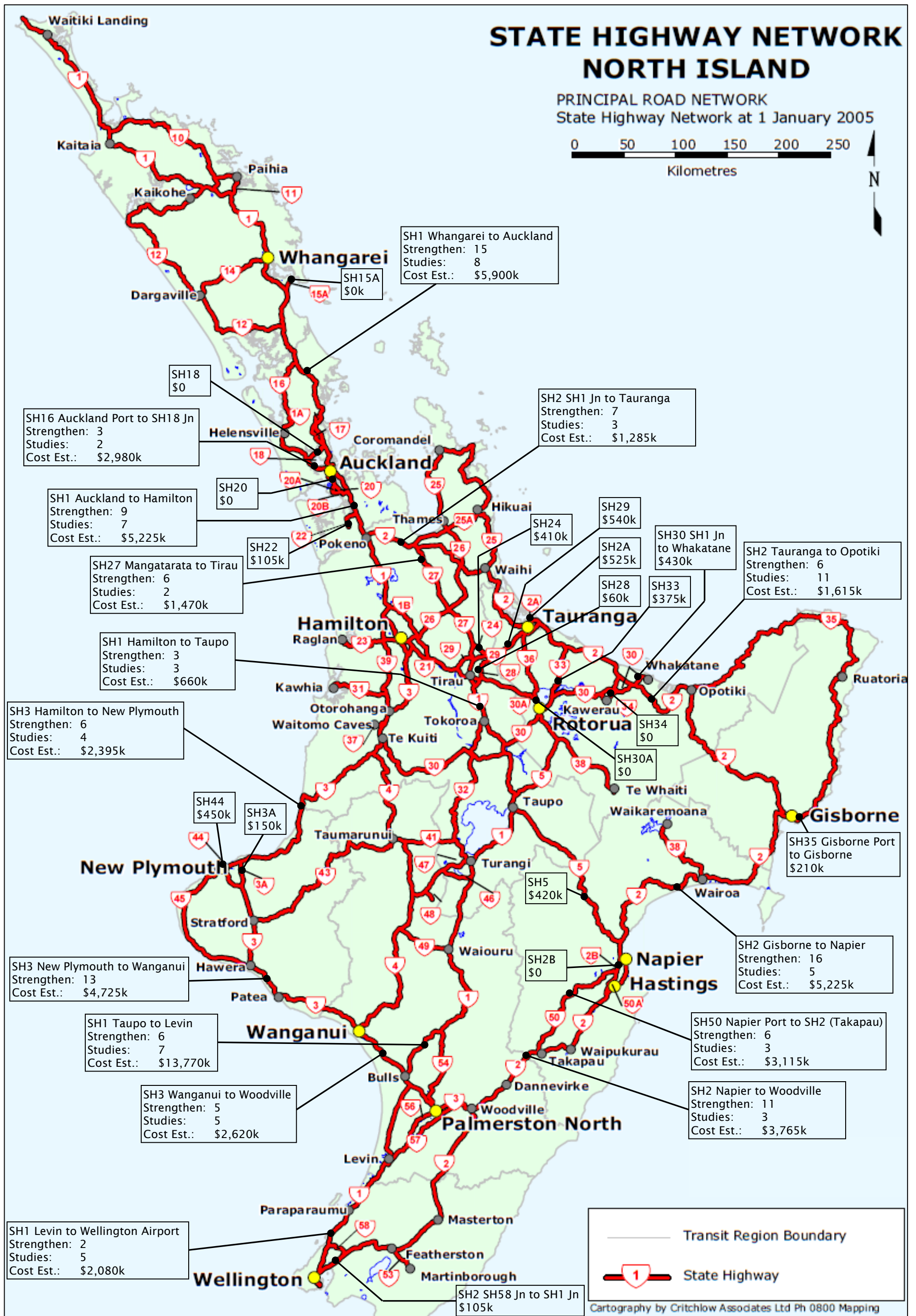
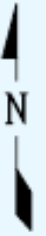
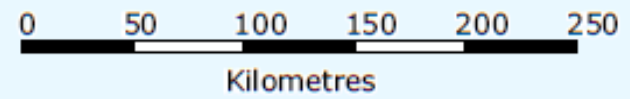
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## **Bridge Study Summary Results**

SH	Location	Total Needing Works	Further Studies	Total Estimated Cost
1N	Whangarei to Auckland (CMJ)	15	8	\$ 5,900,000
1N	Auckland (CMJ) to Hamilton (SH3)	9	7	\$ 5,255,000
1N	Hamilton (SH3) to Taupo	3	3	\$ 660,000
1N	Taupo to Levin	6	7	\$ 13,770,000
1N	Levin to Wellington Airport	2	12	\$ 2,815,000
2	SH1 to Tauranga (SH29)	7	3	\$ 1,285,000
2	Tauranga (SH29) to Opotiki	6	11	\$ 1,615,000
2	Gisborne to Napier (SH50)	16	5	\$ 5,225,000
2	Napier (SH50) to Woodville	11	3	\$ 3,765,000
2	SH58 to SH1	0	1	\$ 105,000
2A	SH2 to Tauranga Harbour	1	0	\$ 525,000
2B	SH2 to SH50 (Napier)	0	0	\$ -
3	Hamilton to New Plymouth (SH44)	6	4	\$ 2,395,000
3	New Plymouth (SH44) to Wanganui (SH4)	13	0	\$ 4,725,000
3	Wanganui (SH4) to Woodville	5	5	\$ 2,620,000
3	Manawatu Gorge	0	1	\$ 800,000
3A	SH3 (Waitara) to Inglewood	1	0	\$ 150,000
5	Tirau to Rotorua (SH30)	0	2	\$ 210,000
5	Rotorua (SH30) to Taupo	0	0	\$ -
5	Taupo to Napier	0	2	\$ 210,000
15A	SH1 to Marsden Point	0	0	\$ -
16	Auckland Port to SH18	3	2	\$ 2,980,000
18	SH1 to SH16	0	0	\$ -
20	SH1 to Onehunga	0	0	\$ -
22	SH1 to Pukekohe	0	1	\$ 105,000
24	SH27 to SH29	2	0	\$ 410,000
27	Mangatarata to Tirau	6	2	\$ 1,470,000
28	SH1 to SH29	1	0	\$ 60,000
29	SH1 to Tauranga	1	3	\$ 540,000
30	SH1 to Rotorua	0	0	\$ -
30	Rotorua to Whakatane	2	0	\$ 430,000
30A	SH5 to SH30	0	0	\$ -
33	SH30 to SH2	1	0	\$ 375,000
34	SH2 to SH30	0	0	\$ -
35	Gisborne Port to SH2	0	2	\$ 210,000
44	New Plymouth to Port Taranaki	1	0	\$ 450,000
50	Napier Port to SH2 (Takapau)	6	3	\$ 3,115,000
50A	SH50 to SH2	1	0	\$ -
58	SH2 to SH1	0	1	\$ 105,000
1S	Picton to Kaikoura	12	5	\$ 3,325,000
1S	Kaikoura to Christchurch (SH73)	2	5	\$ 2,070,000
1S	Christchurch (SH73) to Timaru	5	1	\$ 9,750,000
1S	Timaru to Dunedin (SH88)	6	18	\$ 2,945,000
1S	Dunedin (SH88) to Invercargill	9	18	\$ 3,575,000
1S	Invercargill to Bluff	3	1	\$ 635,000
6	Blenheim to Richmond	1	6	\$ 670,000
73	SH74 to SH1	0	0	\$ -
74	SH73 to Lyttelton Port	0	0	\$ -
78	Timaru to Timaru Port	0	1	\$ 105,000
88	Dunedin to Port Chalmers	0	0	\$ -
<b>Total</b>		<b>163</b>	<b>143</b>	<b>\$ 85,355,000</b>

PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005

PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005

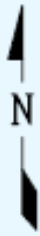


Cartography by Critchlow Associates Ltd Ph 0800 Mapping



# STATE HIGHWAY NETWORK SOUTH ISLAND

PRINCIPAL ROAD NETWORK  
State Highway Network at 1 January 2005



0 50 100 150 200 250  
Kilometres

SH6 Blenheim to Richmond  
Strengthen: 1  
Studies: 6  
Cost Est.: \$670k

SH1 Picton to Kaikoura  
Strengthen: 12  
Studies: 5  
Cost Est.: \$3,325k

SH1 Kaikoura to Christchurch  
Strengthen: 2  
Studies: 4  
Cost Est.: \$1,965k

SH74 SH73 Jn to Lyttelton Port  
\$0

SH73 SH74 Jn to SH1 Jn  
\$0

SH1 Christchurch to Timaru  
Strengthen: 5  
Studies: 1  
Cost Est.: \$9,750k

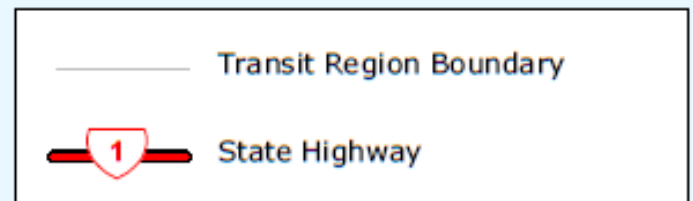
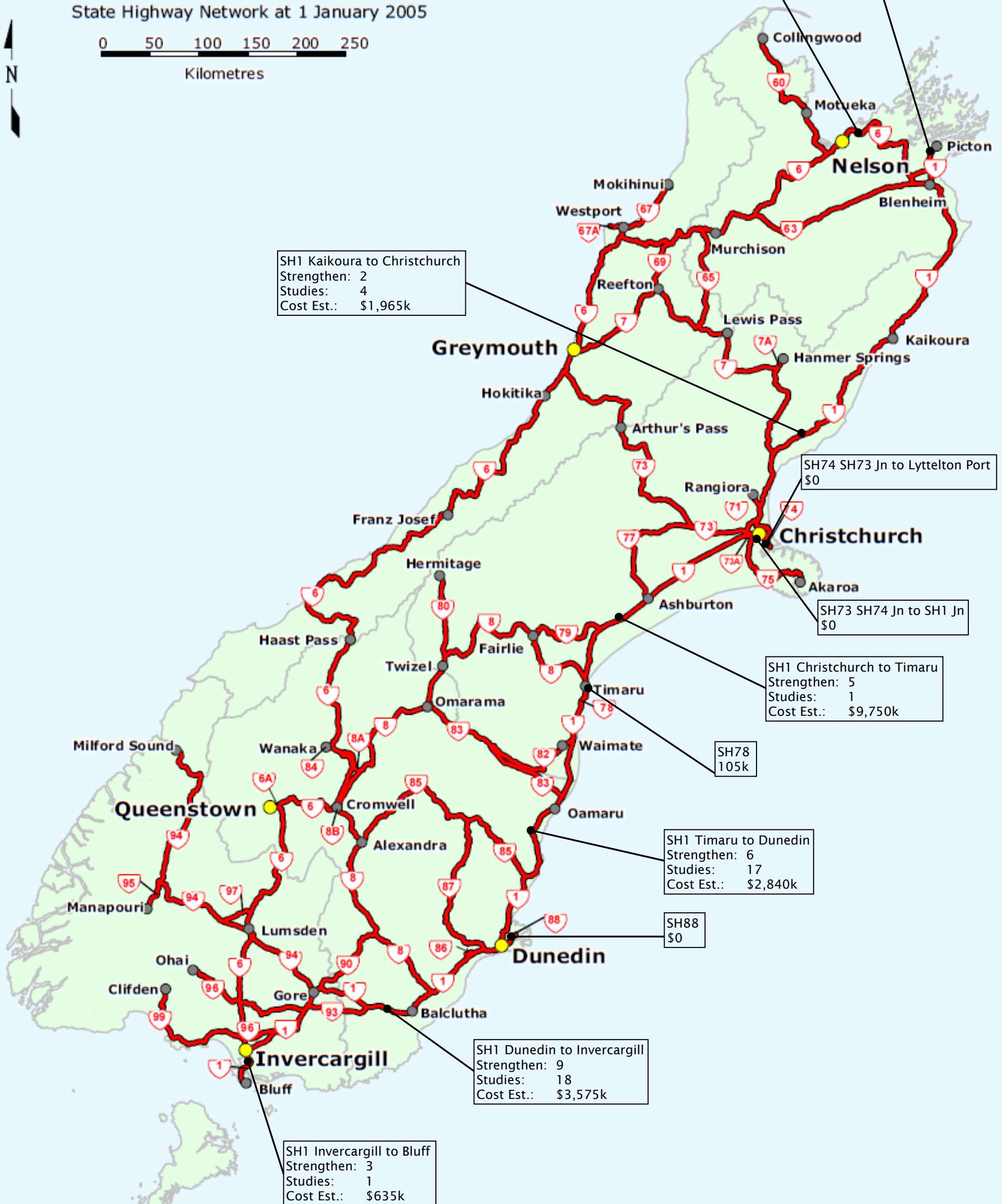
SH78  
105k

SH1 Timaru to Dunedin  
Strengthen: 6  
Studies: 17  
Cost Est.: \$2,840k

SH88  
\$0

SH1 Dunedin to Invercargill  
Strengthen: 9  
Studies: 18  
Cost Est.: \$3,575k

SH1 Invercargill to Bluff  
Strengthen: 3  
Studies: 1  
Cost Est.: \$635k



Cartography by Critchlow Associates Ltd Ph 0800 Mapping



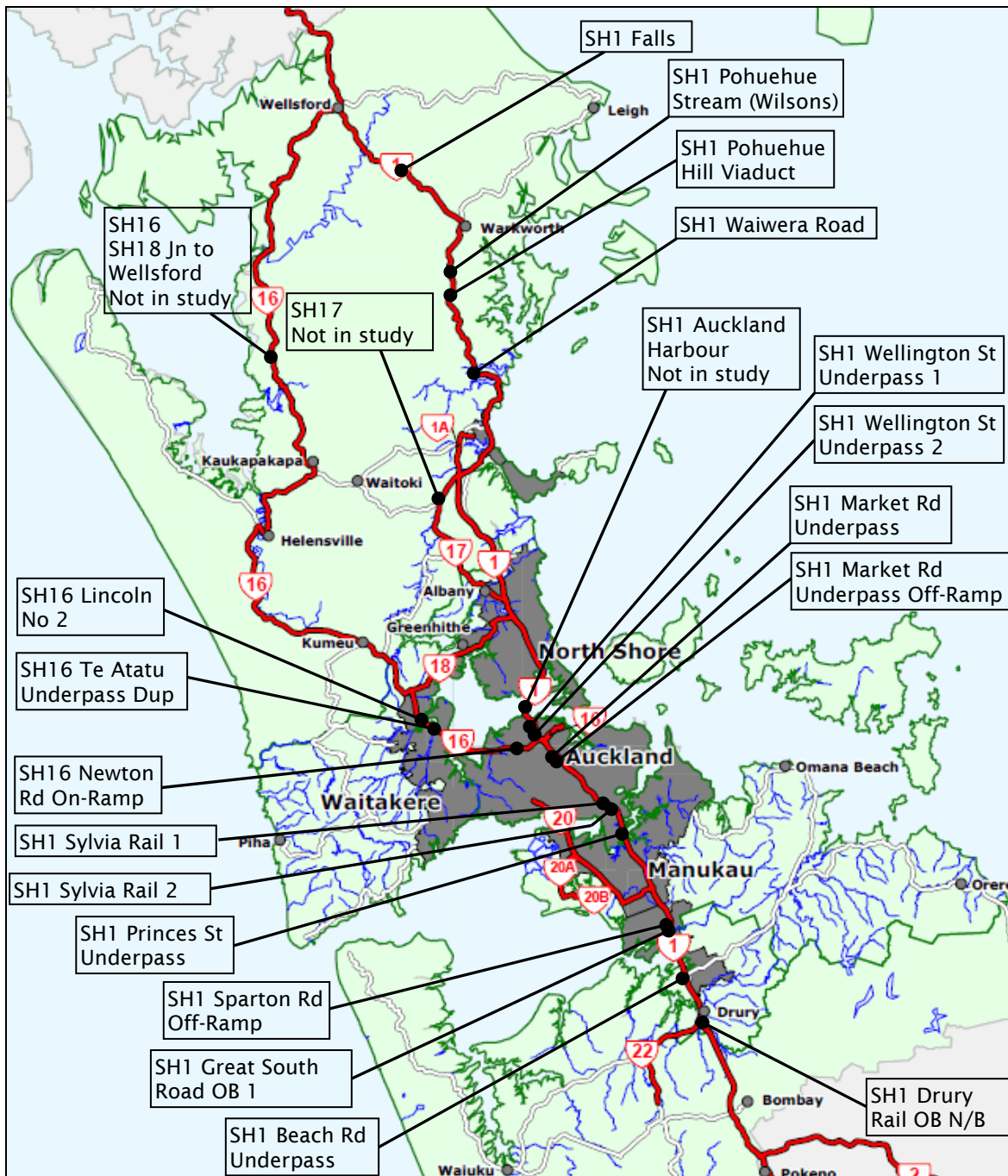
## Bridge Study Results by Region

## Region 1 – Northland



SH	RP	BSN	Name	Cost Est.	Comments
1N	266/6.25	2723	Otaika Stream Bridge No 85	\$300k	Narrow.
1N	273/5.1	2781	Paneiraira Creek (Oakleigh) Bridge No 91	\$210k	Narrow.
1N	273/5.57	2786	Mangapai River (Springfield) Bridge No 92	\$210k	Narrow.
1N	273/12.28	2853	Waipapa Stream Bridge No 95	\$135k	Narrow.
1N	273/16.76	2898	Tauroa Stream Bridge No 98	\$85k	
1N	303/13.88	3169	Piroa Stream Bridge No 104	\$150k	Narrow. Could be affected by Brynderwyn Hill Realignment (in Capital programme).
1N	319/3.41	3224	Coates Bridge No 105	\$60k	Narrow.
1N	319/3.86	3229	Coates Bridge No 106	\$60k	Narrow.
1N	319/14.92	3339	Topuni River Bridge	\$450k	Narrow.
			2 No. bridges	\$210k	Further studies and possible works required.
Total				\$1,870k	

## Region 2 – Auckland

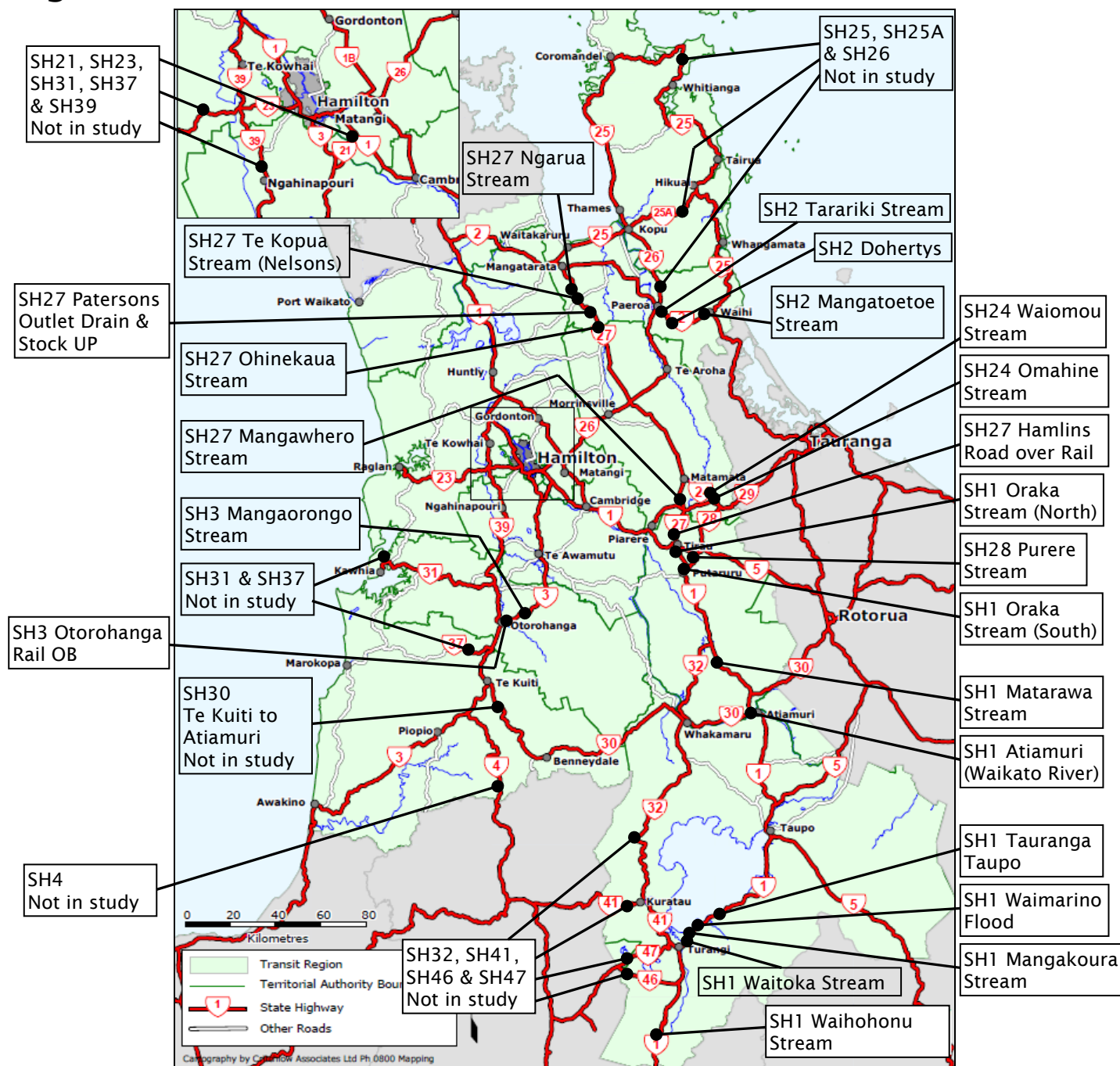


SH	RP	BSN	Name	Cost Est.	Comments
1N	346/8.76	3548	Falls Bridge	\$75k	Long term replacement \$4.5m. Would be affected by Alpur to North Wellsford 4 Laning (in Capital programme).
1N	363/7.18	3702	Pohuehue Stream (Wilson's) Bridge	\$165k	Narrow. Long term replacement \$4.5m. Would be affected by Alpur to North Wellsford 4 Laning (in Capital programme).
1N	373/0	3730	Pohuehue Hill Viaduct	\$1,440k	Narrow. Medium term upgrade to stiffen very light deck \$10m. Would be affected by Alpur to North Wellsford 4 Laning (in Capital programme).
1N	386/0	3860	Waiwera Road Overbridge	\$160k	Narrow. Now bypassed by Northern Gateway.
MIS	414/13.32	4266	Wellington St Underpass No 1 (Over SH1N)	\$780k	
MIS	414/13.32	4267	Wellington St Underpass No2 (Over SH1N)	\$780k	
MIS	431/0.82	4318	Market Road Underpass (Over SH1N)	\$940k	

## Region 2 – Auckland

SH	RP	BSN	Name	Cost Est.	Comments
MIS	431/0.82	4319	Market Road Underpass Off-Ramp (Adj.SH1N)	\$450k	
1N	431/7.61	4387	Sylvia Park Railway Overpass 1	\$475k	
1N	431/7.61	4388	Sylvia Park Railway Overpass 2	\$475k	
MIS	431/10.13	4411	Princes Street Underpass (Over SH1N)	\$540k	
MIS	448/5.48	4534	Sparton Rd Off-Ramp Bridge (Adj.SH1N)	\$135k	
1N	448/5.63	4535	Great Sth Road O/Bridge No.1	\$885k	
MIS	448/10.18	4581	Beach Road Underpass (Over SH1N)	\$535k	
1N	461/0.19	4623	Drury Rail Overbridge Northbound	\$85k	
MIS	0/3.5	37	Newton Rd On Ramp (Adj SH16)	\$1,320k	
MIS	7/4.13	111	Te Atatu Underpass Dup(Over SH16)	\$775k	Medium term upgrade \$4m. Would be affected by Northwestern Motorway Additional Lanes (SH16) (in Capital programme).
16	7/6.57	137	Lincoln Bridge No2	\$675k	Would be affected by Northwestern Motorway Additional Lanes (SH16) (in Capital programme).
			16 No. bridges	\$1,680k	Further studies and possible works required.
Total				\$12,370k	

## Region 3 – Waikato



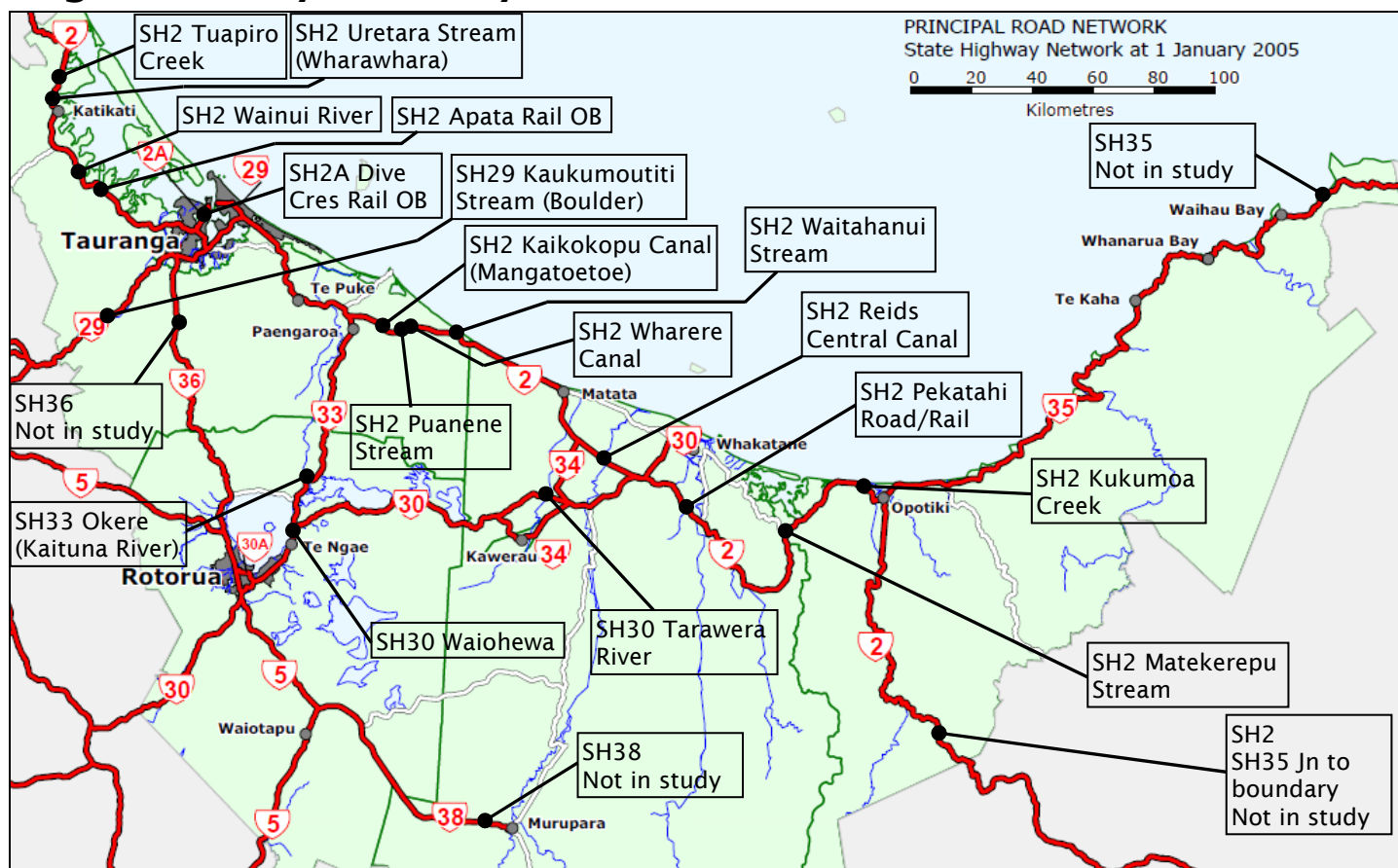
SH	RP	BSN	Name	Cost Est.	Comments
1N	605/1.26	6063	Oraka Stream Bridge (North)	\$150k	Narrow.
1N	613/0.2	6132	Oraka Stream Bridge (South)	\$150k	Narrow.
1N	638/6.47	6445	Matarawa Stream Bridge	\$45k	Block project to widen.
1N	664/0	6640	Atiamuri Bridge (Waikato River)		Urgent replacement. \$19.6m. In Capital programme.
1N	726/14.03	7400	Tauranga Taupo Bridge	\$225k	
1N	744/2.56	7466	Waimarino Flood Bridge	\$60k	
1N	744/2.82	7468	Mangakoura Stream Bridge	\$60k	
1N	744/4.04	7480	Waiotaka Stream Bridge	\$90k	
1N	777/5.91	7829	Waihohonu Stream Bridge	\$1,350k	Redeck.
2	73/1.9	749	Tarariki Stream Bridge	\$75k	
2	73/5.85	788	Dohertys Bridge	\$40k	
2	73/19.99	929	Mangatoetoe Stream Bridge	\$60k	
3	36/13.23	492	Mangaorongo Stream Bridge	\$265k	Narrow.
3	36/19.27	553	Otorohanga Rail Overbridge	\$510k	
24	0/10.48	104	Waiomou Stream Bridge	\$205k	Narrow.

## Region 3 – Waikato

SH	RP	BSN	Name	Cost Est.	Comments
24	0/11.02	110	Omahine Stream Bridge	\$205k	Narrow.
27	0/10.87	109	Ngarua Stream Bridge	\$135k	Narrow. Could be affected by Kaihere Eastern Deviation (in Capital programme).
27	0/12.67	126	Te Kopua Stream (Nelsons) Bridge	\$45k	Narrow. Could be affected by Kaihere Eastern Deviation (in Capital programme).
27	16/3.38	193	Patersons Outlet Drain & Stock Underpass	\$375k	Redeck. Narrow.
27	21/0.6	216	Ohinekaua Stream Bridge	\$375k	Redeck.
27	74/7.44	814	Mangawhero Stream Bridge	\$45k	Narrow.
27	85/7.13	921	Hamlins Road Over Rail Bridge	\$285k	Narrow.
28	0/4.58	46	Purere Stream Bridge	\$60k	
			12 No. bridges	\$1,260k	Further studies and possible works required.
<b>Total</b>				<b>\$6,070k</b>	

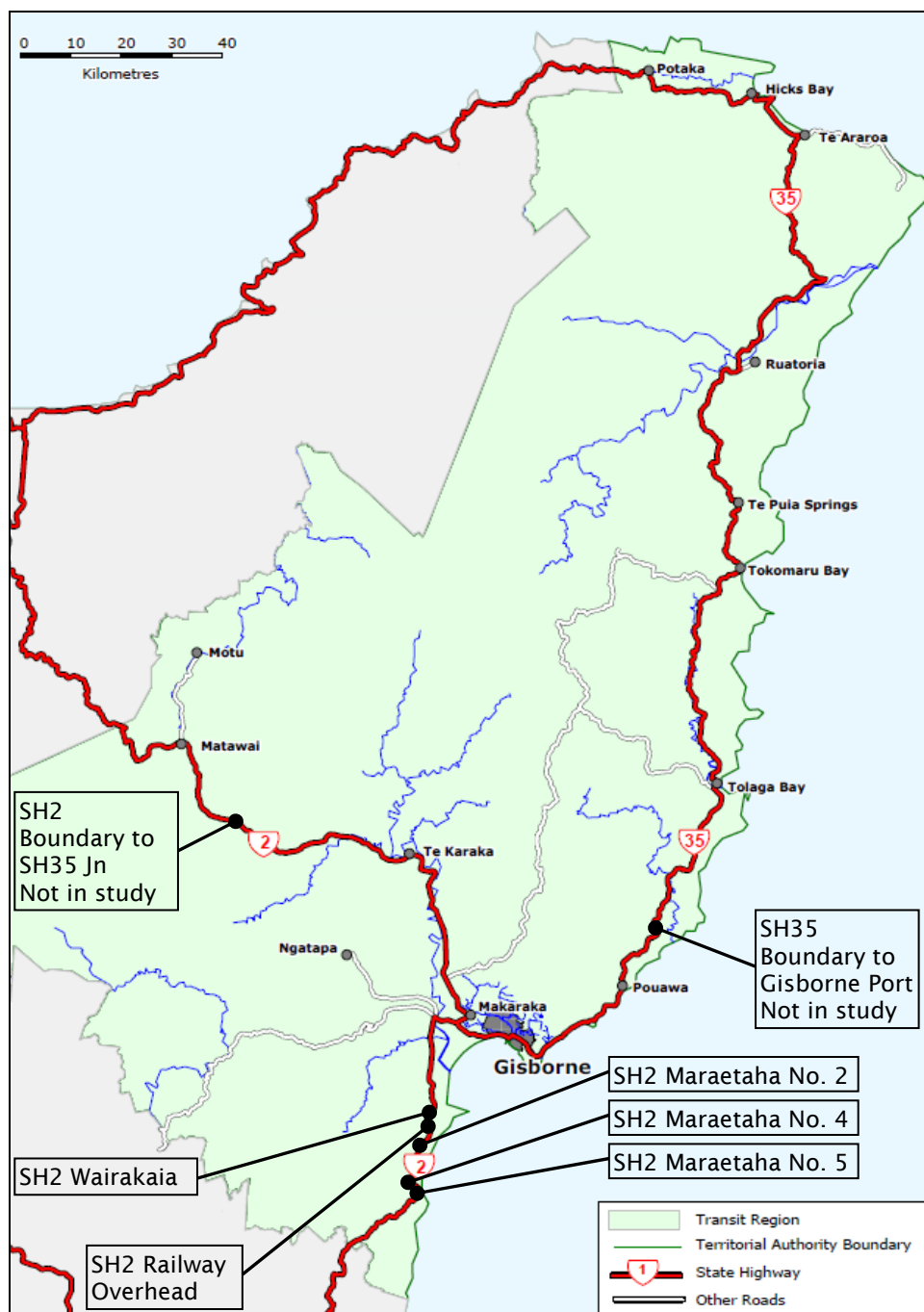


## Region 4 – Bay of Plenty



SH	RP	BSN	Name	Cost Est.	Comments
2	100/10.1	1101	Tuapiro Creek Bridge	\$270k	Narrow.
2	116/2.29	1182	Uretara Stream (Wharawhara) Bridge	\$150k	Narrow. Would be affected by Katikati Bypass (in Capital programme).
2	130/0	1300	Wainui River Bridge	\$195k	Narrow.
2	130/4.03	1340	Apata Rail Overbridge	\$180k	Narrow.
2	189/4.62	1936	Kaikokopu Canal (Mangatoetoe) Bridge	\$45k	
2	189/6.81	1958	Puanene Stream Bridge	\$60k	
2	189/7.67	1966	Wharere Canal Bridge	\$60k	
2	189/18.76	2077	Waitahanui Stream Bridge	\$120k	Narrow. Medium term replacement. \$7m. In Capital programme.
2	232/5.5	2373	Reids Central Canal Bridge		Urgent replacement. \$6.5m. In Capital programme.
2	243/10.82	2538	Pekatahi Road/Rail Bridge		Single lane bridge. Block project to upgrade.
2	283/2.33	2852	Matekerepu Stream Bridge	\$115k	Narrow.
2	294/6.48	3005	Kukumoa Creek Bridge	\$60k	
2A	0/3.93		Dive Crescent Rail Overbridge	\$525k	
29	21/13.36	343	Kaukumoutiti Stream (Boulder Bridge)	\$225k	
30	147/10.25		Waiohewa Bridge	\$150k	
30	194/8.45	2024	Tarawera River Bridge	\$280k	
33	0/7.89	79	Okere Bridge (Kaituna River)	\$375k	Narrow.
			17 No. bridges	\$1,785k	Further studies and possible works required.
<b>Total</b>				<b>\$4,595k</b>	

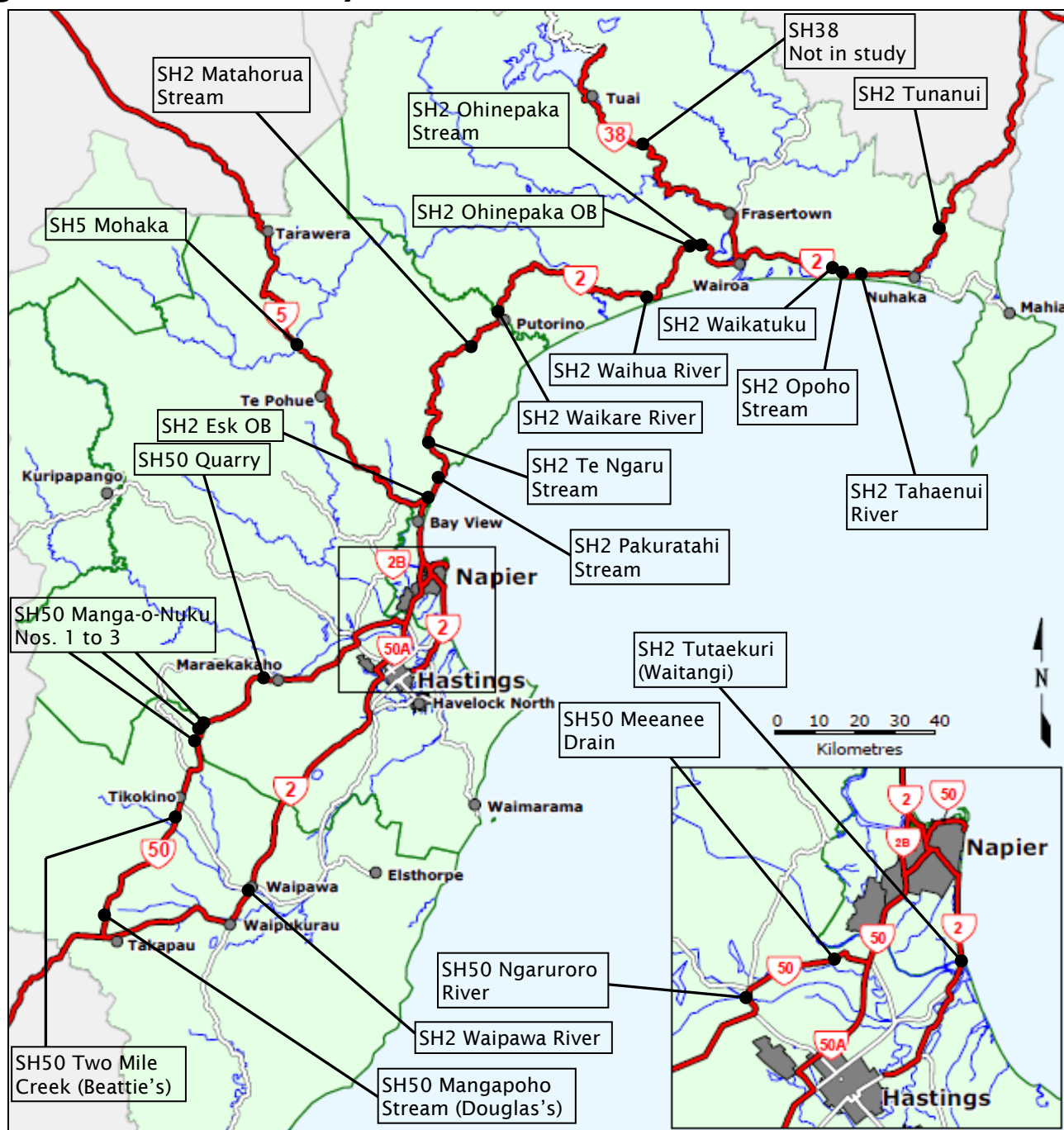
## Region 5 – Gisborne



SH	RP	BSN	Name	Cost Est.	Comments
2	443/17.29	4608	Wairakaia Bridge	\$165k	
2	461/0	4610	Railway Overhead Bridge	\$330k	
2	461/2.77	4638	Maraetaha Bridge No 2	\$315k	
2	461/7.3	4683	Maraetaha Bridge No 4	\$255k	
2	461/7.78	4688	Maraetaha Bridge No 5	\$250k	
			3 No. bridges	\$315k	Further studies and possible works required.
Total				\$1,630k	



## Region 6 – Hawkes Bay

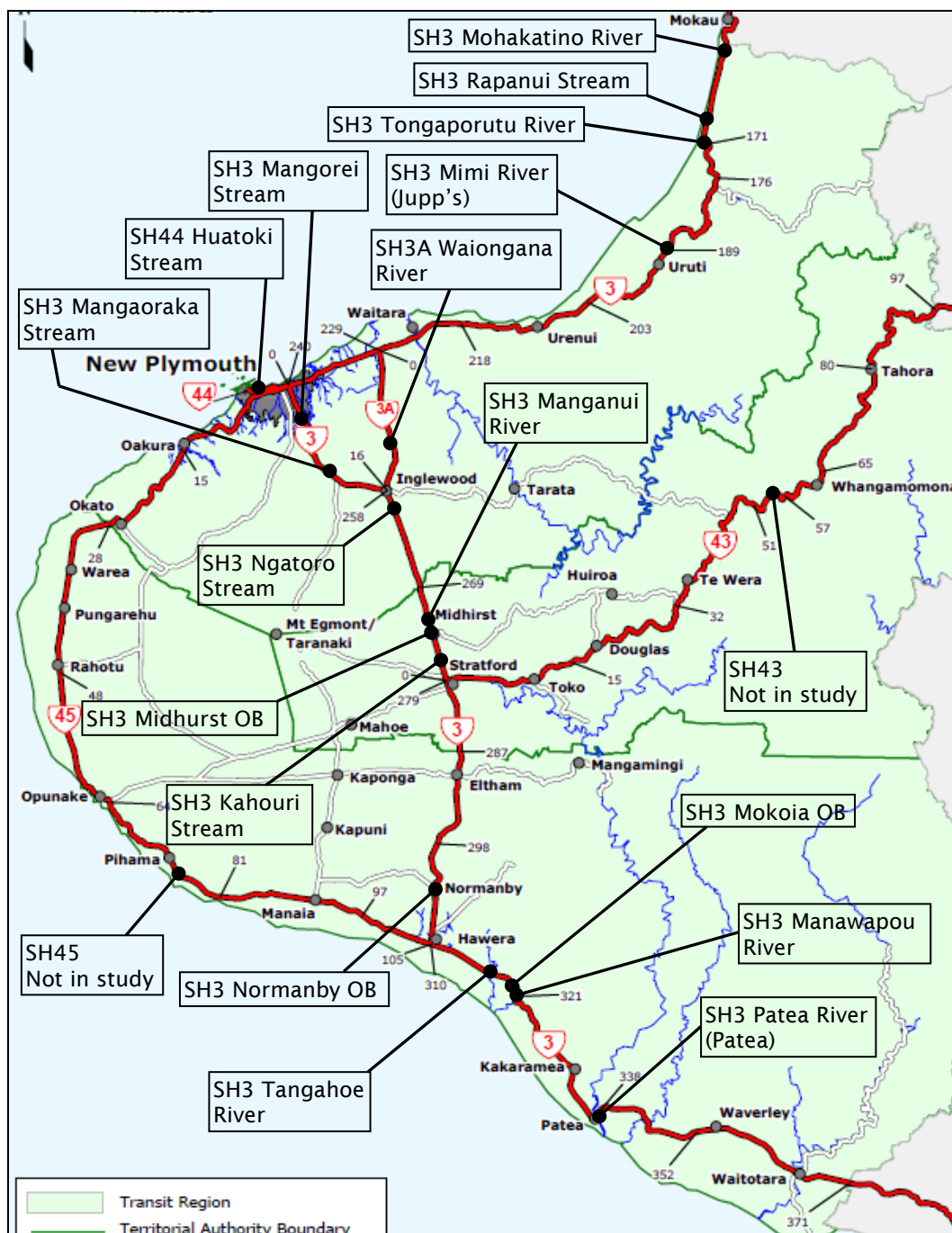


SH	RP	BSN	Name	Cost Est.	Comments
2	483/9.47	4925	Tunanui Bridge	\$285k	
2	497/9.93	5070	Tahaenui River Bridge		Very narrow. Short term replacement \$4m.
2	497/14.05	5110	Opoho Stream Bridge	\$115k	
2	516/0	5160	Waikatuku Bridge	\$120k	
2	533/10.48	5435	Ohinepaka Stream Bridge	\$165k	Very narrow.
2	544/0	5440	Ohinepaka Overbridge	\$430k	Medium term replacement \$5.2m
2	544/10.11	5541	Waihua River Bridge	\$540k	
2	577/14.59	5916	Waikare River Bridge	\$430k	
2	592/7.16	5992	Matakhorua Stream Bridge	\$300k	
2	626/0	6260	Te Ngaru Stream Bridge	\$90k	
2	626/5.56	6315	Pakuratahi Stream Bridge	\$730k	
2	626/11.56	6376	Esk Overbridge	\$180k	Narrow.
2	650/8.34	6583	Tutaekuri Bridge (Waitangi)	\$1,105k	Narrow. Medium term replacement \$8m. In Capital programme.
2	707/6.82	7138	Waipawa River Bridge	\$840k	Narrow.
5	220/0	2200	Mohaka Bridge		Short term upgrade to strengthen \$3m. (Block project.)

## Region 6 – Hawkes Bay

SH	RP	BSN	Name	Cost Est.	Comments
50	3/1.76	48	Meeanee Drain Bridge	\$135k	
50	17/0	170	Ngaruroro River Bridge	\$2,415k	Narrow.
50	33/1.72	347	Quarry Bridge	\$45k	
50	49/0	490	Manga-o-Nuku No. 1 Bridge		Single lane bridge. Short term replacement \$3.5m. In Capital programme.
50	49/1.84	508	Manga-o-Nuku No. 2 Bridge	\$115k	Single lane bridge. Short term replacement \$3.5m. In Capital programme.
50	49/4.48	535	Manga-o-Nuku No. 3 Bridge		Single lane bridge. Short term replacement \$3.5m. In Capital programme.
50	49/15.66	647	Two Mile Creek Bridge (Beatties)	\$45k	
50	79/8.2	872	Mangapoho Stream Bridge (Douglas's)	\$45k	
			10 No. bridges	\$1,050k	Further studies and possible works required.
<b>Total</b>				<b>\$9,180k</b>	

## Region 7 – Taranaki

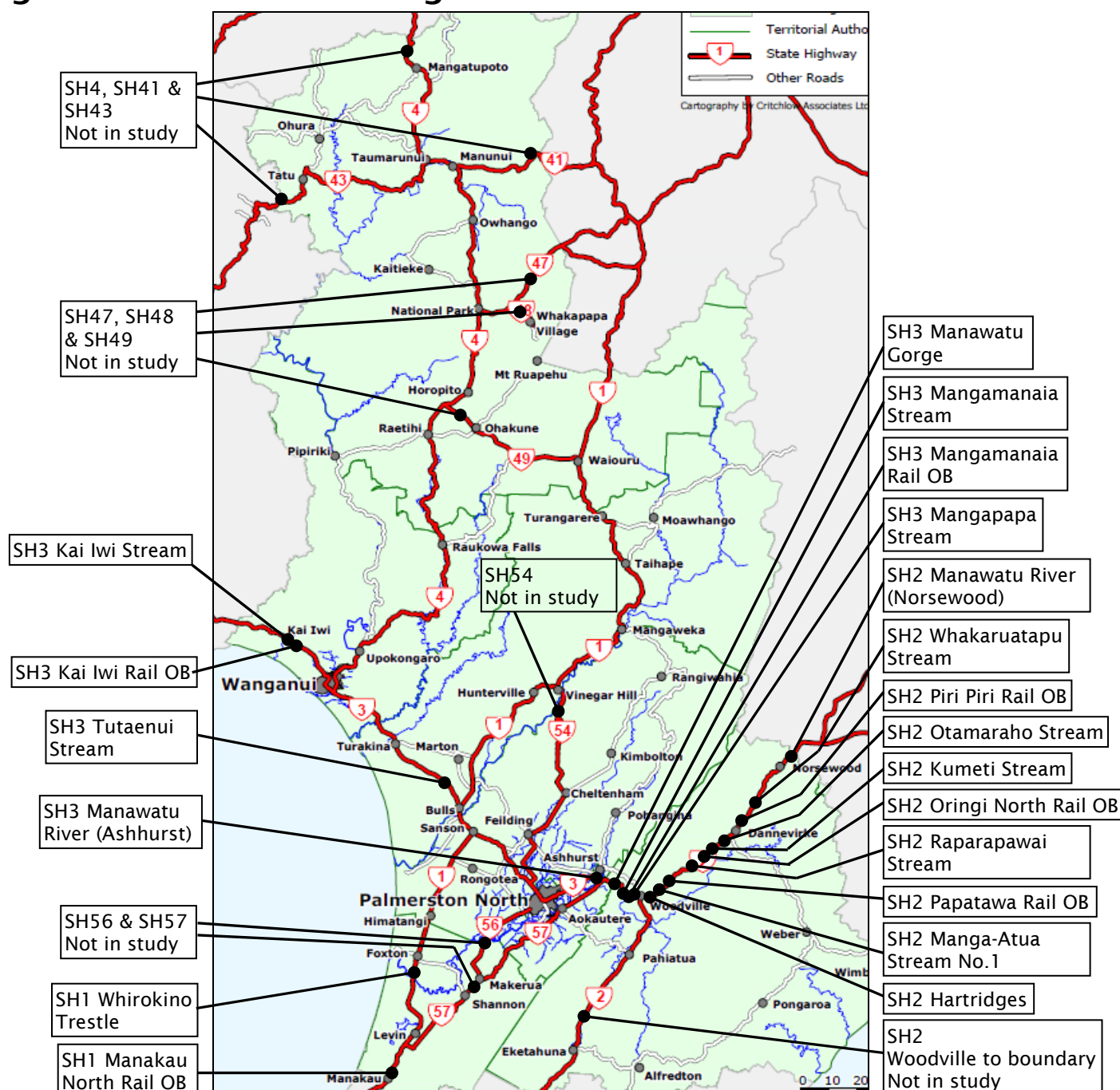


SH	RP	BSN	Name	Cost Est.	Comments
3	158/2.51	1605	Mohakatino River Bridge	\$150k	
3	158/10.5	1685	Rapanui Stream Bridge	\$225k	
3	171/0	1710	Tongaporutu River Bridge	\$750k	
3	189/0	1890	Mimi River (Jupp's) Bridge	\$75k	
3	240/5.69	2457	Mangorei Stream Bridge	\$100k	
3	240/12.77	2528	Mangaoraka Stream Bridge	\$115k	Narrow.
3	258/2.07	2601	Ngatoro Stream Bridge	\$150k	
3	269/3.8	2728	Manganui River Bridge	\$205k	Narrow.
3	269/4.06	2731	Midhurst Overbridge	\$330k	Narrow. Short term replacement \$6.0m. In Capital programme.
3	269/7.45	2765	Kahouri Stream Bridge	\$210k	Narrow.
3	298/4.87	3029	Normanby Overbridge	\$330k	Narrow. Short term replacement \$8.8m. In Capital programme.
3	310/7.09	3171	Tangahoe River Bridge	\$750k	Narrow.
3	310/10.47	3205	Mokoia Overbridge	\$165k	Block project to replace under a realignment scheme.
3	321/0	3210	Manawapou River Bridge	\$270k	

## Region 7 – Taranaki

SH	RP	BSN	Name	Cost Est.	Comments
3	338/0.77	3388	Patea River (Patea) Bridge	\$1,500k	
3A	0/11.09	111	Waiongana River Bridge	\$150k	
44	0/1.15	12	Huatoki Stream Bridge	\$450k	Block project to strengthen.
			2 No. bridges	\$210k	Further studies and possible works required.
Total				\$6,135k	

## Region 8 – Manawatu-Wanganui



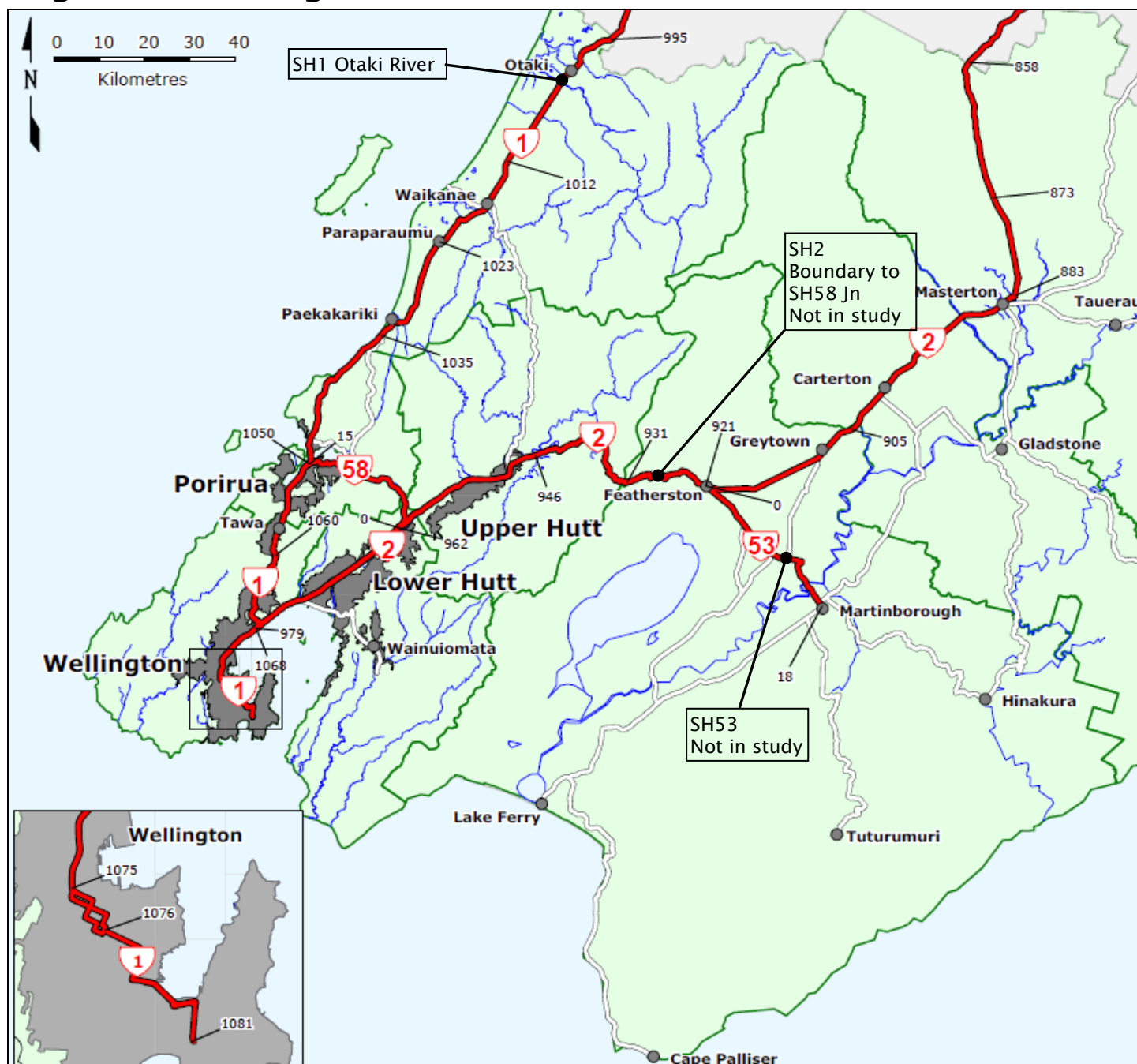
SH	RP	BSN	Name	Cost Est.	Comments
1N	954/11.72	9657	Whirokino Trestle Bridge	\$11,250k	Narrow. Medium term replacement \$30m
1N	985/6.85	9919	Manakau North Rail Overbridge	\$655k	Narrow. Medium term replacement \$1.5m
2	751/1.64	7526	Manawatu River (Norsewood) Bridge	\$115k	Narrow. Could be affected by Manawatu Hill Realignment (in Capital programme).
2	758/7.99	7660	Whakaruatapu Stream Bridge		Very narrow. Short term replacement \$5.6m. In Capital programme.
2	758/11.13	7691	Piri Piri Rail Overbridge	\$115k	Narrow.
2	772/8.87	7809	Otamaraho Stream Bridge	\$60k	Narrow. Block project to replace as part of passing lane improvements.
2	772/9.39	7814	Kumeti Stream Bridge	\$75k	Narrow. Block project to replace as part of passing lane improvements.
2	772/11.97	7840	Oringi North Rail Overbridge	\$315k	Narrow. Medium term replacement \$1.2m
2	772/15.75	7878	Raparapawai Stream Bridge	\$150k	Narrow.
2	788/7.65	7957	Papatawa Rail Overbridge	\$450k	Narrow. Would be affected by Papatawa Realignment (in Capital programme).
2	788/8.21	7962	Manga-Atua Stream Bridge No 1	\$150k	Narrow. Would be affected by Papatawa Realignment (in Capital programme).
2	788/12.98	8010	Hartridges Bridge	\$75k	Narrow.

## Region 8 – Manawatu-Wanganui

SH	RP	BSN	Name	Cost Est.	Comments
3	384/0	3840	Kai Iwi Stream Bridge	\$225k	Narrow.
3	384/1.11	3851	Kai Iwi Rail Overbridge	\$375k	Narrow.
3	432/9.8		Tutaenui Stream Bridge	\$75k	
3	474/14.26	4883	Manawatu River (Ashhurst) Bridge	\$1,500k	
3	488/1.16 – 491/3.6		Manawatu Gorge	\$800k	Further studies required for 72 bridges and half bridges and possible works.
3	491/6.41	4974	Mangamanaia Stream Bridge	\$150k	Narrow.
3	491/6.93	4979	Mangamanaia Rail Overbridge	\$280k	Narrow.
3	491/8.24	4992	Mangapapa Stream Bridge	\$90k	Narrow.
			11 No. bridges	\$1,155k	Further studies and possible works required.
<b>Total</b>				<b>\$18,270k</b>	

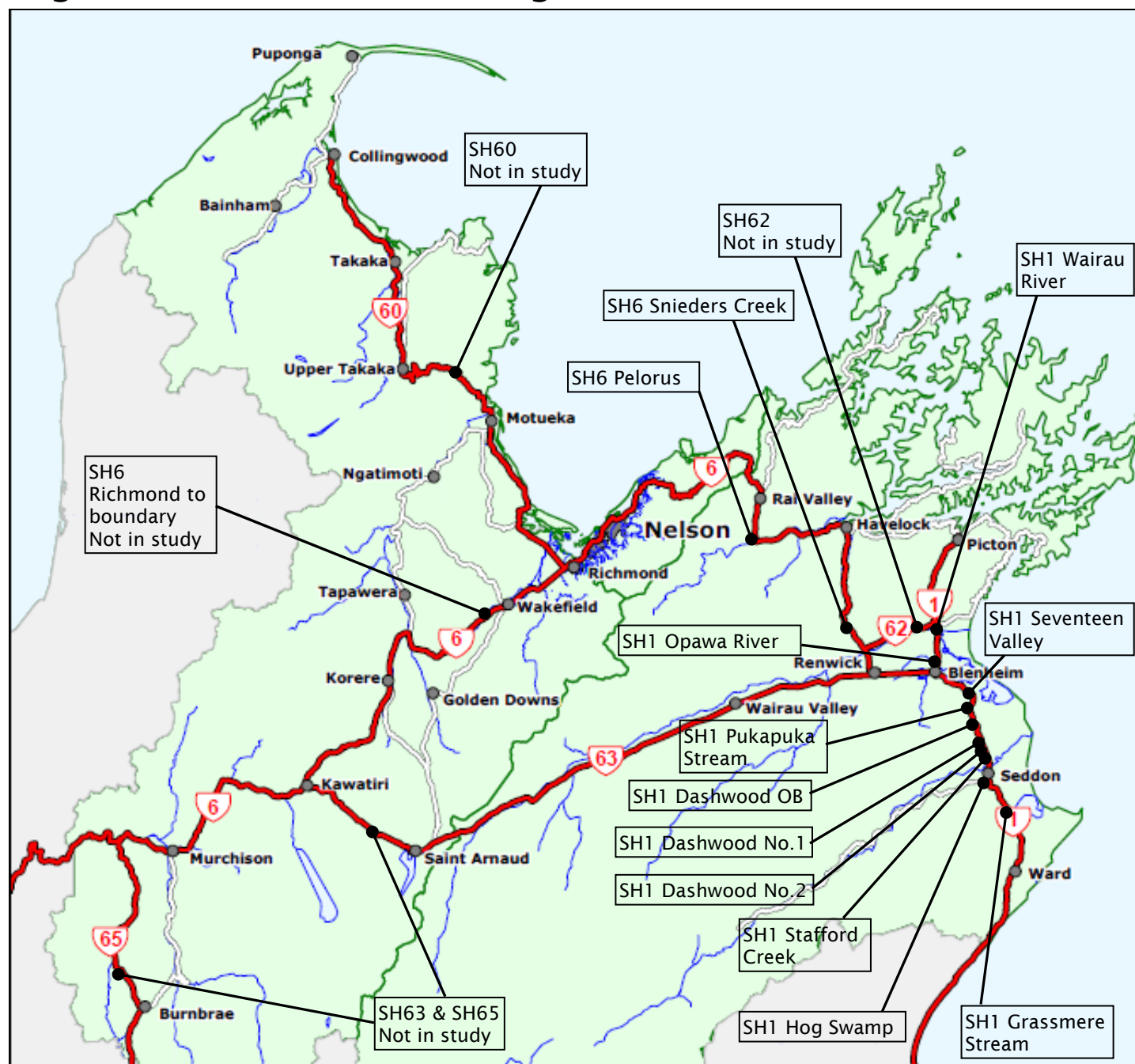


## Region 9 – Wellington



SH	RP	BSN	Name	Cost Est.	Comments
1N	18/2.08	201	Otaki River Bridge	\$900k	Seismic retrofit required \$300k. Could be affected by Kuku to Waikanae 4 Laning (in Capital programme).
			14 No. bridges	\$1,470k	Further studies and possible works required.
Total				\$2,370k	

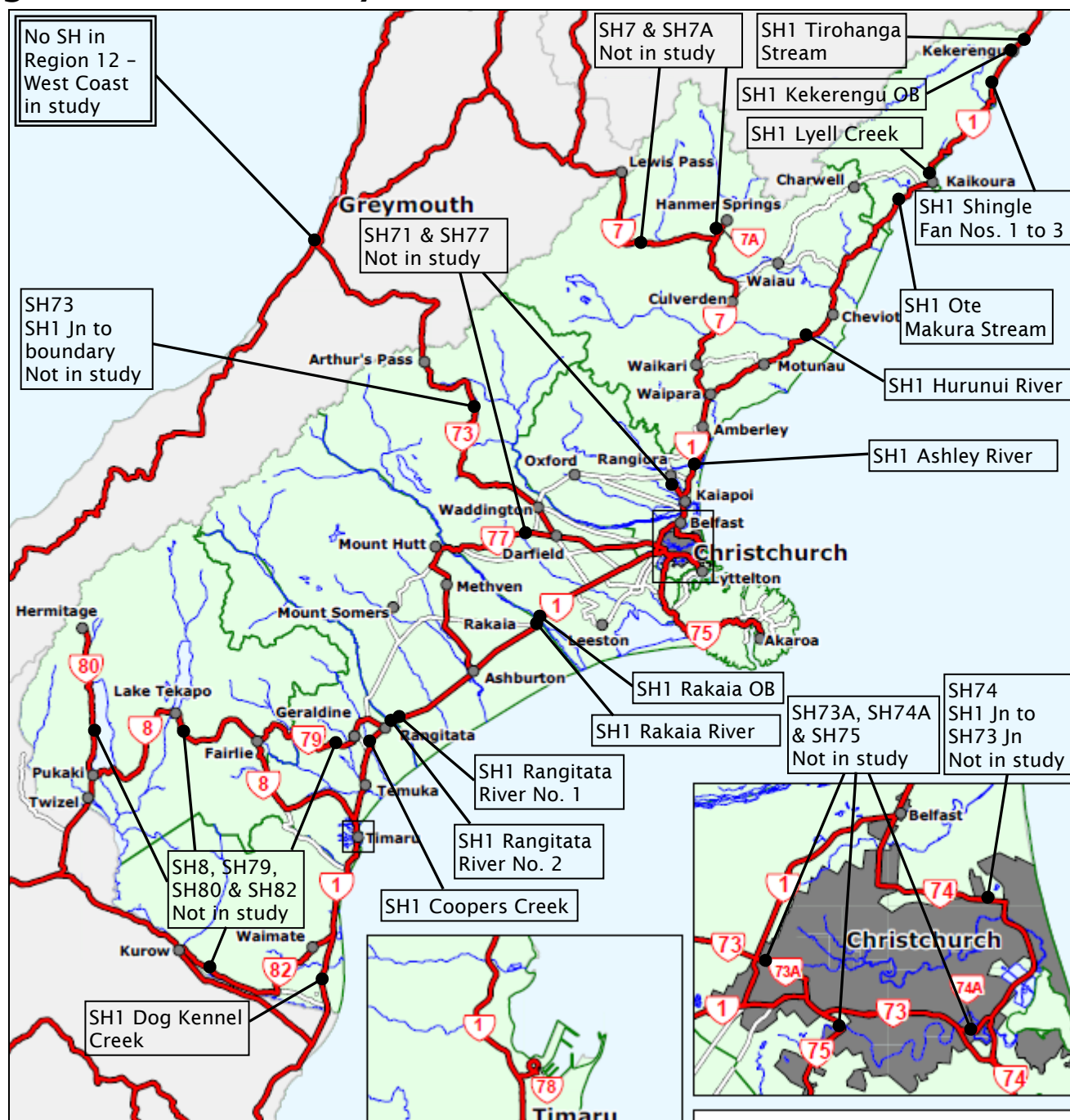
## Region 10 – Nelson-Marlborough



SH	RP	BSN	Name	Cost Est.	Comments
1S	18/2.08	201	Wairau River Bridge	\$1,425k	Narrow. Medium term replacement \$15m for seismic issues.
1S	18/9.01	270	Opawa River Bridge		Very narrow. Medium term duplication \$9m.
1S	28/11.15	392	Seventeen Valley Bridge	\$300k	
1S	28/12.18	402	Pukapuka Stream Bridge	\$85k	Narrow. Medium term replacement \$1.5m.
1S	43/1.36	444	Dashwood Overbridge	\$150k	Narrow. Short term replacement \$6.8m. In Capital programme.
1S	43/4.13	471	Dashwood No.1 Bridge	\$70k	
1S	43/4.84	478	Dashwood No.2 Bridge	\$85k	
1S	43/5.58	486	Stafford Creek Bridge	\$100k	
1S	43/10.76	538	Hog Swamp Bridge	\$75k	Medium term upgrade \$500k.
1S	57/5.03	620	Grassmere Stream Bridge	\$75k	
6	16/7.24	232	Snieders Creek Bridge	\$40k	Narrow. Short term replacement \$750k.
6	50/9.36	594	Pelorus Bridge		Single lane bridge.
			8 No. bridges	\$840k	Further studies and possible works required.
<b>Total</b>				<b>\$3,245k</b>	



## Region 11 – Canterbury

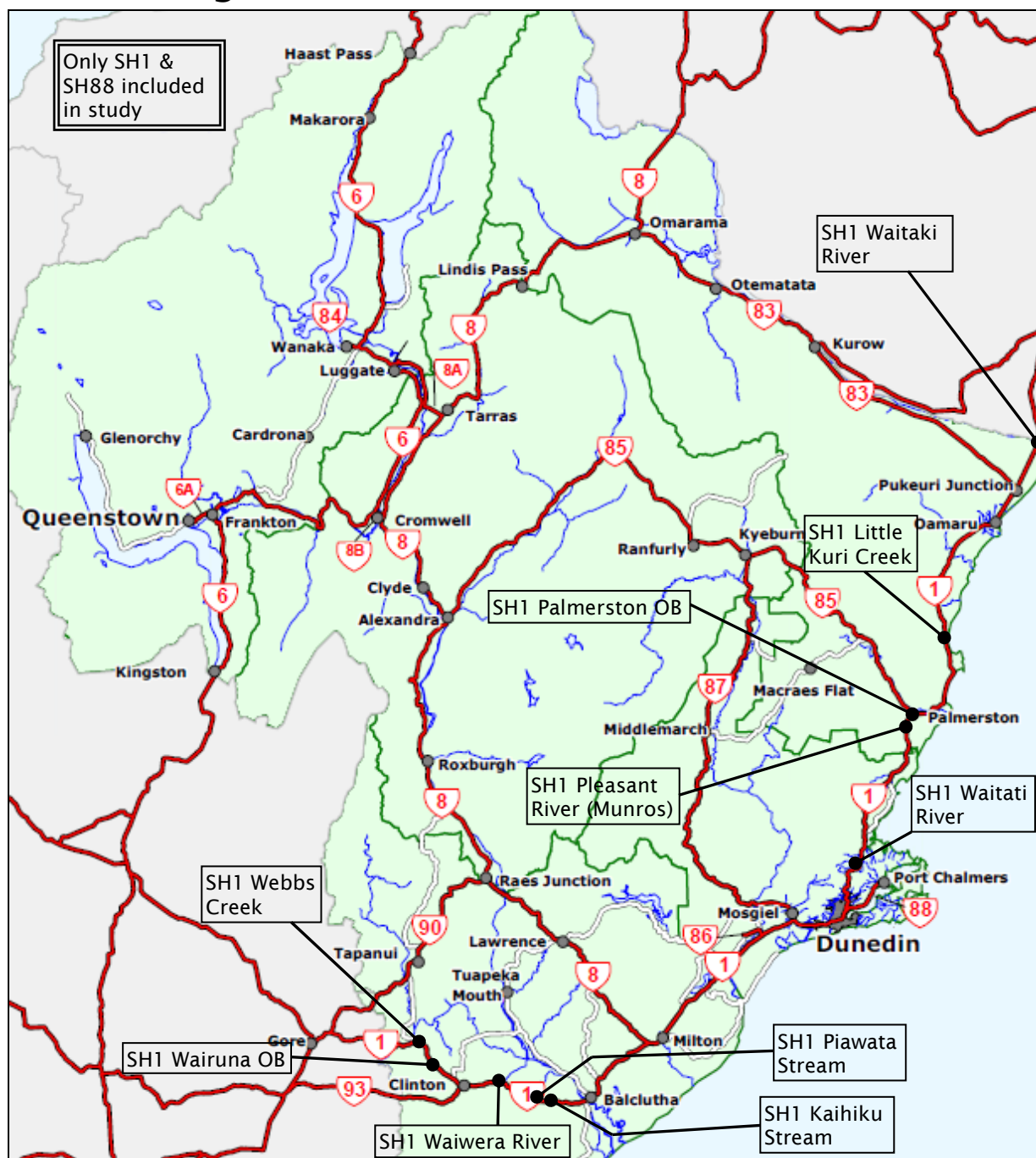


SH	RP	BSN	Name	Cost Est.	Comments
1S	90/0.84	908	Tirohanga Stream Bridge	\$90k	
1S	90/6.92	969	Kekerengu Overbridge	\$180k	
1S	155/2.61	1576	Lyell Creek Bridge	\$165k	Narrow.
1S	163/12.31	1753	Ote Makura Stream Bridge	\$195k	
1S	311/0	3110	Ashley River Bridge	\$1,350k	Narrow. Medium term upgrade to widen \$3m.
1S	381/17.98	3990	Rakaia Overbridge	\$210k	Narrow.
1S	381/18.8	3998	Rakaia River Bridge	\$6,000k	Narrow.
1S	462/0	4620	Rangitata River No 1 (Nth Branch) Bridge	\$2,250k	Narrow.
1S	462/2.36	4644	Rangitata River No 2 (Sth Branch) Bridge	\$1,125k	Narrow.
1S	465/5.81	4708	Coopers Creek Bridge	\$60k	Narrow.
1S	560/0.18	5602	Dog Kennel Creek Bridge	\$30k	
1S	104/7.31	1113	Shingle Fan Nos. 1 to 3 Bridges		3 no. single lane bypass bridges. Block project for replacement.
1S	247/0	2470	Hurunui River Bridge		Single lane bridge.

# Region 11 – Canterbury

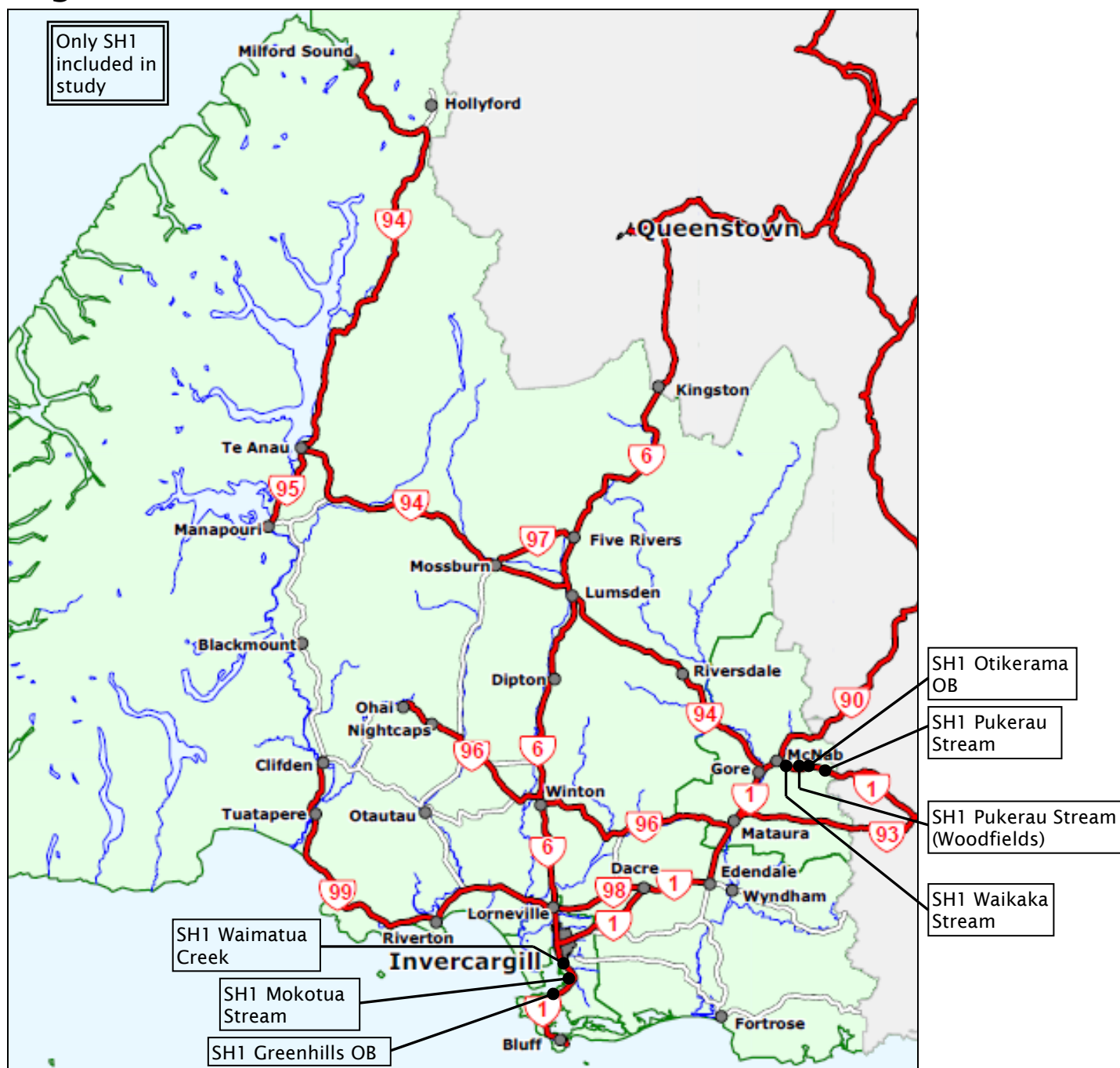
SH	RP	BSN	Name	Cost Est.	Comments
			15 No. bridges	\$1,575k	Further studies and possible works required.
Total				\$13,230k	

## Region 13 – Otago



SH	RP	BSN	Name	Cost Est.	Comments
1S	569/0	5690	Waitaki River Bridge	\$75k	Narrow.
1S	618/8.46	6265	Little Kuri Creek Bridge	\$180k	
1S	635/15.23	6502	Palmerston Overbridge	\$370k	Narrow.
1S	651/3.75	6548	Pleasant River (Munros) Bridge	\$150k	Narrow.
1S	683/5.19	6882	Waitati River Bridge	\$250K	
1S	791/9.96	8010	Kaihiku Stream Bridge	\$130k	
1S	791/10.34	8013	Piawata Stream Bridge	\$130k	
1S	807/0	8070	Waiwera River Bridge	\$300k	
1S	824/0	8240	Wairuna Overbridge	\$330k	
1S	824/8.5	8325	Webbs Creek Bridge	\$75k	
			26 No. bridges	\$2,730k	Further studies and possible works required.
Total				\$4,720k	

## Region 14 – Southland



SH	RP	BSN	Name	Cost Est.	Comments
1S	842/2.49	8445	Pukerau Stream Bridge	\$90k	
1S	842/8.77	8508	Otikerama Overbridge	\$255k	
1S	842/9.04	8511	Pukerau Stream (Woodfields) Bridge	\$150k	
1S	842/11.02	8530	Waikaka Stream Bridge	\$225k	
1S	926/4.33	9303	Waimatua Creek Bridge	\$105k	
1S	926/6.55	9325	Mokotua Stream Bridge	\$100k	Medium term upgrade to widen \$1m.
1S	933/8.52	9415	Greenhills Overbridge	\$325k	
			6 No. bridges	\$630k	Further studies and possible works required.
Total				\$1,880k	