

# **Appendices**

**August 2006**

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## Appendix 1.0 Terms of Reference

May 2006

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1. Background
2. Purpose
3. Scope
4. Membership
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### 1. Background

The amount of Government and land transport revenue being invested in the land transport sector is at a record high level. Transit NZ state that investment in the state highway network alone is forecast to be in excess of \$12 billion over the next 10 years, an increase of 40 percent over the level forecast in 2003/04. Local roads will receive considerable investment too, with central government's contribution over the next 10 years forecast to reach \$2.2 billion.

At the same time, the construction industry has increased its capacity, particularly in Auckland, to undertake the additional works forecast.

However, the costs of delivering road maintenance and construction are higher than forecast. For example, funding requests for local road and state highway maintenance have increased by an additional 6 percent and 3 percent respectively for this year alone.

Current allocation practices see funding decisions for both state highway and local road capital works made after other activity class allocations. In late 2005 changes in forecasts indicated a significant drop in expected ten-year purchasing power for capital works projects as follows:

	<b>Total over 10 years (\$m)</b>
• Reduced fuel excise forecast	250
• Increased road policing	240
• Increase passenger transport operations	320
• Increased local road maintenance	210
• Increased state highway maintenance	120
<b>Total</b>	<b>1,140</b>

To meet this ten-year shortfall, funding for local road capital works has been reduced by \$213m and state highway capital works by \$643m. Cost estimates in the

Transit NZ 10-year State Highway Forecast were also revised in some regions and resulted in a reduction of the number of projects programmed for some regions over the next 10 years.

## **2. Purpose**

To assist the government to ascertain whether recent and forecast cost increases and changes to ten-year outputs are justified or avoidable.

## **3. Scope**

The Advisory Group on Roothing Costs will identify the drivers of cost escalation in the Transit NZ road maintenance and construction programme, and in local authority road construction and maintenance, to the extent that it is co-funded by Land Transport NZ; including:

- input costs;
- supply constraints and competitive forces in the construction industry and their effect on price escalation;
- design and other technical standards used;
- scale and complexity of projects;
- expansion of project scope;
- the processes involved in planning and managing a project from estimations through to delivery and monitoring and reporting on programmes; and
- contracting and tendering processes, including size of contracts.

The Group will identify for action those recommendations that can be implemented within the context of the existing statutory framework.

In carrying out its work, the Group will have regard to existing work being carried out by transport agencies including:

- Transit NZ suppliers summit and outcomes;
- Transit NZ Value for Money project;
- Transit NZ Cost Estimation Review; and
- Land Transport NZ procurement review.

The Group will have access to the outputs of these projects as they are available to assist in its review and, in the case of the Transit NZ Value for Money project, will have the opportunity to provide input into the scope and will receive regular project updates. It is not the role of the Group to direct these studies. The Group will need to consider the statutorily independent functions of these agencies and work with them to establish a suitable relationship.

It is also expected that the Group will meet with key industry stakeholders, Crown entities and local government bodies in its work and that, if it considers it appropriate, it will receive submissions from such stakeholders.

This project is a core component of the Expenditure Review (EXG Review) of Cost Escalation in the National Land Transport Programme. While the EXG Review is led by the Ministry of Transport, the Advisory Group will report directly to the Minister. The Group may be asked to work with the Ministry of Transport around the wider scope of the EXG Review.

#### **4. Membership**

The Group will consist of four persons, including the chair, appointed by the Minister of Transport. To assist in the appointments, suggestions of appropriate members have been sought from the Ministry of Transport, Treasury and Local Government NZ.

#### **5. Accountability and Reporting**

The Group will meet as frequently as it, or the Chair considers is necessary to achieve its agreed objectives, up to 10 days a month. The Group will report directly to the Minister of Transport through:

- Face to face meetings as required/agreed;
- Informal written progress reports; and
- Interim and Final reports.

The Group will present its final report to the Minister of Transport in July 2006. At this time, the independent advisory function of the Group is deemed to be complete.

#### **6. Resources**

The Group will be supported by an Advisory Group Manager and Project Manager, appointed and resourced by the Ministry with further secretariat support provided as required. Some resources will be made available to the Group to engage specialist advice in addition to being able to call upon the Ministry, Treasury, Land Transport NZ, Transit NZ and Local Government NZ to assist as appropriate.

## Appendix 2.0 Bibliography

<b>Title</b>	<b>Organisation</b>	<b>Date</b>
Benefits of Investing in New Zealand's Road Infrastructure	Allen Consulting Group	August 2004
National Land Transport Programme: A Proposal for Improvement	Auckland Business Forum	August 2006
Position paper: Completing Auckland's State Highway Network in 8 Years	Auckland Business Forum	August 2006
Submission on Transit New Zealand's Draft 2006/07–2015/16 10-Year State Highway Forecast	Auckland Business Forum	February 2006
Draft 2006/07 Auckland Land Transport Programme	Auckland Regional Transport Authority	January 2006
Letter to Auckland councils titled 'Process for ARTA approval of IA walking and cycling infrastructure grants'	Auckland Regional Transport Authority	April 2006
AA Advocate Issue 14: Transport policy issues for the 48th Parliament	Automobile Association	2005
National Roads Authority of Ireland Annual Report 2005 and Programme for 2006	Automobile Association	2005
Submission on the 2006/07 Transit New Zealand Ten Year State Highway Forecast	Automobile Association	March 2006
Construction Workplan	Centre for Advanced Engineering	
Decision 558: Fletcher Concrete and Infrastructure Ltd and W Stevenson and Sons Ltd	Commerce Commission	September 2005
Guidance on the Methodology for Multi-Modal Studies (various units)	Department for Transport, United Kingdom	March 2000
Infrastructure Division presentation in Sydney	Fletcher Building	2005
Proposed Western Corridor Plan: Hearing Sub-committee's Report	Greater Wellington Regional Council / Transit NZ	March 2006
Budget 2006 Press Pack	Hon Annette King	May 2006
Generating Growth: Infrastructure Annual Report	Infometrics	May 2003
Draft Statement of Intent 2006–2009 and Letter of Expectation	Land Transport NZ	2005
Land Transport NZ's Funding Allocation Process	Land Transport NZ	June 2006
LTNZ Board Paper: Review of procurement procedures for physical works and professional services 05/10/1638	Land Transport NZ	August 2005
National Land Transport Programme 2002/03	Land Transport NZ	October 2005
National Land Transport Programme 2003/04	Land Transport NZ	June 2003
National Land Transport Programme 2004/05	Land Transport NZ	June 2003
National Land Transport Programme 2005/06	Land Transport NZ	June 2004
National Land Transport Programme 2005/06 Update	Land Transport NZ	June 2005
		August 2005

## Ministerial Advisory Group on Roding Costs

National Land Transport Programme 2006/07	Land Transport NZ	June 2006
Output and Activity Class diagram	Land Transport NZ	
Project Evaluation Manual(s)	Land Transport NZ	
Regional Land Transport Strategy Guidelines	Land Transport NZ	January 2005
Research Strategy 2006–2007	Land Transport NZ	
Statement of Intent	Land Transport NZ	2005–2008
Statement of Intent	Land Transport NZ	2006–2009
Summary of industry environment scan on procurement procedures	Land Transport NZ	2005
National Procurement Strategy for local government	Local Government Association, United Kingdom	2003
Affordability of Local Government Transport Networks	Local Government New Zealand	March 2005
Annual Report	Ministry of Transport	2004–2005
Auckland Joint Officials Group Report	Ministry of Transport	2004
Briefing to the Minister of Transport	Ministry of Transport	September 2005
Memo to Minister: New Zealand Transport Strategy WGT4702	Ministry of Transport	April 2004
New Zealand Transport Strategy	Ministry of Transport	December 2002
Statement of Intent	Ministry of Transport	2005–2008
Statement of Intent	Ministry of Transport	2006–2009
Terms of Reference for Review of Value for Money in the Land Transport Sector	Ministry of Transport	June 2006
Transport Sector Strategic Directions Document	Ministry of Transport	December 2005
Waikato Joint Official Group Report	Ministry of Transport	2006
Principles of Best Practice: Construction Procurement in NZ	NZ Construction Industry Council	January 2006
Meeting New Zealand's Transport Infrastructure Needs to 2025	NZ Council for Infrastructure Development	March 2006
Cost Escalation Estimates: Report to Northern Gateway Alliance	NZIER	September 2004
Letter to David Parker	OCTA Associates Ltd	May 2006
South East Queensland Infrastructure Plan and Program 2006–2026	Queensland Government	May 2006
Briefing Note to the Minister of Finance	Roding New Zealand	April 2006
Letter to Minister of Transport	Tasman District Council	2006
Annual Report	Transfund	2004–2005
Major Projects Review (99/00) Final Recommendations	Transfund	June 2000
Major Projects Review (99/00) Final Text Report	Transfund	November 1999
Major Projects Review (99/00) Summary Recommendations	Transfund	June 2000
New Approaches to Funding Allocation	Transfund	May 2004
Transfund Board Paper: Major Projects Review: Consultation and Final Recommendations TF 00/6/755	Transfund	June 2000
Transfund's Allocation Process	Transfund	September 2004
10-year State Highway Plan and Forecast 2006/07–2015/16	Transit NZ	June 2006

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10-year State Highway Forecast 2005/06–2014/15	Transit NZ	June 2005
10-year State Highway Forecast 2005/06–2014/15 Update	Transit NZ	August 2005
10-year State Highway Plan 2003/04–2012/13	Transit NZ	June 2003
10-year State Highway Plan 2004/05–2013/14	Transit NZ	June 2004
ALPURT Sector B2 Cost History Annual Report	Transit NZ	May 2006
Board Paper: Review of Major Projects CS/03/12/4809	Transit NZ	2004/05 December 2003
Board Paper: The 10-year State Highway Plan—Programming and Costing CS/05/4/5209	Transit NZ	April 2005
Draft 2006/07–2015/16 10-year State Highway Forecast	Transit NZ	February 2006
Draft Statement of Intent 2006/07–2008/09 and Letter of Expectation	Transit NZ	June 2006
Environmental Plan Version 1—November 2004	Transit NZ	November 2004
GGP Alliance Value-for-Money Results Report	Transit NZ	June 2005
GMT Paper: Business Structure Review of Transit's Operating Divisions	Transit NZ	February 2006
GMT Paper: Northern Motorway Extension (ALPURT B2) TOC Reconciliation and PAA Signup Recommendation	Transit NZ	December 2004
GMT Paper: Review of Major Projects Procurement Processes and Issues of Current Relevance	Transit NZ	February 2005
GMT Paper: Value for Money Project	Transit NZ	March 2006
Letter from David Stubbs to David Parker: Scope of Major State Highway Projects	Transit NZ	March 2006
Long Term Procurement Plan	Transit NZ	June 2005
Presentation on Value for Money Project	Transit NZ	
Review of Major Projects (03)	Transit NZ	November 2003
Statement of Intent	Transit NZ	2005–2006
Statement of Intent	Transit NZ	2006–2007
Strategic Plan 2004	Transit NZ	June 2004
Supplier Summit: Presentation and Outcome Report	Transit NZ	March 2006
Transit New Zealand Delivery of Capital Works Report of International Audit	Transit NZ	December 2005
2004/05 Financial review of Transit New Zealand	Transport and Industrial Relations Select Committee	May 2006
Submission on Transit New Zealand's Draft 2006 10-Year State Highway Forecast	Whangarei District Council	February 2006

## Ministerial Advisory Group on Roothing Costs

### 2.1 Submissions

<b>Organisation</b>	<b>Date</b>	<b>Details</b>
Land Transport NZ	March 2006	Ministerial Advisory Group on Roothing Costs: Preliminary Meeting
ACENZ	April 2006	Issues 'Mind Map' presented on 7 April 2006
Treasury	April 2006	Background Material for Ministerial Advisory Group on Roothing Costs
Treasury	April 2006	Ministerial Expenditure Review Group Briefing—Vote Transport (part of)
Ashburton District Council	April 2006	Ministerial Advisory Group on Roothing Costs
Road Transport Forum	May 2006	Confidential—Report on Opportunities to Reduce the Cost of State Highway Projects
Alan Bickers	May 2006	Confidential—Road Construction Cost Escalation
Chris Bremner	May 2006	Reconstruction of the State Highway Road System
Fulton Hogan	May 2006	Confidential
Local Government NZ	May 2006	Road and Transport Cost Driver Issues
Auckland Region CEO Forum	June 2006	Discussion paper and Paper by Greg Hill on Auckland Transport Strategic Alignment Project and draft Terms of Reference
Ministry of Transport	June 2006	Draft response by John Edwards to questions from the Advisory Group on Roothing Costs
Wellington City Council	June 2006	Briefing Note to Her Worship Mayor Prendergast
Jan Wright	June 2006	Examining the NZ Transport Strategy
Rodney District Council	June 2006	Ministerial Advisory Group: Transport Costs
Eastland Wood Council Ltd	June 2006	Submission to the Ministerial Advisory Group on Roothing Costs
Bob Clarkson	June 2006	Collaborative Working Arrangements
Transit New Zealand	July 2006	Transit NZ Comments on Draft Report

## **Appendix 3.0 Stakeholders consulted by the Advisory Group**

### **Central government representatives**

Central government representatives consulted included:

- Secretary for Transport
- Ministry of Transport
- Land Transport NZ
- Transit NZ
- The Treasury.

### **Local government representatives**

Local government representatives consulted included:

- Local Government NZ
- Auckland Regional Transport Authority
- Dunedin, Christchurch, Wellington, Porirua, Upper Hutt, Hutt, Palmerston North, Auckland, Manukau, Waitakere, and North Shore City Councils
- Ashburton, Southland, Manawatu, Masterton, Kapiti Coast, Marlborough, Far North, Franklin, Kaipara, Rodney, Western Bay of Plenty, and Whangarei District Councils
- Northland, Auckland, and Greater Wellington Regional Councils.

### **Industry and interest group representatives**

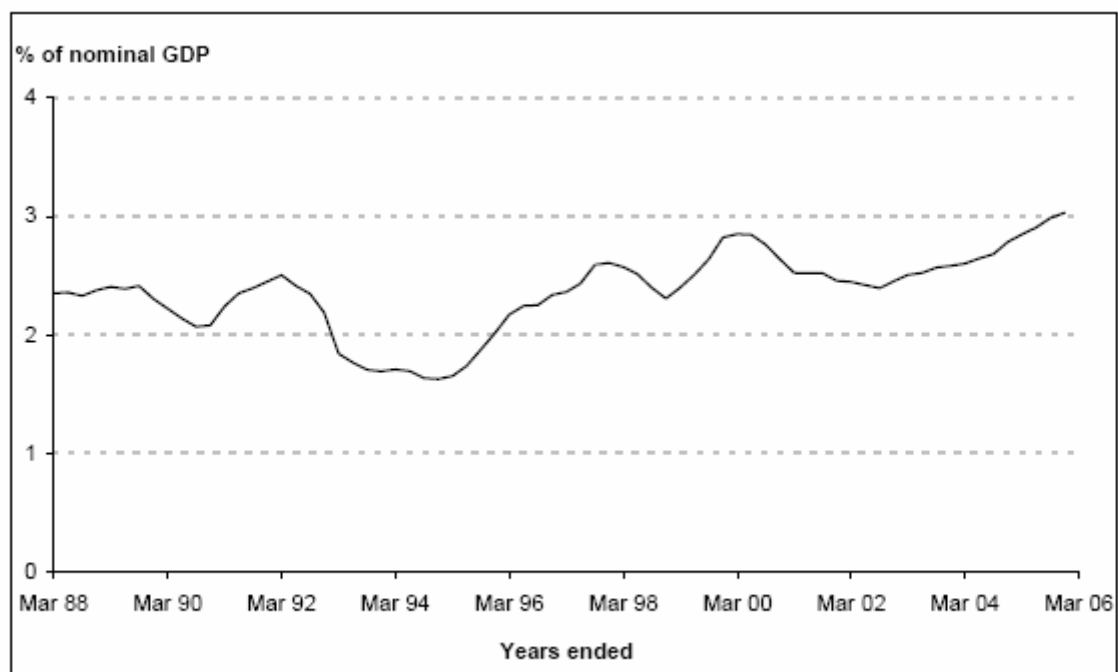
Industry and interest group representatives consulted included:

- Rooding NZ
- NZ Contractors' Federation
- Employers & Manufacturers Association
- Association of Consulting Engineers of NZ
- Automobile Association
- Road Transport Forum
- NZ Council for Infrastructure Development
- Ingenium
- Wellington Western Corridor Sub-Committee
- Auckland Business Forum
- Northern Gateway Alliance
- Design and construction companies and individuals.

## Appendix 4.0 Roothing context

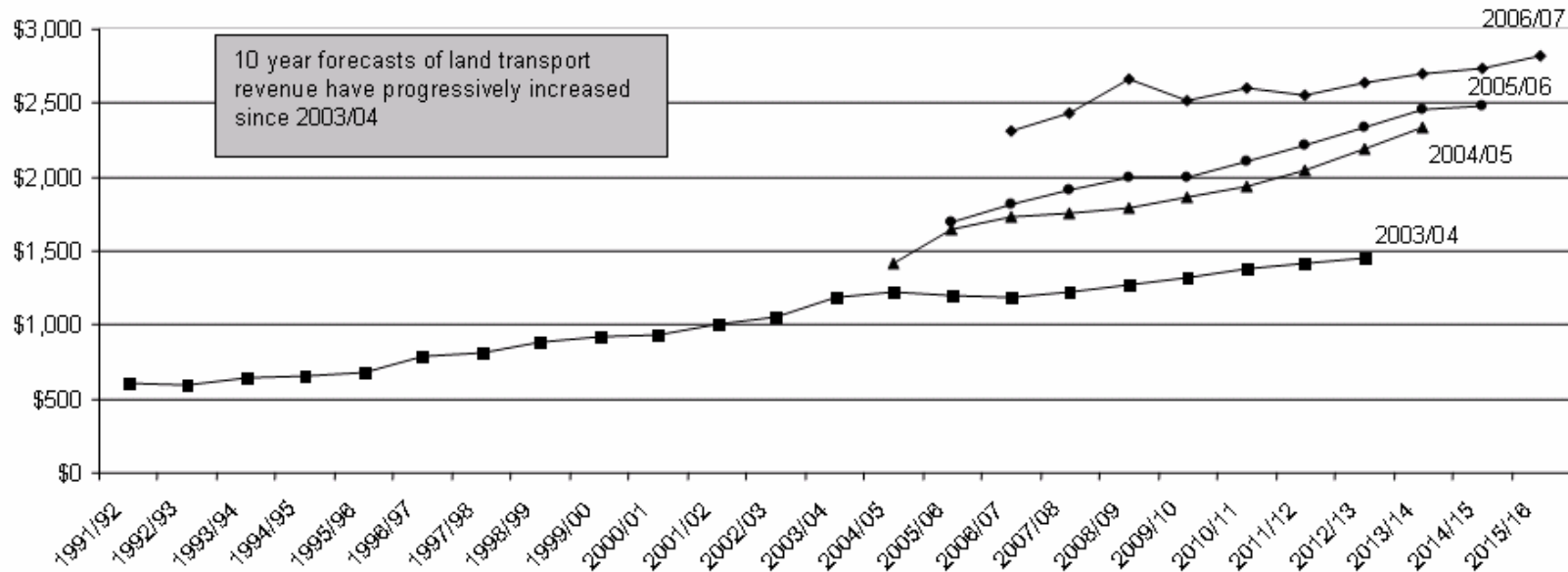
### Appendix 4.1 Other construction investment activity as a percentage of nominal GDP

'Other construction' includes roading, among other activities.



Roading investment as a percentage of GDP has been steadily increasing since the mid 1990s

Appendix 4.2 Increases in forecast of 10-year roading expenditure



Source: Land Transport NZ, August 2006

Appropriations		\$m	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	
Moving Forward (4.2% increase)	Feb 2002	227	57	170	0														
Added Transport Package (part of Investing for Growth)	Dec 2003	900				50	50	100	100	100	100	100	100	100					
Wgn Transport Package	Jan 2005	225				10	15	40	35	25	20	20	20	20	20				
Budget 2005	May 2005	300						100	100	100									
Transport Funding	Jun 2005	500					95	125	140	140									
Wellington Transport Package - Western Corridor	July 2005	660						20	80	120	120	120	100	40	40	20			
Bay of Plenty Transport Package	Aug 2005	150						5	10	25	25	25	25	15	10	10			
Bay of Plenty Transport Package - Harbour Link	Aug 2005	136						50	50	36									
Waikato Transport Package	May 2006	215						17	22	22	22	22	22	22	22	22	22		
Budget 2006 5-year Package	May 2006	862						178	146	208	175	155							
Budget 2006 Expanded Roding Programme	May 2006	425						85	85	85	85	85							
			4,600	57	170	0	50	155	658	708	831	552	527	287	257	192	92	42	22

• Crown appropriations have increased the government's investment in land transport

• \$4.6 bn will be applied in the next 10 years

### Appendix 4.3 Organisations, strategic, and legislative change

In the past 5 years the transport sector has seen significant organisational, strategic, and legislative change.

#### 4.3.1 Organisational change

The Transport Sector Review was undertaken in 2004 to assess the capability of the sector to deliver on the government's strategic vision for transport. As a result of the Transport Sector Review, the Ministry of Transport was given a new focus on strategic leadership, and policy development and delivery. Policy functions were transferred from the former Transfund and the former Land Transport Safety Authority to the Ministry. Land Transport NZ was established in December 2004 out of the former Transfund and the Land Transport Safety Authority, with a focus on integrated management of land transport planning and funding. The necessary legislative amendments were made to incorporate these changes and reflect the following roles and objectives.

Party/organisation	Role/objective as set out in legislation
Minister of Transport	The responsible Minister's role is to oversee and manage the Crown's interests in, and relationship with, statutory entities and to exercise any statutory responsibilities. <sup>1</sup>
Ministry of Transport	The Ministry of Transport is the Minister's adviser.
Land Transport NZ	Land Transport NZ's role is to allocate resources and to undertake its functions in a way that contributes to an integrated, safe, responsive, and sustainable land transport system. <sup>2</sup>
Transit NZ	Transit NZ's role is to operate the state highway system in a way that contributes to an integrated, safe, responsive, and sustainable land transport system. <sup>3</sup>
Local government	Local government's role is to plan <sup>4</sup> and co-fund local road construction and maintenance; identify regional and local priorities; and prepare Regional Land Transport Strategies. <sup>5</sup>

#### 4.3.2 Changes to strategic direction and legislation

Prior to this organisational change, the New Zealand Transport Strategy (NZTS) was developed with its vision for transport: 'by 2010 New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system'.

This broader vision replaced the more narrow focus of safety and efficiency goals. The NZTS guides policy development and government decisions on transport policy, and provides a reference point for those contributing to government transport policy and planning. The NZTS was developed to guide the transport sector's response to the broader social, economic, and environmental needs of the country.

<sup>1</sup> Crown Entities Act 2004.

<sup>2</sup> Land Transport Management Act 2003.

<sup>3</sup> Land Transport Management Act 2003.

<sup>4</sup> As set out in the Local Government Act 2002.

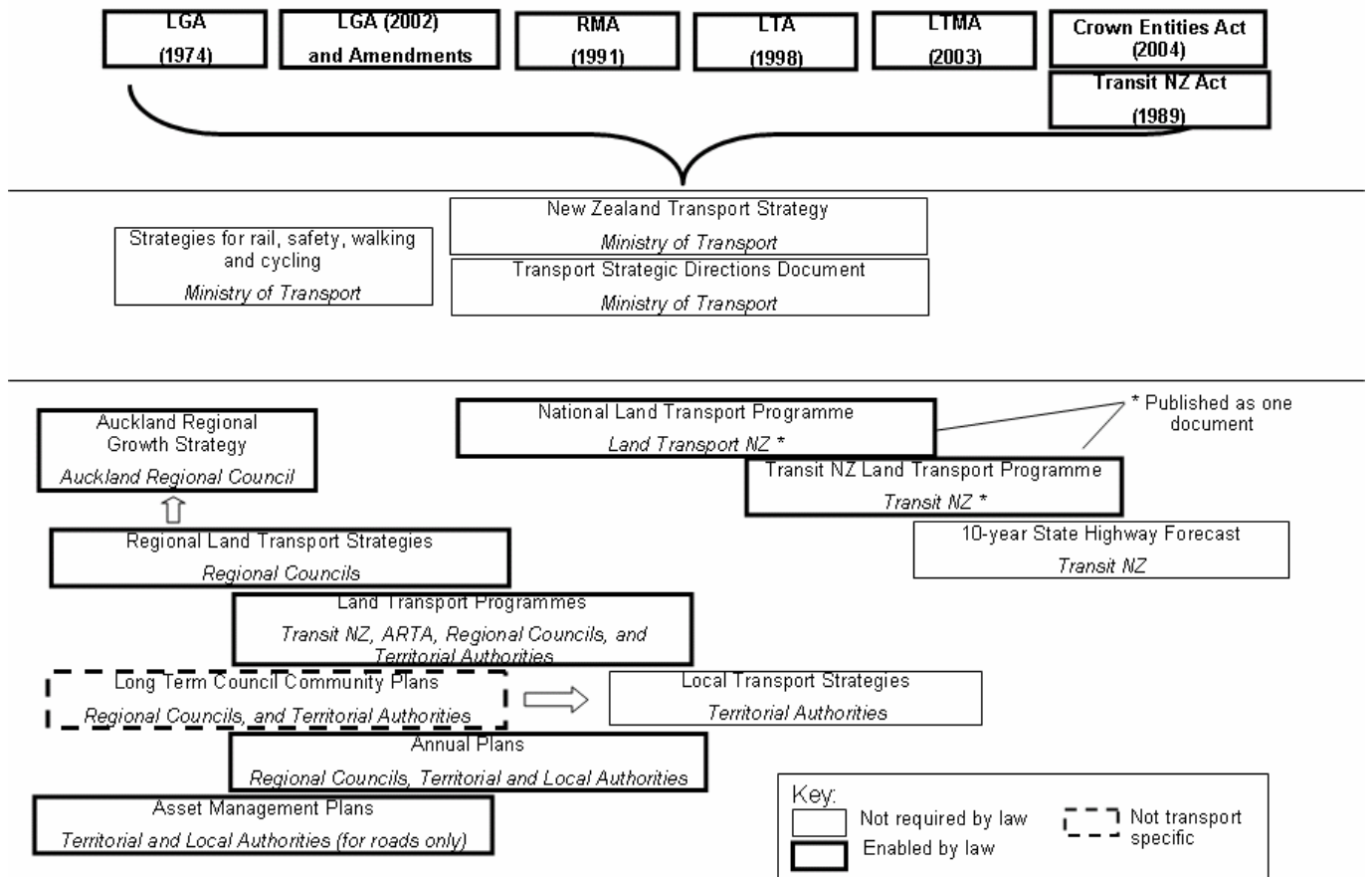
<sup>5</sup> Land Transport Act 1998.

While the NZTS is not a statutory document, the vision and objectives have been incorporated into the Land Transport Management Act (LTMA), which was passed in 2003. The LTMA establishes the framework for land transport funding and planning. The planning processes set out in the LTMA were designed to reflect those processes set out in the Local Government Act 2002. The funding processes are set out in the objectives and functions of Land Transport NZ.

The most recent strategy is the government's Transport Sector Strategic Directions (TSSD) document, released in December 2005. The TSSD is a strategy for those components of the NZTS that require transport agencies to plan and work collaboratively. The TSSD is intended to complement existing agency work programmes and assist the sector's progress towards achieving the NZTS vision.

The following diagram illustrates the strategic documents that guide planning in the roading sector.

## Planning - A map of key transport legislation and strategic and planning documents for roads



**A summary of key recent changes in land transport sector legislation and strategy**

Date	Issue	Comment
2000	Existing regulatory policy for transport as supported by legislation is <i>safety at reasonable cost</i>	The driving force behind this policy is economic. Acceptance of international obligations is also important. For transport infrastructure the legislation is roads focused.
2000–2002	Government develops and releases New Zealand Transport Strategy (NZTS)	Moves from the above principles to an approach that will implement a vision that by 2010 New Zealand will have an <i>affordable, integrated, safe responsive, and sustainable transport system</i> .
November 2003	Land Transport Management Act 2003 passed	Changes focus of transport infrastructure funding and management. Key provisions include: <ul style="list-style-type: none"> <li>• incorporating NZTS criteria into decision making and objectives of Transfund and Transit NZ</li> <li>• aligning regional land transport strategies with the NZTS</li> <li>• enhancing consultation on key documents</li> <li>• changing references to 'roads' to references to 'land transport'.</li> </ul>
Late 2003–2004	Government conducts the Transport Sector Review to establish whether the government sector is equipped to implement the NZTS  Government then introduces an omnibus bill to give effect to the findings of the review	Key findings include the following. <ul style="list-style-type: none"> <li>• Integrate Transfund and Land Transport Safety Authority and integrate their respective funding programmes.</li> <li>• Align the objectives of the other transport Crown entities with the NZTS.</li> <li>• Ministry of Transport should provide strategic policy leadership.</li> <li>• The Crown entities should exhibit more collaboration and cooperation.</li> </ul>
1 Dec 2004	Land Transport Management Amendment Act passed	<ul style="list-style-type: none"> <li>• Land Transport NZ established.</li> <li>• Some policy staff from the Land Transport Safety Authority and positions from Transfund were transferred to Ministry of Transport.</li> <li>• Alignment of NZTS with objectives of other Crown transport entities.</li> </ul>
21 Dec–25 Jan 2005	Crown Entities Act 2004	This separate Act establishes new generic rules for Crown entities and their Ministers.
2005–	Government Transport Sector works together on implementing the NZTS including issues of collaboration and cooperation	<ul style="list-style-type: none"> <li>• Produces Transport Sector Strategic Directions document for cross-sectoral priorities.</li> <li>• Sets up a variety of interagency working groups including a planning task force and a reference group for the boards of Crown entities.</li> </ul>

**Appendix 5.0 10-year revenue and expenditure forecasts**

	2003/04	2004/05	2005/06	05/06 update	Draft 2006/07 (Nov 05)	2006/07
<b>NLTF 10 year Revenue Forecasts</b>						
Land Transport Revenue - N Funding		15,100	17,757	18,060	17,559	19,089
Investing for Growth - R Funding est \$207m p.a.	-	2,045	2,186	2,186	2,186	2,099
Crown Appropriations - C Funding		900	1,375	1,715	1,865	1,541
	-	<b>18,045</b>	<b>21,318</b>	<b>21,961</b>	<b>21,819</b>	<b>22,729</b>
<b>NLTP 10 year Allocations</b>	<b>2003/04</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2006/07</b>
State Highway Maintenance	3,295	3,837	4,499	4,499	4,617	4,942
State Highway Construction	3,258	3,652	5,768	6,138	5,378	8,399
Local Road Maintenance	2,991	3,521	4,332	4,332	4,546	4,894
Local Road Construction	541	849	2,055	2,091	1,815	1,974
Administration	668	693	838	859	904	1,042
Other Activity Classes	2,102	6,162	3,525	4,231	4,550	3,999
<b>Total</b>	<b>12,855</b>	<b>18,714</b>	<b>21,017</b>	<b>22,150</b>	<b>21,810</b>	<b>25,250</b>
<b>SHF 10 year Allocations</b>	<b>2003/04</b>	<b>2004/05</b>	<b>2005/06</b>	<b>05/06 Update</b>	<b>Draft 2006/07 (Nov 05)</b>	<b>2006/07</b>
Maintenance	3,490	4,046	4,463	4,463	4,934	4,942
Construction	3,411	4,136	6,017	6,387	6,854	8,557
Administration	387	430	536	556	618	619
<b>Total</b>	<b>7,288</b>	<b>8,611</b>	<b>11,016</b>	<b>11,406</b>	<b>12,406</b>	<b>14,118</b>
<b>Notes</b>				OA	OA	
OA = over allocation				Excl D	Excl D	
Excl D = excludes value of debt funded activity						
Draft 2006/07 SHF published in Feb 2006 was developed from indicative allocations provided by Land Transport NZ						

**Key:**

MTF = National Land Transport Fund

NLTP = National Land Transport Programme

SHF = State Highway Forecast

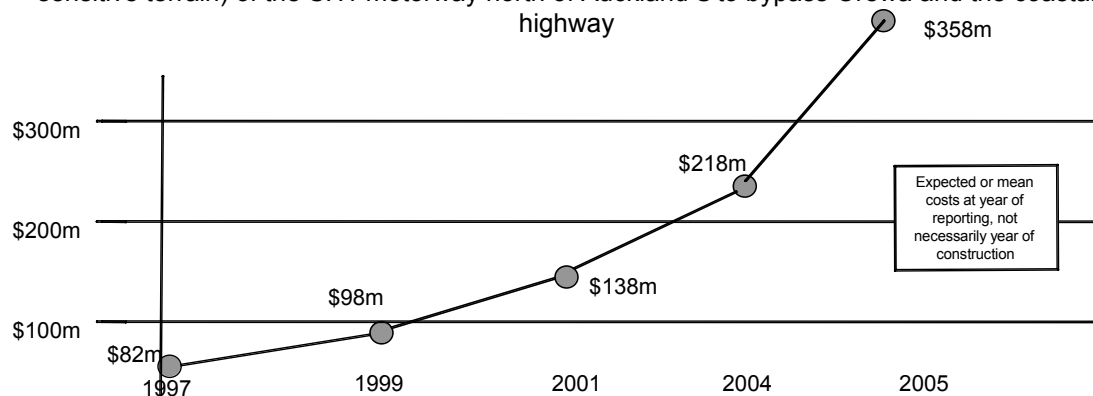
**Source:** Information collated by Ministry of Transport from published State Highway Forecast and National Land Transport Programme documents.

**Appendix 6.0 Case study analysis**

**Appendix 6.1 ALPURT B2**

**1. Alpur B2**

6.5 km predominantly four lane - high design standard - toll road extension (through difficult and sensitive terrain) of the SH1 motorway north of Auckland S to bypass Orewa and the coastal highway



Key cost drivers		Relative impact on cost changes. * Minor ** Moderate *** Significant			
	<b>Estimation</b>	** Improved estimation although significant risks underestimated	<input type="checkbox"/> Improved estimation from Alpur A experience		<input type="checkbox"/> Reassessment of risk profile
Scope	<b>Design</b>	*** From 2 to 4 Lane on 5km out of 7km	<input type="checkbox"/> Longer/higher Waiwera Bridge <input type="checkbox"/> Full grade separation @ N junction		<input type="checkbox"/> Full 4 lane <input type="checkbox"/> Increased bridge costs <input type="checkbox"/> Tolling system costs
	<b>Environmental mitigation</b>	**		<input type="checkbox"/> Consent conditions including costs to fit within designation <input type="checkbox"/> 1st Eco viaduct	<input type="checkbox"/> 2 Tunnels <input type="checkbox"/> 2nd Eco viaduct
	<b>Input costs</b>	*		<input type="checkbox"/> Earthworks	
	<b>Governance</b>	<input type="checkbox"/> No comprehensive review of costs <input type="checkbox"/> No options	<input type="checkbox"/> No cost breakdown	<input type="checkbox"/> No explicit reference to cost increase approval	<input type="checkbox"/> No explicit reference to cost increase approval

### 6.1.1 Further detail on ALPURT B2 project summary

Below are the highlights that lead to \$65 million of scope changes, driven by two changes—the inclusion of the Nukumea eco-viaduct and the Johnsons Hill tunnels (and associated changes to the northern termination).

- The scope for ALPURT B2 was established in 1999 as a two-lane, 80 km/hour state highway that would provide a more direct and improved State Highway 1 route, for free public use, within a restricted designation corridor accompanied by minimal mitigation. This scope was maintained until June 2004, by which time it was a four-lane, higher speed, high-specification, grade-separated, tolled motorway with extensive mitigation over and above the requirements of the Resource Management Act 1991.
- Between 1999 and 2003, there was a rigorous consenting process, including public hearings, appeals, Environment Court hearings, and High Court proceedings. All necessary consents were obtained by early 2003.
- In late 2003, ALPURT B2 moved from being the 26th project of national priority to being funded. There appears to have been a strong desire to have the project built on a 'fast-track' process.
- In January 2004, ALPURT B2 was assessed for compliance with the recently enacted LTMA by Transit NZ's consultants, Andel Consultants. No changes in scope were recommended.
- In February 2004, a paper was provided to the Transit NZ Board on the Scope of ALPURT B2. The paper identified that appellants to the ALPURT B2 resource consents argued to have the Nukumea Stream bridged and a tunnel constructed through Johnsons Hill. For both suggestions, the paper concluded that 'this argument has been considered by the Transit NZ Board [in October 2002] and [was] rejected'. No decisions appear in the Board minutes relating to the project scope.
- In March 2004, it was reported to the Transit NZ Board that a letter was received by Transit NZ from persistent opponents to ALPURT B2, the Manu Waiata Restoration Protection Society. 'An existing significant risk has been brought to our attention in the last month. The Manu Waiata Restoration Protection Society have written to the Board summarizing its concerns with ALPURT B2, which are of an environmental nature. The Society have a long association with ALPURT and have campaigned for much higher standards of mitigation to environmental impacts on the ALPURT B2 design than those included in the December 2003 specimen design (of B2). While the Society presents a number of arguments around legal aspects of the project and approval process, its underlying motive is to achieve higher levels of mitigation of environmental impacts.'
- The Society had consistently sought to have two primary scope changes—inclusion of the Nukumea viaduct and the Johnson's Hill tunnels. These had both been assessed by the Transit NZ Board in October 2002. The Board had resolved that 'the Authority agrees not to amend the design of ALPURT B2 to further bridging of the Nukumea Valley and Ricker Basin or tunneling through Johnson's Hill' with it being concluded that 'it would be imprudent use of funds to offer additional mitigation measures to resolve the current appeals.' Given the track record of the Society, it is not unreasonable to assume that the Society would ultimately have sought to have ALPURT B2 reviewed for LTMA compliance through the courts. The impact on the delivery time for ALPURT B2 would no doubt have been significant had it been taken to the courts.
- In the Transit NZ Board papers of April 2004, it was noted that 'As per the Board's wishes, one of the first tasks for the Alliance (the contracting alliance

that is building ALPURT B2) is to prepare an environmental risk register. This register will be used to assess opportunities for environmental enhancement over the current specimen design which will include, amongst other issues, an assessment of tunneling through Johnson's Hill and bridging the Nukumea stream.' It is possible that the direction provided by the Board to the Alliance to assess opportunities for environmental enhancements, specifically naming the Nukumea viaduct and Johnson's Hill tunnels, is in response to the 'existing significant risk' posed by the Society's letter regarding LTMA compliance.

- In June 2004, the Transit NZ Board was provided with a presentation on the 'opportunities to achieve enhanced environmental outcomes' developed by the Alliance, focusing on the Nukumea viaduct and Johnson's Hill tunnels (and related relocation of the northern termination). The Board resolved to include the Nukumea viaduct in the project scope, and to continue the investigations of the Johnson's Hill tunnels and relocated northern termination.
- The decisions to include the Nukumea viaduct and Johnson's Hill tunnels appear to be on the basis of compliance with the LTMA. It should be noted, however, that the January 2004 Transit Major Projects Review of ALPURT B2 for compliance with the LTMA did not identify the need for the scope change.
- The evidence provided for the justification of the two scope changes was presented in the 27 July 2004 Concept Design Report prepared by the Alliance and presented to the Alliance Board.
- In their assessment of ALPURT B2 against the LTMA, it was noted that 'It must be emphasised that this was a preliminary assessment only based on the collective judgment of the professionals involved and was aimed at providing guidance on the main drivers for the proposed options, the relative benefit of the options under consideration and identifying which options should be investigated further.' The assessment for the Johnson's Hill tunnels was as follows:
  - 'Greatly extends width of the wildlife corridor which is regionally significant coast-to-coast and anchored in Wenderholm regional park—managed by Auckland Regional Council as a mainland island
  - Reduces extent of vegetation clearance (old growth Broadleaf Forest which is designated Site of Special Wild-life Interest)
  - Reduces risk to large Kahikatea (one of the largest in Rodney if not the region)
  - Strong visual advantages (eliminates two bridges and cuts); defines the gateway
  - Opens opportunity to split carriageways vertically (split grade line); maximizes width of eco-corridor
  - Reduces the longitudinal gradient on the motorway from 9.5% to 2.3%.
  - The median cost was determined to be \$48.6m and the 95th percentile cost \$57.7m.'

The assessment for the Nukumea viaduct was as follows:

- Saves locally important wetland.
- Supports fernbird.
- Retains approx 200m of streambed habitat in regional significant waterways (fish species implications).
- Retains an eco-corridor linking Nukumea with RAP21 (may obviate the need for the Otanerua Viaduct).
- Reduces volumes of earthworks.

- Reduces extent of regional significant vegetation type being cleared (RAP21)
- Strong community support including some of the strong objectors
- Engineering; saves two culverts; won't need to find disposal area for unsuitable soil.'
- The median cost was determined to be \$15.0 million and the 95th percentile cost was \$16.9 million.

From a review of some internal Transit NZ documentation and conversations with Transit NZ personnel, it appears that the changes relating to the Nukumea viaduct and Johnson's Hill tunnels may also have been driven by safety concerns with the specimen design.

The Advisory Group, noted the following comments in the 'Target Out-Turn Cost Report' by the Northern Gateway Alliance in their December 2004 report:

#### **'2.1.22 LTMA Enhancements**

The LTMA 2003 requires greater consideration of economic, social and environmental responsibility than was the case prior to the LTMA. Accordingly, the following items that were not required by the consents, and would likely not have been considered seriously under the previous regime, are now included in the project;

- Nukumea Viaduct...
- Johnson's Hill Tunnel...'

And also:

#### **'3.3.1 Geometric**

...The geometric design has been developed from the specimen design to preliminary design stage. Several major changes in scope have occurred during preliminary design, including... a decision by the Transit Board to fund a tunnel through Johnson's Hill, two Waiwera structures (providing four traffic lanes) and the Nukumea Eco-viaduct.

As a result, the TOC (Target Outturn Cost) design element ... has significantly changed from the specimen design... The horizontal and vertical alignments have been revised to achieve a 100kph design speed horizontally, and 95kph vertically.'

Finally:

#### **'3.8 Safety Audits**

Following receipt of the safety audit on the Specimen Design and the response from Beca Carter (May 2004 and June 2004 respectively) the design team developed the design to address the issues raised.

- An at grade northern termination was also presented to the Safety Audit Team for a stage 1.5 safety audit. A Safety Audit Report, dated July 2004, was received but a response was not prepared. This option was superseded by Transit's decision to progress the design of a tunnel through Johnson's Hill.'

It should also be noted that in the Transit NZ Board papers of April 2004 (1 month before the receipt of the safety audit on the specimen design), the following comment was made:

‘As per the Board’s wishes, one of the first tasks for the Alliance is to prepare an environmental risk register. This register will be used to assess opportunities for environmental enhancement over the current specimen design which will include amongst other issues, an assessment of tunneling through Johnson’s Hill and bridging the Nukumea Viaduct.’

#### **6.1.2 Conclusions from ALPURT B2**

- It appears that the environmental enhancements incorporated in ALPURT B2 at a cost of \$65 million were in response to the risk posed that the Manu Waiata Restoration Protection Society would challenge the project regarding compliance with the requirements of the LTMA. The board decided that the threat this response posed to the timely completion of the project justified the reassessment of mitigation of environmental impacts of the project and they sought a report on the appropriate level of enhancements to achieve the objectives of the LTMA. This is an example of a decision made to speed up a project, which ultimately resulted in a significant cost increase.
- It appears to the Advisory Group, from the information available to them, that the decision to include the Nukumea viaduct and Johnson’s Hill tunnels (and associated changes to the northern termination) was not driven by safety requirements, although it is also apparent that the changes have allowed a safer road to be designed.
- With regard to Transit governance, prior to 2002/03 there was a strong focus on cost and economic efficiency, largely because of the need to have a benefit–cost ratio (BCR) of 4 or more to obtain funding. For instance, the Transit NZ Board was presented a 19-page report explaining why the cost of ALPURT B2 had increased from \$98.8 million to \$131.3 million in the revised cost estimate of March 2001. This level of rigour has not been evident since the requirement to achieve a particular BCR to receive funding has been removed. The amount of evidence (presumably) presented to the Transit NZ Board for the inclusion of \$65m of environmental enhancements (incorporated in the Concept Design Report of July 2004) is brief and not particularly compelling given the scale of costs involved.
- In this instance, there was very little analysis of the inclusion of the Nukumea viaduct and Johnson’s Hill tunnels; the report identified that the tunnel option has ‘improved the extent of environmental mitigation’ and also ‘reduces the gradients of the new motorway and reduces the extent of earthworks cuts’. On the strength of this and the need for Transfund (now LTNZ) to exhibit a sense of social and environmental responsibility, it was concluded that ‘the inclusion of the Johnson’s Hill Tunnel and Nukumea viaduct is consistent with Transfund’s objective under the LTMA 2003’. While consistent, the report is silent on whether or not Transfund viewed the changes as justified. This does not appear to be a rigorous review for what was a costly change to the project.

From the evidence provided for the inclusion of the Nukumea viaduct and Johnson’s Hill tunnels, the Advisory Group considers that the additional costs were not fully justified. While these enhancements to the project might be able to be justified on the basis of environmental mitigation, safety enhancements and improved design outcomes, the information provided does not demonstrate the robust process of

evaluation of this additional expenditure by Transit NZ or Land Transport NZ that would be expected.

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Source: 6.1: Information collated by Don Wignall for the Ministerial Advisory Group from various Transit New Zealand, Transfund New Zealand and Land Transport New Zealand board reports.  
6.1.1 to 6.1.2 Stuart McKenzie, Ministerial Advisory Group from various Transit New Zealand, Transfund New Zealand and Land Transport New Zealand board reports.

### 6.1.3 Bibliography of /Commentary on Board Papers reviewed for ALPURT B2 Case Study

ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
1.			April 1999	CS/99/4/3271	Not available for review—Requested from Transit. Previous cost estimates of \$82 million (1997) for a two-lane road was revised to be \$95.6 million for a four-lane alignment.
2.				Attachments	Not available for review—requested from Transit.
3.			August 1999	CS/99/8/3384	Not available for review—requested from Transit.
4.				Attachments	Not available for review—requested from Transit.
5.	State Highway 1: ALPURT Sector B2	1	May 2000	CS/00/5/3619	Progress report to describe project costs for the four-lane higher standard option at \$106 million (17) 'tangible' BCR at this cost reported at 4.5 (20). Additional northern interchange costs of \$9.2 million (25) also referred to—with an associated BCR of \$4.3 million (26).
6.				Attachment A Locality Plan	Not available for review.
7.	State Highway 1:ALPURT Sector B2 Update	2	Sep 2000	CS/00/9/3735	Progress report detailing Environmental Court issues—with potential cost implications of an additional \$1.5 million (26).
8.				Attachment A Locality Plan	Not available for review.
9.	State Highway 1: ALPURT Sector B2	3	Oct 2000	CS/00/10/3787	Progress report. Mainly discusses land and resource consent issues but also notes that the 'final cost estimate' is likely to be above previous estimates because of the recent oil price increases and a decline in the NZ dollar (23).
10.				Attachment A Locality Plan	Not available for review.
11.	State Highway 1: ALPURT Sector B2	4	Nov 2000	CS/00/11/3808	Progress report—mainly on land and resource consent issues—and confirmed

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					the inclusion of a grade separated northern junction in the project scope (22) and said that the current estimate was \$115 million although this was in the process of being updated (21).
12				Attachment A Locality Plan	Not available for review.
13				Attachment B Proposed interchange with north facing ramps only	Not available for review.
14				Attachment C Proposed interchange with north and south facing ramps	Not available for review—requested from Transit.
15	State Highway 1: ALPURT Sector B2	5	Feb 2001	CS/01/2/3880	<p>Progress report—mainly on land and resource consent issues.</p> <p>Under the heading 'Funding', only a 'few' of the reasons for increased costs were detailed (33), amounting to \$2.7 million out of a total increase of \$28 million to a new 'firm' estimate of costs of \$138 million (34). Note: this represents less than 40 percent of the final Target Out turn Cost of \$358 million.</p> <p>The benefit–cost ratio was revised downwards to 4.1 (36).</p> <p>Delays in construction were noted and a revised completion date of between May and December 2004 was stated (52 b).</p>
16				Attachment A Locality Plan showing the four contracts proposed	Not available for review—requested from Transit.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
17				Attachment B Otanerua eco- viaduct showing connection for bio- diversity	Not available for review—requested from Transit.
18	State Highway 1: ALPURT Sector B2	6	May 2001	CS/01/5/3945	<p>Purpose to seek approval to successively apply construction funds.</p> <p>Costs are quoted as a total of \$145 million (4)—or \$7 million more than the 'firm' estimate provided to the Board 3 months previously, but there is no explanation as to what this increased cost relates to.</p> <p>Due to a property dispute, a construction delay was referred to that could result in additional costs of between \$1 million and \$2 million (9 and 17).</p> <p>The potential cost impact of delaying the southern contract to second quarter 2003 was estimated at \$6 million to \$14 million.</p>
19				Attachment A Locality Plan	Not available for review.
20				Attachment B Transfund NZ Funding Paper	Provided.
21				Attachment C Project consent issues	Provided.
22	ALPURT B2 Update	7	Jul 2001	CS/01/7/4038	<p>Report on alternative funding options for ALPURT B2, so as not to delay more important strategic projects (6).</p> <p>Tolling was discussed and it was stated that 'tolls would divert some traffic, including possibly a high proportion of traffic, back to the existing route thereby diluting the economic benefit of the project' (15).</p> <p>Additional costs due to tolling were estimated to be between \$4 million and \$5 million (17).</p> <p>Transit appeared to borrow the least amount to maintain progress on ALPURT</p>

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					B2 (25) No decision was taken and further work by external consultants to investigate options for financing was referred to (34).
23				Attachment A Cash profiles graph	Not available for review—requested from Transit.
24				Attachment B Variable levels of borrowing graph	Not available for review—requested from Transit.
25	ALPURT B2 Update	8	Sep 2001	CS/01/9/4081	Report updating consent, land, and alternative funding options. Repetition of much in previous Board paper but this time with the recommendation to proceed with an investigation of options for financing (49). The cost is still \$145 million and a benefit–cost ratio (BCR) of 4.1 (17). Note: from now on BCR was not reported in the main Board papers—and nowhere in the material reviewed is there a discussion of what was or was not included in the cost element of the BCR calculation, and incremental analysis does not appear to have been undertaken or reported on in this project.
26				Attachment A Locality Plan	Not available for review.
27	State Highway 1: ALPURT Sector B2	9	Oct 2002	CS/02/10/4465	Report on resource consent issues. Additional costs of \$1.15 million were expected to be required to cover Environment Court proceedings (31). Additional mitigation measures (bridge structures for the Nukumea Valley swamp and Ricker Basin, and a tunnel through Johnsons Hill) were investigated on the basis that this would appease the parties opposing the consenting process. The total cost of these measures was identified as \$30 million, raising the estimate to \$175 million. This was regarded as follows: '...it would be an imprudent use of funds to offer additional mitigation measures to resolve the current appeals' (23). Consequently, the Board were recommended not to undertake further bridging in the Nukumea Valley or

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					tunnelling in Johnsons Hill (32 b).
28				Attachment A Locality Plan	Not available for review.
29				Attachment B RDC letter	Not available for review.
30				Attachment C Photomontages	Not available for review.
31	State Highway 1: ALPURT B2 and Orewa Link Road Hearing Update	10	Sep 2003	CS/03/09/4727	Update report on Orewa Link Road designation.  This is the first paper to discuss Alpur B2 as a tolled road (3). The papers that discussed and approved the project as a toll road were not provided. Although most decisions are referenced to particular board papers, no such reference is made for the tolling decision.
32	ALPURT B2 Link Road Hearing Update	11	Oct 2003	CS/03/10/4752	
33				Attachment A Draft amended consent order	Not available for review.
34	ALPURT B2	12	Nov 2003	CS/03/11/4768	Report on delivery model and tactics.  It was recommended that ALPURT B2 should be the next candidate for the application of an 'alliance' delivery model (15), that tolling was assumed (17), and that an upfront grant be considered (44 ii).
35				Attachment A Delivery flowchart	Not available for review.
36				Attachment B Design flowchart	Not available for review.
37				Attachment C	Provided.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
				Funding flowchart	
38				Attachment D Order in council flowchart	Not available for review.
39				Attachment E Outline plan flowchart	Not available for review.
40				Attachment F Scenario 1: Sequential integration	Not available for review.
41				Attachment G Scenario 2: Overlap integration	Not available for review.
42	ALPURT B2	13	Dec 2003	CS/03/12/4812	To seek approval for a programme of toll road development and consultation.
43				Attachment A Risk adjusted action plan (final as tabled)	Not available for review.
44				Attachment B NLTP flowchart	Not available for review.
45				Attachment C Order in council flowchart	Not available for review.
46	ALPURT B2 Toll Road	13/2	Feb 2004	CS/04/02/4815	Progress report. Reference to request from the Board for a description of the scope of the project (5). A January 2004 updated cost of \$218 million was stated plus an allowance of

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					<p>\$5 million for toll infrastructure (14). The increase of \$73 million over the previous estimate of \$145 million was not explained fully, although a reference was made to a report CS/04/02 providing a 'general update' on portfolio cost estimation.</p> <p>Four general reasons for the increase were given (15), namely:</p> <ul style="list-style-type: none"> <li>• new Transit cost-estimation procedures</li> <li>• higher than expected cost escalation/inflation</li> <li>• higher earth works rates</li> <li>• complex northern termination junction</li> </ul> <p>Under the heading 'Borrowing', it was implied that Transfund would underwrite the financial risk for the project (21).</p>
47				Attachment A Progress against programme	Not available for review.
48				Attachment B Progress development flowchart	Not available for review.
49				Attachment C Project scope	<p>Explains that the original designation applied for in 1994 was for a two-lane, 80km/hr design.</p> <p>In 1998, as a result of 'high growth in traffic', Transit adopted a revised proposal, which effectively is the broad scope of the project as it stood in February 2004, namely to allow for four lanes throughout and to build four lanes for the majority of the route with a two-lane construction over and north of the Waiwera River.</p>
50	ALPURT B2 Toll Road	14	Mar 2004	CS/04/3/4858	<p>Progress report in which an update on significant risks said the overall costs of the project were still fluid with on-site toll infrastructure, and the overall scope and environmental enhancement costs were not fully determined (38 e).</p> <p>It was proposed that the Chairman of Transit would write to the Society and explain that the officers of Transit would reassess the environmental impacts of the project and report back on appropriate levels of enhancement, if necessary,</p>

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					to achieve the objectives of the LTMA. They also noted to the Society that 'one of the dimensions of tolling is that user charges can be assigned to pay for costs to provide a superior product than that which might have otherwise been provided. In this way, road users pay for the superior standard of highway which might, for example, include environmental enhancement' (43 b). Note: cost increases, ongoing subsidy provisions and underwriting of risks due to the design choices being made are not taken from public funds. Presumably this is on the basis that the additional costs for the 'superior' highway would be funded from toll revenue.
51				Attachment A Progress against programme	Not available for review.
52	ALPURT B2 Toll Road	14/2	Apr 2004	CS/04/04/4883	Report on business case and consultation issues.  Statement that commercial negotiations with a consortium had commenced and were ongoing in the context of 'intense pressure on this project' (34).  Also a statement that 'as per the Boards wishes—one of the first tasks for the Alliance is an environmental risk register', which '...will be used to assess opportunities for environmental enhancement over the current specimen design'; this specifically mentioned the assessment of the Nukumea Stream and Johnsons Hill (35).
53				Attachment A Updated programme	Not available for review.
54	ALPURT B2 Toll Road	15	May 2004	CS/04/05/4911	Report on consultation material and design cost-estimate increases.  Toll levels are quoted as being within the range \$1.70 (minimum to meet criteria)–\$2.80 (revenue maximising).  An unspecified design cost increase was referred to (22 and 31 c).
55				Attachment A Programme update	Not available for review.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
56				Attachment B Updated programme	Not available for review.
57				Attachment C Consultation material	Not available for review—requested from Transit.
58				Attachment D Funding application	Not available for review—requested from Transit.
59				Attachment E Heads of agreement	Not available for review.
60	ALPURT B2 Toll Road	16	Jun 2004	CS/04/6/4940	<p>Strategy adopted includes:(a) one toll point between Orewa link road and the northern interchange and (b) a toll tariff that maximises use of the new facility and minimises diversion effects (6).</p> <p>A revenue maximising toll was referred to of \$2.20 (8).</p> <p>A toll of \$1.80 (at 2004 costs) was adopted that was stated to be the minimum toll that allows advancement of the project to its earliest start date (10 and 11).</p> <p>The Board raised the issue of 'considering ALPURT B2 is a rural road with a high level of casual usage, can a full electronic toll collection be effective?' ( 12 b).</p> <p>Reference to the Board requesting officers 'to review ALPURT B2 for opportunities to achieve enhanced environmental outcomes' (18).</p> <p>It was recommended that the Nukumea eco-viaduct was included in the scope of the project (45 a) and that further investigations take place into the Johnsons Hill tunnels and relocation of the northern terminus (45b).</p>
61				Attachment A Programme update	Not available for review.
62				Attachment B	Not available for review—requested from Transit.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
				Financial outputs	
63				Attachment C Hearings processes (for consultation)	Not available for review.
64				Attachment D Transfund resolutions on Penlink	Not available for review.
65				Attachment E Penlink plan	Not available for review.
66	ALPURT B2 Toll Road	17	Aug 2004	CS/04/8/5008	<p>Updated report on programme for release to Environment Court on Link Road issues.</p> <p>The only design change due to tolling was the removal of the south-facing slips at the northern termination (20).</p> <p>A design estimate used in preparing the business case was as follows: \$217 million capital cost, \$23 million on-road tolls systems, \$15 million (net) Nukumea eco-viaduct—a total of \$255 million—at June 2004 prices (21).</p> <p>An alternative design was also investigated at the request of the Board, which incorporated Johnsons Hill tunnels—and associated works—at an additional cost of \$50 million (25).</p> <p>The alternative design was said to be compatible with the assumption that four lanes will ultimately continue to Warkworth (47) and that the design raised complex issues but no 'fatal flaws' (52).</p> <p>The actual costs of tolling were stated to be 'high and are forecast to be unsustainable by a single project such as ALPURT B2' and that a 'separate funding stream' be set up to fund the back office, marketing and customer services (71). This 'toll management entity' cost was assumed to be funded separately by Transfund (72).</p> <p>Reference was made to subsidised costs to be paid by Transfund—presumably for the toll management entity (78).</p>

Ministerial Advisory Group on Roothing Costs

ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
67				Attachment A Development programme	Not available for review.
68				Attachment B Delivery programme	Not available for review.
69	ALPURT B2 Toll Road	18	Sep 2004	CS/04/9/5034	<p>Report to approve application for 'up-front grant'.</p> <p>Suggestion that the project scope should be defined as the extension of the northern motorway to Puhoi—with interim connection at Titsford Bridge (21), with the cost of this extension north of Titsford Bridge, was given as \$160 million at August 2004 prices (23).</p> <p>A revised construction cost estimate of \$320 million for the ALPURT B2 scheme (that is, up Titsford Bridge) was reported (27).</p> <p>Toll assumptions reported to be \$1.80 for cars and \$3.60 for heavy vehicles (28).</p> <p>Proposal to set the level of upfront grant 'optimistically' on the basis of 'mean costs, high revenue projections and commit to annual subsidies if these prove necessary' (34).</p> <p>The basis to seek annual subsidy was different to this, namely, on the basis of 95th percentile costs and mean traffic figures (35).</p> <p>A preliminary range of transaction fee charges of between \$0.19 cents and \$0.54 cents was being used in the financial modelling (46).</p> <p>If the transaction fee stayed at the assumed mid level of \$0.32 cents, further funding from Transfund would be required for capital, refurbishment, and an annual subsidy to offset the effects of the transaction fee level (47).</p> <p>A possible transaction fee level of \$1.20 was also reported if 95th percentile costs of the tolls system project were to materialise (50).</p> <p>The possible annual subsidy from Transfund to meet the 'true costs of transaction' (not clear on what basis this is quoted) was reported to be between \$1.38 million and \$5.4 million per annum (note this indicates a possible range</p>

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					of additional costs over 35 years of between \$48 million and \$189 million—if ALPURT B2 was the only New Zealand toll project).
70				Attachment A Development programme	Not available for review.
71				Attachment B Critical path programme	Not available for review.
72				Attachment C Financial modelling output	Provided.
73				Attachment D Construction funding application	<p><i>5 Project financials</i></p> <p>Revenue projections were given as \$11.8 million in 2011 and \$1,011 million over the period 2009 to 2044 at medium growth projections (Table 2). It is not clear how the annual and total figures relate to each other and on what basis they have been prepared.</p> <p>A mean construction cost of \$320 million was reported (Table3).</p> <p>The debt finance able to be supported from the mean cost and high growth modelling is quoted as being \$150 million. The actual debt raised is quoted to be \$216 million. The implications of adopting a higher debt figure than can be supported are not discussed.</p> <p>Annual subsidies were reported to be needed to cover 'predicted cash deficits in the early years of the project', although this is not explained. The scale of these subsidies was 'indicated' to be in the order of \$84.8 million in escalated dollars.</p> <p><i>6 Economics</i></p> <p>A tolled benefit–cost ratio of 1.4 is referred to, presumably on the basis of a \$320 million construction cost. It is not clear what costs have been used and if land and sunk costs have been included.</p> <p><i>8 Major cost and delay risks and treatments</i></p>

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					Nine potential cost-related risks were identified, all of which have potential implications for the National Land Transport Fund.
74				Attachment E Construct hearing panel report	Not available for review.
75				Attachment F Transfund allocation process—executive summary	Construction costs are quoted as \$286 million plus \$19 million toll systems roadside cost (1.15). The upfront grant required for a tolled project is quoted as being \$175 million (1.16). In contrast to the earlier Transit Board material reviewed, there is some (welcome but partial) discussion of traffic demand, travel times, and diversion potential (1.2, 1.5, and 1.17). The summary states that the project will 'provide a major boost for the local economy', although this is a qualitative rather than a quantitative prediction.
76				Attachment G Resolution of Board on consultant report recommendations	Not available for review
77	ALPURT B2 Toll Road	19	Oct 2004	CS/04/10/5058	Report seeking approval of the release of the toll proposal for public consultation.
78				Attachment A Case for ALPURT B as a toll road	Not available for review—requested from Transit.
79	ALPURT B2: Report on matters raised by Dr Pond representing the Manu Waiata Restoration and Protection Society	19/2	Dec 2004	CS/04/12/5126	Mitigation for the ALPURT B project said to be 'unprecedented' in New Zealand.
80				Attachment A Report on matters	Not available for review.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
				raised by Dr Pond	
81	ALPURT B2 Toll Road	19/3	Dec 2004	CS/04/12/5115	<p>Presentation of final business case and construction start strategy.</p> <p>A 15 percent profit margin is allowed for in the alliance model (20).</p> <p>A project cost of \$364 million from the alliance was reported (23), together with an adjusted version of \$344.9 million of the previous Transit estimate of \$320 million (25), although it is not entirely clear how and on what basis this was achieved.</p> <p>Project cost was reported as 'some 6% over budget' and 'the drastic step of reducing scope at a macro level to achieve some cost savings' was discussed (28).</p> <p>The diversion is predicted to increase from 15 percent to 19 percent with implied reference to manage this diversion through taking action on the bypassed section of State Highway 1 (34).</p> <p>Costs of maintaining the alliance range from \$0.35 million to \$1.1 million per month (48).</p> <p>Incentives for cost, non-cost, and maintenance performance are detailed (67 to 74 inclusive).</p>
82				Attachment A Draft letter from Minister	Not available for review.
83				Attachment B Current forecast cost for ALPURT B2	Not available for review.
84				Attachment C Financial model outputs	Not available for review—requested from Transit.
85				Attachment D Cash flow forecasts	Provided.

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
				for funding approval comparisons	
86				Attachment E Non-cost performance measures summary	Not available for review.
87	ALPURT B2 Update	22	Feb 2005	CS/05/02/5157	<p>Progress report.</p> <p>An agreed target out-turn construction cost of \$293 million was reported (8).</p> <p>The total project out-turn cost of \$358.4 million is (9) broken down as follows:</p> <p>Limb 1; \$293m construction Limb 2: \$43.5m profit at approx 15 percent Limb 3 (at expected) \$1.9m Tolling Costs; \$15.5m Transit costs; \$3.4m maintenance pain/gain \$1.1m</p> <p>A 95th percentile cost of \$377.7 million was quoted (10).</p> <p>For 'reporting purposes' a target out-turn cost of \$365 million was also quoted.</p>
88				Attachment A Link Road— Determination of application	Not available for review.
89	ALPURT B2 Update	23	Mar 2005	CS/05/3/5191	Progress report on relatively minor items.
90	ALPURT B2	20	Apr 2005	CS/05/4/5208	<p>Progress and funding issues.</p> <p>A mean cost of \$359m was reported (35).</p> <p>Possible changes to annual subsidy (reduced to \$7.5 million) and the potential need for an upfront grant of \$227 million (38), but a recommended upfront grant requirement of \$203 million (43).</p>
91	ALPURT B2	24	Jun 2005	CS/05/6/5248	A \$13 million increase in upfront grant funding (to \$193 million) was

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ALPURT B2					
Transit NZ Board Papers					
	Subject		Date	Reference	Commentary
					recommended to cover anticipated shortfalls (36 d).
92	ALPURT B2 Funding Update	21	Oct 2005	CS/05/10/5377	Report on funding plan. Cost and cash-flow pressures were reported (7 to 12 inclusive).
93	ALPURT B2 Funding Plan	21/1	Dec 2005	CS/05/12/5442	Report recommending a debt of \$255 million to cover construction and interest during construction (4). It was proposed to do this through issuing infrastructure bonds (35) with a risk of interest-rate fluctuations being identified (36 and 37).
94				No reports have been sourced for 2006	Not available for review—requested from Transit.
95	Northern Gateway Alliance appendices RP-U_003—Appendix A: Tunnel Concept Drawings				
96	NGA appendices RP-U_003—Appendix B: Tunnel Concept Phases Analysis				
97	NGA appendices RP-U_003—Appendix C: Tunnel Concept Services Requirements				
98	Northern Gateway Alliance—Ranking sheet—LMTA scores: Review of Options				

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ALPURT B2					
Transfund New Zealand					
	Subject		Date	Reference	
1.	2003/04 NLTP: Programme Adjustments (April Review)	D	May 2004	TF 04/5/1388	Approval of an additional \$20.91 million for the design phase of the ALPURT B project (2 a)—this appears to involve more than simply design—but also to include constructor expenses (8) and raises the issue of what the other sunk costs are on this project and how they have been accounted for in BCR calculations etc.
2.				Attachment 1 Table showing adjustments	No comment.
3.				Attachment 2 Design funding application	The application for the \$20.9 million is <b>additional</b> to the previously approved design funding of \$12.25 million—giving a total of \$33.16 million.
4.				TF 04/9/1448	Not available for review—requested from Land Transport NZ.
5.	State Highway 1—Northern Motorway Extension (ALPURT B2)	A	Oct 2004	TF 04/10/1468	<p>Confirmation of the upfront grant approval of \$180 million and the ongoing subsidy to Transit debt repayments of \$84.8 million over the period 2009–2025 (2 a i and ii).</p> <p>Cost estimate of \$320 million referred to (3).</p> <p>Quote from earlier report stating cost estimate for additional environmental enhancement was \$65 million and that Transit's view of the scope increases on the project is that 'the elements cannot be viewed singularly and do not need to be justified by incremental analysis' (16).</p> <p>A tolled benefit–cost ratio (BCR) of 1.8 and a diversion rate of 20 percent are referred to (32).</p> <p>Note: not clear how this relates to the earlier (04/09) figure quoted by Transit of a 1.4 tolled BCR—on the basis of a lower construction cost—and not clear what costs have been used and if land and sunk costs have been included.</p>
6.				Attachment 1 Transit application for budget approval	Copy of Attachment D CS/04/9/5034 referred to and commented on above.

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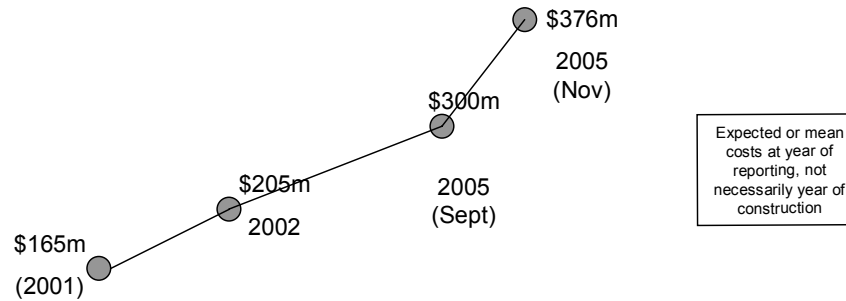
ALPURT B2					
Transfund New Zealand					
	Subject		Date	Reference	
7.				Attachment 2 The case for an ALPURT B toll road	Copy difficult to read. Very little in terms of facts and figures—network traffic volumes etc.
8.				Attachment 3 Letter from Wendy Pond	No comment.
9.				Attachment 4 Letter from Transit re tunnel consents	No comment.
10				Attachment 5 Transfund Allocation Process assessment file note	This is concerned with the performance of the proposal—mainly as a toll road— with a key consideration being the cost implications for the NLTF, rather than the total project cost.
11	ALPURT B2 Enabling Works Package	B	Dec 2004	TF 04/12/1503	Approval of an immediate release of \$20m (of \$180m approved funding) from the upfront grant allocation for an enabling works package (2 a and 15).
12.				Attachment 1 Transit submission CS/04/12/5115	Referred to and commented on above.
13				Attachment 2 Letter from Minister	No comment.
14				Attachment 3 Transit presentation	Reference to possible lengthening of debt period to 2048 to manage cost over-run risk.

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ALPURT B2					
Land Transport New Zealand					
	Subject		Date	Reference	
15	ALPURT B2 Funding application			05/04/1544	Approval of an additional \$6 million for construction funding in 2004/05. Repeat of earlier material from Transit reports on debt and revenues although not clear how financial basis has been calculated.
16				Attachments	Single sided copy provided—missing pages requested from Transit.
17	ALPURT B2 Funding application			05/06/1566	Noted that \$26 million had already been released and that the remainder of the \$180m upfront grant were approved for release—but did not approve or address the request for an additional \$13 million to be added to the upfront grant.
18				Attachment 1 Transit funding application	Material from Transit previously commented on.
19	ALPURT B2 Loan Guarantee			05/12/1694	Information on loan guarantee requirements and development of documentation.
20				Attachment 1 Copy of Transit report CS/05/12/5442	Commented on previously above.
21				Attachment 2 Transit–Crown draft agreement	No comment.
22				Attachment 3 Land Transport NZ– Crown draft agreement	No comment.

## 2 Vic Park Tunnel

The Harbour Bridge to City project is a key component in the transport strategy for Auckland in support of other capacity and public transport initiatives



		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	Errors in detailed estimations
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>	**	Approximately \$40m single northbound tunnel from Viaduct
<b>Input costs</b>		*	30% increase in Auckland input costs 2001-2006
<b>Governance</b>			Reasoning in support of project changed over time

**Key issue**

- Additional road capacity achieved but at very high costs providing small environmental benefits
- Uncertainty over the long term treatment of existing viaducts

**Source:** Stuart McKenzie, Ministerial Advisory Group from various Transit New Zealand, Transfund New Zealand and Land Transport New Zealand board reports.

### 6.2.1 Further detail on Victoria Park tunnel project summary

Below is a brief synopsis of the process used to establish the scope of the Victoria Park tunnel project:

- A long list of options was identified by reviewing previous study reports and through three days of workshops held in February and March 2001. A short list of five options was then presented to the Transit NZ Board in November 2001, with the Board choosing to release three options for public consultation. The three options were:
  - Option A—widening or replacement of the existing Victoria Park viaduct
  - Option B—new depressed roadway
  - Option C—full or partial tunnel.
- It was noted by the Transit NZ Board that ‘given that Options B or C offer no additional roading benefits than Option A, it was likely that only Option A would be fully fundable through the National Roding Programme’.
- In June 2002, it was reported to the Transit NZ Board that ‘Preliminary feedback from key stakeholders, except SMBA (Saint Mary’s Bay Association, a local lobby group), indicates a general preference for Option A for the following reasons:
  - Least impact on the only significant property required (Victory Christian Church)
  - Least impact and disruption during construction
  - Least cost for funding from the National Roding funding leaving more funds for other Auckland transport projects
  - Least impact on the environment e.g. groundwater, contaminated ground
  - Construction able to start sooner
  - Visually similar to existing (a known quantity)’.

The key stakeholders consulted included property owners and occupiers, iwi, Auckland City Council (ACC) councillors and officers, Auckland Regional Council councillors and officers, North Shore City Council politicians and officers, St Mary’s Bay Association, and Infrastructure Auckland.

- The June 2002 Transit NZ Board paper also identified that ‘Feedback from ACC officers to date has been mixed because of the varied interests that ACC represents. ACC officers would prefer a tunnel through Victoria Park but accept that this is unlikely to be funded.’
- In September 2002, the Transit NZ Board was presented with an evaluation of four options:
  - Option A—a widened or new Victoria Park viaduct
  - Option B—partially covered trench
  - Option C—full tunnel
  - Option D—northbound tunnel (retaining the existing structure for southbound traffic).
- An evaluation of the social and environmental effects of each option was also presented: ‘The major differences in the effects relative to Option A are;
  - Option B and C have significantly reduced noise, visual and severance effects through Victoria Park. However, they also have significant construction impacts.
  - Option D retains the status quo within Victoria Park, and therefore has no significant reduction in effects compared to Option A

- All the tunnel options are likely to be less favoured by Iwi based on initial consultations'
- 'In summary Options B and C...offer some amenity benefits, but would cost an additional \$165 to \$180 million over and above Option A....On the other hand, Option D, which has an additional cost of \$100 million, offers only modest amenity benefits...'
- By the November 2002 Transit NZ Board meeting, it was resolved by the Board that '...Transit cannot justify the additional costs of either a full tunnel or a northbound tunnel without local funding to meet the additional costs'.
- In the December 2004 Transit NZ Board papers, resolutions passed by the ACC Transport Committee in December 2002 were presented. The essence of these resolutions was that:
  - the option of widening the current road and viaduct was unacceptable
  - the council expected the improvements to fully mitigate the impacts of this corridor by trenching and tunnelling
  - Victoria Park is an irreplaceable community asset and should not be further compromised
  - funding through a combination of tolls and debt funding should be investigated.
- It was also clear that there was significant pressure on Transit NZ to deliver this project as soon as possible. This was due to the planned opening of other motorway projects, where without the Victoria Park project 'the full potential and benefits of these significant infrastructure projects will not be realised'.
- Given 'that a viaduct structure has little, if any support' the Transit NZ Board was therefore presented with a single option—the northbound tunnel option. 'While it may seem somewhat deterministic to advocate a specific approach to this transport issue, we would make it clear that we see this as a political decision'. This then became the preferred option, and is the basis of the project for design at present.
- Land Transport NZ reviewed the project in April 2005. The extra cost for the northbound tunnel option was not clearly identifiable, and the option's potential benefits (not including roading benefits, which were essentially the same for all options) were presented as:
  - Putting sections of the route underground will potentially have the following environmental benefits;
    - Reduction in adverse visual impact of existing viaducts, when demolished. [Note there is no plan for removing the existing viaduct, although this point is not made very clear.]
    - Reduction in adverse noise impacts. [Note that this does not align with the assessment of environmental effects presented to the Transit NZ Board in September 2002.]
    - Concentration of vehicle fumes through vents. [The merit of this point was not explained, nor did it align with the assessment of environmental effects presented to the Transit NZ Board in September 2002.]
  - On the basis of this evaluation, Land Transport NZ approved design funding to further evaluate the northbound tunnel option.
- There is currently no long-term strategy for replacement of the existing viaduct.

### 6.2.2 Conclusions from Victoria Park tunnel

- An objective assessment of environmental effects prepared in September 2002 for Transit NZ showed that 'Option D (northbound tunnel option) retains the status quo within Victoria Park, and therefore has no significant reduction in effects compared to Option A (the viaduct option)'. On this basis, there appears to be no objective rationale for committing the additional funds required to construct Option D over Option A. In fact, analysis indicates that significant environmental improvement will only occur if all traffic is moved underground; however, there is currently no plan to replace the existing viaduct.
- The Advisory Group notes that papers presented to Land Transport NZ for the release of design funding do not appear to present the full evaluation of incremental costs and benefits for the various options. The Advisory Group therefore think it is difficult for the Land Transport NZ Board to make a fully informed decision as to the merits of the northbound tunnel relative to the additional costs required for its construction.
- Transit NZ appears to the Advisory Group to be making decisions to speed up projects that have high cost implications. There does not appear to be a systematic process to establish the scope of this project based on their assessment of environmental effects.

On the basis of the evidence provided, the opinion of the Advisory Group is that the additional costs to construct the Northbound tunnel have not yet been fully justified or proven to be unavoidable.

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**SOURCE:** Information collated by Don Wignall for the Ministerial Advisory Group from various Transit New Zealand and Land Transport New Zealand board reports.

### 6.2.3 Bibliography of /Commentary on Board Papers reviewed for Victoria Park tunnel Case Study

Victoria Park tunnel (also called Auckland Harbour Bridge to City)				
Transit NZ Board Papers				
	Subject		Date	Reference
1.			Jul 1999	
2.	State Highway 1: Auckland Harbour Bridge to City	T	Nov 2001	CS/01/11/4153

Based on work carried out between 1995 and 1997 and resulted in a tidal flow scheme being adopted as the preferred option.

Not clear what the previous involvement of the Board has been in this project. A professional services contract was let in December 2000 to develop a transportation strategy and corridor options (6). Context described as Transit's Auckland State Highway Strategy 2000 (8). Objectives for the Harbour Bridge to City (HBTC) project were to balance the capacity of the southern approach with the capacity of the Auckland Harbour Bridge and to increase capacity for other reasons (10). The implications of a potential / additional Waitemata Harbour crossing were not considered in developing the HBTC options (11). The scheme concept is to provide five lanes in either direction between the Auckland Harbour Bridge and the city, with three lanes in each direction continuing southbound across Victoria Park (13). All of this preceded the later consideration of road pricing or travel demand management. The existing viaduct was predicted to be 'unable to cope'<sup>6</sup> with inter-peak demand—including port-related flows—by 2021, and the deterioration of the viaduct due to a life-shortening 'alkali aggregate reaction' was also referred to (21). The options were first screened then, subject to an evaluation using 'pre-determined criteria' to determine a shortlist of five options for the Victoria Park tunnel (26), although costs for six options are provided, ranging between \$70 million and \$430 million (42).

<sup>6</sup> Not clear what is meant by the use of this term in a meaningful sense (for example, speeds, queues, delays).

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Victoria Park tunnel (also called Auckland Harbour Bridge to City)					
Transit NZ Board Papers					
	Subject		Date	Reference	
					Costs quoted were said to be unsuitable for project budget purposes (42). The options had not been subject to cost-benefit assessment (43). Three options were approved for community consultation, namely, a) viaduct, b) sunk roadway, c) full or partial tunnel—although it was also stated that 'bearing in mind the pressing nature of the problem ... only a) was likely to be fully fundable' out of nationally available funds (46 d).
3.	State Highway 1: Auckland Harbour Bridge to City—Attachment A: Option plans				Requested from Transit.
4.	State Highway 1: Auckland Harbour Bridge to City—Attachment B: Property, Lane Use and Engineering Issues	101/2	Nov 2001	CS/01/11/4153	Provided.
5.	Auckland Harbour Bridge to City	S	Jun 2002	CS/02/06/4315	Reporting back on consultation, it was stated that feedback from key stakeholders indicated a general preference for option a) viaduct (7), but that the community/public expressed a majority preference for options b) sunk roadway or c) full tunnel (8). The report clearly indicates that funding for options b) and c) is not likely to be available and that a preferred scheme is going to be developed based on option a).
6.	Harbour Bridge to City	R	Sep 2002	CS/02/9/4443	Option d) northbound only tunnel separately identified in this report. Discussion on whether or not it was worth trying to obtain funds from Infrastructure Auckland towards an under-grounding option, with the cautionary reference to it being 'critically important that this project is not unduly delayed in resolving funding' (25).
7.	Harbour Bridge to City—Attachment A: Locality Plan	103/2	Sep 2002	CS/02/9/4443	Provided.
8.	Harbour Bridge to City—Attachment B: Comparison of Environmental and Social Effects Under RMA Criteria		Sep 2002	CS/02/9/4443	Requested from Transit.
9.	Harbour Bridge to City—Attachment C: Comparison of Benefits Under IA Criteria		Sep 2002	CS/02/9/4443	Requested from Transit.

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Victoria Park tunnel (also called Auckland Harbour Bridge to City)					
Transit NZ Board Papers					
	Subject		Date	Reference	
10	Harbour Bridge to City	Q	Nov 2002	CS/02/11/4511	<p>Report on the outcome of discussion between Infrastructure Auckland and Transit, confirming that a contribution of \$25 million to \$30 million was the maximum Infrastructure Auckland would be prepared to contribute to a full tunnel and no contribution to a partial tunnel would be made.</p> <p>Consequently, an oddly worded resolution was passed to inform Infrastructure Auckland, Auckland City Council, and Auckland Regional Land Transport Committee that 'Transit does not support Transit funding the additional costs of a tunnel over a widened viaduct and deferring other Auckland projects.'</p>
11	Harbour Bridge to City—Attachment A: Locality Plan	104/2	Nov 2002	CS/02/11/4511	Provided.
12	Harbour Bridge to City	P	May 2003	CS/03/5/4632	<p>The report was to report on representations made by the Auckland Regional Council, to apply for consent for a tunnel and to seek additional funds to deliver this. It was stated that a tunnel option would delay implementation by at least 18 months (13).</p> <p>A resolution was passed confirming the willingness of Transit 'to designate an alternative to widening the Victoria Park Viaduct subject to the additional cost of the project being fully underwritten by Auckland region'.</p>
13	Harbour Bridge to City—Attachment A: Locality Plan:	105/2	May 2003	CS/03/5/4632	Provided.
14	State Highway 1:Harbour Bridge to City	O	Dec 2004	CS/04/12/5132	<p>The report reiterated that 'it is critical that this project is implemented as soon as possible' (22).</p> <p>The Harbour Bridge to City options under review were all said to be compatible with a potential / additional Waitemata Harbour crossing (23).</p> <p>A resolution was passed for Transit to consult with councils to seek their shared advocacy of a preferred solution based on a northbound tunnel only (capable of being operated as four lanes) and the retention of the existing viaduct for southbound movements.</p>
15	State Highway 1:Harbour Bridge to City—Attachment A: Locality Plan	106/2	Dec 2004	CS/04/12/5132	

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Victoria Park tunnel (also called Auckland Harbour Bridge to City)					
Transit NZ Board Papers					
	Subject		Date	Reference	
16	State Highway 1: Harbour Bridge to City	N	Feb 2005	CS/05/02/5166	A report requesting confirmation of a proposed investigation funding application and associated timeframes.
17	State Highway 1: Harbour Bridge to City— Attachment A: Locality Plan	107/2	Feb 2005	CS/05/02/5166	
18	State Highway 1: Harbour Bridge to City	M	Jul 2005	CS/05/7/5287	<p>A report recommending an accelerated approach is taken to development, planning, and construction of the Harbour Bridge to City project.</p> <p>Auckland and North Shore City and Auckland Regional Councils, were reported to have stated support for the northbound tunnel option (11).</p> <p>Additional work was proposed, including the 'update of the cost of the preferred project option' (16).</p> <p>It can be inferred that no LTMA-type assessment had been undertaken up to this point (19).</p> <p>It was resolved that liaison between Transit and Land Transport NZ will be under the authority of the Chief Executive and not rely on joint Board membership (31 a).</p>
19	State Highway 1: Harbour Bridge to City— Attachment A: Locality Plan	108/2	Jul 2005	CS/05/7/5287	
20	State Highway 1: Harbour Bridge to City— Attachment B: Optimistic, Expected and Pessimistic Delivery Programmes				Requested from Transit.
21	State Highway 1: Harbour Bridge to City Design Funding	L	Sep 2005	CS/05/9/5353	<p>Report to describe proposed (first stage) design funding application to Land Transport NZ.</p> <p>A current cost estimate was estimated to be \$300 million (15).</p>
22	State Highway 1 : Harbour Bridge to City Design Funding—Attachment A: Macro Scope Refinements	109/2	Sep 2005	CS/05/9/5353	<p>This discusses the need or otherwise to increase capacity northbound beyond Victoria Park and the use of that capacity for bus priority (50).</p> <p>The application of Transit's Geometrical Design Manual (GDM) standards is also discussed and it is indicated that 'ambient' standards are appropriate and that GDM standards may be otherwise 'relaxed' (9).</p>

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Victoria Park tunnel (also called Auckland/Harbour Bridge to City)					
Land Transport New Zealand Board Papers					
	Subject		Date	Reference	Commentary
1.					Not clear if there were any earlier Transfund or Land Transport board papers on this project (enquiry made to Land Transport NZ to follow this up).
2.	Harbour Bridge to City Investigation Funding	J	Apr 2005	05/04/1550 AF 102 12 02	Report recommending: a) approval of design funding from regional Regional funding to allow the preferred option to be selected based on LTMA requirements and b) further funding for this project (including construction) 'may' be out of Regional funding.  It was noted that the Harbour Bridge to City project was in the draft state highway programme for 2005/6 at \$175 million. (Note: the state highway programme uses 'escalated' costs, but since 2002 the Transit Board had been assuming a 'current' cost of \$200 million or higher).
3.	Harbour Bridge to City Investigation Funding— Attachment 1: Transit Board paper CS04/12/5132				Commented on previously under Transit references.
4.	Harbour Bridge to City Investigation Funding— Attachment 2: Transit Board paper CS05/02/5166				Commented on previously under Transit references.
5.	Harbour Bridge to City Investigation Funding— Attachment 3: Transit design funding application				This seems to indicate that the \$1.5 million stage 1 design funding is on top of an 'approved' allocation of \$5.8 million—although this is far from clear and has not been mentioned in any of the Transit or Land Transport NZ Board papers reviewed—so it remains unclear who approved the original \$5.8 million and when.
6.	Harbour Bridge to City Investigation Funding— Attachment 4: Aerial photograph				
7.	Harbour bridge to city advanced design	I	Sep 2005	05/09/1625 AF102 12 02	Report recommending the approval of \$1.5 million for the design of the northbound tunnel option of the Harbour Bridge to City project. Presumably it is the same \$1.5 million as previously approved in April, subject to agreement of the terms of reference.  This time, however, it was recommended that National funding be used for this part of the design and future 'advanced design' costs to accelerate the project, but that subsequent costs and construction costs are 'pursued' from Regional

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Victoria Park tunnel (also called Auckland/Harbour Bridge to City)					
Land Transport New Zealand Board Papers					
	Subject		Date	Reference	Commentary
					funding (18). A marginal cost increase due to the tunnel option was said to be approximately \$200 million (20).
8.	Harbour Bridge to City advanced design— Attachment 1: Transit design funding application				This is simply a copy of the Transit Board paper of September 2005 (5353), which has within it a brief reference to an estimated cost of \$300 million (15).
9.	Harbour Bridge to City advanced design— Attachment 2: Diagram of project extent				
10	Resolution: Harbour Bridge to City advanced design	K2– K6	Apr 2004	05/04/1550 ID 51	
11	Resolution: Harbour Bridge to City advanced design	K1	Sep 2005	05/09/1625 ID 113	

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Victoria Park tunnel (also called Auckland/Harbour Bridge to City)					
Other References					
	Subject		Date	Reference	
1.	Transit Cost Summary Auckland Region Project Cost Summary— Victoria Park tunnel (previously Harbour Bridge to City)	OT101	May 2006		Post 2002 costs have been taken from state highway plans, which are escalated costs and in many cases have proved to be very unreliable.  The commentary provided against the costs is not consistent with the timing of material presented to the Transit Board.
2.	Option Cost Summary Harbour Bridge to City—Transit NZ Submission Estimates (millions)	VPT 1 OT102	Oct 2001		\$165 million partial tunnel option. Mid cost (in the range \$150 million–\$180 million).
3.	Option Cost Summary Harbour Bridge to City—Transit NZ Submission Estimates	VPT 2 OT103	Oct 2001		\$165 million partial tunnel option. Mid cost (in the range \$150 million–\$180 million).
4.	Option Cost Summary Harbour Bridge to City	VPT 3 OT104	May 2002		\$200 million partial tunnel option. Mid cost (in the range \$190 million–\$200 million).
5.	Option Cost Summary Harbour Bridge to City—Transit NZ Submission Estimates: Partial Tunnel Option	VTP 4 OT105	May 2002		\$205 million partial tunnel option. Rounded range estimate.
6.	Beca Cost Estimate Harbour Bridge to City—Undrained Tunnel Scheme: Beca Parallel Estimate— 17 November 2005—Post Reconciliation	VTP 5 OT106	Nov 2005		\$376 million partial tunnel option. In the references examined there is no record of this estimate being reported to / considered by the Transit or Land Transport NZ Boards.

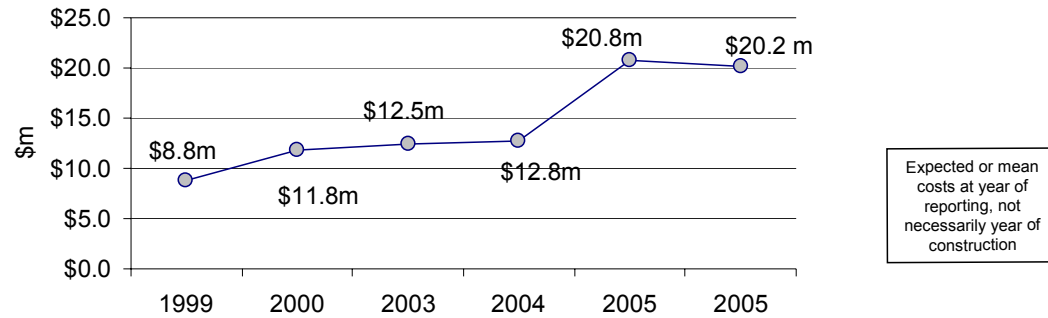
**SOURCE:** 6.2.1 to 6.2.3 Stuart McKenzie, Ministerial Advisory Group.

Appendix 6.3

Other case studies

### 3 Bell Block Bypass

Four lane SH3 bypass of local community on northern approach to New Plymouth



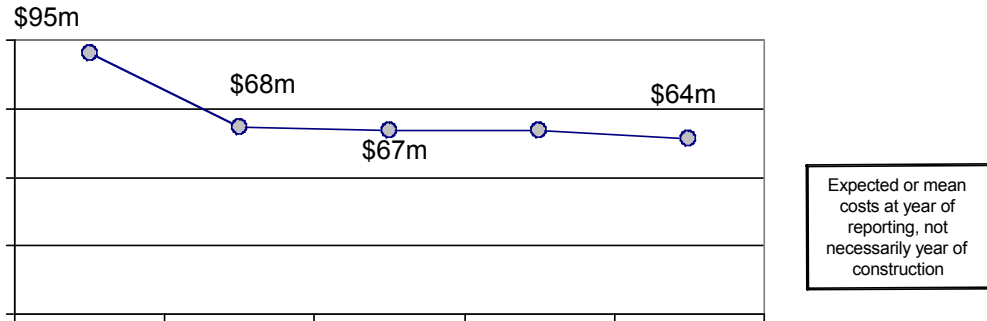
Key cost drivers		Relative impact on cost changes. * Minor ** Moderate *** Significant	
Estimation		↓	
Scope	Design	***	Grade separation
	Environmental mitigation		
Input costs			
Governance			Well presented scheme

**Key issues**

- Well considered scheme – however, cost increase due to grade separation (seems to have) lead to funding deferral by Land Transport NZ

### 4 Grafton Gully

High capacity inner city motorway linkages and interchange occupying a very wide corridor between the CBD and academic precincts



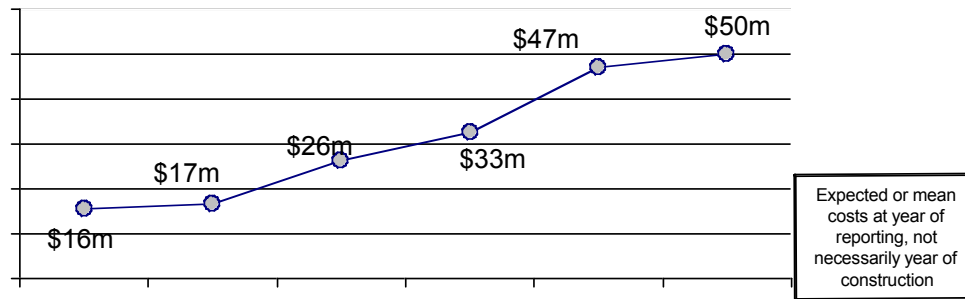
Key cost drivers		Relative impact on cost changes. * Minor ** Moderate *** Significant	
Estimation		↓	
Scope	Design	**	Transit reports are unclear, but estimation change is a possible cause of initial cost reduction
	Environmental mitigation	***	Transit reports are unclear, but scope change is a possible cause of initial cost reduction
Input costs			
Governance			Well presented scheme

**Key issues**

- Scheme costs were well managed with outturn costs under budget

## 5 Mangatawhiri

Realignment of a 2 lane section of SH2 on the Auckland to Tauranga route for safety reasons with long term potential for upgrading to 4 lane expressway standard



Key cost drivers		Relative impact on cost changes. * Minor ** Moderate *** Significant	
Estimation		** ∇	Application of new estimation procedures Additional stability and accommodation works Tenders higher than estimated
Scope	Design	***	Design shifted from 2 lane with passing lanes to full 4 lane express way standard design with staged 2 lane implementation
	Environmental mitigation		
Input costs			
Governance			Adequate

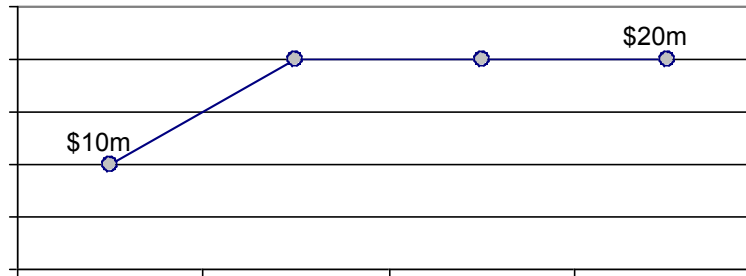
**Key issue**

- Is full 4 four lane design today appropriate to the likely timing of the need for full 4 lane construction?

## 6 Waiouru Connection

Connection from SH1 into major population growth node at Flat Bush east? of Manukau CityŠ but on a sub-optimal alignment requiring junction upgrading and carriageway widening of SH1

Expected or mean costs at year of reporting, not necessarily year of construction



**Note**

Costs are for Transit portion of scheme which also included developer and council contributions

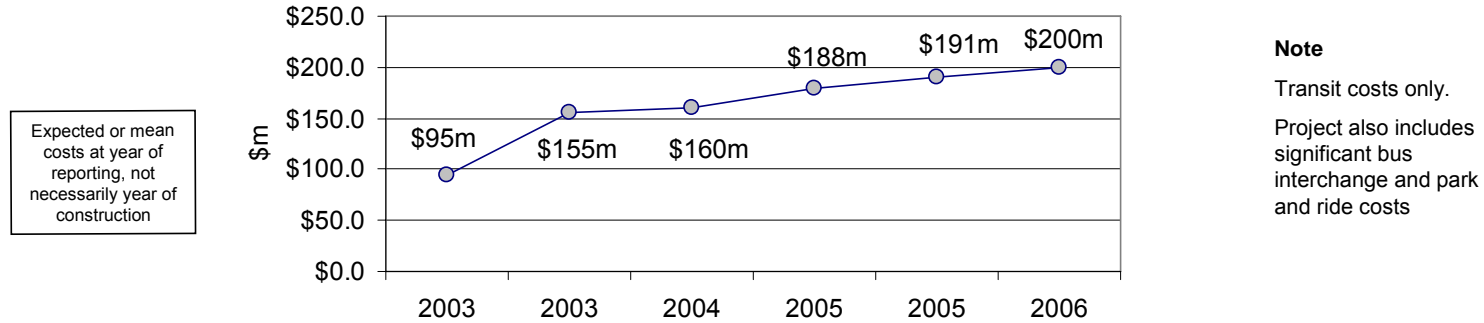
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	No allowance for contingencies
<b>Scope</b>	<b>Design</b>	**	Additional 2 lanes
	<b>Environmental mitigation</b>		While the initial reasons for the scheme were related to environmental mitigations, they do not explain subsequent cost increases
<b>Input costs</b>		*	30% increase in Auckland input costs 2001-2006
<b>Governance</b>			Well reported to Transit Board

**Key issue**

- Could the objective of this connection (to East Tamaki) have been achieved more directly with less cost through better planning?

## 7 Northern Busway

High occupancy vehicle and bus priority project on state highway – involving redesignation of existing road capacity over the Auckland Harbour Bridge, SH1 widening, junction improvements, bus interchanges, park and ride facilities associated bus service network and traffic management initiatives



**Note**  
 Transit costs only.  
 Project also includes significant bus interchange and park and ride costs

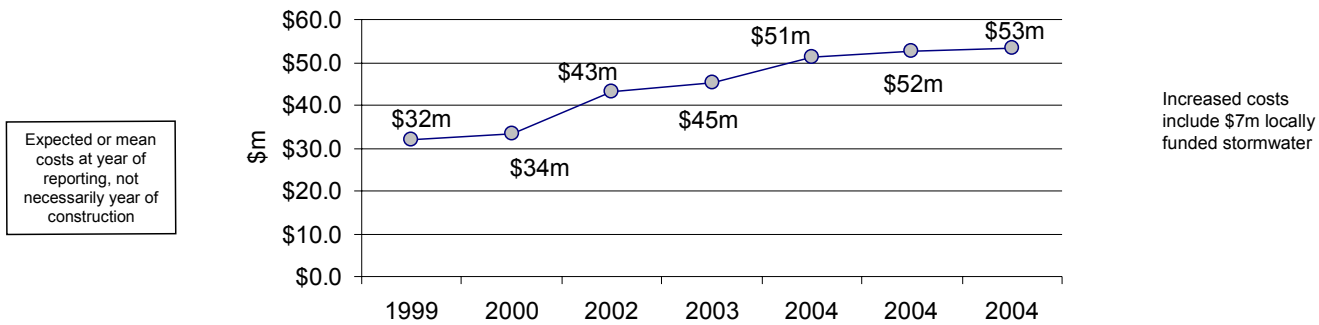
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	Optimistic early design assumptions New procedures implemented
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>	**	Noise, shoreline and landscape
<b>Input costs</b>		*	30% increase in Auckland input costs 2001-2006
<b>Governance</b>			Adequate

**Key issue**

- Benefits are critically dependent on implementation of the Harbour Bridge to city project (Vic Park)

## 8 Inner City Bypass

An inner urban highway capacity project with urban development benefits



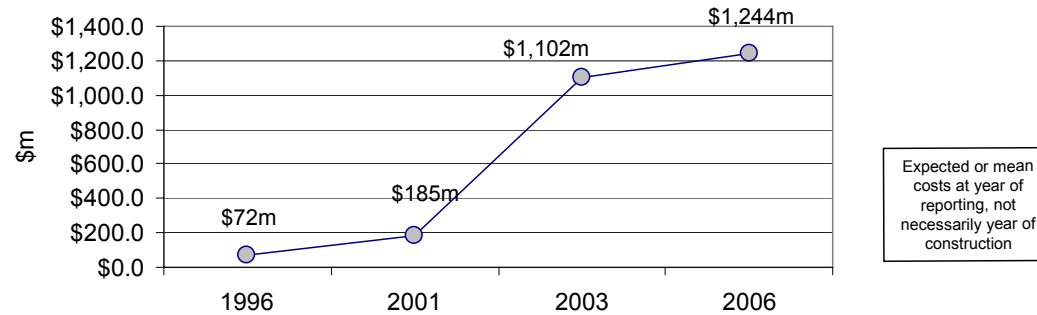
Key cost drivers		Relative impact on cost changes. * Minor ** Moderate *** Significant	
Estimation		↓	
Scope	Design	**	Minor changes only
	Environmental mitigation		
Input costs		**	Minor only
Governance			Well reported

### Key issues

- Real increases after allowing for locally funded stormwater costs are small
- Well cost managed project

## 9 Waterview Connection (Avondale)

A 7km very high cost extension of SH20 to provide the northern connection of the Auckland western ring road connection to SH16. Proposed as a toll road.



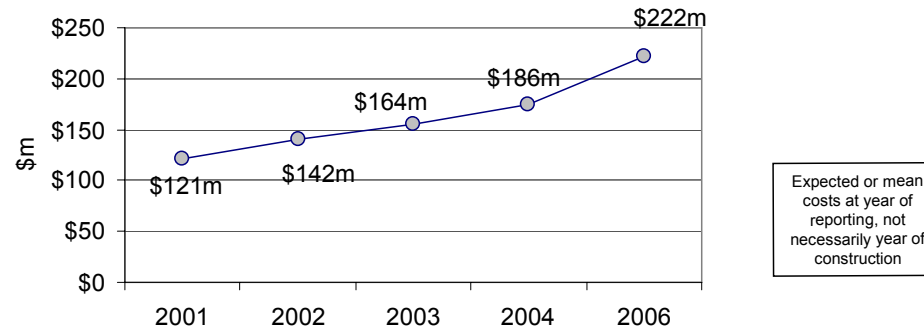
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		**	New cost estimation procedures
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>	***	Decision to undertake extensive undergrounding (probably via cut and cover) have lead to the main increase in costs
<b>Input costs</b>		*	30 % increase in Auckland input costs 2001-2006
<b>Governance</b>			Unclear – not all board reports received – under review

**Key issue**

- Should scheme capacity be reduced in view of the proposals to toll the Western ring route?

## 10 Manukau Extension (SH1 – SH20)

A connection from SH1 to SH20 as part of the Auckland western ring road. Proposed as a toll road



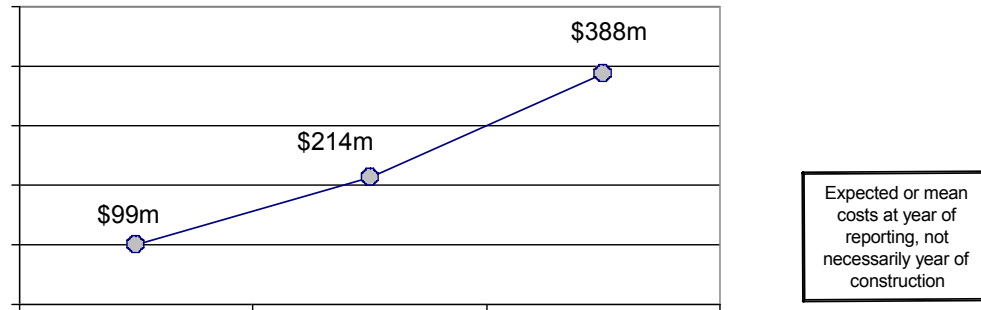
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		**	New estimation procedures introduced
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>	***	Manukau City Council requirements
<b>Input costs</b>		*	Auckland cost increases above CPI
<b>Governance</b>			Unclear – not all board reports received – under review

**Key issue**

- Manukau City Council requirements lead to scope changes

## 11. Tauranga Eastern Arterial

A high cost tolled eastern motorway approach to Tauranga with associated PT priority measures



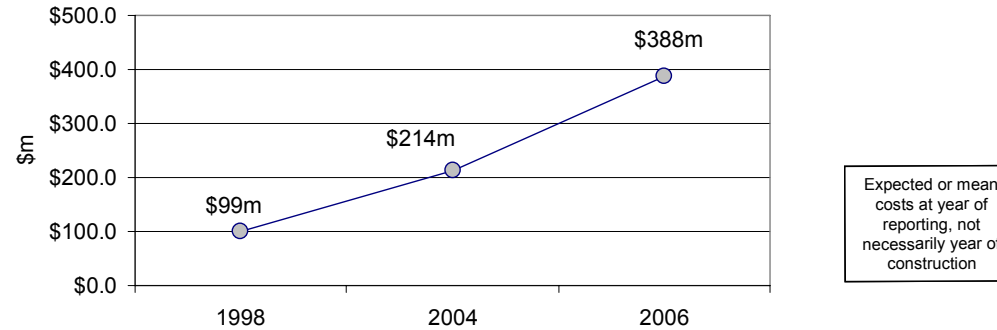
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	New cost estimation procedures and significant variations in cost due to risk management reviews
<b>Scope</b>	<b>Design</b>	**	Significant scope changes and additional facilities added to scheme (priority lanes, traffic management and tolling)
	<b>Environmental mitigation</b>		
<b>Input costs</b>			
<b>Governance</b>			Unclear Š not all board reports received

**Key issue**

- Are capacity requirements and bus priority requirements appropriate in the context of tolling?

## 12 Tauranga Eastern Arterial

A high cost tolled eastern motorway approach to Tauranga with associated passenger transport priority measures



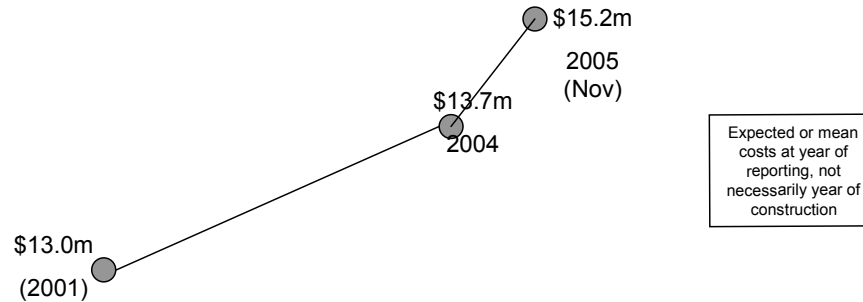
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	New cost estimation procedures and significant variations in cost due to risk management reviews
<b>Scope</b>	<b>Design</b>	**	Significant scope changes and additional facilities added to scheme (priority lanes, traffic management and tolling)
	<b>Environmental mitigation</b>		
<b>Input costs</b>			
<b>Governance</b>			Unclear – not all board reports received – under review

### Key issue

- Are capacity requirements and bus priority requirements appropriate in the context of tolling?

### 13 Whangaparaoa Road – Rodney District

Four lane road connection to rapidly developing area - part of the Penlink project



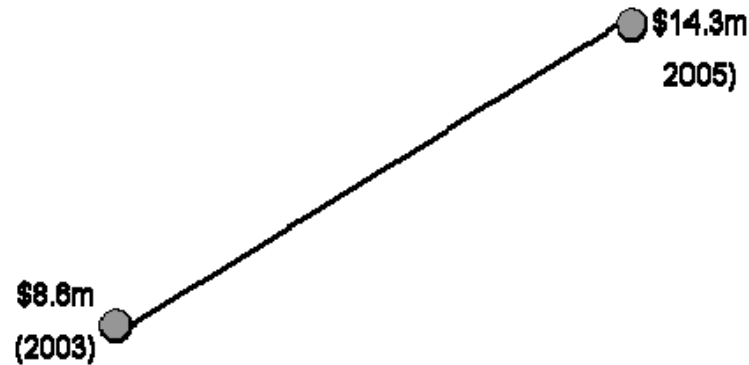
		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		*	Good – no cost escalation over and above expected
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>		
<b>Input costs</b>		*	
<b>Governance</b>			Thought to be reasonable – but not reviewed in detail

**Key issue**

- Pretty much in line with normal escalation / inflation

## 14 Kerikeri

Important heritage bypass of settlement of Kerikeri – (Funded 75% from LTNZ and 25% from Ministry of Culture and Heritage)



Expected or mean costs at year of reporting, not necessarily year of construction

		Relative impact on cost changes. * Minor ** Moderate *** Significant	
<b>Estimation</b>		***	Land and contingency costs too low
<b>Scope</b>	<b>Design</b>		
	<b>Environmental mitigation</b>		
<b>Input costs</b>		**	Escalation in rates higher than anticipated
<b>Governance</b>			Thought to be reasonable – but not reviewed in detail

### Key Issues

- Need to discount investment over longer period than 25 years to achieve justification
- Benefits are cultural / environmental rather than transport efficiency related

## Appendix 7.0 Land Transport NZ audit of statistical sample of local authority and state highway project costs and benefits both pre-tender and post-construction

LTNZ audit of road construction projects. Based on statistical sample weighted by project value

Costs and benefits values listed before tender and post construction. Source: Colin Tubb, Performance Monitoring, LTNZ.

Project	SH' or LR'	Project Completion Date	BCR' before	BCR after	BCR change	Benefits before (\$k)	Benefits after (\$k)	Benefit change	Cost before (\$k)	Cost after (\$k)	Cost change
<b>2001-2002</b>											
Kaipataki Link	LR	Dec-99	7.7	9.1	18%	32,358	47,891	48%	5235.0	5266.1	1%
Rosedale Road Realignment	LR	30-Apr-01	4.5	5.9	31%	13,382	13,708	2%	2440.0	2304.0	-6%
Trooper Road North S1	SH	3-Apr-00	4.6	5.1	11%	3,811	3,778	-1%	878.0	738.0	-16%
Caversham Valley Road Stage 1	SH	8-Nov-99	4.0	3.8	-5%	3,005	3,005	0%	837.0	850.7	2%
Waiouru - Utki Passing Lanes	SH	6-Apr-00	5.3	5.0	-6%	4,976	4,976	0%	1,107.0	1,102.9	0%
Whangaehu Hill Construction	SH	22-Jun-00	4.1	4.4	7%	3,823	3,823	0%	1,050.0	1,009.1	-4%
Ponaua Seal Extension	SH	21-Apr-00	1.2	1.1	-8%	1,717	1,717	0%	1,620.0	1,628.3	1%
SH1 Huntly North	SH	12-Jun-01	4.3	7.8	81%	906	2,680	196%	465.0	460.7	-1%
Ngutukaka Realignment SH1	SH	7-Apr-00	4.9	3.4	-31%	8747.1	8747.1	0%	2,030.0	3,222.7	59%
Papanui to Riccarton Cycleway	LR	10-Aug-01	4.4	4.2	-5%	4,035	4,135	2%	930.6	1,265.5	36%
Hills Road Rehabilitation	LR	9-Oct-01	10.5	9.5	-10%	1,903	1,903	0%	666.0	686.0	3%
Sibera Ford - Ferniehurst Deviation	SH	8-May-01	5.4	4.2	-22%	1,0637	1,0637	0%	2,300.0	2,895.4	26%
<b>2002-2003</b>											
Ohaupo Road Underpass	LR	21-Mar-01	5.9	5.6	-5%	4,000	4,000	0%	745.0	781.9	5%
N1 Arterial Road	LR	1-Jun-01	3.3	3.8	15%	10,807	10,807	0%	3,289.0	3,168.2	-4%
Kingseat Road II Franklin District	LR	24-Dec-00	4.7	6.5	38%	2,088	3,298	58%	720.0	692.7	-4%
Khyber Pass Arterial Improvements	LR	1-Jun-01	15.0	15.2	1%	32,731	32,731	0%	2,461.0	2,589.7	5%
AHB Seismic Upgrade	SH	5-Apr-00	16.0	16.0	0%	30,680	30,680	0%	2,350.0	2,350.2	0%
Maisey Rd to Trafalgar Rd Realignment	SH	31-May-99	5.1	7.0	37%	27,408	27,408	0%	5,050.0	5,167.3	2%
Woolston Burwood Expressway Stage 1E	SH	30-Nov-01	4.0	5.5	38%	15,740	14,681	-7%	3,404.3	3,181.7	-7%
Glengarry Hill Realignment	SH	19-Jul-00	6.6	6.3	-5%	10,261	10,261	0%	2,001.1	1,894.0	-5%
Allen Road to Omahu Road	SH	16-Mar-00	4.7	6.9	47%	72,350	72,350	0%	15,300.0	13,366.6	-13%
Omahu Road to York Road	SH	24-Sep-01	5.1	5.0	-2%	7,600	7,600	0%	1,800.0	1,882.1	5%
<b>2003-2004</b>											
Crown Range Road Seal Extension	LR	31-Mar-02	4.3	6.2	44%	17,492	17,492	0%	5,800.0	4,653.0	-20%
Arahura S Kaihinu Realignment	SH	21-Jul-00	6.9	7.8	13%	7,464	7,289	-2%	1,200.0	1,034.0	-14%
Whites Bridge	SH	25-Jul-01	4.2	3.5	-17%	6,244	6,634	6%	2,650.0	3,182.0	20%
Shelly Beach Lane Extension	SH	27-Mar-01	20.0	18.4	-8%	59,783	59,783	0%	3,193.0	3,529.0	11%
Homer Tunnel to Murrells Realignment	SH	7-Jun-00	4.0	3.1	-23%	3,564	3,564	0%	1,191.6	1,462.1	23%
Pauatahanui Bridge Replacement	SH	19-Jun-02	4.0	3.8	-5%	11,809	11,742	-1%	2,980.0	3,083.0	3%
Rakaia-Ashburton Passing Lanes	SH	7-Apr-00	10.3	9.9	-4%	12,705	12,324	-3%	1,213.0	1,219.8	1%
Smoothing 0203 S Wallace Road	LR	12-Jun-03	9.6	20.0	108%	218	218	0%	275.0	273.0	-1%
Smoothing 0203 S Te Ohaki	LR	6-Jun-03	5.2	3.4	-35%	123	123	0%	249.0	262.4	5%
Rimutaka Improvements (see note below)	SH	May-98	0.0	0.0	0%	0	0	0%	1,150.0	2,840.0	147%
<b>2004-2005</b>											
Horopito Curve	SH	20-Dec-02	6.2	6.5	5%	5,305	5,305	0%	870.0	797.0	-8%
Candys to Starvation	SH	20-Jul-01	5.6	4.0	-29%	27,586	27,065	-2%	8,525.0	10,887.0	28%
Construction Projects 02/03 (< \$3M) - Saddle Hill to Mosgiel Four Laning	SH	Sep-03	4.4	5.0	14%	8,074	8,074	0%	1,900.0	1,675.9	-12%
Construction Projects 02/03 (< \$3M) - Green Island Motorway Median Barrier	SH	25-Jul-02	3.3	3.3	0%	3,211	3,211	0%	1,150.0	1,157.0	1%
Tadmore S Glenhope Seal Extension	LR	4-Apr-03	5.3	5.3	0%	4,035	4,035	0%	1,465.0	1,466.0	0%
Awakino Slip - Realignment	SH	23-Mar-01	4.6	4.6	0%	3,420	3,420	0%	5,060.0	3,189.0	-37%
Hawkswood Deviation (SH1)	SH	22-May-01	5.5	6.0	9%	21,231	26,533	25%	5,325.0	5,575.0	5%
Mokau River Bridge (SH3)	SH	21-Sep-01	14.0	16.4	17%	121,420	121,420	0%	9,150.0	7,422.0	-19%
Fairfield Motorway (SH1)	SH	9-Dec-01	3.7	3.3	-11%	50,776	50,776	0%	19,333.0	20,852.0	8%
Jacobs River Approach Realignment (SH6)	SH	20-Dec-01	5.6	5.8	4%	5,976	5,976	0%	1,165.0	1,103.0	-5%
Springbank Road Realignment (SH1)	SH	18-Mar-00	7.0	10.4	49%	10,281	12,807	25%	1,352.0	1,097.0	-19%
Herring Stream and Remnants Bridge Rplacements	LR	17-Dec-03	6.4	6.5	2%	4,833	4,833	0%	835.8	813.6	-3%
Rawhiti Road South Seal Extensor	LR	23-Mar-00	4.1	3.6	-12%	3,893	3,893	0%	1,350.0	1,416.0	5%
Horotiu Bridge Replacement	LR	30-Jun-02	3.7	3.5	-5%	6,826	7,991	17%	2,860.0	3,376.0	18%
South of Lawrences Realignment (SH4)	SH	23-Mar-02	5.3	8.3	57%	5,108	5,108	0%	2,550.0	1,623.0	-36%
Riverlea Road South Safety Improvements (SH1)	SH	15-Aug-01	4.2	13.0	210%	2,447	7,918	224%	680.0	662.0	-3%
Kamo Bypass (SH1)	SH	1-Nov-02	5.0	3.1	-38%	28,486	28,486	0%	6,237.0	9,674.0	55%
<b>2005-2006</b>											
Kapiti Intersection	SH	1-Jun-99	7.0	9.2	31%	19,470	19,510	0%	2,425.0	2,447.0	1%
Patersons to Pouriri Stream Reconstruction	SH	14-Oct-02	4.3	7.4	72%	1,176	1,364	16%	883.0	588.0	-33%
SH25 Te Kouma - Parakarae	SH	4-Aug-01	4.9	45.4	827%	349	349	0%	259.0	328.0	27%
Cobham Drive / Grey St Intersection	SH	Jun-02	4.4	1.3	-70%	4,330	1,598	-63%	1,196.0	1,196.0	0%
Mamaku Bluffs Realignment	SH	Dec-02	4.1	3.9	-5%	12,140	12,809	6%	2,500.0	3,285.0	31%
Airport - Taradale Road Motorway	SH	7-Aug-03	3.1	1.0	-68%	23,729	8,000	-66%	11,352.0	11,841.0	4%
Wainui / Matauri Bay Road Stage II	LR	12-Dec-03	5.0	4.5	-10%	4,247	5,309	25%	1,700.0	2,379.8	40%
Chaselands Highway Seal Extension	LR	7-Apr-05	2.6	3.1	19%	1,494	1,494	0%	681.3	589.7	-13%
Pohokura Forestry Road	LR	Apr-04	99.0	99.0	0%	0	0	0%	740.0	639.1	-14%
Street Light Upgrade 02/03	LR	Jun-03	7.9	11.3	43%	4,566	4,566	0%	651.0	417.0	-36%
Smoothing Projects 2002	LR	30-Jun-03	4.0	4.0	0%	0	0	0%	1,189.5	1,161.1	-2%
Cadrona Valley Bridges	LR	17-Mar-04	8.2	8.2	0%	9,613	9,613	0%	1,295.0	1,232.0	-5%
			448.2	524.3		816389.2	831448.1	2%	171260.2	176931.2	
				Average change	23%					Overall change	3.3%
									Avg cost LR	1687.3	
									Avg cost SH	3537.5	

Notes \*: Local Road (LR), State Highway (SH), Benefot Cost Ratio (BCR)

## Appendix 8.0 Design and constructions standards impact on roading costs.

The analysis is focused upon effects on State Highways with the impact on local roads noted in column 2.

Cost driver	Impact on local roads	Impacts on cost increases 2000–2005	Potential future impacts 2006–2016
<p><b>Induced traffic.</b> Defined as new, longer or shifted time of travel, primarily created by land use changes specifically related to road improvements—for example, longer commutes. Considered a disadvantage if modelled, however most project specific models assume fixed trips. Mitigation of induced traffic is assumed from the application of other strategies including: land use planning controls on urban sprawl, PT provision, and traffic demand management including road pricing.</p>	Some	No change in policy that would explain recent cost increases.	<p>It is critical that:</p> <ul style="list-style-type: none"> <li>• Comprehensive and integrated transport and growth management strategies optimise the balance of road, public transport and traffic demand management investment in appropriate situations.</li> <li>• Induced traffic mitigation measures (PT, TDM etc) are effective in order to deliver the expected benefits of new roads.</li> </ul> <p>Transit NZ advises that systems are in place to achieve these requirements. The cost consequences are high if integrated planning in appropriate and identified situations is not carried out and measures implemented and monitored in a timely fashion.</p>
<p><b>Design speed</b> Higher design speeds create difficulties in avoiding terrain and existing structures. Safety benefits need to continue to be evaluated against the costs.</p> <p>Transit is retrospectively lowering posted speeds in some locations as appropriate for safety reasons.</p>	Some	No change in policy that would explain recent cost increases.	<ul style="list-style-type: none"> <li>• Current process involves assessing at the desirable design standard / guideline, evaluating the best option using Land Transport NZ's PEM, and finally Transit undertaking a review to ensure the project is 'fit for purpose' at an affordable cost.</li> <li>• Project evaluation systems (for example, assessment of marginal costs and benefits of design speed options) are in place to optimise choice of design speed.</li> <li>• It is critical these systems are effective given the potential cost consequences.</li> <li>• Design speed decisions need to be integrated with other transport and land use planning</li> </ul>

Ministerial Advisory Group on Rooding Costs

Cost driver	Impact on local roads	Impacts on cost increases 2000–2005	Potential future impacts 2006–2016
<p><b>Urban design.</b> Higher quality urban environments from the integrated design of buildings, places, spaces, activities, and networks. There has been a steadily increasing awareness of urban design issues.</p>	<p>Yes</p>	<p>Minor Transit NZ administration costs for developing an urban design approach. Minor alterations to some projects.</p>	<p>Costs or savings are heavily scenario-dependent:</p> <ul style="list-style-type: none"> <li>• Greater emphasis on mitigation might result in minor/moderate costs.</li> <li>• Little change to the current approach might result in minor savings.</li> <li>• Greater emphasis on social and environmental sustainability, other modes, and design and land use management might reduce transport needs. Moderate or locally substantial savings might result.</li> </ul>
<p><b>Application of standards</b> Application of generalised standards without specific acceptance of some risk may encourage an over-conservative approach.</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• Standards themselves are not considered a significant issue. Some minor cost increases in recent years.</li> <li>• Flexibility to appropriately apply standards is a cost issue.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible moderate or locally substantial savings from a revised approach to risk management of standards.</li> </ul>
<p><b>Building Act.</b> Bridges and some other structures now included. Increased seismic, concrete durability and compliance administration requirements.</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• New administrative requirements. Some new standards especially seismic design.</li> <li>• Minor administration costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Costs generated by new code requirements and some retrofitting, mainly seismic strengthening.</li> <li>• Generally minor costs, but locally substantial if bridges need replacement.</li> </ul>
<p><b>Pavements.</b> More costly methods needed to meet greater freight traffic demands.</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• Standards have not changed.</li> <li>• Increased heavy vehicle volumes are increasing costs significantly.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased paving costs on some heavily used routes, partially offset by wider use of stabilised materials.</li> <li>• Minor or locally moderate costs.</li> </ul>
<p><b>Other design issues.</b></p> <ul style="list-style-type: none"> <li>• New safety barrier standards require a progressive upgrade as barriers are replaced.</li> <li>• Temporary traffic management for works requiring more planning, vehicles, staff and equipment.</li> </ul>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• New safety barriers and progressive introduction of a new temporary traffic management code.</li> <li>• Potentially inappropriate application of traffic management code on local roads resulting in minor or locally moderate costs.</li> </ul>	<p>As for recent cost increases.</p>

Ministerial Advisory Group on Roothing Costs

Cost driver	Impact on local roads	Impacts on cost increases 2000–2005	Potential future impacts 2006–2016
<b>Land purchase.</b> Current policy is just-in-time purchase, typically starting 3 years prior to construction		<ul style="list-style-type: none"> <li>• No change in land purchase standard or policy that would explain recent cost increases.</li> <li>• Moderate or locally severe costs are due to land cost increases.</li> </ul>	<ul style="list-style-type: none"> <li>• Measures to optimise land purchase costs are being taken.</li> <li>• Savings are inconclusive.</li> </ul>
<b>Noise.</b> There is a steadily increasing awareness of noise issues and pressure for mitigation. Options include quieter pavements, noise barriers, tunnelling or trenching.	Yes	<ul style="list-style-type: none"> <li>• Increasing pressure for mitigation in sensitive areas on new and retrofit projects.</li> <li>• Minor or locally moderate costs.</li> </ul>	<ul style="list-style-type: none"> <li>• As for recent costs, plus possible further effects arising out of new policy.</li> </ul>
<b>Storm water.</b> Separation and treatment of oil etc from major flows into sensitive water bodies. Roothing projects may focus attention on pollution arising from many sources.	Yes	<ul style="list-style-type: none"> <li>• No single change in policy that would explain recent cost increases.</li> <li>• Steadily increasing awareness of air quality issues. With locally minor costs only to date.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing cost risks for new roads increasing in sensitive areas, particularly Auckland.</li> <li>• Retro fitting of road storm water treatment poses a significant cost risk in Auckland, depending on where costs fall.</li> </ul>
<b>Air quality.</b> Cost risk from control of airborne emissions from vehicles. Investigation costs and some risk to project consent approval.		<ul style="list-style-type: none"> <li>• Steadily increasing awareness of air quality issues.</li> <li>• One project consent lost due to air quality and noise issues.</li> <li>• Negligible costs to date.</li> </ul>	<ul style="list-style-type: none"> <li>• Control of emissions from vehicles.</li> <li>• Could become an issue at some hearings.</li> </ul>
<b>Heritage.</b> Impact on route decisions to avoid historical or cultural sites. Requirements to shift structures.		<ul style="list-style-type: none"> <li>• Steadily increasing awareness of heritage issues.</li> <li>• No single change in policy that would explain recent cost increases.</li> <li>• Minor or locally moderate costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Preservation of structures as necessary.</li> <li>• Minor or locally moderate costs.</li> </ul>
<b>'Cascading' of standards.</b> Inappropriate application of Transit standards to local roads.	Yes	<ul style="list-style-type: none"> <li>• Possible over-design of local roads.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible over-design.</li> <li>• Potentially significant at a local level.</li> </ul>

Ministerial Advisory Group on Roding Costs

Cost driver	Impact on local roads	Impacts on cost increases 2000–2005	Potential future impacts 2006–2016
<p><b>Maintenance.</b> Rising pavement costs flow-on into maintenance costs.</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• Costs generated by heavier traffic requiring more substantial pavements.</li> <li>• Moderate or locally severe costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Future pattern of local authority maintenance expenditure.</li> </ul>

## **Appendix 9.0 Measurable objectives and monitoring**

An examination of the Statements of Intent (SOIs) for the Ministry of Transport, Land Transport NZ and Transit NZ for the past 2 years indicates that there were no specific value-for-money objectives in the year ending June 2006, and therefore no monitoring of these. In the year beginning July 2006, there are no value-for-money measures, although a number of activities to investigate value for money are outlined, including this report.

- The Ministry's SOI for 2005–2008 had a strategic objective of improving the effectiveness of the land transport system. Key activities to support this priority included 'identifying costs of transport (including environmental, social and economic externalities) and determining how these should be met'. There was no specific performance measure for value for money.
- The Ministry's SOI for 2006–2009 now has a strategic priority of 'World Class Infrastructure'. Within this is an activity 'to ensure funding of transport represents value for money, reflects policy and is realistic'. This includes advice on rail and specific projects, but also includes a project to 'provide cost–benefit analysis of rules and policy developments to ensure that any changes produce net benefit to the nation'. Reference is also made to the overall Value for Money Review being undertaken by Government, a component of which is this report. There is no specific performance measure relating to these activities, albeit that the Statements of Service Performance are more sophisticated than in the previous year.
- The Transit NZ SOI for 2005–2006 contained goals to forecast benefits for large projects scheduled for completion in that year, and to measure project benefits against forecast benefits. Measures of timeliness and of capital projects completed within expected cost and time parameters were included. The LTMA requires that Transit NZ delivers best value for money in its procurement practices, and Transit NZ has undertaken considerable work on the manner in which it can achieve value for money. However, there was no value-for-money performance objective to be reported on.
- The draft Transit NZ SOI for 2006 contained goals for forecasting benefits of large projects in terms of environmental, social, and economic impacts consistent with Transit NZ's triple bottom-line reporting.
- Land Transport NZ, who is tasked with allocating resources for transport, did not have a value-for-money indicator among its key results in the SOI from the 2005–2006 year. However, in preparation of the SOI for the current year, the Minister highlighted the need for Land Transport NZ to 'continue to illustrate that public expenditure is applied and managed in the most cost effective manner'. The Minister emphasised the need for evidence that robust controls are in place to minimise scope and cost creep. Land Transport NZ in turn indicated that value for money was being addressed through the review of procurement procedures for physical works and professional services and through the strategic policy review of land transport expenditure against value-for-money criteria.

## **Appendix 10.0 Land Transport NZ funding procedure**

Land Transport NZ outlines a six-stage allocation process of allocating funds. This involves formulation of land transport programmes by approved organisations, assessment of these against LTMA requirements, prioritisation of these, preparation of the 10-year programme, funding approval and overall programme monitoring. In assessing projects, Land Transport NZ evaluates each proposal against:

- the seriousness and urgency of the transport issue or problem addressed
- the effectiveness of the proposed solution in dealing with the issue
- the economic efficiency of the proposal.

A qualitative evaluation system is used, whereby each project is evaluated under each of these criteria as high, medium or low. The economic efficiency evaluation takes account of the benefit–cost ratio (BCR) of the project. Land Transport NZ will then prioritise the proposed activities according to the above evaluation, take account of the affordability of the projects and the opportunity to integrate projects to achieve the efficient and effective use of resources. In the case of Auckland Regional Transport Authority (ARTA, this evaluation is provided to Land Transport NZ for all projects for the Auckland region. National (N) funds are allocated on the basis of national priority; Regional (R) funds are allocated on the basis of regional priority; and Crown (C) funds are allocated according to agreed Crown and regional priorities. Land Transport NZ funds investigations into projects as well as the projects themselves.

## **Appendix 11.0 Input Costs - Economic context**

Business and Economic Advice Ltd (BERL) have provided the following advice to the Advisory Group:

'The world is growing fast and this is increasing competition for resources and services, especially energy and oil, steel and freight capacity. Most of these are driven by expansion of China and India. China has been growing this fast for a long time, and will continue to do so. However, there are reported moves within the investment by China to increase their self-sufficiency in key commodities such as steel, and this will tend to ease pressure on production and shipping from suppliers like Australia. There may be some easing in energy prices as the present particular pressure on oil prices due to the stresses between US and Iran ease, but the trend will continue upwards.

New Zealand has been growing strongly for 12 years, and in the last 4 years has been lifting the rate of investment, which will drive future growth and living standards. A key part of the investment is construction, which is taking a step up, and has to compete with other sectors for resources.

The labour market in New Zealand has been increasing supply of labour by bringing people into the labour force from overseas and from mature people not previously participating in the labour force.

The market mechanism to attract more resources is to pay a higher price for them. Construction has been increasing the price it is paying for labour faster than other industries. This is not inflationary, it is a cost of expansion. The expanded workforce will need training and experience to become fully productive.

Inflation is a process where people in the market increase the price of the goods they are selling across the board, in order to recover increased wage costs or costs of inputs. This increase in the price of goods stimulates a wage demand and increase, and so the inflation cycle is set in train, and overall prices increase.

The increases in resource prices (of labour and construction capacity) we are discussing here are purely a consequence of normal operation of a supply curve in a market. If a player in the market requires a higher quantity of supply of construction capacity, and construction labour, it must pay a higher price to bid that capacity and labour away from another use, or employment. This is an increase in relative prices for labour and capacity specific to construction. That capacity and/or labour may presently be employed elsewhere in New Zealand or in another country.

The increased unit costs including the increased margins are likely to be needed to fully service the expanded supply from the growing construction firms. The construction industry is shifting from a subsistence mode, to a fairly vigorous growth mode. This needs capital, and certainty of a future flow of work.

Much of the recent changes in the local components of unit costs are a result of the change to growth. They are a cost of growth that will expand future capacity. Over time they will increase productivity in construction and the economy. Then the costs will moderate at the new, higher and sustainable level.

The overall conclusion is that for the 1980s and 1990s, investment in New Zealand was at a level below that necessary to maintain a reasonable standard of living.

Consequently many components of our capital goods-producing industries, including road construction, have been operating at a subsistence level, with low, but probably unsustainable output prices.

The country and the government have decided to increase their investment rate, and so demand for resources and capacity has increased. This increased investment rate is likely to continue, as the country and the government aim for the standard of living to at least keep pace with the OECD. Therefore the increase in construction activity and costs experienced over the last two or three years is a structural movement to a new, higher level. It is not a cyclical bubble in activity due to a temporary stimulus. This higher level is likely to be maintained, and so unit prices are likely to stay at these higher levels. The rate of price and cost increase will decline as they stabilise at the level needed to sustain the higher rate of activity.

There is a 'cyclical' element in the oil price (affecting diesel and bitumen prices) and easing international pressures will allow it to reduce from the present level. However it is not expected to return to previous, low levels'.

## **Appendix 12.0 Input Costs and Industry Competition**

### **Appendix 12.1 Input cost increases**

**Fuel.** Diesel and petrol contribute 6 to 7 percent of typical project costs. This input cost has increased by 100 percent over the past 5 years leading to a 6.5 percent increase in construction costs. Fuel prices are internationally driven, difficult to predict because of movements in both the global price and the New Zealand exchange rate, and largely unavoidable.

**Hourly labour.** Shortages of skilled labour continue with many companies recruiting internationally. Pay rate increases have been well above general labour inflation. In addition to base wage rates, the overall cost of providing hourly labour has also increased because of improved employment conditions and the increased proportion of overtime rates available in the current buoyant market and as a consequence of increased night-time working.

Hourly labour traditionally accounts for 15 to 20 percent of project costs. Labour cost increases over the period 2001–2006 are estimated at 35 percent with the resulting impact on construction costs of around 6.1 percent.

Looking forward, the additional one week annual leave provision in the Holidays Act to take effect in April 2007 will add a further 2 percent to labour cost. Labour costs including this 2 percent are expected to increase in 2006/07 at similar levels to the average annual increase over the last 5 years.

**Aggregate / quarry products.** Apart from labour and plant, quarry products represent the single largest input to the road supply chain: used directly to form base-course and sub base-course and sealing chip; indirectly as aggregates used in the production of concrete and asphalt; and as structural fill.

Quarry products contribute between 5 and 15 percent of road construction costs. Cost increases over the period 2001–2006 are estimated in a wide range from 18 to 50 percent. Saha International have made the following high level findings:

'By their nature the supply of quarry products operates as a local market, with the cost of transport making up as much as 40–50% of the cost of delivered product. Open access to quarries within close proximity to project sites that can meet Transit NZ specifications is critical to maintaining competitive pricing of road construction and maintenance. For instance, the closure of high quality basalt quarries in Auckland now means that quarry products for Auckland rooding projects are being sourced from greywacke quarries between 30–40 kms south of Auckland. It has also become evident that complying with the current TNZ specifications is becoming increasingly difficult as the nature of the available materials changes ('fine' greywacke material often struggles to meet the TNZ M4 specification without modification).

It is therefore increasingly important that Transit NZ monitors situations where it may be inadvertently limiting the competitiveness of local markets for quarry products through its own specifications (e.g. High PSV aggregate), and its own objections to consent applications by quarry owners under the Resource Management Act (RMA). Similarly, Transit NZ's position on new quarry consent should take into account not only the direct impacts of truck volumes and access on existing roads but also the indirect cost implications for the construction of new roads.

At this stage the ownership of the quarry industry is largely independent of the contractor industry, except in the case of Fletchers with Winstones and small quarry ownership interests by Fulton Hogan and Higgins. Transit NZ should however be alert to any further acquisition of high quality strategically located quarries by contractors as this has the potential to limit upstream competition'.<sup>7</sup>

The overall impact is estimated to be a 4.0 percent increase in overall construction costs over the 5 years 2001 to 2006. Similar cost increases for this input to those experienced on average over the last 5 years are expected to continue in the foreseeable future.

**Salaried staff.** Staff costs make up around 5 to 10 percent of the cost of typical road construction projects. Costs are estimated to have risen by 35 percent over the 5-year period 2001–2006. Demand for construction supervisors and managers far exceeds local supply and international recruitment has been strong over the past three or four years. The impact is estimated to be a 2.8 percent increase in road construction costs. Similar cost increases for this input to those experienced on average over the last 5 years are expected in 2006/07.

**Plant.** Plant costs make up about 16 to 20 percent of road construction input costs. While demand for plant has been strong and significant investment in new plant capacity has taken place, plant hire rates have increased in the range of 10–15 percent over the five-year period 2001–2006. The impact is a 2.2 percent increase in construction costs. Plant cost increases in 2006/07 are expected to be similar to the average in recent years although the effect of movements in the exchange rate will influence the actual increase.

**Contractors' margins** (defined as corporate overhead plus profit). Margins currently make up around 8 to 14 percent of road construction input costs and have increased by 22 percent in the five-year period 2001–2006 as a result of the expanding market demand. The margin range in 2001 is estimated to have been 6 to 12 percent.<sup>8</sup> These margin increases have a weighted impact of a 2.0 percent increase in road construction costs. No further increase in contractors' margins is expected in 2006/07. Buoyant markets rather than a fundamental lack of competition are considered to be more responsible for the margin element of recent cost increases. In recent years Transit NZ has transferred more risk than previously was the case onto contractors. Risk transfer to the party best able to manage the risk is justified, but this comes at the price of increased margins.

**Materials cost** increases such as reinforcing steel and concrete products are less important in the impact on overall road construction costs over the period 2001–2006.

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<sup>7</sup> Saha International Workstream Three Report, 3/8/2006, p3.

<sup>8</sup> The source of information on the 22% contractors' margins increase 2001 – 2006 and contractors' margins 8 to 14% share of supply chain is a personal communication between the Advisory Group Project Manager and Ian Bond, 7 August 2006.

## Appendix 12.2 Other cost factors

The following estimates are sourced from advice to the Advisory Group from Bond Construction Management Ltd.<sup>9</sup>

**Legislative changes and compliance** are estimated on a subjective basis to have had a combined effect of around a 4 percent increase in construction costs over the 5-year period 2001–2006. Costs include resource management requirements for additional works and indirect costs of additional planning, and supervision. The time required to build a road has also lengthened by around 10 percent, which has a material cost impact. While Resource Management Act effects have occurred over the last decade more than half are estimated to have impacted in the last 5 years.

More stringent Occupation Safety and Health requirements have resulted in extra costs with full-time dedicated safety supervisors on all significantly sized projects.

Legislative change and increased professional standards are also driving increases in construction company corporate (offsite) overheads. Examples include increases in professional staff undertaking environmental, quality assurance, health and safety, legal and employment functions.

**Technical, traffic management and stakeholder management standards and Transit NZ own managed costs.** These costs are estimated on a subjective basis to have contributed approximately a total 5 to 6 percent increase to the cost of roading projects over the five-year period 2001–2006. Design standard issues are addressed in further detail in this report's discussion of scope. Also refer to Appendix 10.

- Transit NZ continues to increase its technical standards, including, for example, enhanced safety barrier, seismic, and pavement design. The impact is subjectively estimated to represent a 2.5 percent increase in road construction costs.
- Increased work volumes are in complex urban environments where the majority of road construction work has been located in recent years. This has driven higher, traffic and stakeholder management requirements and night work. The impact is subjectively estimated to represent a 2 to 3 percent increase in road construction costs.
- Urban design requirements are subjectively estimated to have resulted in a 0.5 percent increase in road construction costs.
- Transit NZ's own managed costs include external costs associated with: resource consents, legal advice, audits, partnering processes, value engineering, safety audits, traffic management plans, peer reviews, parallel estimates and stakeholder liaison. The impact is subjectively estimated to represent a 0.25 percent increase in road construction costs.

**Labour productivity.** In very buoyant markets, labour productivity drops. A productivity reduction of 10 to 25 percent from a lesser skilled workforce is not unusual.<sup>10</sup> In New Zealand the problem is reported to have been made worse by the lack of formalised building trade apprenticed training over the last 10–15 years, resulting in both an aging and less skilled workforce. The impact on overall construction costs is estimated at 3 to 4 percent over the five-year period 2001–2006.

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<sup>9</sup> Bond Construction Management Ltd, *ibid*, pp18–21.

<sup>10</sup> Bond Construction Management Ltd, *ibid*, p21.

Actions to minimise future cost increases include involvement by key purchasers such as main contractors, Transit NZ and local government in industry training initiatives.

**Professional services.** Industry experts estimate that professional services providing design and construction monitoring roles have, like other aspects of construction, moved from a highly competitive period to a sellers market. Cost increases are considered likely to have at least followed the general construction cost trend over the last 5 years.

### Appendix 12.3 Supply chain competition discussion<sup>11 12</sup>

**Reinforcing steel** (3.5 percent of an average Transit NZ road construction supply chain). Fletcher Steel and Steel and Tube are the two dominant suppliers using the same original source from NZ Steel. International supply presents a realistic substitute to maintain competition in this market.

**Concrete and concrete pipes** (10 percent of an average Transit NZ road construction supply chain). A national duopoly receiving very comfortable margins exists in cement supply. Import substitution of cement is not a strong economic proposition.<sup>13</sup> Ready mix concrete is a competitive market in Auckland with 30 plants. Pre-cast concrete competition in Auckland is adequate with five main competitors and a number of smaller participants. More competitors in the national concrete pipe market, serviced primarily by Hynds and Humes (Fletcher), would be beneficial. New entrants and/or expansion of existing capacity in all segments of the concrete supply market above would be aided by more certainty of future workflow.

**Asphalt and fuel** (11 percent of an average Transit NZ road construction supply chain). Both Fulton Hogan and Works Infrastructure, the top two asphalt producers, have ownership interests in bitumen distributors controlling 88 percent of total NZ production. Bitumen is commonly imported maintaining a further degree of competition in this market.

**Quarry products** (12 percent of an average Transit NZ road construction supply chain). The Advisory Group understands that sufficient competition exists for aggregate supply in the Auckland region where there are four major quarry operators supplying the Transit NZ road construction sector. Issues of cost increases relate more to the high cost of new development and transport costs due to urban congestion.

**Contractors' margins** (9 percent of an average Transit NZ road construction supply chain). The number of competitors in many parts of the supply chain has reduced in recent years. For example, the withdrawal of Stevensons in 2000 and the Downer and Works merger in 2003 has reduced the number of main contractors. Consolidation of the number of local firms has also been experienced in the United States.<sup>14</sup>

**Other input costs** including other materials, direct plant, Labour and staff are not considered to demonstrate to competition issues of concern.

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<sup>11</sup> Supply chain share data from Bond Construction Management, *ibid*.

<sup>12</sup> Market share assessments from Saha International, *ibid*. Other Commentary from Advisory Group discussions.

<sup>13</sup> Commerce Commission decision reported In Saha International report to Transit 20 June 2006.

<sup>14</sup> *Measures, Markets and Mileposts*, Washington State Department of Transport 31 December 2005.

#### **Appendix 12.4 Procurement improvement initiatives**

The Advisory Group supports the initiatives identified to date by Transit NZ's own Value for Money project.<sup>15</sup> These initiatives focus on maximising the number of well-qualified bidders and include:

- market monitoring to ensure the Commerce Commission appropriately regulates merger and acquisition activity
- facilitation of a well-informed market to encourage bids from existing firms and small firms with growth potential
- market intervention including the prospect of Transit NZ contracting directly for key input supply enabling competitive bids from smaller firms
- design of contract size to avoid unreasonable exclusion of smaller bidders
- reasonable allocation of risk
- packaging of projects on a geographic basis to facilitate local bidders
- contract flexibility for substitute inputs such as pavement stone
- appropriate technical qualification requirements to avoid unreasonable prevention of smaller firms stepping up to complete more complex work
- aligning project timing with supply windows identified by industry monitoring.

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<sup>15</sup> Saha International Ltd, *ibid.*

**Appendix 12.5 Competition monitoring**
**Appendix 12.5.1 Competition monitoring—Transit NZ and local authorities total**
**PHYSICAL WORKS CONTRACTS LET 1 JULY 2004 TO 30 JUNE 2005**

\* Includes all Transit NZ and Local Authority maintenance and construction contracts

REGION	WORK TYPE	Number of Contracts Let	Total Value of Contracts Let (\$000)	Average Value of Contracts Let (\$000)	Average Number of Tenderers	Contracts with Three or More Tenderers (%)	Contracts With Two Tenderers	Contracts With One Tenderer
CENTRAL NI	Area-wide & Rehabilitation	37	21,100	570	3.4	76%	7	2
	Bridge Maintenance	4	3,105	776	3.5	100%	0	0
	Bridge Renewals	2	1,093	547	2.5	50%	1	0
	Construction	21	43,904	2,091	3.3	57%	7	2
	Corridor Maintenance	23	9,798	426	3.0	70%	5	2
	Other	32	50,995	1,594	3.0	59%	12	1
	Pavement Maintenance	17	26,601	1,565	4.0	88%	1	1
	Reseals	14	8,496	607	2.6	57%	6	0
SUMMARY		150	165,092	1,101	3.2	69%	39	8
EAST COAST NI	Area-wide & Rehabilitation	12	7,048	587	1.9	25%	5	4
	Bridge Maintenance	5	5,687	1,137	2.6	60%	1	1
	Bridge Renewals	2	705	352	2.0	0%	2	0
	Construction	8	9,299	1,162	4.6	88%	1	0
	Corridor Maintenance	11	2,991	272	2.6	64%	2	2
	Other	16	83,819	5,239	2.5	44%	7	2
	Pavement Maintenance	6	3,729	622	3.0	50%	1	2
	Reseals	8	5,272	659	3.0	75%	2	0
SUMMARY		68	118,550	1,743	2.8	53%	21	11
NORTH NI	Area-wide & Rehabilitation	16	12,393	775	2.6	25%	8	4
	Bridge Maintenance	8	9,021	1,128	3.6	75%	2	0
	Bridge Renewals	4	2,268	567	3.0	50%	0	2
	Construction	14	16,703	1,193	2.9	57%	3	3
	Corridor Maintenance	11	2,065	188	4.2	82%	1	1
	Other	26	158,208	6,085	3.3	62%	7	3
	Pavement Maintenance	11	27,870	2,534	3.5	82%	2	0
	Reseals	3	1,181	394	3.0	67%	1	0
SUMMARY		93	229,709	2,470	3.3	60%	24	13
SOUTH ISLAND	Area-wide & Rehabilitation	35	16,500	471	2.6	57%	11	4
	Bridge Maintenance	11	10,183	926	3.4	55%	4	1
	Bridge Renewals	2	1,135	567	2.5	50%	0	1
	Construction	30	12,030	401	3.1	63%	6	5
	Corridor Maintenance	22	12,688	577	2.6	41%	12	1
	Other	45	85,593	1,902	2.8	60%	12	6
	Pavement Maintenance	23	68,368	2,973	2.7	70%	5	2
	Reseals	29	21,286	734	2.4	34%	17	2
SUMMARY		197	227,782	1,156	2.8	55%	67	22
SOUTH NI	Area-wide & Rehabilitation	19	12,489	657	2.4	53%	3	6
	Bridge Maintenance	23	61,533	2,675	2.7	52%	5	6
	Bridge Renewals	2	641	320	3.0	100%	0	0
	Construction	30	30,428	1,014	2.5	43%	10	7
	Corridor Maintenance	22	24,285	1,104	2.1	41%	4	9
	Other	47	49,089	1,044	2.3	36%	18	12
	Pavement Maintenance	11	11,794	1,072	2.3	45%	2	4
	Reseals	5	5,453	1,091	2.0	0%	5	0
SUMMARY		159	195,713	1,231	2.4	43%	47	44
<b>NATIONAL SUMMARY (Year to 30 June 2005)</b>		<b>667</b>	<b>936,845</b>	<b>1,405</b>	<b>2.8</b>	<b>56%</b>	<b>198</b>	<b>98</b>
Previous Summary (Year to 30 June 2004)		757	705,387	932	3.2	65%	185	77
Previous Summary (Year to 30 June 2003)		708	572,031	808	3.3	66%	183	60
Previous Summary (Year to 30 June 2002)		848	532,278	628	3.7	72%	177	57
Previous Summary (Year to 30 June 2001)		915	714,770	781	3.9	77%	172	38
Previous Summary (Year to 30 June 2000)		1050	589,887	562	4.2	81%	153	43
Previous Summary (Year to 30 June 1999)		1037	687,471	663	4.7	87%	107	23
Previous Summary (Year to 30 June 1998)		1144	519,757	454	4.7	87%	110	41
Previous Summary (Year to 30 June 1997)		1108	513,564	464	4.3	86%	116	39
Previous Summary (Year to 30 June 1996)		1118	414,943	371	4.1	83%	146	37

SOURCE: LTNZ file: ANA\_Multiple\_All Market Share 0405\_20020618\_Colin Tubb\_National\_DO.xls

**Appendix 12.5.2 Competition monitoring—Transit NZ**  
**COMPETITION MONITORING - PHYSICAL WORKS CONTRACTS**  
**SH CONTRACTS LET - 1 July 2004 to 30 June 2005**

REGION	WORK TYPE	Number of Contracts Let	Total Value of Contracts Let (\$000)	Average Value of Contracts Let (\$000)	Average Number of Tenderers	Contracts with Three or More Tenderers (%)	Contracts With Two Tenderers	Contracts With One Tenderer
CENTRAL NI	Area-wide & Rehabilitation	3	3,938	1,313	2.7	33%	2	0
	Bridge Maintenance	1	523	523	1.0	0%	0	1
	Construction	4	24,260	6,065	2.3	50%	1	1
	Corridor Maintenance	11	12,464	1,133	2.9	55%	4	1
	Other	14	4,772	341	2.6	43%	8	0
	Pavement Maintenance	6	16,004	2,667	3.3	83%	1	0
SUMMARY		39	61,961	1,589	2.7	51%	16	3
EAST COAST NI	Area-wide & Rehabilitation	1	2,688	2,688	2.0	0%	1	0
	Bridge Maintenance	2	478	239	2.0	0%	2	0
	Corridor Maintenance	7	8,692	1,242	4.1	86%	1	0
	Other	1	51	51	4.0	100%	0	0
	Pavement Maintenance	3	61,275	20,425	1.7	0%	2	1
	Reseals	1	1,833	1,833	1.0	0%	0	1
SUMMARY		18	76,374	4,243	2.9	50%	6	3
NORTH NI	Area-wide & Rehabilitation	1	1,098	1,098	5.0	100%	0	0
	Bridge Maintenance	4	3,143	786	2.8	25%	2	1
	Construction	6	6,072	1,012	1.8	33%	0	4
	Corridor Maintenance	2	2,816	1,408	1.5	0%	1	1
	Other	3	654	218	4.0	67%	1	0
	Reseals	1	1,184	1,184	2.0	0%	1	0
SUMMARY		17	14,967	880	2.6	35%	5	6
SOUTH ISLAND	Area-wide & Rehabilitation	15	10,571	705	2.6	53%	4	3
	Bridge Maintenance	5	939	188	2.4	40%	3	0
	Construction	21	12,845	612	2.5	48%	6	5
	Corridor Maintenance	14	6,918	494	2.8	50%	6	1
	Other	22	7,657	348	2.5	59%	5	4
	Pavement Maintenance	11	86,147	7,832	2.3	36%	6	1
	Reseals	9	10,039	1,115	2.2	22%	7	0
SUMMARY		97	135,117	1,393	2.5	47%	37	14
SOUTH NI	Area-wide & Rehabilitation	2	2,667	1,334	3.0	100%	0	0
	Bridge Maintenance	8	2,132	266	2.3	50%	1	3
	Construction	18	83,200	4,622	2.9	72%	3	2
	Corridor Maintenance	5	1,484	297	2.0	20%	3	1
	Other	11	6,275	570	2.6	36%	6	1
	Pavement Maintenance	2	5,944	2,972	3.0	100%	0	0
	Reseals	4	4,168	1,042	2.0	0%	4	0
SUMMARY		50	105,870	2,117	2.6	52%	17	7
<b>NATIONAL SUMMARY (Year to 30 June 2005)</b>		<b>221</b>	<b>394,290</b>	<b>1,784</b>	<b>2.6</b>	<b>48%</b>	<b>81</b>	<b>33</b>

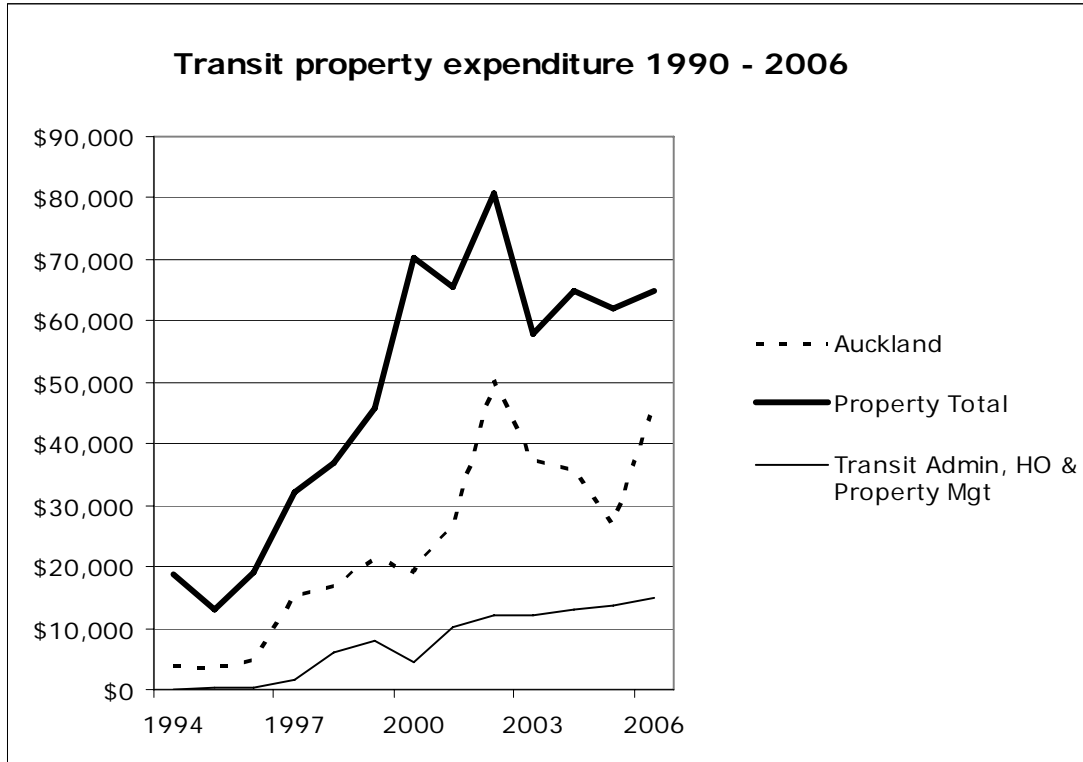
## Ministerial Advisory Group on Roading Costs

**Appendix 12.5.3 Competition monitoring—local authority**
**COMPETITION MONITORING - PHYSICAL WORKS CONTRACTS**
**LA CONTRACTS LET - 1 July 2004 to 30 June 2005**

REGION	WORK TYPE	Number of Contracts Let	Total Value of Contracts Let (\$000)	Average Value of Contracts Let (\$000)	Average Number of Tenderers	Contracts with Three or More Tenderers (%)	Contracts With Two Tenderers	Contracts With One Tenderer
CENTRAL NI	Area-wide & Rehabilitation	34	14,822	436	3.6	85%	4	0
	Bridge Maintenance	3	661	220	2.3	67%	0	1
	Bridge Renewals	2	516	258	4.0	50%	1	0
	Construction	17	14,143	832	3.6	82%	3	0
	Corridor Maintenance	14	12,053	861	3.2	57%	4	2
	Other	19	7,763	409	3.0	68%	5	1
	Pavement Maintenance	12	40,965	3,414	4.1	92%	1	0
	Reseals	14	19,992	1,428	3.9	93%	0	1
	SUMMARY		114	110,342	968	3.5	80%	17
EAST COAST NI	Area-wide & Rehabilitation	11	5,614	510	2.5	45%	6	0
	Bridge Maintenance	3	943	314	1.0	0%	0	3
	Bridge Renewals	2	206	103	2.0	50%	0	1
	Construction	8	7,486	936	2.6	63%	2	1
	Corridor Maintenance	4	2,116	529	4.0	50%	2	0
	Other	12	3,616	301	2.4	50%	4	2
	Pavement Maintenance	3	13,642	4,547	2.3	33%	2	0
	Reseals	7	7,163	1,023	2.4	43%	3	1
	SUMMARY		50	40,785	816	2.5	46%	19
NORTH NI	Area-wide & Rehabilitation	15	14,352	957	3.1	60%	6	0
	Bridge Maintenance	4	346	86	2.3	25%	1	2
	Bridge Renewals	4	600	150	3.3	50%	1	1
	Construction	8	9,345	1,168	4.0	88%	1	0
	Corridor Maintenance	9	9,452	1,050	3.1	56%	3	1
	Other	25	20,026	801	3.9	72%	5	2
	Pavement Maintenance	11	140,103	12,737	2.9	64%	3	1
	Reseals	2	21,092	10,546	3.5	100%	0	0
	SUMMARY		78	215,316	2,760	3.4	65%	20
SOUTH ISLAND	Area-wide & Rehabilitation	20	10,979	549	3.2	80%	3	1
	Bridge Maintenance	6	880	147	2.5	33%	4	0
	Bridge Renewals	2	913	456	4.0	100%	0	0
	Construction	9	2,820	313	3.7	78%	1	1
	Corridor Maintenance	8	4,237	530	3.8	63%	2	1
	Other	23	13,148	572	3.0	61%	8	1
	Pavement Maintenance	12	45,340	3,778	3.2	75%	2	1
	Reseals	20	16,025	801	2.7	50%	9	1
	SUMMARY		100	94,343	943	3.1	65%	29
SOUTH NI	Area-wide & Rehabilitation	17	12,221	719	2.7	59%	4	3
	Bridge Maintenance	15	2,894	193	2.6	40%	6	3
	Bridge Renewals	2	721	360	2.0	50%	0	1
	Construction	12	3,244	270	2.1	25%	3	6
	Corridor Maintenance	17	23,921	1,407	2.4	47%	4	5
	Other	38	14,866	391	2.2	32%	11	15
	Pavement Maintenance	9	24,215	2,691	2.2	33%	4	2
	Reseals	11	11,539	1,049	2.1	36%	3	4
	SUMMARY		121	93,622	774	2.3	39%	35
<b>NATIONAL SUMMARY (Year to 30 June 2005)</b>		<b>463</b>	<b>554,408</b>	<b>1,197</b>	<b>3.0</b>	<b>60%</b>	<b>120</b>	<b>65</b>
Previous Summary (Year to 30 June 2004)		503	318,066	632	3.3	64%	126	52
Previous Summary (Year to 30 June 2003)		518	385,756	745	3.5	69%	126	36
Previous Summary (Year to 30 June 2002)		625	292,554	468	3.8	75%	123	36
Previous Summary (Year to 30 June 2001)		698	430,746	617	4.0	79%	117	28
Previous Summary (Year to 30 June 2000)		700	275,947	394	4.2	82%	101	26
Previous Summary (Year to 30 June 1999)		711	381,156	536	4.8	88%	74	14
Previous Summary (Year to 30 June 1998)		797	337,256	423	4.8	87%	75	28
Previous Summary (Year to 30 June 1997)		779	275,053	353	4.5	88%	78	19
Previous Summary (Year to 30 June 1996)		771	258,580	335	4.2	85%	90	25

**Appendix 13.0 Land Costs**

**Appendix 13.1 Transit NZ property expenditure 1999–2006**



**Appendix 13.2 Annual average increase in median dwelling sale price—Auckland district**

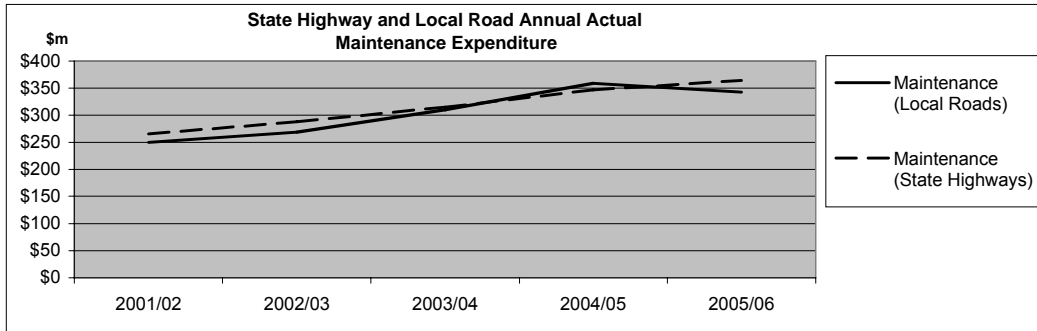
Real Estate Institute of NZ  
Dwellings, median sales price in the Auckland District

Date	Median	5-year increase	Average annual increase over five years
Jun-96	\$ 146,000		
Jun-01	\$ 177,000	21%	4%
Jun-06	\$ 310,000	75%	15%

**Appendix 14.0 Maintenance data and discussion**

**Appendix 14.1 Annual state highway and local road maintenance expenditure 2001/02 to 2005/06**

Annual growth in State Highway expenditure, averaging 9 percent per annum since 2001/02, has matched growth in heavy commercial vehicles shown in Appendix 14.2.



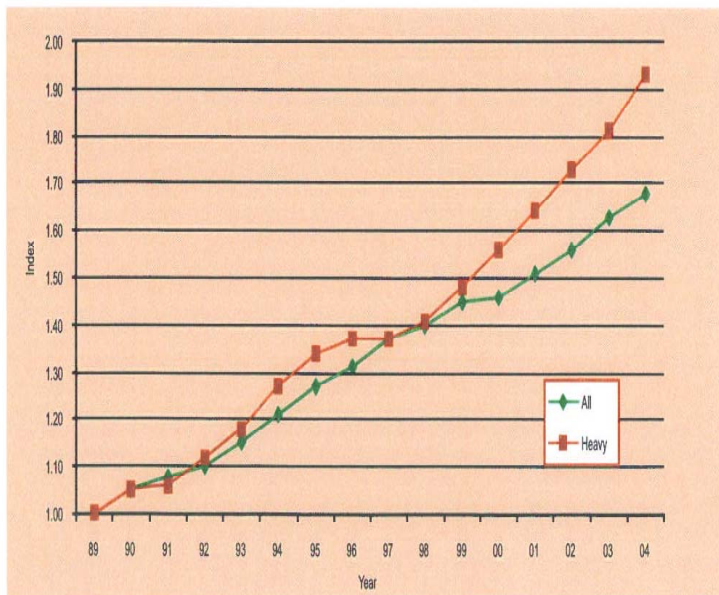
Maintenance (Local Roads) Total % increase 2000/01 - 2005/06 and average annual increase	37%	9%
Maintenance (State Highways) Total % increase 2000/01 - 2005/06 and average annual increase	37%	9%

Source: LTNZ file: ANA\_Land Transport\_NLTP (1991-2006)\_Special\_20021209\_Nick\_Hunter\_National\_DO.xls

**Appendix 14.2 Annual traffic growth on state highways**

Annual growth in Heavy Vehicles since 2000 has averaged 9 percent per annum.

Traffic Growth on State Highways



Source: National Roothing Maintenance Cost Overview, Report to Ministerial Advisory Group, Opus International, June 2006, p6.

**Appendix 14.3 Maintenance costs 2001–2005. Average change in annual expenditure, unit rates and achievement (work completed) for both state highways and local roads**

Analysis of state highway and local road maintenance expenditure levels shows recent increases have been around inflation levels for all activities other than area-wide pavement treatment, which has experienced very significant increases.

Source: National Roading Maintenance Cost Executive Summary. Opus International Consultants, 2006

<b>Structural Maintenance Activity</b>	<b>Average Annual Change in State Highway Network Expenditure 2000-2005</b>	<b>Average Annual Change in State Highway Unit Rates 2000-2005</b>	<b>Average Annual State Highway Activity Achievement</b>	<b>Average Annual Change in Local Authority Network Expenditure 2000-2005</b>	<b>Average Annual Change in Local Authority Unit Rates 2000-2005</b>	<b>Average Annual Local Authority Activity Achievement</b>
General Pavement Maintenance	+1.5%	N/A	Decrease	+2.7%	N/A	Unknown
Maintenance Reseals	+1.6% (4.8% over the last 4 years)	+2.4%	Static at approximately 14% of network length	+4.7%	+4.9%	Static at approximately 8% of network length.
Pavement Smoothing	-3.0%	N/A	Decrease	+1.5%	N/A	Decrease
Area-wide Pavement Treatment	+26.8% (Includes AC surfaces and pavements)	<b>+31%</b>	Static at approximately 2% of the network length	<b>+13%</b>	+19.2% (Includes Urban AC pavements)	Static at approximately 1% of the network length
Background average annual CPI	+2.5%					