mitigate adverse effects of the development proposal on the transport system.'

Best practice urban design principles are applied to the planning and design of new state highway projects. For example, Transit has used good urban design methods for the remodelled SH1 Newmarket Viaduct. As well as creating a visually appealing bridge, Transit is working closely with local authorities to ensure that the space around the viaduct is fully integrated with surrounding uses such as the upscale Newmarket retail area.

Improving travel choices is an important aspect of Transit's work in Auckland. Transit will continue to work with ARC, ARTA and the local authorities to provide more transport choices, via the support and development of Neighbourhood Accessibility Plans to ensure that all individuals have access to the facilities they need.

2.1.7 Education

Educating road users on how to best use state highways improves safety and efficiency. Transit's website (www.transit.govt.nz) gives up to date information on traffic flows, incidents (such as accidents and unexpected closures) and special events affecting the highway. This information is also distributed via radio stations and VMS to alert drivers and enable them to plan their journeys.

A range of techniques is used to give drivers the best available information on road works, diversions, closures and new layouts. Information is communicated directly by way of presentations, newsletters, letters and flyers, as well as in newspapers, on the radio and via VMS.

Education needs to cover all aspects of road use, which requires an integrated approach across all transport agencies including local councils, ARC, Land Transport New Zealand, ARTA and the New Zealand Police. Moving forward, there is an opportunity to build upon the work already done and clarify roles.

2.1.8 Continual improvement

Transit is continually working to improve the efficiency and operation of the state highway network and is committed to the continuous monitoring and review of its business practices and performance. Furthermore, Transit will change the way it does business to reflect the new goals and objectives in the UNZTS and will implement these changes in parallel with those changes required to form and operate the New Zealand Transport Agency.

2.2 PLANNING AND MANAGEMENT TOOLS

Three categories of state highways and three categories of environments that state highways pass through have been identified in the NSHS for the Auckland region. The following table describes these categories.

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State Highway Categorizations

National state highways Connect places of national significance, and/or are designated motorways.	**Urban** Ranging from small-to-medium-sized settlements to major cities, includes all urban communities.
Regional state highways Connect territorial regions and places of regional significance.	**Peri-urban** Defined as the areas surrounding major towns where there is a mix of land uses, (commercial, industrial, residential and agricultural). The speed limit is generally 70 kph to 100 kph.
Sub-regional state highways Connect territorial districts and places of district significance such as communities, tourist attractions and key primary production areas.	**Rural environment** Can vary from mountainous to agricultural, with limited dwellings or settlements, and may be the only highway in the area and perform a wide range of functions. Speed limits are generally 100 kph.

Transit's Planning Policy Manual outlines Transit's approach to incorporating these categories into managing and operating state highways. This policy recognises that further actions are required from various regional and national organisations to deliver an integrated multi-modal transport system.

AS3

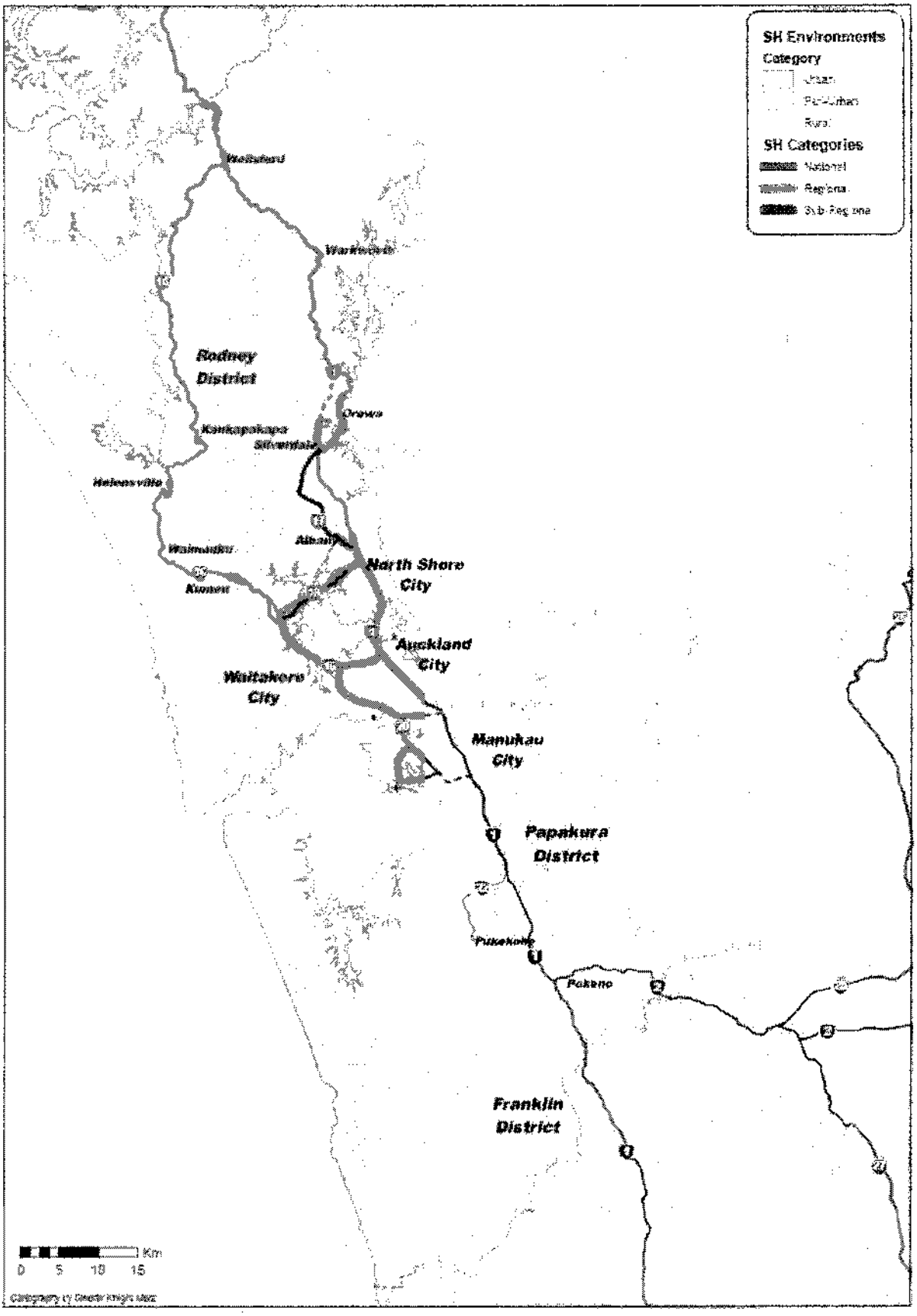
SH Environments
Category
Urban
Peri-Urban
Rural
SH Categories
National
Regional
Sub-Regional
Rodney District
Orewa
Kaukapakapa
Silverdale
Helensville
Waimauku
Kumeu
North Shore City
Auckland City
Waitakere City
Manukau City
Papakura District
Pukekohe
Pokeno
Franklin District
Km
0 5 10 15

Figure 7

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2.2.2 Revoking State Highways

Transit usually undertakes a review of the entire state highway network every five years, in consultation with local road controlling authorities and other stakeholders. The State Highway Review specifically seeks to determine:

- Which roads should remain as state highways,
- Whether any local roads should be declared state highways or motorways,
- Whether any state highways should be declared motorways and
- Whether any state highway declaration should be revoked, in which case the road would become a local road.

In the long term Transit may consider revoking state highway status of:

- SH1, The Hibiscus Coast Highway (Silverdale to Puhoi),
- SH17 Greville Rd to Silverdale,
- SH20 Redoubt Rd to Puhinui and,
- SH18 Albany Highway to Westgate (Upper Harbour Drive to Tauhinui Rd & Hobsonville Rd from east of Buckley to SH16 at Westgate)

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APPENDIX SH1: CMJ to Northland

Introduction

The SH1 Northern Motorway is the major national strategic route between Northland and Auckland. It is the major route that connects Auckland to the North Shore, Rodney and the Northland Region. It is one of the busiest motorways in the country.

Existing highway and traffic volumes

As the national state highway, the Northern Motorway carries more than 167,000 vehicles per day (vpd) at its highest point between Fanshawe Street and Onewa Road. It passes through mainly urban areas. North of Greville Road Interchange the motorway passes through peri-urban areas, as detailed below.

SH1 Northern Motorway

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Traffic volume range (AADT)*	*Average traffic (AADT)* [9]
Wellington/Cook Street to Fanshawe Street	national/urban (1)	1.0	4	80	4.0	94,400	94,400
Fanshawe Street to Esmonde Road	national/urban (1)	6.0	9*	100**	4.5	138,300 – 167,000	152,500
Esmonde Road to Oteha Valley Interchange	national/urban (1)	10.3	6***	100	3.9	53,500 – 107,100	88,100
Oteha Valley Interchange to Silverdale Interchange	national/rural (3)	12.0	6	100	6.7	42,100	42,100
Silverdale	national/peri-	5.5	4	100****	1.1	16,500	16,500

[9] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{ab}=\sum_{b}^{a}(AADT*Length)\Big/\sum_{b}^{a}Length$).

AS6

Interchange to Grand Drive (SH1A)	urban (2)						
* Curran/Shelly to Stafford Road is 8 lanes and Onewa Road to Esmonde Road is 7 lanes, whereas the remaining lengths are 9 lanes.							
** 80km/hr between Fanshawe Street to the end of Auckland Harbour Bridge, whereas the remaining lengths are 6 lanes.							
*** Tristram Avenue to Upper Harbour is 5 lanes and Upper Harbour to Greville Interchange is 4 lanes.							
**** 70km/hr between Link Road roundabout to Maire Road (west), 50km/hr between Maire Road (west) to end of State Highway 1A.							
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.							

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SH1 Silverdale to Wellsford

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [10]
Silverdale Interchange to Moffat Road (Orewa)	national/peri-urban (2)	3.7	2	80	5.7	28,600
Moffat Road (Orewa) to Arundel Reserve access (Orewa)	national/urban (1)	3.8	2	50	6.4	21,500
Arundel Reserve access (Orewa) to Hatfields Beach rest area	national/peri-Urban (2)	1.7	2	70	6.7	19,000
Hatfields Beach rest area to McKinney Road (Warkworth)	national/rural (3)	21.9	2	100*	7.0	16,100
McKinney Road (Warkworth) to Whitaker Road (Warkworth)	national/peri-urban (2)	1.2	2	70	5.0	21,000
Whitaker Road (Warkworth) to Hill Street (Warkworth)	national/urban (1)	0.7	2	50	5.0	21,000
Hill Street (Warkworth) to Hudson Road (Warkworth)	national/peri-urban (2)	1.0	2	70	5.0	21,000
Hudson Road (Warkworth) to Wellsford rail overbridge	national/rural (3)	16.7	2	100	7.7	10,700
Wellsford rail overbridge to 500m north of School Road	national/urban (1)	2.6	2	50**	5.0	11,600

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500m north of School Road to Silver Hill Road	national/rural (3)	3.0	2	100	5.0	11,600
Silver Hill Road to Te Hana rail overbridge	national/per-urban (2)	0.8	2	70	7.9	11,000
Te Hana rail overbridge to Ross Road	national/rural (3)	4.8	2	100	10.3	9,800
* 80km/hr between Hatfield Bay Reserve to Billing Road						

Future traffic demand

The following growth nodes have been identified by ARC's Regional Growth Strategy: Takapuna, Smales Farm, Albany, Orewa, Silverdale and Warkworth. Additionally, growth to areas further north is expected in coastal Rodney and Whangarei.

Business growth is expected in Wairau Valley, Albany centre and Silverdale, as well as in areas further north, such as the port at Marsden Point.

Future improvements and indicative dates

Estimated stage of completion	**1 - 50%**	**51 - 100%**

Major improvements	**Description**	**2008-2020**	**2020-2030**	**2030-2040**
Vic Park Tunnel	A tunnel is planned to be constructed beneath Victoria Park for northbound traffic			
Additional Waitemata Harbour Crossing	Provide additional capacity between the North Shore and Auckland			
Cycle/pedestrian facilities across	Ensure active modes are included in another crossing			

Waitemata Harbour	or existing facility			
Northern Busway Extension	Investigate Busway extension from Constellation Drive to Orewa			
HOVs	Investigate HOV opportunities on the Northern Busway			
ALPURT	Albany to Puhoi realignment and extension of SH1, first state highway toll road			
Warkworth Intersection improvements	A range of traffic management and intersection upgrades			
Puhoi to Wellsford	Capacity Improvements			
Warkworth Bypass	Long term concept to bypass Warkworth			
SH1 North safety improvements	Safety improvements on Schedewys Hill and Dome Valley			
Cycle network near SH1	Progress regional cycle network facilities across SH1			
Pedestrian linkages to bus stations	Complete walking and cycling linkages to Northern Busway stations			
Auxiliary lane	Northcote to Sunnynook			
Ramp signals	Complete ramp signal programme including priority vehicle bypass lanes at Greville Interchange (S.B.), Upper Harbour (N.B.) and Esmonde Rd on-ramps			

	(S.B.)	[redacted]		
Stormwater/Structural upgrade	Auckland Harbour Bridge			

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APPENDIX SH1: Southern Motorway to Waikato Expressway

Introduction

SH1 north-south corridor is the most important national corridor for the movement of freight and people in the North Island. The strategy for the north-south Waikato Expressway is to provide long-term linkages between Auckland, Waikato and the Bay of Plenty, which is regarded as the 'Golden Triangle' of economic activity. It is also a strategic regional route connecting Auckland and Manukau cities with connections to the Northern and Northwestern motorways and has a wide influence on the regional and local road networks. This section of the ASHS will consider SH1 from Franklin District through south Auckland and links to the CMJ.

Existing highway and traffic volumes

The Southern Motorway is a national state highway. Its highest flow is more than 200,000 vpd between Khyber Pass and Gillies Avenue.[11] The motorway corridor is often heavily congested, has low service levels and passes through urban, peri-urban and rural areas.

SH1 Southern Motorway & Waikato Expressway

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Traffic volume range (AADT)*	*Average traffic (AADT)* [12]
Nelson/Hobson Street to Grafton Gully	national/urban (1)	1.5	7*	80	3.8	93,900 – 143,100	117,400
Grafton Gully to race course (Tecoma)	national/urban (1)	5.2	7**	100***	3.9	153,600 – 200,300	171,200
Race course (Tecoma) to SEART	national/urban (1)	3.8	6	100	4.8	140,700 – 150,300	143,700
SEART to Te Irirangi	national/urban (1)	9.2	6	100	5.6	99,200 – 112,700	108,700
Te Irirangi to	national/urban (1)	10.8	6****	100	8.5	69,700 –	78,800

[11] Auckland State Highway and Motorway Traffic Count Data 2006

[12] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{sh} = \sum_{b}^{a}(AADT * Length) \Big/ \sum_{b}^{a} Length$).

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Papakura Interchange						94,500	
Papakura Interchange to Drury Interchange	national/peri - urban (2)	4.2	4	100	10.0	56,600	56,600
Drury Interchange to SH2	national/rural (3)	15.9	5*****	100	8.7	33,800 – 40,300	37,700
SH2 to Pokeno	national/rural (3)	2.8	4	100	13.9	20,800	20,800
Pokeno to Mercer	national/rural (3)	5.0	4	100	12	16,680	16,680
* Nelson/Hobson Street to Northwestern Motorway is 6 lanes							
** Grafton Gully to Kyber Pass is 8 lanes, Kyber Pass to Gillies Avenue is 10 lanes and Gillies Avenue to St Mark Road is 6 lanes							
*** 80km/hr between Grafton Gully to Gillies Avenue							
**** Takanini Interchange to Papakura Interchange is 8 lanes							
***** Drury Interchange to Ramarama Interchange and Mill Road to Beaver Road are 4 lanes							
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.							

Future traffic demand

The following growth nodes have been identified by ARC's Regional Growth Strategy: the CBD, Newmarket, Remuera, Ellerslie, Sylvia Park, Otahuhu, Manukau, Papakura, Manurewa, Papatoetoe, Flat Bush and Pukekohe.

Business growth is expected in Onehunga, Highbrook, East Tamaki, Wiri, and Papakura. Additionally strong economic growth is anticipated in the 'Golden Triangle' of economic activity between Auckland, Tauranga and Hamilton, with SH1 and SH29 being the primary national route connecting these cities.

Future improvements and indicative dates

Estimated stage of completion	**1 - 50%**	**51 - 100%**

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Major improvements	Description	2008-2020	2020-2030	2030-2040
Newmarket Viaduct	Upgrade and provide additional southbound capacity on the Southern Motorway			
CMJ to Mt Wellington	Investigate Dynamic Traffic Management (including HOVs)			
Mt Wellington to Papakura	Investigate 6-laning, QTN and interchange improvements			
Papakura Interchange	Implement interchange improvements to complement surrounding growth			
Cycle Network near Southern Motorway	Progress regional cycle network facilities near and across SH1			
Pedestrian links to stations	Provide quality pedestrian linkages across SH1 to the rail stations between Remuera and Penrose			
Ramp Signals	Complete ramp signal programme including priority vehicle bypass lanes at Mt. Wellington (S.B.), Southeastern arterial (S.B.) and Takanini			

	(N.B.)	[redacted]		
SH1 managed lanes for priority users	Investigate and implement freight & HOV priority lanes		[redacted]	
SH1 to Hamilton	Capacity improvements including possible 4-laning			

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APPENDIX SH2

Introduction

State Highway 2 is a regional highway from Pokeno to SH27, and from SH27 to Tauranga. SH2 is a sub-regional state highway and is within the Franklin District boundaries.

Existing highway and traffic volumes

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [13]
SH1 to Koheroa Road	regional/rural (6)	9.2	2	100	12.0	13,600
Koheroa Road to McKenzie Road	regional/rural (6)	1.2	2	80	12.0	13,600
McKenzie Road to Kopuku	regional/rural (6)	7.2	2	100	12.0	13,600
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.						

Future traffic demand

Beyond the Franklin District, SH2 has a dual local commuter and through route function between Katikati and Tauranga and is experiencing significant growth pressures. However, significant capacity increases to SH2 through the Karagahape Gorge would be difficult due to its environmental, scenic and tourism qualities. There is also conflict between tourists and the high volume of heavy vehicles (800 heavy vehicles per day). Furthermore the Department of Conservation has a development strategy for taking the Gorge area to National Park status and continuing development of SH2 would be in conflict with this objective.

Transit has taken the position that SH1 and SH29 are the most appropriate national state highway routes, to connect Auckland with Hamilton and Tauranga. It

[13] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{ab} = \sum_{b}^{a}(AADT * Length) / \sum_{b}^{a} Length$).

is envisaged that long term focused investment on SH29 will improve travel times between Auckland, Hamilton and Tauranga and contribute to economic development in these regions. This approach is now an important component of Transit's NSHS and is threaded through most of the Waikato region's strategic planning documents, most notably the Waikato Regional Land Transport Strategy. Similarly. The Bay of Plenty region includes this strategic vision in its RLTS. Transit will continue to support these strategies and coordinate state highway improvements across the regions.

This strategy reflects the national priorities and constraints of the area. With the current funding levels, it is simply not affordable in a 10 or even 20 year period to make a significant advancement on providing 4-lane capacity improvements on the two main routes simultaneously and Transit has chosen, instead to target capacity investment in the first instance to SH1 and SH29 and to respond as appropriate to any safety issues on SH2 by providing improved passing opportunities where appropriate.

Future improvements and indicative dates

Estimated stage of completion	**1 - 50%**	**51 - 100%**		
Major improvements	**Description**	**2008-2020**	**2020-2030**	**2030-2040**
Mangatawhiri Deviation	Safety improvements			
Kopuku Realignment	To improve safety and provide passing opportunities			
Cycle network	Provide cycle network facilities near and across SH2			

APPENDIX SH16: Northwestern Motorway and SH16 to Wellsford

Introduction

SH16 is a strategic route connecting the Auckland isthmus and suburbs to the west through Waitakere City and north to Wellsford. Beginning at Nelson Street and passing through the Auckland Central Motorway Junction, the Northwestern Motorway connects Auckland to developing suburbs in Waitakere City and ends at the intersection with SH18 at Westgate. SH16 plays a key role in connecting the Western Ring Route to the CBD and eastern suburbs. SH16 also provides an important alternative route to SH1 for emergencies and high volume holiday periods.

Existing highway and traffic volumes

The Northwestern Motorway is a national state highway and carries more than 113,000 vpd at its peak between Western Springs and Newton Road.

Between Westgate and Wellsford, SH16 is primarily a two-lane highway and functions as a regional state highway servicing the western rural areas including Kumeu and Helensville.

SH16 Northwestern Motorway

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Traffic volume range (AADT)*	*Average traffic (AADT)* [14]
Hobsonville Road to Te Atatu Road	national/urban (1)	5.9	4	100	3.1	40,100 – 69,900	56,500
Te Atatu Road To Great North Road	national/urban (1)	5.3	6	100	5.2	89,200 – 93,200	91,000
Great North Road to Southern Motorway	national/urban (1)	7.2	6*	100	4.0	60,800 – 113,500	97,400

[14] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{GS} = \sum_{0}^{n}(AADT * Length) / \sum_{0}^{n} Length$).

connections							
Southern Motorway connections to Alten Road	national/urban (1)	3.2	5**	80	3.5	12,500 – 33,500	21,100
* 7 lanes between Western Springs and Newton Road and 7 lanes between Nelson/Hobson and Southern Motorway connections							
** 4 lanes between Wellesley Street to Southern Motorway connections							
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.							

SH16 Westgate to Wellsford

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [15]
Motorway (SH16/18 Junction) to Don Buck Road (Westgate)	regional/ urban (4)	0.7	2	80	10.0	30,800
Don Buck Road (Westgate) to Brigham Creek Road	regional/peri-urban (5)	3.3	2	80	10.0	23,700
Brigham Creek Road to Old Railway Road (Kumeu)	regional/rural (6)	3.5	2	80	8.6	20,300
Old Railway Road (Kumeu) to Trigg Road (Huapai)	regional/urban (4)	3.0	2	60	7.9	15,700
Trigg Road (Huapai) to Wintour Road (Waimauku)	regional/rural (6)	3.4	2	100	4.4	12,700
Wintour Road (Waimauku) to	regional/peri-urban (5)	1.4	2	70	4.4	12,700

[15] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{ab}=\sum_{a}^{b}(AADT*Length)\Big/\sum_{a}^{b}Length$).

Mabbet Lane (Waimauku)						
Mabbet Lane (Waimauku) to Kowhai Street (Helensville)	regional/rural (6)	15.2	2	100*	6.3	5,100
Kowhai Street (Helensville) to Stewart Street (Helensville)	regional/peri urban (5)	1.2	2	50	10.0	6,600
Stewart Street (Helensville) to Pipitiwai Drive (Helensville)	regional/urban (4)	0.6	2	50	10.0	6,600
Pipitiwai Drive (Helensville) to Opoto Place (Kaukapaka)	regional/rural (6)	9.5	2	100	7.7	3,700
Opoto Place (Kaukapakapa) to North Crescent (Kaukapakapa)	regional/urban (4)	0.8	2	50	6.2	4,800
North Crescent (Kaukapakapa) to Prictor Road (Wellsford)	regional/rural (6)	44.9	2	100**	7.4	1,700
Prictor Road (Wellsford) to SH1/16 Junction	regional/urban (4)	0.5	2	50	8.1	2,300
* 70km/hr between Kaipara River Bridge and Kowhai Street						
** 70km/hr between Lime Quarry entry and Prictor Road						

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Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.

Future traffic demand

The following growth nodes have been identified by ARC's Regional Growth Strategy: Pt Chevalier, Grey Lynn, Te Atatu, Westgate, Massey North, Kumeu, Huapai, Waimauku, and Helensville.

Major business growth is expected in Rosebank and Lincoln Road. Additionally, upon completion of the SH20 to SH16 Waterview connection, further traffic is anticipated between Waterview and Westgate as demand is dispersed from SH1 to the Western Ring Route as the alternative to SH1.

Future Improvements and indicative dates

Estimated stage of completion	**1 - 50%**	**51 - 100%**

Major improvements	**Description**	**2008-2020**	**2020-30**	**2030-2040**
Northwestern Motorway widening for HOV/QTN/Freight	-Te Atatu to Royal 6-lanes -Waterview to Rosebank 8-lane -Rosebank to Te Atatu 8-lane			
Auxiliary lane	Newton Road to Western Springs			
Brigham Creek Extension	Combination of bus priority measures and motorway widening			
Cycle network near SH16	Progress regional cycle network facilities near and across SH16			

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SH16 cycle facilities	Extend Northwestern cycleway to Wellsford as strategic tourism route		[redacted]	
Kumeu and Helensville	Investigate urban improvements			
SH16 passing lanes	To improve safety and efficiency			
SH16 to Port (Grafton Gully Stage 3)	Improve through freight traffic and pedestrian access to CBD			
Ramp signals	Complete ramp signal programme including priority vehicle bypass lanes at Lincoln Road (E.B.), Te Atatu (E.B.), Waterview (E.B./W.B.)	[redacted]		

APPENDIX SH17

Introduction

SH17 is the old state highway that connected Auckland and the north. SH17 runs northwest from SH1 Greville Road Interchange, past new developments in central Albany and through Albany Village terminating at the junction with SH1 at Silverdale. SH17 is defined as a sub-regional state highway. Transit is currently investigating revoking the route's state highway status.

Existing highway and traffic volumes

Section	*Type of highway function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [16]
SH1 (Albany) to Stevenson Crescent	sub-region/urban (7)	3.0	2	50*	5	20,000
Stevenson Crescent to Foley Quarry Road	sub-regional/peri-urban (8)	2.8	2	80	4.1	12,300
Foley Quarry Road to SH1 (Silverdale)	sub-region/rural (9)	11.7	2	100**	6.9	6,600
* 80km/hr Albany Highway and Data Way						
** 80km/hr between Dairy Flat School and Redvale Sanitary Landfill Access Road and at SH1 (Silverdale)						
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.						

[16] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{sub} = \sum_{i}^{n} (AADT * Length) / \sum_{i}^{n} Length$).

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APPENDIX SH18: Upper Harbour Motorway and SH18A

Introduction

The Upper Harbour Corridor is the main east/west link, or the top-most rung in the ladder, between North Shore and Waitakere cities and is a national state highway that passes through peri-urban environments. The corridor extends from SH1 Northern Motorway in the east, along Hobsonville Road to the end of the SH16 Northwestern Motorway. The Greenhithe Section was completed and opened in December 2007. Having just opened, traffic count data for the Upper Harbour Motorway is not yet available.

Existing highway and traffic volumes

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Traffic volume range (AADT)*	*Average traffic (AADT)* [17]
SH1/18 Junction (Constellation Drive) to Paul Matthews Road	national/peri-urban (2)	1.1	2				
Paul Matthews Road to east end of Upper Harbour Bridge	national/peri-urban (2)	5.5	4				
East end of Upper Harbour Bridge to Monterey Park	national/peri-urban (2)	1.7	4*				
* The new bridge will accommodate three traffic lanes and a pedestrian/cycleway.							
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.							

[17] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{sh} = \sum_{b}^{a}(AADT * Length) / \sum_{b}^{a} Length$).

State Highway 18A (Hobsonville Road)

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [18]
SH1/18 Junction (Constellation Drive) to Albany Highway	sub-regional /urban (7)	2.7	2	80*	5.0	19,000
Albany Highway to Tauhinu Road	sub-regional /urban (7)	4.0	2	70	3.7	26,800
Tauhinu Road to Buckley Avenue	sub-regional /urban (7)	2.6	2	100	5.9	24,400
Buckley Avenue to SH16/18 Junction (Westgate)	sub-regional /urban (7)	6.6	2	50	5.9	32,800
* 50km/hr at SH1/18 junction						
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.						

Transit is currently investigating revoking the route's state highway status.

Future traffic demand

The following growth nodes have been identified by ARC's Regional Growth Strategy: Westgate, Massey North, Hobsonville, Albany Centre and potentially Whenuapai.

Major business growth is expected near Albany and Whenuapai.

[18] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{all} = \sum_{h}^{n}(AADT * Length) / \sum_{h}^{n} Length$).

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Future improvements and indicative dates

Estimated stage of completion time	1 - 50%	51 - 100%

Major improvements	Description	2008-2020	2020-2030	2030-2040
Constellation Drive	Upgrade the connection between SH18 and SH1 to motorway standard			
Hobsonville Deviation	Complete SH18-SH16 motorway connection			
RTN	Rapid transit network connection between Albany and Westgate			
HOV	Investigate HOV opportunities			
Cycle network near SH18	Progress regional cycle network facilities across SH18			
Ramp signals	Complete ramp signal programme including priority vehicle bypass			

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	lanes SH1 (S.B.)			

APPENDIX SH20: Southwestern Motorway and SH20A/B

Introduction

SH20 Southwestern Motorway is a strategic route connecting Auckland and Manukau cities. It is a major part of the Western Ring Route and the strategic route that connects the region to Auckland International Airport via SH20A and SH20B.

A new motorway-to-motorway link is being built between SH20 Southwestern Motorway and SH1 Southern Motorway at Manukau City. As part of the Waterview Connection project, SH20 will connect with the Northwestern Motorway. The Western Ring Route will provide an alternative route to SH1.

Existing highway and traffic volumes

SH20 is a national state highway and passes through urban areas. It carries over 87,000 vpd at its maximum between Onehunga and Mangere.[19]

SH20 Southwestern Motorway

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Traffic volume range (AADT)*	*Average traffic (AADT)* [20]
Hillsborough Road to Onehunga	national/urban (1)	2.5	4	100*	4.1	45,500 – 69,500	60,600
Onehunga to George Bolt Drive (SH20A)	national/urban (1)	4.6	6**	100	4.6	66,600 – 87,900	74,500
George Bolt Drive (SH20A) to Vogler Drive	national/urban (1)	6.4	4	100***	6.0	35,900 – 47,400	41,500

[19] Auckland State Highway and Motorway Traffic Count Data 2006

[20] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{ab} = \sum_{b}^{a}(AADT * Length) / \sum_{b}^{a} Length$).

Vogler Drive to SH1/20 Junction****	national/urban (1)	4.1	2	80*****	9.7	–	27,500
* 50km/hr at Hillsborough Road Intersection							
** Onehunga to Coronation Road is 4 lanes, Coronation Road to Walmsley Road is 5 lanes							
*** 50km/hr at Puhinui Road Intersection and 80km/hr between Puhinui Road and Vogler Drive							
**** Vogler Drive to SH1/20 Junction is non-motorway section							
***** 70km/hr from Ash Road to Great South Road, 50km/hr at SH1/20 Junction							
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.							

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SH20A and SH20B

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [21]
SH20A						
Southwestern Motorway to Kirkbride Road	national/ peri - urban (2)	1.8	4	100*	5.6	36,000
Kirkbride Road to Montgomerie Road	national/ peri - urban (2)	1.1	4	100	4.3	36,200
Montgomerie Road to Airport	national/ peri - urban (2)	1.8	4	100**	6.9	39,500
SH20B						
Southwestern Motorway to Airport	national/peri-urban (2)	3.9	2	100***	4.0	19,800
* 60km/hr around Kirkbride Road Intersection						
** 50km/hr when approaching Airport after Ihumatao Road						
*** 50km/hr around Puhinui Road Intersection						

Future traffic demand

The following growth nodes have been identified by ARC's Regional Growth Strategy: Pt Chevalier, Mt Albert, Stoddard, Mt Roskill, Royal Oak and Onehunga, Manukau City Centre, Manurewa, Old Papatoetoe, Flat Bush, Mangere, and Hunter's Corner.

Business growth is expected in Rosebank, Onehunga, Highbrook, East Tamaki, Mt Wellington, near the airport and Wiri.

The Auckland International Airport welcomes nearly three quarters of New Zealand's international visitors. Additional development is anticipated in and near the airport and Transit will work with the Airport and local authorities to ensure appropriate access for both passengers and freight.

[21] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{av} = \sum_{b}^{a}(AADT * Length) \Big/ \sum_{c}^{a} Length$).

These areas will inevitably contribute to increased congestion on SH20 Southwestern Motorway in both cities and public transport options will need to be explored with ACC and ARTA.

Future improvements and indicative dates

Estimated stage of completion	**1 - 50%**	**51 - 100%**

Major improvements	**Description**	**2008-2020**	**2020-2030**	**2030-2040**
Waterview Connection	Linking SH20 to SH16			
Manukau Harbour Crossing	A duplicate motorway bridge beside existing bridge, future-proofed for rail			
Manukau Extension	Motorway connections between SH20 and SH1 at Manukau City			
RTN	Investigate RTN along SH20			
Cycle network near SH20/A/B	Complete regional cycle network facilities near and across SH20/A/B			

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East-West link (Onehunga)	Provide motorway link between SH20 and SH1			
SH20A/B	Provide quality transit facilities in the medium term, upgrade to rapid transit facilities in the long term			
Mt. Roskill Extension	Strategic extension of SH20, as part of the Western Ring Route			
Ramp signals	Complete ramp signal programme including priority vehicle bypass lanes at Onehunga (S.B./N.B.), Coronation (N.B.) Mangere Bridge (N.B.) on-ramps			

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APPENDIX SH22

Introduction

SH22 connects the area north of the Waikato River, with areas east of the Southern Motorway including Pukekohe, Tuakau and Waiuku.

SH22 is a regional highway and is surrounded by rural areas.

Existing highway and traffic volumes

Section	*Type of highway (function & environment)*	*Length (km)*	*Number of lanes*	*Speed limit (km/hr)*	*Heavy commercial vehicle (%)*	*Average traffic (AADT)* [22]
SH1/22 Junction to Crown Road	regional/rural (6)	10.5	2	100	5.2	15,400
Crown Road to Pukekohe	regional/peri-urban (5)	2.4	2	70*	8.4	11,500
* 50km/hr after Adams Drive						
Source: Auckland State Highway and Motorway Traffic Count Data 2006 & Highway Information and Highway Information Sheets as at 30/11/2005.						

Future traffic demand

Initial investigations indicate the need for selected capacity improvements to accommodate existing congestion and anticipated growth in the Franklin District.

[22] Average traffic AADT is the sum of AADT times the length of the smaller sections and divided by the total length of the grouped section as above ($Average\ Traffic\ AADT_{sh} = \sum_{b}^{s}(AADT * Length) \Big/ \sum_{b}^{s} Length$).

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Future improvements and indicative dates

Estimated completion time	1 - 50%	51 - 100%

Major improvements	Description	2008-2020	2020-2030	2030-2040
Capacity improvements	Investigate 4-laning			
Cycle facilities	Provide high quality shoulders for cyclists			

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List of References

Organization	Title	Year
Joint	KiwiRAP - New Zealand Road Assessment Programme How Safe Are Our Roads?	2008
Auckland Regional Council	Growing Smarter: The Auckland Region In The 21st Century An Evaluation of the Auckland Regional Growth Strategy 1999 A Technical Report for the Auckland Regional Growth Forum	July 2007
Auckland City	Central area access strategy: Getting to, from and around the CBD	2005
Auckland City	Auckland City: Growth Management Strategy Auckland Urban Living	December 2003
Auckland City	The Liveable Arterials Plan	2007
Auckland Regional Council	Regional Growth Forum Auckland Regional Growth Strategy: 2050: A Vision for Managing Growth in the Auckland Region	Nov 1999
Auckland Regional Council	Auckland Regional Freight Strategy	2006
Auckland Regional Council	Auckland Bus Priority Initiatives to 2003	2003
Auckland Regional Council	Auckland Regional Land Transport Strategy	2006/2007
Auckland Regional Council	Moving Forward 2005: Auckland Regional Land Transport Strategy	November 2005
Auckland Regional Public Health Service	Improving Health and Wellbeing: A Public Health Perspective for Local Authorities in the Auckland Region	2006
ARTA	High Quality Rail Rapid Transit for Auckland	August 2005
ARTA	A Step-Change for Auckland Rail Development Plan 2006	August 2006
ARTA	Auckland Regional Transport Plan	June 2007
ARTA	Auckland Passenger Transport Network Plan 2006-2016	November 2006
ARTA	Sustainable Transport Plan 2006-16	2006
Minister of Transport	New Zealand Transport Strategy	December 2002
Ministry of Transport	Discussion Paper Sustainable Transport Update of the New Zealand Transport Strategy	December 2007
Transit/MWH	Network Maps Route Data Sheets Highway Information Sheets Region 2: Auckland	May 2007
Ministry of Tourism	The Tourism Flows Model Summary Document Summary Document	August 2007
Transfield Services	PSMC 005 Auckland North Network 2005/06 Safety Management and Intervention Plan	July 2006

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Transit New Zealand	Planning Policy Manual For Integrated Planning And Development of State Highways Version 1 – Effective From 1 August 2007 – For Comment	2007
Transit New Zealand	Inside Congestion Monitoring, Congestion Management, Road Safety Auckland Traffic Performance 2007	2007
Transit New Zealand	Southern Motorway Traffic Operations Strategy	20 October 2004
Transit New Zealand	Environmental Plan Version 1 – November 2004 Improving Environmental Sustainability and Public Health in New Zealand	November 2004
Transit New Zealand	Transit New Zealand ITS Strategy 2004	2004
Transit New Zealand	Auckland State Highway Strategy	December 2000
Transit New Zealand	National State Highway Strategy	June 2007
Transit New Zealand	State Highway 2 Athenree to Tauranga Strategy	December 2007

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DRAFT

20 March 2008

Transport Strategy
Extension: 8419
Waitakere Central, 6 Henderson Valley Road
Ref:KMW

Transit New Zealand
PO Box 1459
Auckland

Attention: Tommy Parker

Dear Tommy

DRAFT AUCKLAND STATE HIGHWAY STRATEGY

Thank you for the opportunity to comment on the Draft Auckland State Highway Strategy. The Council considered the Draft at its meeting on 19 March 2008 and has authorised me to make the following submission:

1. The Council supports the need to update the previous Auckland State Highway Strategy to take into account the current planned projects, the Auckland Sustainability Framework, and long term strategic planning for transport and land use in the Auckland region. This is necessary in order to ensure that sustainable outcomes are sought through an Auckland State Highway Strategy.

2. The Council recommends amendment of the proposed vision for State Highways in Auckland to take into account the following:
    - The objectives in the Land Transport Management Act, the proposed update of the New Zealand Transport Strategy, the guidance provided by the Auckland Sustainability Framework, and the vision in the Auckland Regional Land Transport Strategy;
    - The requirement to provide for other modes of travel on and across the State Highway network and utility services, including the provision for cyclists, pedestrians, passenger transport;
    - The requirement to integrate the State Highway network with the land use outcomes sought in the Regional Policy Statement;
    - The ladder concept is not required to include, and should not include, the Additional Waitemata Harbour Crossing. This is a project which still needs to be investigated in terms of feasibility, affordability, fit with land use, fit with other modes of transport, and fit with existing roading networks; and
    - The need to optimise use of the State Highway network, rather than to maximise its use, consistent with a travel demand management approach.

3. The Council supports the recognition on page 12 that it is inappropriate to further expand the state highway network to meet future demand for private passenger vehicles. The Council supports Transit NZ's commitment to develop opportunities to increase vehicle occupancy by prioritising use of lanes on the state highway network. This recognises that as demand increases it will be necessary to prioritise use by high occupancy vehicles and commercial vehicles.

4. Given the recognition of the need for travel demand management, the Strategy should take a view on congestion charge as a key travel demand management tool to achieve more efficient use of the state highway network. The Council supports the introduction of a congestion charge in the Auckland region, subject to a number of conditions, including prior investment in high-quality passenger transport.

5. The Council supports the need to integrate the state highway network with local roads and land use. The proposed Regional Arterial Roads Plan provides guidance about integration of the state highway network with local roads which could be mirrored in the Auckland State Highway Strategy. Once the

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state highway network is completed, traffic management on both the state highway network and the local roading network will be an important focus.

6. The Council does not support an Additional Waitemata Harbour Crossing because of concerns about maintaining or increasing the number of vehicle movements between North Shore City and the CBD via the existing and proposed Additional Waitemata Harbour Crossing. The Council prefers that efficient use of the existing Harbour Bridge is achieved through travel demand management and provision of multiple modes of travel. It is essential that the Auckland State Highway Strategy proposes an affordable programme which fits within an affordable regional land transport programme.

7. The Council requests that the Draft Auckland State Highway Strategy is amended to take into account the following in the Western Sector:

   - Future Investigations – Table 4 on page 28 refers to future capacity investigations. This should be amended to refer to "future investigations". SH 18 should be removed from the future investigation part of the table because it is into the design and construction phase rather than the investigation phase. The SH 16 widening project is at the investigation stage and should be noted in the table. The Whau Bridge should also be identified as at the investigation stage. state highway access to Whenuapai airport should be identified for future investigation, on the basis that a state highway connection would be required if Whenuapai operates as a commercial airport. The State Highway Strategy needs to respond to changes in travel patterns that could be expected to arise from the introduction of a congestion charge. This should be included as a future investigation.
   - Continuous bus shoulder lanes - Continuous bus shoulder lanes along SH 16 should be part of the Strategy, at least until a priority lane is implemented along State Highway 16, (which may or may not result in removal of the bus shoulder lanes).
   - Priority lanes on State Highway 16 – The Council supports priority lanes on SH 16 for high occupancy vehicles and/or commercial vehicles (such as trucks). Ramp signals provide an important opportunity for prioritisation of these vehicles for access onto the state highway network.
   - Rapid Transit Route – The Council completed a study of a future rapid transit route from Henderson to Upper Harbour Bridge. The State Highway Strategy should acknowledge that study and the requirement to plan for a bus way along State Highway 18 and at least part of SH 16 in the future.
   - Upgrade of interchanges – The Strategy should recognise the need to upgrade Te Atatu and Lincoln interchanges to reflect the high traffic volumes that use them and the need to provide for priority access to and from the interchanges.
   - Pedestrian and cycle ways – The Council supports the inclusion of cycle ways alongside SH 18 and 16. In the future these cycle ways should be permitted by legislation to allow for use by pedestrians as well as cyclists.
   - The Western Sector map should indicate possible future routes in respect of the Whau Bridge and state highway access to Whenuapai airport.
   - The note on page 30 that the western rail line will generally accommodate the passenger transport demand for the west of Auckland should be deleted. That statement is inconsistent with the Auckland Passenger Transport Network Plan and ignores the need for bus travel by those in the Northern Strategic Growth Area, Massey, Te Atatu Peninsula, Te Atatu South and Lincoln Road.
   - The note on page 31 about the Western Ring Route facilitating greater inter-regional freight movement should also acknowledge the intra-regional freight movement along that route.

8. The following are suggested wording changes to reflect land use and employment distribution in the region:

   - There is currently a spatial imbalance of employment land in the region, which results in a high number of vehicle trips from the north and the west to employment centres in the CBD and the south. This creates significant pressures on the state highway network. Land use and employment planning that helps to correct that imbalance will reduce the pressures on the state

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highway network and enable local trips on local roads. It is important that the Auckland State Highway Strategy supports the region's land use and employment initiatives that help to address the spatial imbalance of employment land in the region. It would be appropriate to reference the Auckland Region's Economic Development Strategy and Business Land and Economy Group studies about employment land distribution in the region.

- Section 1.3.1 on page 27 needs to recognise the future growth areas at Massey North, the Hobsonville corridor, and potentially around a commercial Whenuapai airport.

9. Heavy Haulage routes – It would be appropriate to review heavy haulage routes in the Strategy and produce a map showing future heavy haulage routes on and off the state highways. The Strategy should recognise the need for use of local roads and state highways for movement of over-weight and over-dimension vehicles in the region.

10. Section 2.2.2 on page 55 should refer to the revocation of both SH 18 (from Don Buck Road to Buckley) and SH 16 (from Don Buck Road to Brigham Creek Road) in the short term, rather than the long term.

11. The appendices identify future predicted growth in traffic volumes based on the current ARC model. However, it is appropriate to note a caution that these are subject to travel demand management initiatives and do not reflect the optimum level of demand that the Strategy should provide for.

If you have any queries regarding the above, please contact Kevin Wright Ph 836 8000 Ext 8419.

Yours sincerely

Vijaya Vaidyanath
CHIEF EXECUTIVE OFFICER

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TRANSIT NEW ZEALAND
ARARAU AOTEAROA

Waterview Connection

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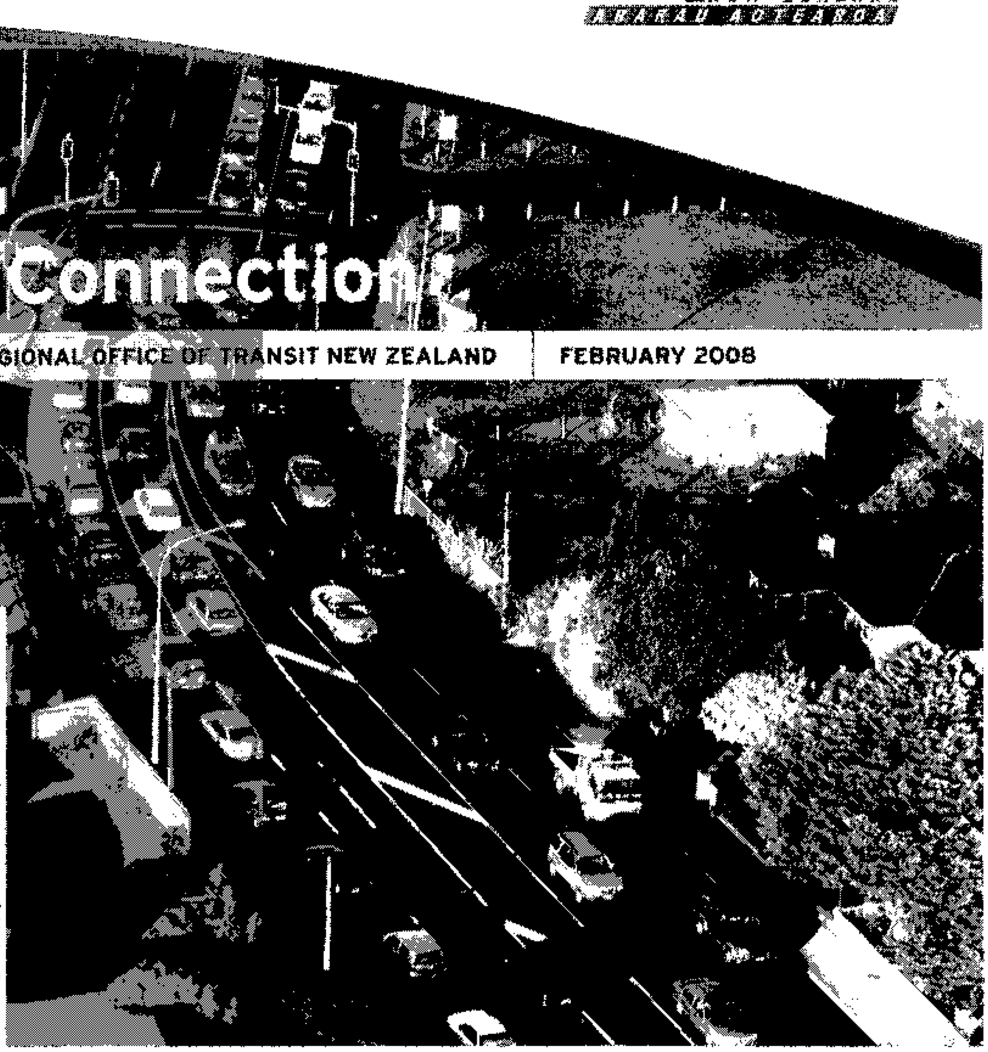

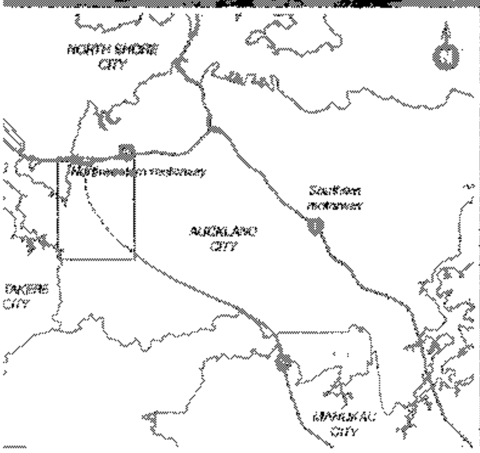

GOING UNDERGROUND - WHAT DO YOU THINK?

In response to community desires for more under grounding of the Waterview Connection project, Transit is proposing a tunnel as the best way to connect SH20 at Mt Roskill to the northwestern motorway at Waterview. Transit would now like your comments on the proposal and you can provide them by using the last page of this booklet.

The tunnel is a critical link to complete the Western Ring Route (WRR), providing a viable alternative route to the southern motorway through Auckland. The route will connect all four Auckland cities and improve connections to the state highway network for residents and businesses in the central west of Auckland City.

The route will provide through traffic with more reliable travel times. A more comprehensive Auckland motorway network will improve links to major employment centres, allowing goods and services to be transported more efficiently and will boost local and regional economies.

The new route also takes traffic off some local roads and creates opportunities for improved bus passenger transport.

The tunnel proposed for the Waterview Connection project will significantly minimise community disruption, compared with other options. It is preferred over a surface option through Hendon Avenue, Phyllis Street and alongside Oakley Creek.

Transit is now coming back to the community, councils, transport agencies and others with an interest in the project to find out what you think about the tunnel proposal.

Waterview Connection

- Completes the Western Ring Route
- 4.5km long
- Mostly underground (3.2km tunnel)
- Minimises community disruption
- Some noise and vibration during tunnel construction
- Invisible and silent above the tunnel when completed
- Local air quality will be better than a surface option
- Transit will negotiate to buy any required properties including underground strata

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Western Ring Route

If English is not your first language we can organise a translation of this newsletter.
Please contact us if you need this service.
[illegible]
Toe fiema'u ha ngaahi fakamatala faka-Tonga?
[illegible]

Auckland's north-western motorway.

Oakley waterfall.

Oakley Creek – Auckland's longest urban stream.

WHY DO WE NEED THE WATERVIEW CONNECTION?

The Waterview Connection will complete the Western Ring Route, a 48km motorway running through Manukau City, the central west of Auckland city to Waitakere City and North Shore City.

The route will connect three existing state highways, SH20 from Manukau, the northwestern motorway and the upper harbour highway to provide an alternative link between SH1 south and north.

To the north, the Greenhithe section has opened and work will start on the Hobsonville section this year.

New sections of SH20 are being built at Manukau and Mt Roskill and a new Manukau Harbour Crossing is underway. The Waterview Connection will complete the WRR by linking Mt Roskill to the northwestern motorway at Waterview.

Auckland needs good rail, road and public transport networks to continue developing as a world-class city and to continue economic growth. Traffic congestion and poor road transport links are two of the biggest threats to these aims.

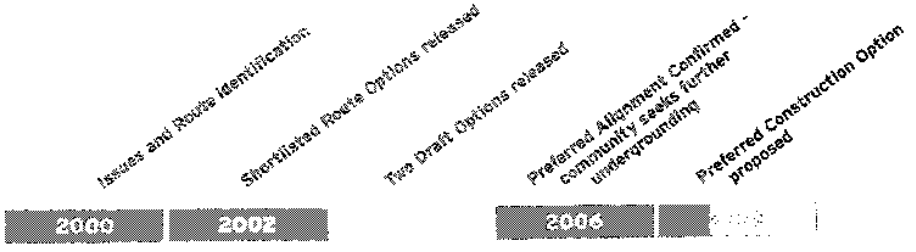
The Western Ring Route will provide a highway that reduces reliance on SH1 and the Auckland Harbour Bridge and will mean easier and more reliable access to Auckland International Airport. Although large sections of the route are in place, the full benefits of the route will not be realised until all of it is open.

A recent economic analysis shows that by forming the Waterview Connection and completing the Western Ring Route, the Waterview Connection could provide significant benefit to the local and regional economy.

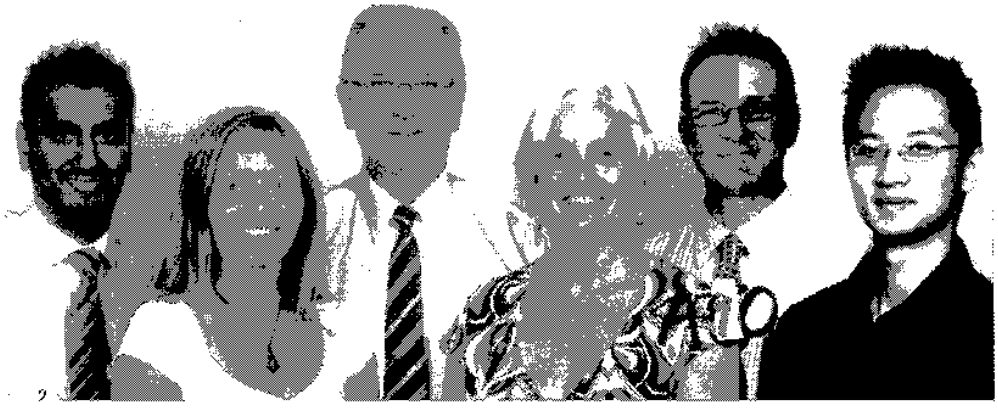
The route will help reduce congestion and the emissions that come from stop-start driving. The Waterview Connection will eliminate about eight sets of traffic lights on a typical journey from SH20 at Mt Roskill to Waterview. It will also take some pressure off local roads.

As congestion increases on our roads, it will become a growing challenge to keep state highways flowing efficiently. Transit will need to consider a number of methods to ensure traffic flow is maintained including ramp signals, variable messages and tolls.

COMMUNITY CONSULTATION TIMELINE



The Waterview Connection project team is looking forward to working with you.



WHY A TUNNEL?

In cities around the world, tunnels are being used increasingly to solve the dilemma of improving roading networks in already established communities. They enable transport network development while minimising community upheaval.

Transit has investigated two basic construction options for the Waterview Connection:

- a surface option mostly in a trench with limited cover that would cut through the heart of residential suburbs and parks. A variation of this would extend the cover particularly adjacent to Oakley Creek.
- a tunnel beneath the suburbs that would be invisible for much of the route.

The tunnel option will cost about $1.89b to complete in 2015. It is not the most expensive option because less property is needed and it is the shortest and most direct route.

We have listened to the community's views and believe the tunnel responds positively to calls for much less disruption to families and homes and to parks and reserves, including Oakley Creek. This is the longest fully urban stream in Auckland and home to the city's largest waterfall.

The tunnel means that fewer people will have to move. About 160 properties will be required to build the tunnel compared to about 500 for the other options.

Property disruption will be limited to areas at the tunnel entry and exit points (portals) near the Mt Roskill and Waterview interchanges. These areas would be required for construction zones no matter which option was chosen.

The Transit Board chose the tunnel as its preferred construction method after careful consideration of the pros and cons of each option. With community support a completion date in 2015 is possible.