New Zealand Transport Agency

Road Maintenance Task Force

Better Asset Management, Planning and Delivery

Quality Record Sheet

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New Zealand Transportation Agency

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1.1 Project Scope and Executive Summary

This report provides a summary of research investigation and Technical Working Group consideration of the Road Maintenance Task Force: Better Asset Management, Planning and Delivery.

The Road Maintenance Task Force's challenge is to consider the hypothesis:

***"If** … we (the sector) ensure that all road network management units are making sound road asset management decisions then the above action will lead to an improvement in efficiency, effectiveness and whole of life value for money in delivery of road maintenance operations and renewals"*

The problem definition statement: Currently there is a perception that there is an asset management capacity and capability gap within the sector so sub-optimal programmes are being delivered.

This research report, incorporating results of the 2011/12 NZ Road Maintenance Task Force Stakeholder Survey, and feedback from the Technical Working Group, seeks to address the hypothesis and problem definition statement.

1.2 Key Findings

The key findings of the research report illustrate the opportunities for improvement that have been identified throughout the report, they relate to:

1. Current Practice
2. Target Practice
3. Performance Management
4. Policy Implications
5. Gains and Benefits
6. Asset Management Skills

1.3 Recommendations

Asset Management Practice provides a process for determine 'what is required, how it will be provided, and how it will be funded'. Over time AM practice has improved to analyse these issues thoroughly. AM practice in New Zealand is well-developed and generally adequate to support organisation's long term plans.

Asset Management can further provide benefits and service delivery optimisation as greater savings are sought if the appropriate environment for improvement is established.

The key findings indicate the AM process should include a greater cognisance of the economic context that planning occurs within, that a wider range of scenarios should be considered and that greater direction is needed to produce integrated results.

In order to progress the actions proposed the following recommendations should be considered by the Research Topic Team and Technical Working Group.

Recommendation One: Prepare guidance documentation to direct and integrate Regional Planning and RCA AM Practice

This links with finding 2b
There is a need for joined-up planning which reflects Strategic-Tactical-Operational and National-Regional-Local continuums with impacts within the immediate planning horizon.

This recommendation is also associated with findings:
3b Integrated Performance management requires an alignment of objectives and horizons
(immediate impact horizon)
4a AM practices need to acknowledge the capital expenditure context and need to integrate with longer term programmes
(immediate impact horizon)
4b The three year GPS is ratified after Council LTPs are adopted, this creates disconnects for Council financial strategies and causes Elected Representatives to approve financial forecasts that contain a degree of uncertainty
(medium impact horizon)
5e Asset Managers should acknowledge the long term fiscal tensions – there is no business-as-usual scenario
(immediate impact horizon)

Recommendation Two: Incentivise the development of options and trade-offs through AM Practice

This links with finding 2d
There is a need to develop options and consider trade-offs as part of the AM process with impacts expected in the medium horizon

Recommendation Three: Encourage and provide leadership to enable study teams and technical working parties to identify and implement more efficient and effective maintenance practices

This links with finding 2l
A step change in maintenance is sought by Technical Working Group (re-thinking maintenance) as well as continuing incremental innovation', which is expected to impact in the medium horizon

Recommendation Four: Seek Improvements in AM Practice

This recommendation links with findings 6a, 6b and 6c as follows:
6a Asset Management Peer Audits could be used to improve the standard of AM Practice
(medium impact horizon)
6b There is scope for Regional clusters, workshops for peer mentoring, shared services and greater skills transfer
(immediate impact horizon)
6c Documentation of appropriate practice case studies will provide reinforcement for those performing well and guidance for others
(immediate impact horizon)

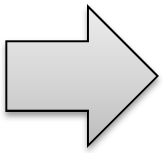
2.0 INTRODUCTION

2.1 The Road Maintenance Task Force's Challenge

The Road Maintenance Task Force's challenge is to consider the hypothesis:

"If … we (the sector) ensure that all road network management units are making sound road asset management decisions then the above action will lead to an improvement in efficiency, effectiveness and whole of life value for money in delivery of road maintenance operations and renewals"

Figure 2.1: Sound Asset Management Decisions

Action		**Result**	**Indicator**	**Evidence**: *Assets and Service Performance*
Sound AM Decisions		*Improved Efficiency*	*How well the proposed solution maximises the value of what is proposed from the resources used*	*Benefit Cost* *Above average against benchmarking*
		Improved Effectiveness	*Contribution that the proposed solution makes to delivering the potential identified in the strategic fit assessment*	
		Whole of life value for money	Savings in the long term when compared to regime without AM	

Effectiveness and efficiency are consistent with NZTA's Investment and Revenue Strategy, which also adds the 'strategic fit' criteria. Strategic fit is described as *Link to GPS impacts an identified problem, issue or opportunity aligns with the NZTA's strategic investment direction.*

The understanding of what whole of life means is based on NZTA's Investment and Revenue Strategy.

A whole of life assessment considers the social environmental, cultural and economic impacts of the outputs, any on-going maintenance and operational costs of the asset or service, and costs associated with its disposal.

A range of assets will exhibit a range of lives, meaning whole of life analysis is complex when combining assets, so an output based approach is suggested. Preliminary discussions suggest twenty-five years should be used as a default period for this assessment, as this includes:

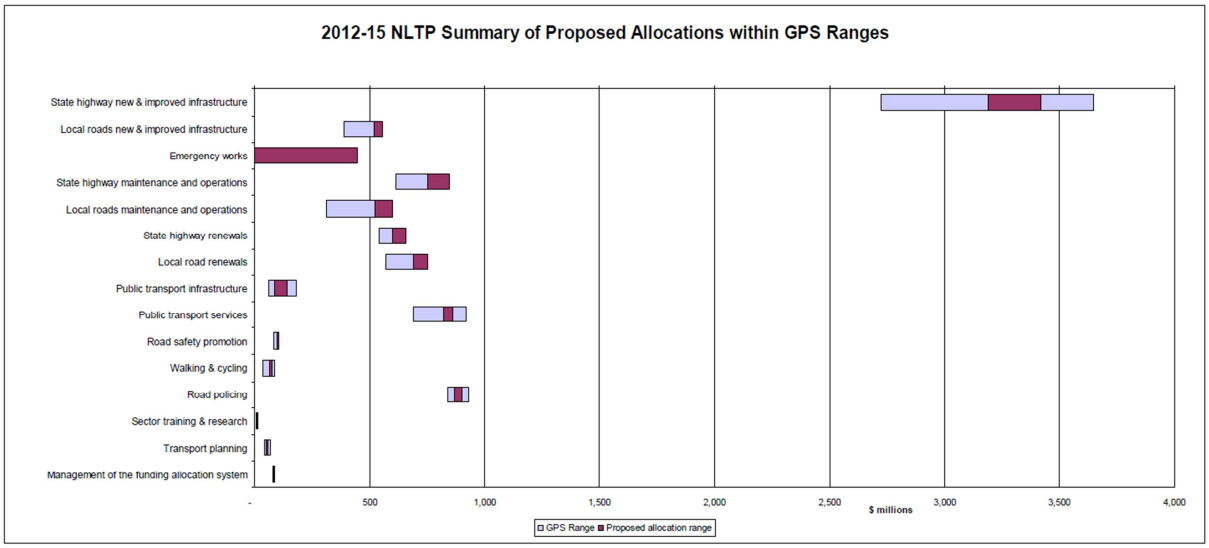
- Planning beyond Council's Long Term Plan framework
- A period of at least one surfacing lifecycle
- Consideration of intergenerational equity

It should be noted that if outcome based assessment is undertaken then the objectives for those outcomes should also span a long term. This identifies the role of strategic planning documents that provide direction to high level outcomes beyond the tactical planning (AMP) horizon.

An underpinning objective of the task force is to identify opportunities for savings, and specific questions have been asked of the industry as to where savings may be found.

Currently central government has placed a high priority on actions that encourage and support economic growth, while operating in a restrained global economy. The on-going Roads of Economic Significance (RoNS) programme illustrates this approach.

Figure 2.2: NLTP Proportional Spend



This spend-priority affects maintenance and savings are sought.

As the majority of Road Controlling Authorities (RCA) are Territorial Local Authorities, much of the Asset Management undertaken is directed by Local Government drivers including the Local Government Act 2002 (and amendments) framework. Local authorities have 'powers of general competence' that enables then to ascertain community outcomes and undertake planning and programmes that seek to achieve the wants of needs of their community.

The Land Transport Management Act 2003 (and amendments) provides specific direction to all RCAs (or Approved Organisations) as to the management of transportation infrastructure and serves along with the regime for central government funding.

In line with the philosophy of both pieces of key legislation, guidance is provided to RCAs but NZTA does not specifically direct them on how to undertake Asset Management Planning or manage their networks. This means differing levels of service may be developed across the country and the mechanism for delivering programmes and monitoring the impact of those programmes varies. In turn this often causes some tension as the expectations of RCAs is for NZTA to accept and support the levels of service and delivery methodologies they have developed.

Asset Management (AM) practice provides the platform for long-term planning across strategic, tactical and operational levels. "Joined up" planning that considers the drivers of central and local government is essential to demonstrate that outcomes are targeted and appropriate programmes are in place to deliver those outcomes.

New Zealand has an international reputation in the Asset Management sector and has provided considerable leadership in the transportation activity. Much of the practice to date has been to ascertain and develop programmes in a robust manner and secure local government funding (rates) and central government funding (NZTA financial assistance) at the level deemed necessary.

Transportation Asset Managers are often cautious to offer alternatives approaches or savings. This limits the value of the AM process as discussion in Asset/Activity Management Plans (AMP) on options is rare.

In developing AMPs, Asset Managers are aware that they will be competing for funding from their own community (ratepayers) and from NZTA. At a local level the community has a wide portfolio of activities and desires and NZTA has similar tensions both across the country and with the priority of new projects against maintenance and renewal works.

Therefore it should be acknowledged that AMPs and Council's Long Terms Plans will reflect the best argument an Asset Manager can offer for their objectives and programmes.

NZTA provides financial assistance to RCAs as part of Network and Asset Management (Work Category 151) or Activity Management Planning (Work Category 003).

NZTA's Planning and Investment Knowledge base provides some guidance on Activity Management Planning (see Section 5.0), which is consistent with Local Government practice.

Looking forward, it is likely central government funding will continue to be restrained by the global economic context and the full hypothecation model for transportation funding. This is expected to have a significant impact on all Road Controlling Authorities as they seek to balance the Levels of service their stakeholder's desire with the funding available.

A step-change or a path for incremental improvement is sought by the Task Force to enable greater benefits from sound asset management and decision making.

2.2 AM – Why Do It?

2.2.1 What is Asset Management?

Asset Management is
The systematic and coordinated activities and practices of an organisation to optimally and sustainably deliver on its objectives through cost-effective lifecycle management of assets.
(IIMM, 2011)

Observations:

- In order to be effective, the objectives should be clearly spelt out and with appropriate planning horizons
- There will be more than one organisation associated with the AM process, and objectives of stakeholders are likely to be in tension as their priorities vary
- Where the objective horizons are shorter than the planning period inconsistencies and uncertainty is likely

The goal of asset management is:
To meet the required level of service, in the most cost effective manner, through the management of assets for present and future customers.
(IIMM, 2011)

There is an expectation that the core areas of AM will be covered to an appropriate level in every organisation's AMP

These areas are:

- *Providing a defined level of service and monitoring performance*
- *Managing the impact of growth through demand management and infrastructure investment*
- *Taking a lifecycle approach to developing cost effective management strategies for the long term that meet that meet that defined level of service*
- *Identifying, assessing and appropriately controlling risks*
- *Having a long term financial plan*
  (IIMM, 2011)

These core areas have been assessed through AMP reviews and the 2011 Task Force Survey, where the discussion on these core areas was derived from the International Infrastructure Management Manual.

In addition to these core areas, the 2011 IIMM placed a greater emphasis on the strategic context and asset management policy. In Australia the AM Policy is central to an organisation's AM Practice, whereas in NZ it is less common.

Appropriate practice also directed by the Office of the Auditor General through Audits of TLAs (Local Govt Act compliance)

2.2.2 The Benefits of AM

The OAG 2010 Asset Management for Public Entities identified AM essentials:

- Planned approach
- Integrated with other planning, considering funding sources and available finance
- Reliant on good quality data and well operated data systems
- Clear levels of service
- Comprehensive lifecycle asset management strategies
- Clear service delivery arrangements
- Demand needs understood
- Risks recognised and managed
- Financial forecasts are complete and inform choices
- Planned and monitored improvements

(Source OAG 2010 Asset Management for Public Entities)

As AM Practice develops there is an expectation that financial forecasts will provide a range of options and associated sensitivity analysis. This drives AMPs to provide a discussion on the trade-off options available, rather than a supporting document for a budget bid.

It is generally accepted that there are tangible benefits from improved asset management; the IIMM states these as being:

- *Strong Governance and Accountability*
- *More Sustainable Decisions*
- *Enhanced Customer Service*
- *Effective Risk Management*
- *Improved Financial Efficiencies*

(Source: IIMM 2011)

The transfer of improved financial efficiencies into real savings is frequently challenged where AM is used to support increases in costs.

This report does not seek to determine if such increases in costs over the last decade or more are due to AM practice or other cost drivers, or may be dealing with backlog given the current priority on CAPEX.

The OAG in 2010 stated *AM as being important because:*

- *Many public services rely on assets to support their delivery*
- *Assets represent a significant investment by New Zealanders that need to be protected*
- *Assets are often taken for granted until they fail*

(Source OAG 2010 Asset Management for Public Entities)

AM has provided certainty to NZTA that the funds invested on behalf of the Minister of Transport are being effectively spent and that with other audit processes in place, appropriately audited. Accordingly the expectations of NZTA Staff have also driven the practices employed.

2.3 What Does Good Practice Look Like?

2.3.1 Overview

Best practice is often referred to and is the goal of many organisations; those with a thorough understanding of their context will develop a strategy driven approach with an objective of determining and targeting best appropriate practice. Best appropriate practice considers the organisation's needs and tailors an approach that is 'fit for purpose'; accordingly the AM Practice itself is optimised.

Over the last decade in times of a more buoyant economy, AM practice was striving to meet higher standards and influencing organisations including the Office of the Auditor General and NZTA regularly signalled that improvement was expected. 'Raising the bar' and mandatory use of optimised decision making tools were an expectation and many organisations had large improvement plans in mind to eventually reach an advanced level of AM sophistication.

The IIMM represents a toolbox of good practice, the extent to be used should be determined by an organisation to ensure its approach is suitably robust without 'overshooting' and investing in AM practices that provide little benefit.

This report acknowledged that applied appropriately the IIMM is the accepted guidance to AM generally and Transportation AM in NZ specifically.

The alignment throughout strategic, tactical and operational planning has become more mature over time and a combination of top-down (strategy driven) and bottom-up (needs and budgets) approaches are employed in the AM process.

2.3.2 The Role of AMPs

An AM Plan is a written explanation of intended AM programmes for management of infrastructure assets based on the organisations understanding of service level requirements and the networks capability to meet those requirements.

Typically AM plans are built from the ground up considering the main components of AM to determine the management programme required.

These programmes in turn form the basis of the funding requested of a local authorities residents (rates), NZTA (subsidies) and road users for specific services (fees and charges). Programmes detail the Operations & Maintenance, Renewal and Improvement (New Capex) requirements deemed necessary by each organisation and the implementation approach that is proposed for the programmes.

Given its role in 'demonstrating the need', AMPs are central to appropriate AM Practice, and it is reasonable to regard the AM plan as the indicator of the quality of AM practice.

The 2011 IIMM (and it predecessors) discusses the need to match the level of complexity with an organisation's corporate needs (IIMM 2011 2.1.3).

Differences in the levels of complexity are expected across the country for a range of reasons and these are expected to play out through the AMP Reviews undertaken in 2008 and the 20011/12 survey.

Observations to date indicate some organisations may have good practice processes in place, but demonstrate them poorly through AMP.

2.3.3 Integrated Planning and Solutions

To be most effective, organisations cannot operate in isolation. Transportation services are not limited by Local Authority Boundaries or NZTA and Local Authority delegations.

Joined-up planning that encompasses national, regional and local drivers along with joint management across organisations should be clearly demonstrated. Tensions are likely to exist, and these should be worked through the AM process.

2.3.4 AM Information Systems

AM information systems exist to support and facilitate good decisions. New Zealand has a well-developed suite of systems and asset data collection has been undertaken for many years. The combination of relevant software and robust data provides an excellent foundation for asset management and is the envy of Transportation Asset Managers from other parts of the world.

RAMM provides a range of services to Asset Managers, Network Managers and NZTA. For most organisations its use is adequate if not thorough for its purposes.

The use of DTIMS is increasing and assisting Asset Managers with good decision making. Greater use of models to test alternative strategies will maximise the benefits of a well-developed model and should be encouraged. Calibrating models to align with an Engineers preferred option should be discouraged as this negates the benefits of the model itself.

The use of AM Information systems rather than the systems themselves is an indicator of good practice.

2.4 Definitions

The following definitions of Transport Planning and Maintenance and Operations from the Government Policy Statement on Land Transport Funding (July 2011) have been used throughout this report.

Transport Planning	Activities related to managing and delivering transport planning to improve network, service or asset management plans in response to significant changes in transport demand.
Maintenance and Operation of Local Roads	Activities related to managing and delivering local road maintenance and operations. Maintenance activities are for managing the physical condition of assets that is appropriate to the level of use. Operation activities are for managing demand and running services to optimise utilisation across networks. Emergency reinstatement for immediate responses to loss of service is included in this activity class.

3.0 ANALYSIS OF CURRENT ROAD NETWORK AM PRACTICE

Ascertained through 2008 AMP reviews, 2011/12 NZ Road Maintenance Task Force Stakeholder Survey and comments from the Office of the Auditor General.

3.1 2008 AMP Review (GHD)

In 2008 Land Transport New Zealand (LTNZ) engaged GHD Ltd to undertake an assessment of the standard of Asset Management Plans used across the transportation sector. The assessment utilised an AM assessment tool developed by LTNZ and MWH.

Extracts from the review along with our observations follow.

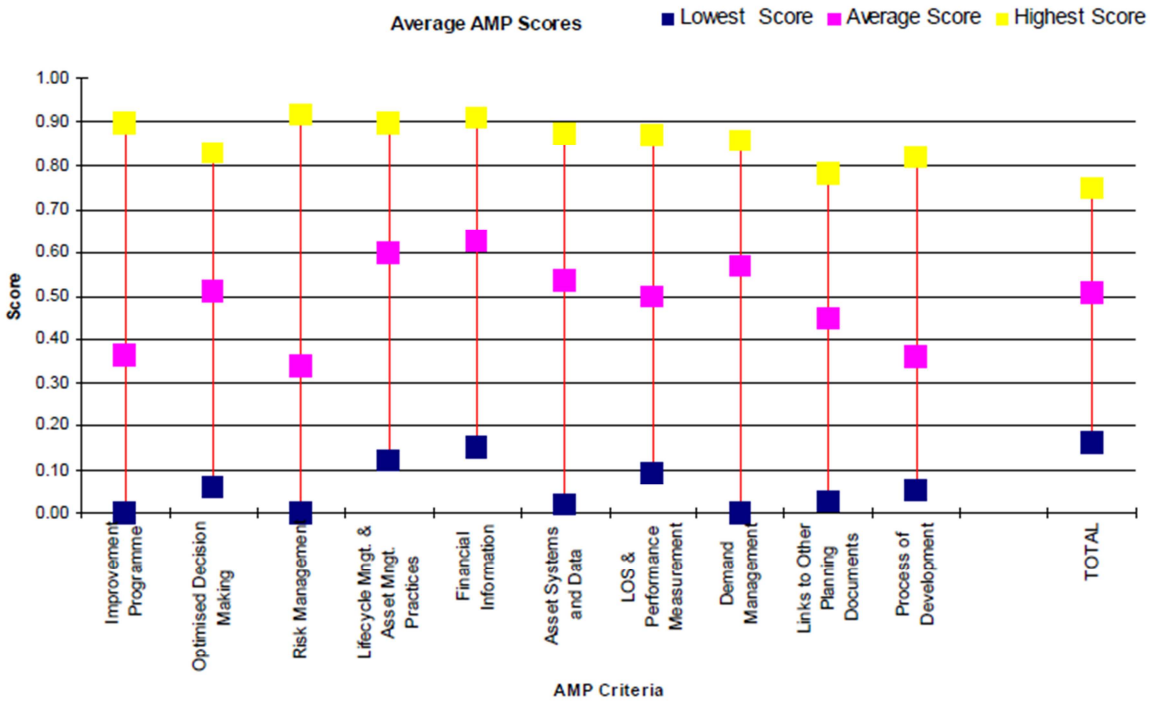
Figure 3.1: Summary of RCA Asset Management Plan Results

GHD

Land Transport NZ
Ikiiki Whenua Aotearoa

1.2.5 National Summary

The following figure shows the overall results for the 74 RCA's.



The average score across the 74 RCA's is 0.51 (Northern = 0.61, Midlands = 0.46, Central = 0.47, Southern 0.48)

- *Twenty One RCA's scored Poor results (28%)*
- *Thirty Five RCA's scored Moderate results (47%)*
- *Eighteen RCA's scored Good results (25%)*
- *No RCA's scored excellent results*
- *The minimum score is 0.16 the maximum score is 0.75*
- *Twenty Two RCA's used the Activity Management Plan framework (or hybrids thereof)*
- *The AMPs exhibit elements of Advanced practices, but overall are considered to be Basic/Intermediate*

Discussion
Transport related infrastructure represents a significant investment across the country and at multiple levels of governance. Given the length of time that asset management planning and its surrounding philosophies has been integrated into Local Government and suitably supported by the National Asset Management Steering Group (NAMS), it is surprising that the average result across the 74 AMP's is hovering around 50%. The assessment criteria as shown in Table 1 are not too dissimilar from that of the Office of the Auditor General (OAG), however are more holistic, which aligns with the Local Government Act 2002, specifically the requirements around reporting Levels of Service at the community level.

Observation:
From the report it can be deduced that a wide range of practice existed and that there were numerous AM components where Councils failed to meet a minimum or core level. [links to finding 2k]

Key Areas of Note
Demand Management, Levels of Service and Life Cycle Management has been given the greatest weighting within the assessment criteria, each is worth 15%. Demand Management entails understanding those factors that influence the service. The major metropolitan RCA's typically understood and articulated the key growth and demand drivers, the reverse was largely mirrored by the smaller rural RCA's. In some instances, major growth related studies have been carried out which has enabled those RCA's to gain a far greater insight to their future requirements. It is important to note that this level of investment may not be required by all; however it needs to be stressed that the impacts on service delivery need to be investigated so that decisions around future infrastructure requirements can be made in light of robust data and analysis.

The poor development of Levels of Service was highlighted by the OAG in their report following the audits of the 2006 AMPs and LTCCP's. The Local Government Act 2002 is clear in its requirements for local government to seek meaningful agreements with, report, measure and communicate the levels of service developed with its customers. This entails ***the development of options and costs so that customers can make informed decisions on the Levels of Service that they want and are prepared to pay for.*** *Most if not all RCA's collect data on their customers through a number of mechanisms, including service request data and Satisfaction Surveys. It is the transition to the next phase of developing options and costs that is being largely left out. The legislation is demanding and asks a lot of Local Government, however a small handful of RCA's have taken the next step and have started to develop options and costs, and consult with their customers. This highlights the importance of planning and developing a consultation strategy over a number of years. The NAMS Manuals provide best practice guidance to assist local government in the development of Levels of Service, options and costs.*

Life Cycle Management provides the "cradle to grave" understanding of the assets that allows for their management throughout their effective lives (base life). This element of the assessment was second on average with an overall score of 0.60 across the 74 RCA's. Theory associated with maintenance, renewals and new works is typically plentiful within most AMPs; however it becomes evident quite quickly if knowledge of the assets has not been articulated through this section. The assessment criteria are based on the author(s) providing a suitable breadth and depth of knowledge around how the separate assets that make up the portfolio are managed. This also comes down the accuracy and reliability of RAMM and whether or not the added value such as TSA and dTIMS are used to supplement the decision-making processes.

Observation:
Variations were observed in demand management practice between metropolitan authorities and smaller rural authorities; practice should be consistent with the authority's needs. [links to finding 2f]

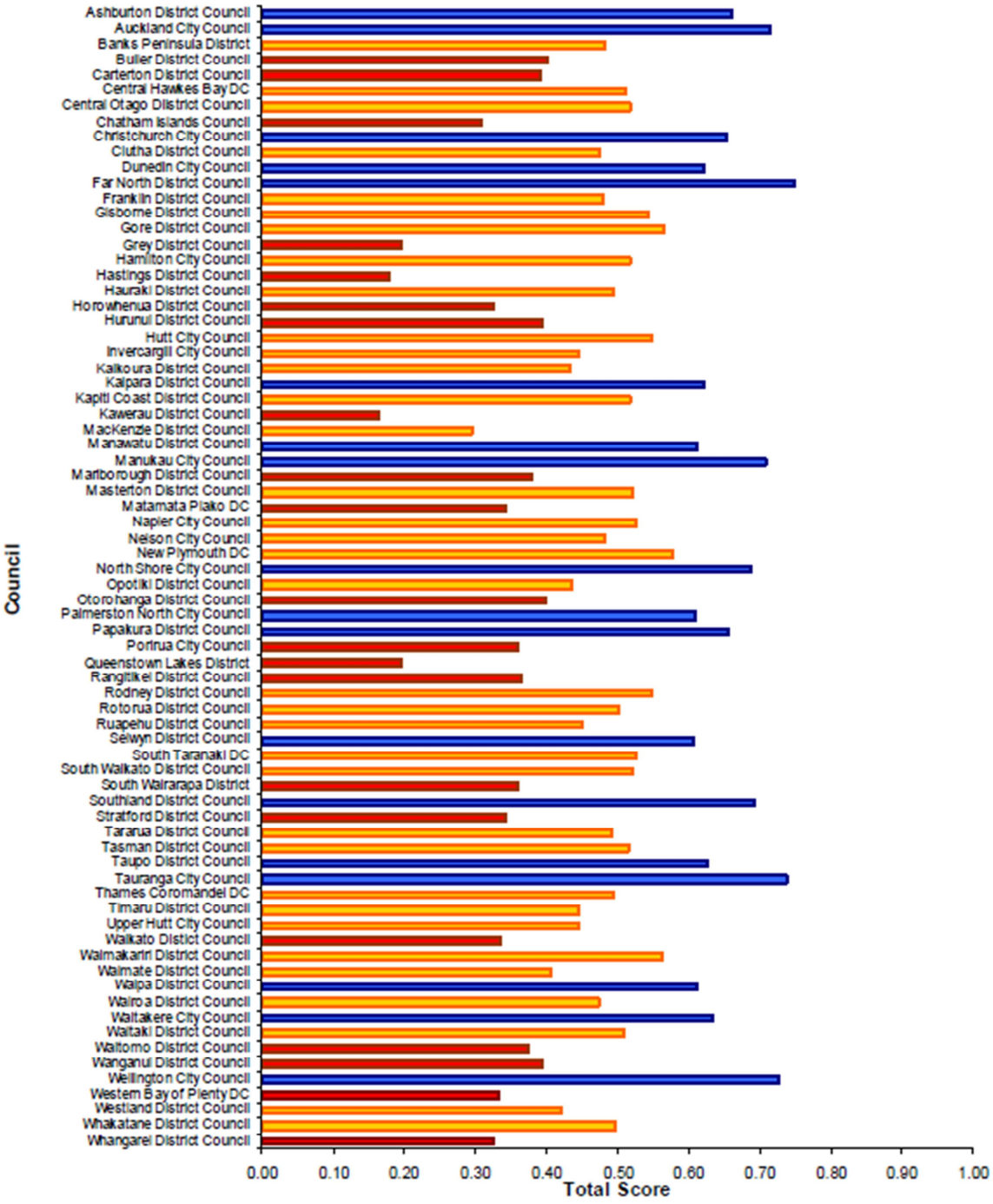
If RCAs consider NZTA (their funding partner) as a "customer" in the above statement, then consideration of what NZTA is prepared to pay should became integral to the AM process.

Lifecycle management is reasonably well understood, and the quality of the analysis is dependent on the underlying asset data. [links to finding 1e, 2j]

Figure 3.2: Overview of AMP Results

4.1 Overview of National AMP Results

Figure 9: Overall AMP Results



Key to Scoring Crossbar for Overall Results

0.00 - 0.40	AMP is considered to be poorly developed and very Basic (Poor). The AMP doesn't outline the basic asset management practices, systems or information necessary to manage the roading network.
0.41 - 0.60	AMP is considered to be Basic, however with intermediate aspects at the higher end (Moderate). Although the AMP outlines asset management practice systems and information it does so in a perfunctory way indicating there is no depth to the analysis. There is limited confidence in the robustness of long term financial forecasts and the decision making analysis.
0.61 - 0.80	AMP is considered to be at an Intermediate level, with advanced aspects at the higher end (Good). There is a clear articulation of most asset management practices. There is reasonable confidence that long term financial forecasts are robust and decision making is sound.
0.81 - 1.00	AMP is considered to be Advanced (Excellent). The AMP information is strong and convincing in all aspects. There is high confidence in long term financial forecasts and the way options are analysed and decisions made.

Analysis

- The average score across the 74 RCAs is 0.51 (Northern = 0.61, Midlands = 0.46, Central = 0.47, Southern 0.48)
- Twenty One RCAs scored Poor results (28%)
- Thirty Five RCAs scored Moderate results (47%)
- Eighteen RCAs scored Good results (25%)
- No RCAs scored excellent results
- The minimum score is 0.16 (Kawerau), the maximum score is 0.75 (Far North)
- The AMPs exhibit elements of Advanced practices, but overall are considered to be Basic
- Intermediate

Observations:

There is a clear indication to RCAs that the standard is not as high as it could be, but the report did not indicate the target level that should be sought. Therefore to many the report indicated that the highest level of practice was the standard that should be aspired to. Improvement programmes, Risk Management and the process of development scored poorly across the country illustrating the Asset Management process was not as mature as it should be. [links to finding 1d, 5g]

If the above graphic was presented as a proportion of "appropriate practice achieved" this is likely to show smaller authorities with less complex issues in a more positive manner. [links to finding 2k]

3.2 2011/12 NZ Road Maintenance Task Force Stakeholder Survey

In December 2011, NZTA conducted a survey of 67 road controlling authorities to contribute to this study using the online application "Survey Monkey".
The preamble outlined the purpose and methodology for the survey as follows:

With the publication of the 2012/13 – 2021/22 Government Policy Statement on Land Transport Funding (GPS) the government decided to establish a Road Maintenance Sector Task Force. With the purpose of identifying opportunities for efficiencies (in delivery of road operations, maintenance and renewals) and encourage their uptake, the Task Force is undertaking four areas of research:

- *Better asset management planning and delivery*
- *Collaboration and clustering amongst road controlling authorities*
- *Cost drivers for road maintenance operations and renewals*
- *Documentation, procurement and markets*

Asset or activity management (AM) is the core planning tool for the delivery of road operations, maintenance and renewals activities. Therefore it is important to the Task Force to achieve an understanding of the maturity level of AM in the sector, the benefits, if any, of making changes and the challenges faced in that pursuit.

A number of you are already part of the Task Force work, but we recognise the importance of seeking a wide sector view. We therefore ask that you assist us on this task and complete the attached survey. It should take approximately 20 – 30 minutes.

Responses were received from 27 Road Controlling Authorities, which represents 40% of RCAs as detailed below.

Table 3.1: Summary of Stakeholder Survey Results

Survey Responses Received		
NZTA	1	
Local Authority RCAs		
Total	27/67	40%
Population Represented	1,038,525 of 4,268,375	24%
2011 Maintenance Expenditure Represented	1,425,399,894 of 493,286,202	35%
North Island/South Island Split	North 15 South 12	
District/City Council Split	District Councils 23 City Councils 4	Range represented (No Responses from Auckland, Christchurch, Hamilton or Wellington)

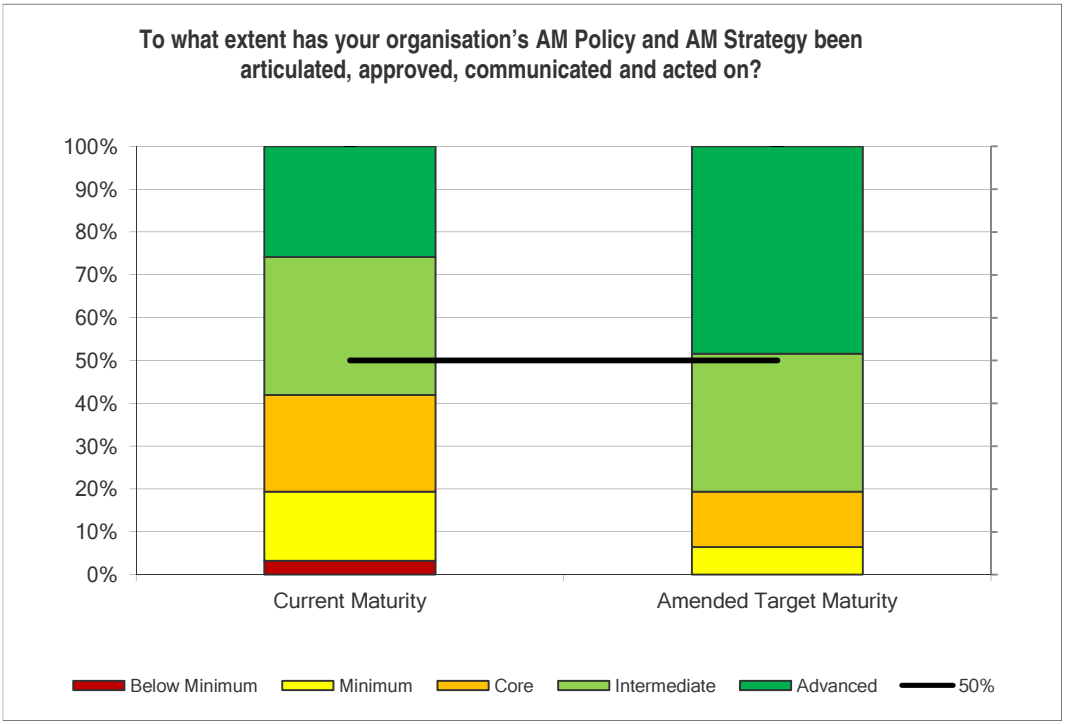
Not all participants answered each question that was asked.

The results were extracted as a group and the responses from individuals could not be identified or analysed. This precluded the option of assessing current and target AM Practice in combination with performance for individual authorities.

The survey results were considered in terms of the average position for current and target AM practice as well as the proportions within each category.

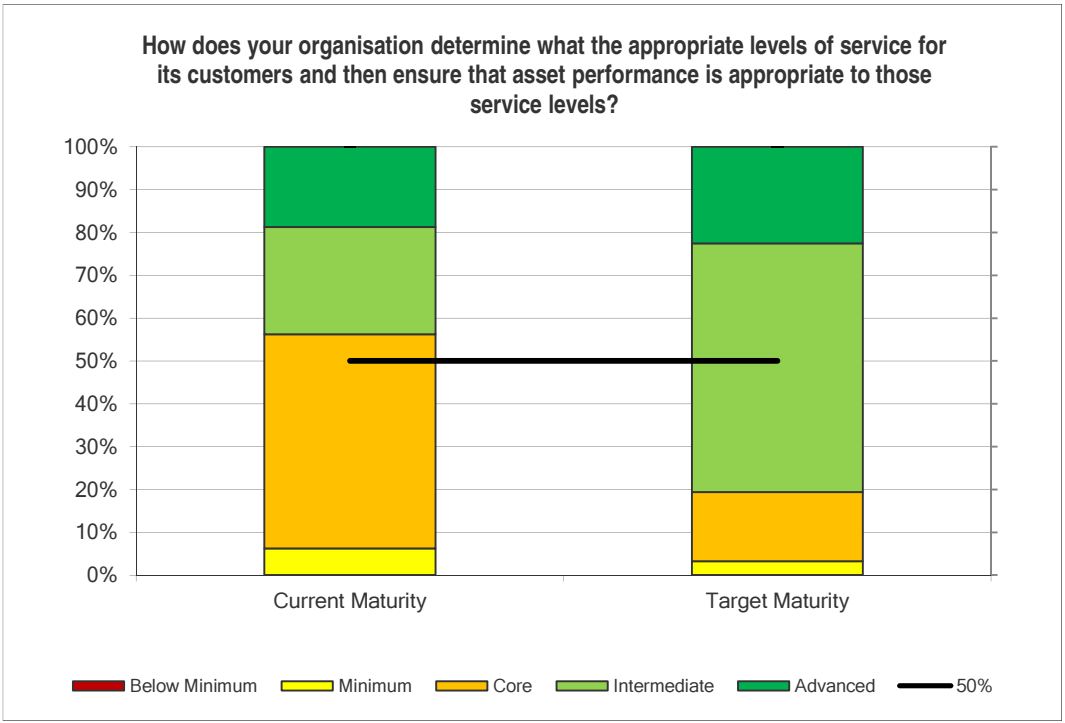
Proportions identified within each question asked

Figure 3.3: Q6 – Extent of AM Policy and Strategy



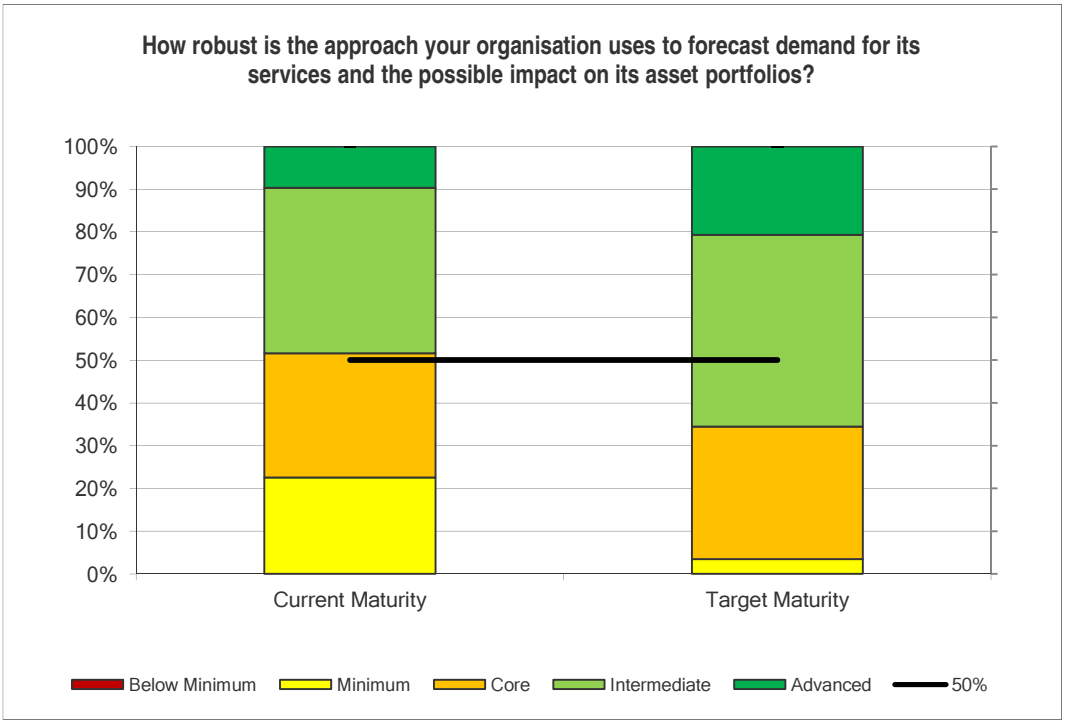
Reviewers comment:
This highlights the need for a clear understanding of what is required and setting about achieving it. High standards should be targeted.

Figure 3.4: Q8 – Determining Appropriate Levels of Service



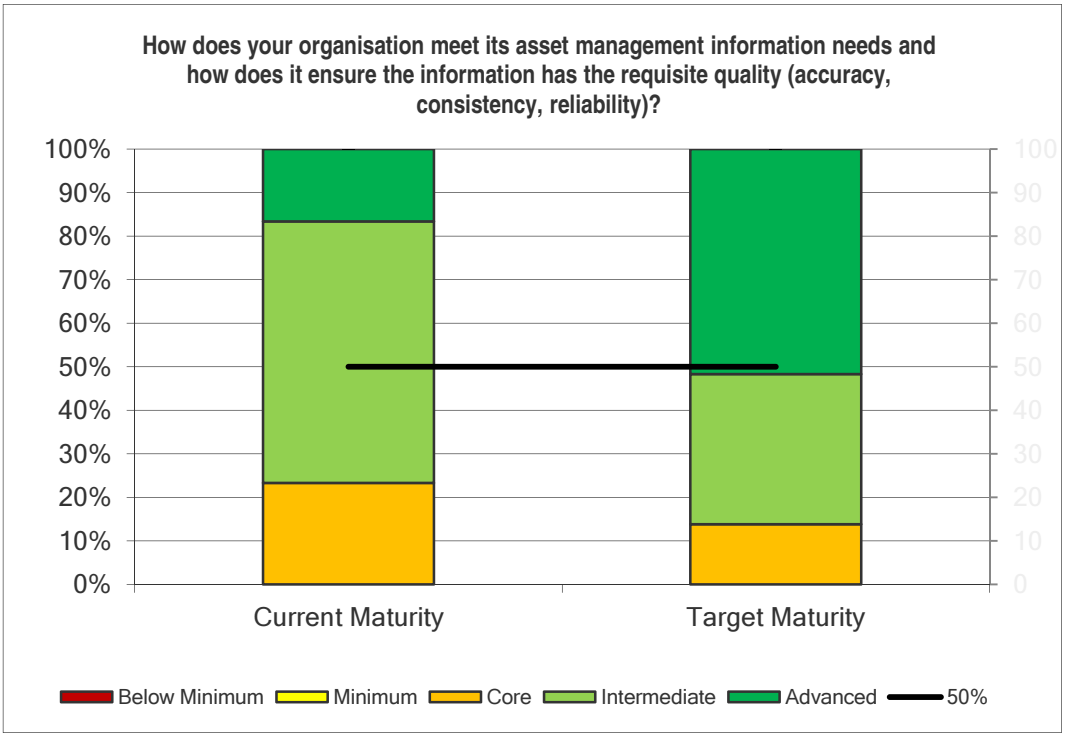
Reviewers comment:
Often Levels of Service are determined and agreed, work is done and an outcome achieved; there is no feed-back loop or a disconnect between the outcome and the Level of Service/initial objective. Are we measuring what we set out to do, or did we just 'do work'?

Figure 3.5: Q10 – Robustness of Forecasting Demand



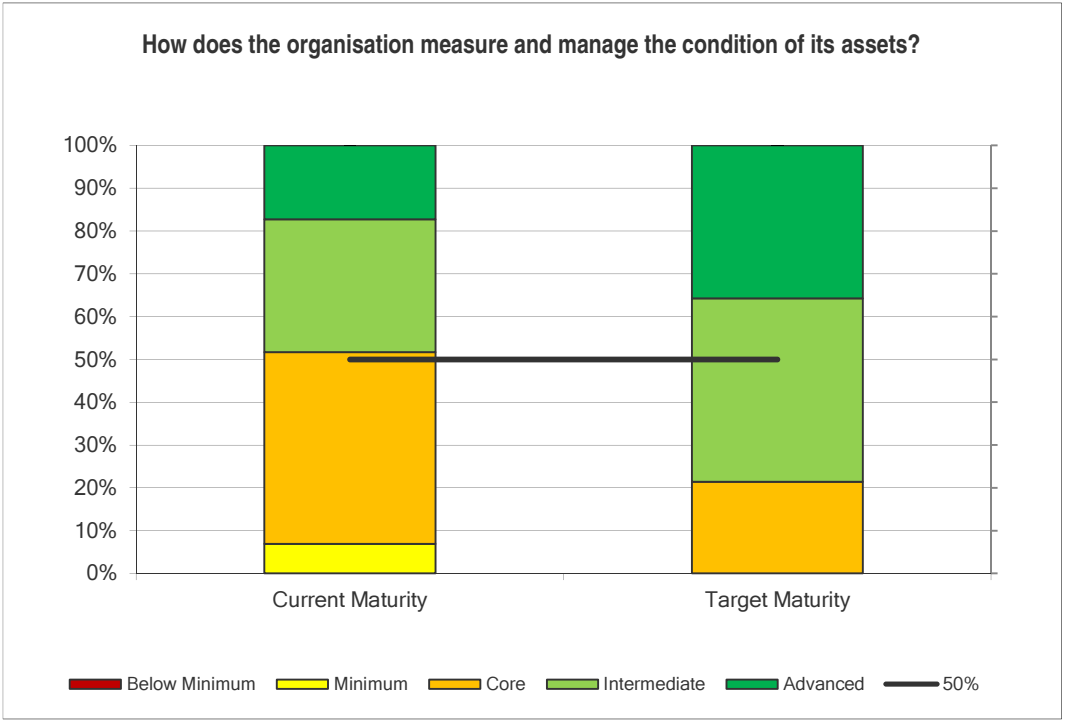
Reviewers comment:
Presently demand management is heavily influenced by TLA's population projections and less consideration is given to economic growth driven demand. Given this is the government's priority, greater emphasis should be placed on freight planning and regional growth alignment. The HPMV studies indicate the relative immaturity of this AM component.
Demand management can also be overdone and it is important that the growth drivers for regions and where the gains can be made are understood.
"we can do better" was the consensus view of the research topic team"

Figure 3.6: Q12 – AM Information Needs



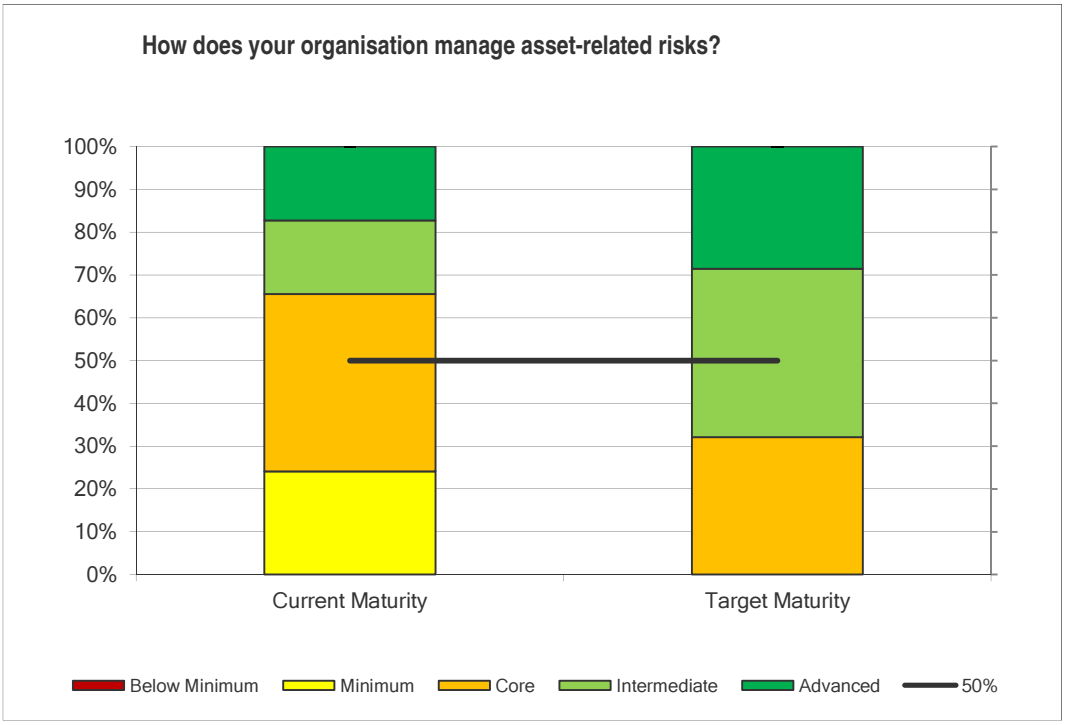
Reviewers comment:
The importance of reliable information appears to be understood, the shift is appropriate.

Figure 3.7: Q14 – Measuring and Managing Asset Condition



Reviewers comment:
The importance of reliable information appears to be understood, the shift is appropriate.
Managing asset condition (proxy for Level of Service) is the current focus.

Figure 3.8: Q16 – Managing Asset-related Risks

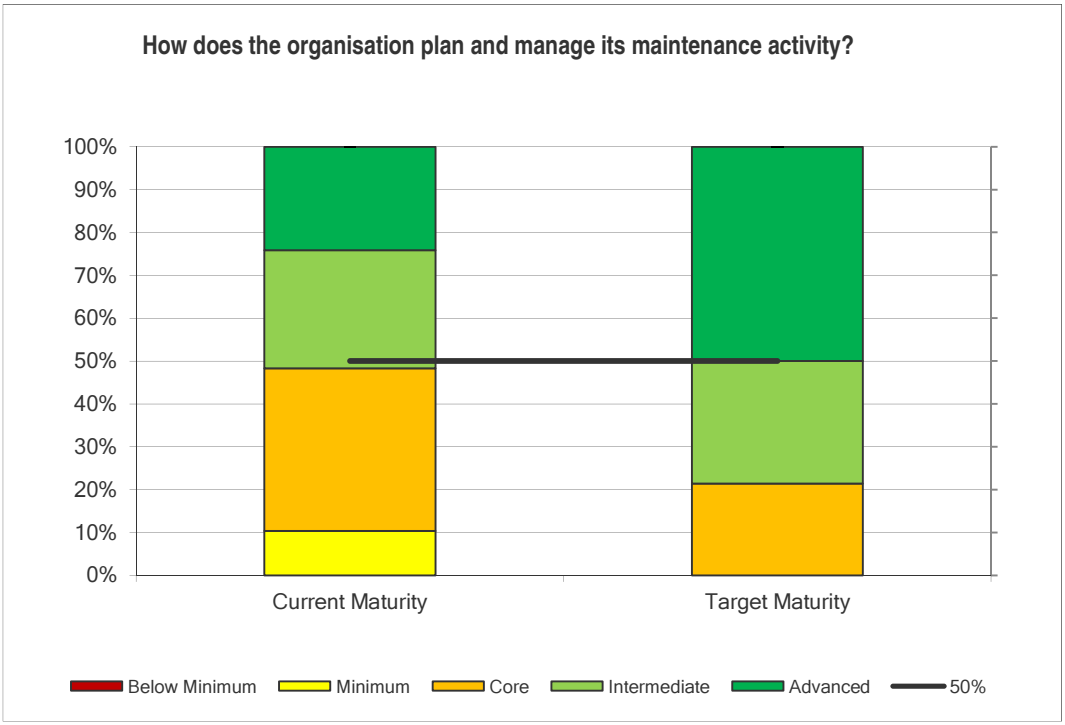


Reviewers comment:
The pattern is similar to asset condition (above), and reflects the risk adverse nature of the sector. These issues should be combined to test the management approaches and programmes employed.

Figure 3.9: Q18 – Replacement / Refurbishment Decision-Making

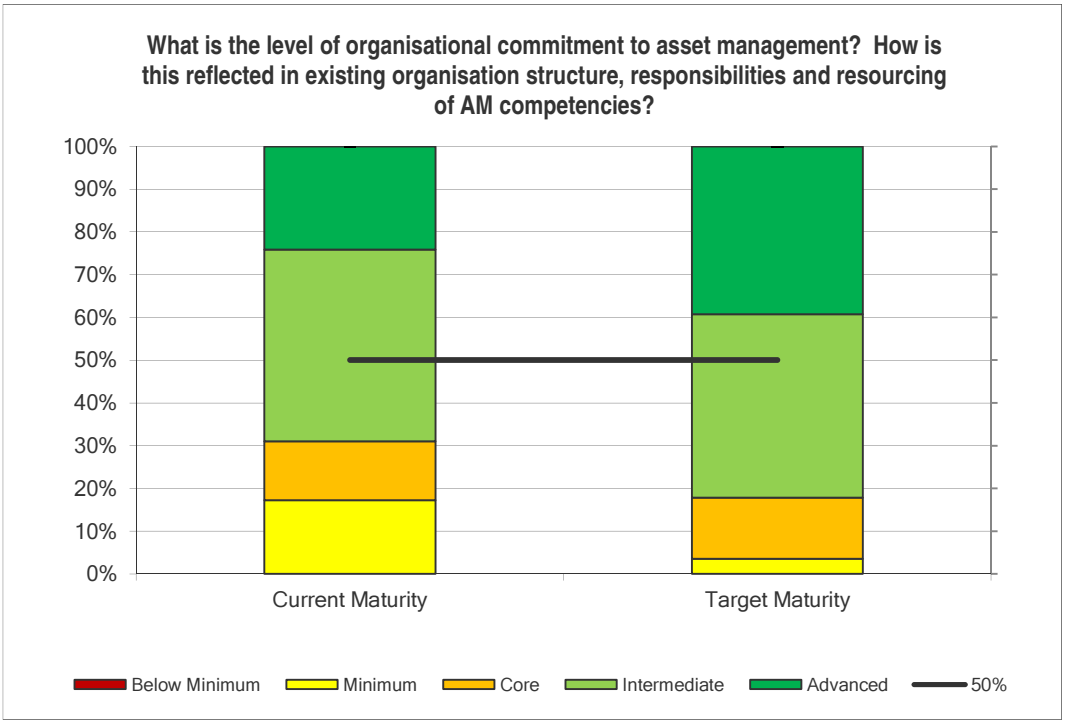
Reviewers comment:
Managers generally believe they are doing a good job and establish one plan for the future. Models should be used to investigate options rather than support one option. More testing and sensitivity analysis along with a feedback loop on the effectiveness and efficiency of the programmes should be utilised.

Figure 3.10: Q20 – Planned and Manage Maintenance Activity



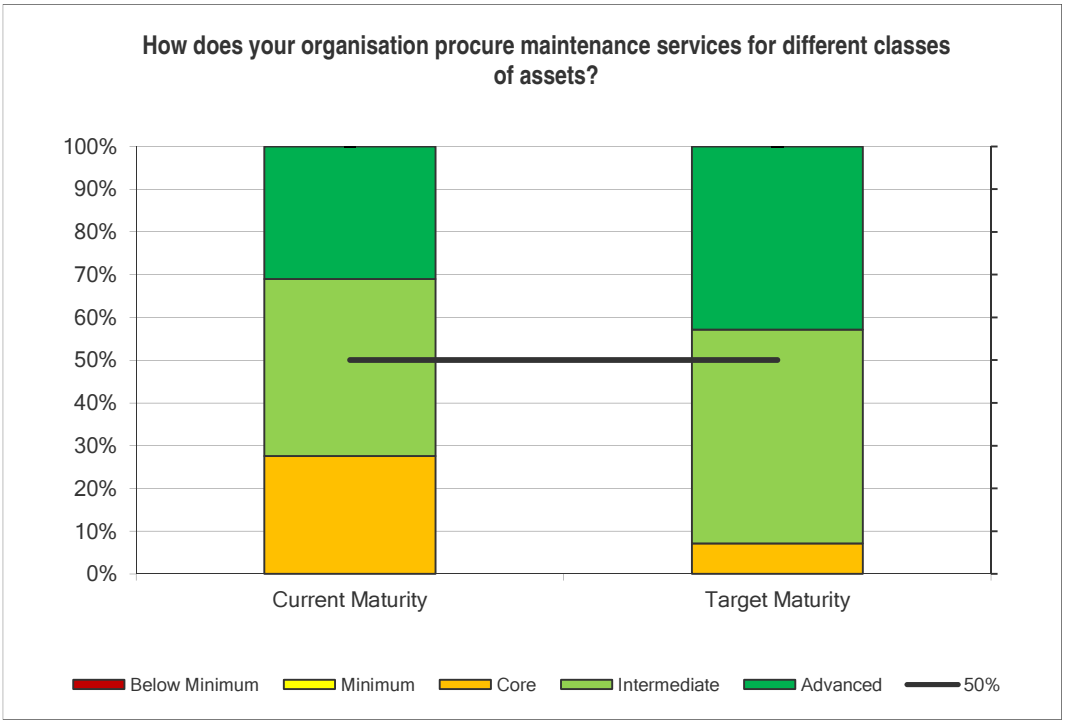
Reviewers comment:
There are opportunities for big savings in the long term. A step-change is needed to challenge current thinking and realise savings.

Figure 3.11: Q22 – Organisational Commitment to AM



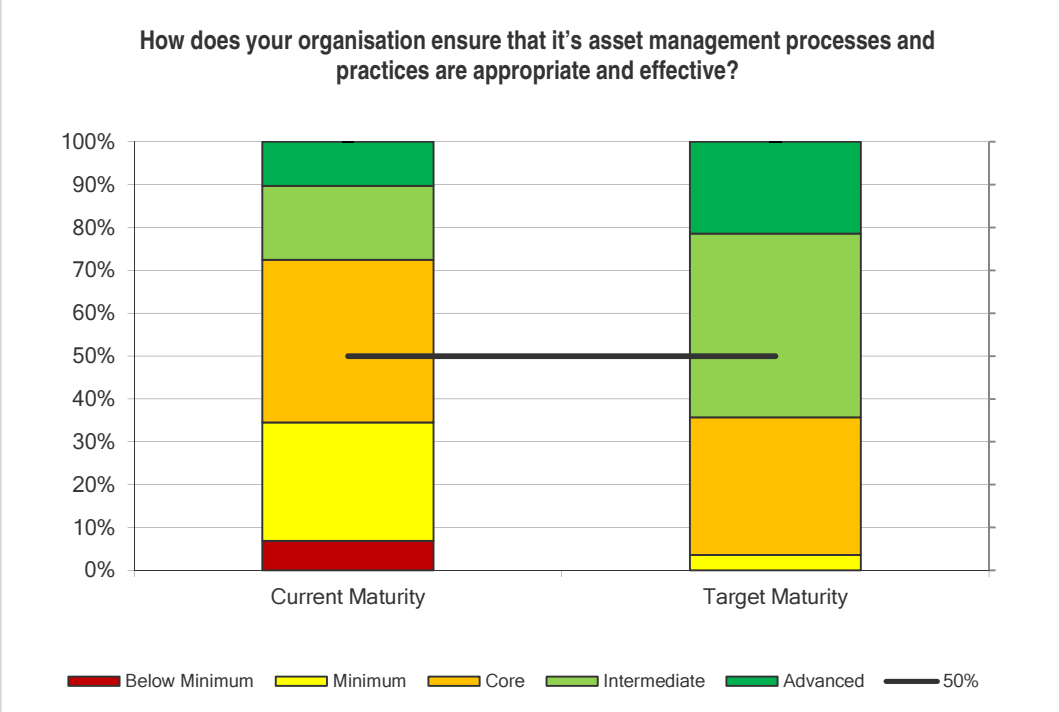
Reviewers comment:
Only a small change is seen as necessary, this conflicts with the impediments to progressing AM maturity.
What guidance is there on what 'a good organisation' looks like? Difficult given the range of TLAs involved
Some participants may believe there is no benefit in improving their practice, others may have selected the 'least path of resistance'

Figure 3.12: Q24 – Procurement of Maintenance Services



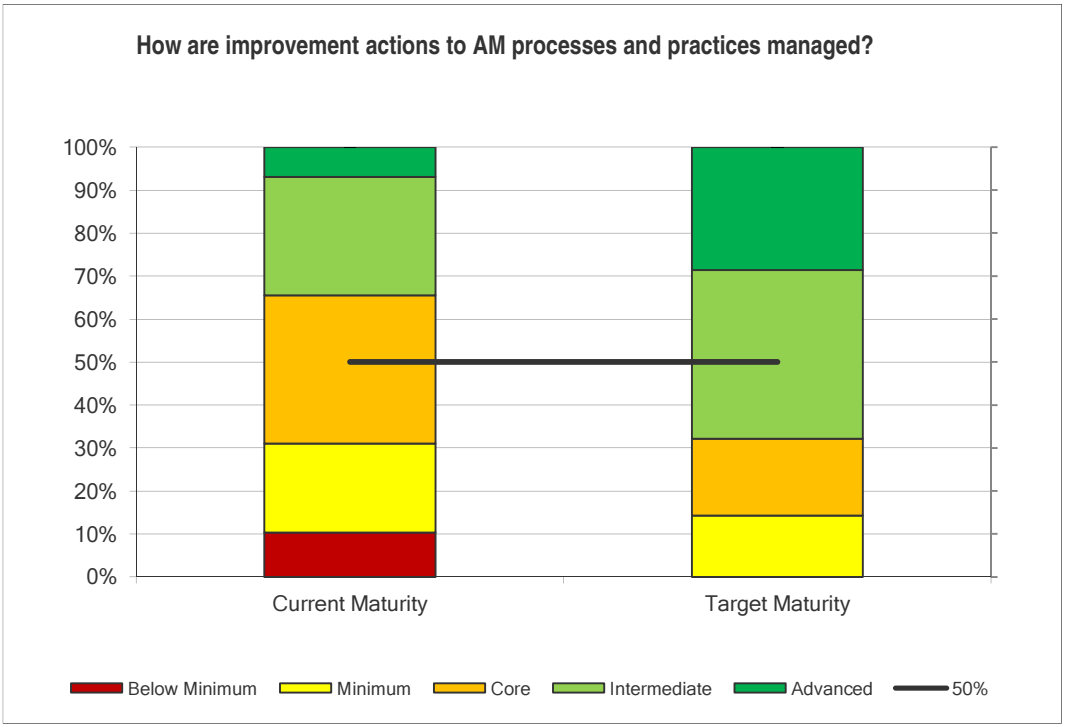
Reviewers comment:
Expected change shown, no major implications for this part of the task force.

Figure 3.13: Q26 – Appropriate and Effective AM Processes and Practices



Reviewers' comments combined with question 28

Figure 3.14: Q28 – Managing AM Improvement Actions



Reviewers comment:
The biggest range is shown in these two graphs, which challenges the answers provided earlier in the survey. How can we believe we are doing a good job when our processes and practices require improvement?
These graphs are key indicators of the learning that is still needed, particularly in the areas of understanding our objectives, measuring achievement, providing a feedback loop for improvements and learning's.

Average Scores within each question asked

Figure 3.15: Average Results for Each Question Asked

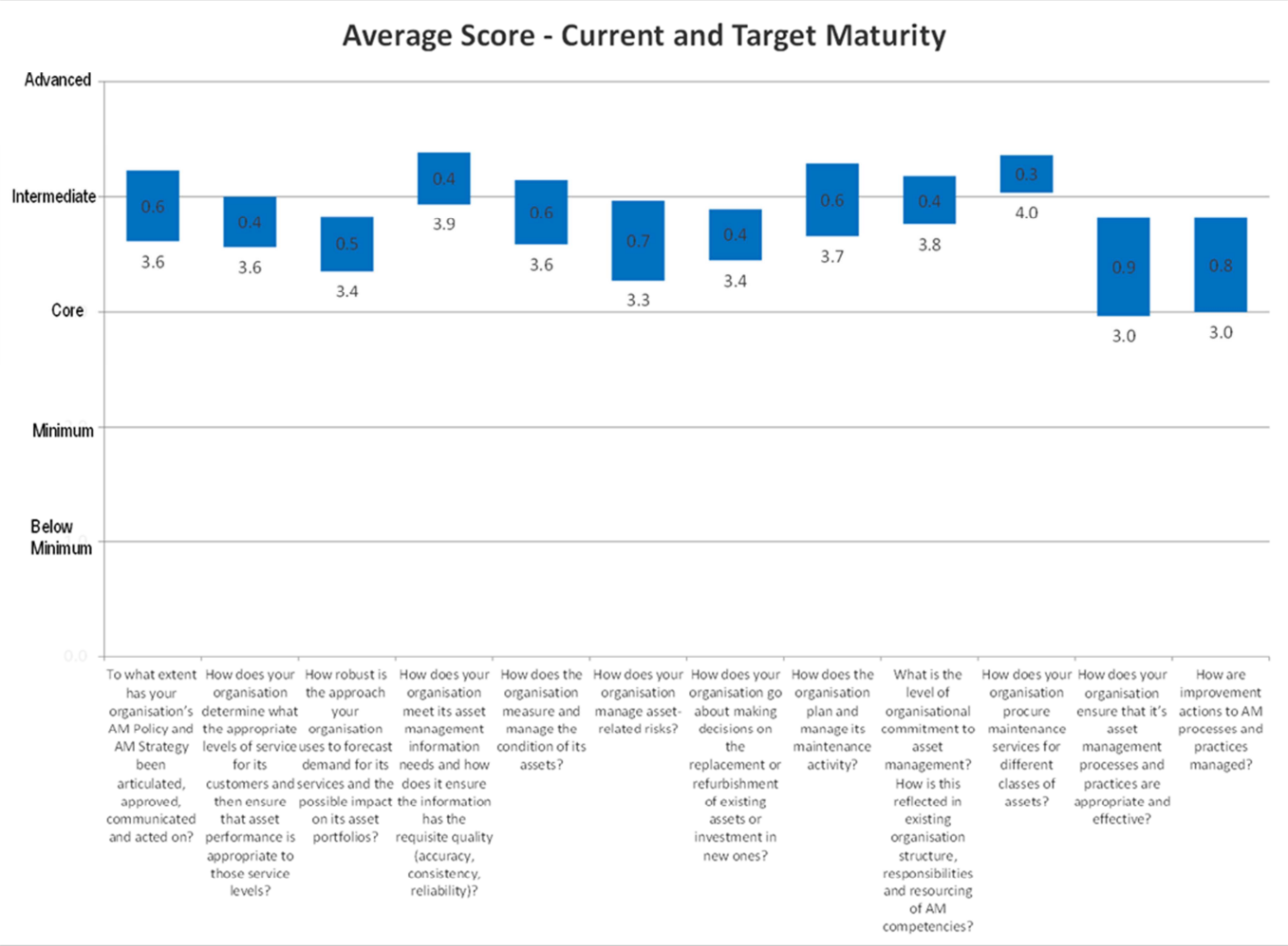
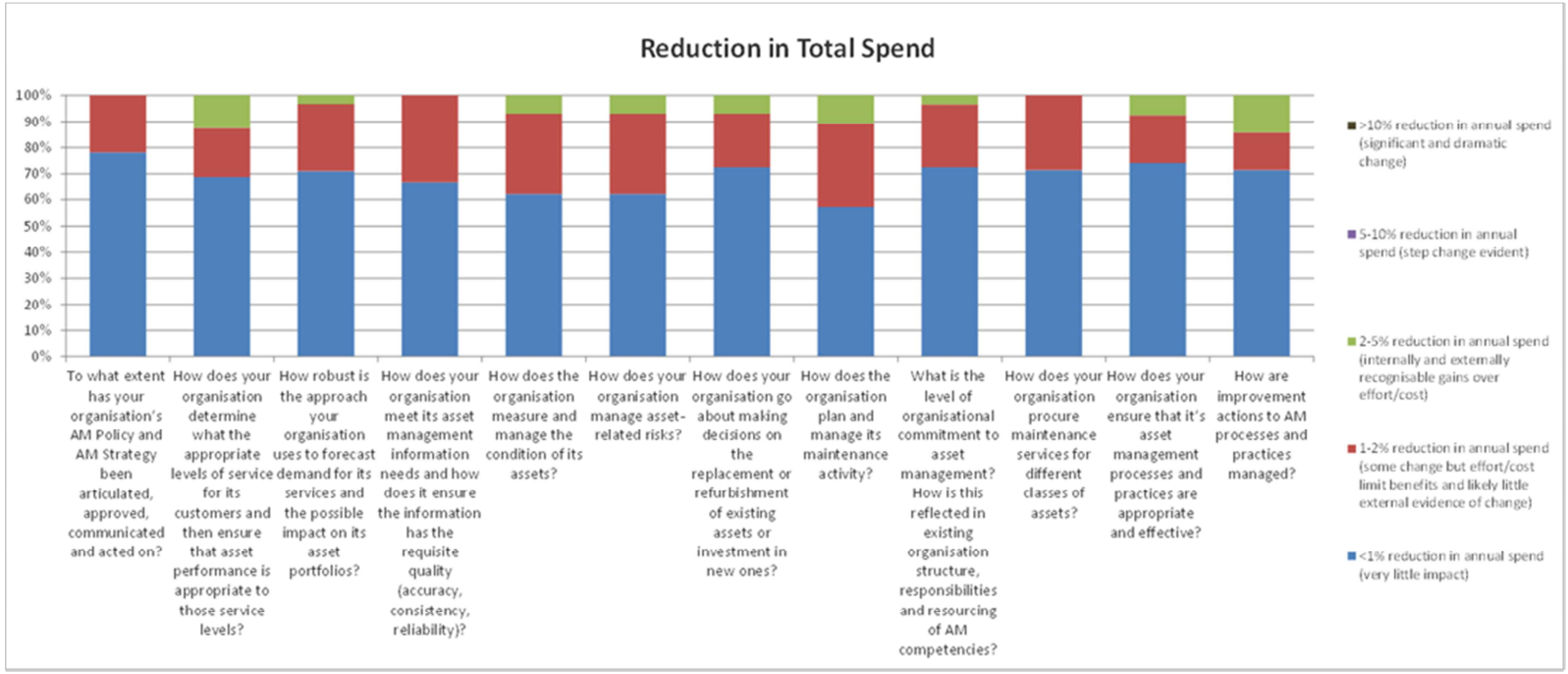


Figure 3.16: Results of Reduction in Total Spend Estimates



Reviewers' comments:
The areas where the greatest potential reductions identified were:

1. *Planning and management of the maintenance activity (team members have challenged the savings identified in the survey which may illustrate participant's cautiousness) [links to finding 5c]*
2. *Measuring and managing condition of assets [links to finding 3d]*
3. *Determining and measuring appropriate levels of service [links to finding 3e]*
4. *Managing Risk [links to finding 2i, 5d]*

1 and 2 are closely linked, and should be considered in balance with 3 and 4.

Figure 3.17: Q35 – Key AM Staff – Years of Experience

Reviewers' comments:
It is reassuring to see the range of experience levels throughout the industry, and there are numerous 'Key AM Staff with only a few years' experience. The skills shortage is a concern for the long term and it is important that individual organisations and the sector as a whole is ensuring appropriately experienced staff are in key role now and in the future.

Summary of Survey Observations

While a range of responses was received, in general RCAs would regard themselves as currently being at a core - intermediate level of AM practice, and targeting core, intermediate or advanced practice. This is reassuring and should reflect an appropriate level of practice. Guidance may be required to ensure effort in reaching the higher levels of practice is undertaken by those where real benefits will be gained. [links to finding 2a]

Where there is a large shift identified between current practice to target practice, this shift represents effort and cost. Real benefits should be identified before unnecessary effort and cost is employed.

Participants identified few areas where even moderate (more than 2%) reductions in total spend could be achieved. This may reflect the risk adverse and financially cautious nature of Asset Managers more than the potential savings. [links to finding 2h, 5d]

3.3 Government Policy Statement on Land Transport Funding

The Government Policy Statement on Land Transport Funding, published Ministry Of Transport in July 2011 provides some comments on Transport Planning and refusing AM.

47. Value for money will mean a culture of continually seeking better and smarter services and ways of operating. ***Getting greater value from land transport investment requires the NZ Transport Agency, local government and other Approved Organisations to continue to:***

- *make better use of the land transport network. Improved network management and selective development is needed to lift the performance and capacity of the existing network and minimise the need for major investment in new infrastructure. This includes ensuring users' expectations are understood, for example, through dialogue with industry*
- *select and fund activities and projects that will make the greatest contribution to the government's goals and priorities outlined in this GPS*
- *carefully consider the sequencing and phasing of projects so that, for example, small iterative investments in existing infrastructure do not take place when more significant investment in redeveloping the same infrastructure is shortly planned to commence*
- *encourage innovation and be open to new models of delivery that are likely to result in better and smarter services and/or minimise whole of life costs*
- *secure delivery of quality infrastructure and services for minimising whole of life cost and improve monitoring and contract management to ensure we are getting the standard of delivery, or outcomes, that are being paid for or better*
- ***raise the bar on the standard of asset and activity management to boost the performance of the land transport infrastructure and services. This is important as appropriately maintained, renewed and operated networks help minimise the whole of life cost of transport investment***
- ***improve the operational efficiency of the planning and funding allocation processes. This includes removing any unnecessary duplication particularly in planning.***

(Source: Government Policy Statement on Land Transport Funding, Ministry of Transport, July 2011 Emphasis report author's)

Observations:

There is a strong message to RCAs that the standard of AM is not where it should be, but at the same time there is duplication in process. Given the Transportation Planning funding band has been reduced for 2012-15, RCAs will benefit from a clear directive on where improvements are required to their practices and where changes to the broader planning process will occur.
[links to findings 1c, 1d, 2a, 2b, 2c, 2k, 3b, 3c, 4a, 4b, 5c, 5e, 6a, 6b, 6c, 6d]

3.4 The Office of the Auditor General - LTCCPs

The Office of the Auditor General's Report on the 2009-19 Long Term Council Community Plans provides a useful commentary on the standard of AM in place. While the comments relate more to the LTCCP documents, the underpinning AMPs and processes are included in the audit process.

How long-term planning has improved
Overall, our audits of the 2009-19 LTCCPs showed that local authorities are demonstrating an increased acceptance of the importance of "thinking long term" through both the content of their LTCCPs and their approach to producing them. These observations have also been made in comments to my staff by others working with the sector.

Compared with the 2006-16 LTCCPs, the 2009-19 LTCCPs showed:

- *increased attention to planning for the sustainable delivery of services*
- *a strengthening commitment to raising longer-term issues with local authorities' communities*
- *better processes for preparing the LTCCP*

Where improvements are still needed
Although we can clearly see progress in long-term planning, local authorities still need to improve their practices supporting long-term planning. These improvements are needed to match local authorities' intent to plan effectively for the long term.

Local authorities could improve their practices in:

- *completing and integrating robust underlying information, such as asset management plans (including understanding and monitoring levels of service) and forecasting assumptions*
- *complementing long-term thinking* by preparing appropriate financial strategies

Both of these have been challenges for the sector for some time. We continue to recommend that local authorities focus on them because they are fundamental for a local authority. Until local authorities have robust underlying information and appropriate financial strategies, the potential inherent in local authorities' willingness to think long-term will not be fully realised.

In our view, many local authorities can still produce better LTCCPs. We saw progress and improvements in the 2009-19 LTCCPs, but other changes, such as the steps that have been taken more recently to focus on effective reporting against performance frameworks, will also help.

The improvements some local authorities have achieved show the sector, and other parts of the public sector, that effort put into the planning and reporting of performance information, both financial and non-financial, does add value to an entity's reported information.

Our audit opinions on the 2009-19 LTCCPs
Our non-standard audit opinions on the 2009-19 LTCCPs primarily related to matters of substance. We issued only four qualified audit opinions on the final LTCCPs, but, in our view, those LTCCPs were not fit for purpose. The matters the local authorities were struggling with are significant and challenging.

[Reasons included]

1. *Performance management framework – inadequate to demonstrate levels of service*
2. *Lack of financial prudence. Long-term plan is financially unsustainable*
3. *Inadequate underlying information, particularly for asset management plans.*
4. *Prime financial statements were not reasonable estimates, given no allowance for inflation.*
5. *Deficient consultation process)*

We also used an "emphasis of matter" paragraph in our audit reports on 14 local authorities' LTCCPs to draw the reader's attention to matters such as: • financial strategies that did not set revenues in the 2009-19 LTCCP at high enough levels to be able to replace assets in the future (this approach will require significant rate increases or reductions in levels of service in the future);

- *uncertainty about continued funding from central government, on which the local authority depends; and*

- *risks in relying on dividend streams from subsidiaries to reduce the level of the local authority's borrowing.*

Asset Management in the LTCCPs - Summary of our findings
7.2 In recent years, we have seen local authorities improve their asset management practice and the related information that they hold about their assets.

7.3 Generally, local authorities had enough underlying information to support the forecasts and disclosures about assets in their 2009-19 LTCCPs. However, a significant number of local authorities' asset management plans were not complete, did not reflect other available information and management practice, and did not support the information included in the LTCCPs.

7.4 Also, a significant number of local authorities needed to better define their levels of service. In our view, local authorities need to focus on improvement planning to continuously enhance how they manage their assets.

Asset management in the 2009-19 LTCCPs - Asset management and our audit opinions
7.17 There was a significant reduction in the number of non-standard audit opinions relating to asset management. We issued just one non-standard audit opinion that was related to asset management (compared with five for the 2006-16 LTCCPs).

In the Auditor General's December 2011 letter to Local Authorities, the role of the Financial Strategy (Local Government Act 2002 s 101A) is reinforced.

We believe the financial strategy should bring together:
- The intended levels of service
- The cost of those levels of service
- The intended means of funding those cost(s)
- An intended pathway to a future financial position

Observation:
There are no comments in terms of transportation asset management practice specifically, but a number of key points are made. The development and funding of levels of service remains central and discussions about alternatives must become commonplace. This may also restart the sustainable development discussion that have little moment currently. [links to finding 2d, 2e, 2k]

The requirement for a financial strategy will reinforce this discussion; but the development of a robust long term funding strategy will be limited by certainty about central government funding of transportation activities. [links to finding 1c, 2k]

3.5 The Office of the Auditor General 2011 NZTA Maintenance and Renewal Work on the State Highway Network

In 2011 the Office of The Auditor General published "NZTA Delivering Maintenance and Renewal Work on the state highway network".

This report assesses how effectively NZTA is running and renewing the State Highway network.

The report concludes that
"Overall, NZTA effectively and efficiently maintains the state highway network to the required condition by ensuring that quality and timely maintenance and renewal is completed on the network."

While the report does not specifically asses the maturity of AM practice, the following extracts illustrate the issues involved.

Using information to improve the effectiveness of maintenance work

5.3
Our audits highlighted the importance of NZTA having more complete information about the condition of the state highway network (particularly for bridges, tunnels, and other structures) and consistently monitoring the performance of consultants and contractors. These are important for NZTA to know what the key issues affecting the condition of state highways are, and whether those issues are being adequately addressed by the maintenance work of its consultants and contractors.

Planning maintenance work to target the most important work for the long-term condition and use of state highways.

5.6
Our audits highlighted the importance of having clearer links between long-term and day-to-day maintenance planning. They also highlighted the importance of NZTA regularly engaging with road users on what they expect from state highways. These are important for NZTA to know that its work is focused on the most essential work for both the long-term condition and use of state highways.

5.7
NZTA has made improvements. For example, NZTA has prepared an interim asset management plan for state highways and is planning to publish a revised plan by September 2011. The interim plan introduced a stronger connection between what the different levels of service for maintenance mean for road users (for example, keeping the roughness of a state highway's road surface below certain levels) and what they would expect to experience as a result (for example, how the levels of roughness could affect the smoothness or comfort of their ride). Our second audit highlighted that NZTA staff were very customer-focused – a strategic priority – in the areas we visited. They communicated closely and regularly with a range of road users and the transport industry on maintenance planning and operational matters.

5.8
In our view, continuing to review and improve its planning and engagement with road users will help NZTA to ensure that its work is focused on the most important aspects of maintenance for both the long-term condition of state highways and what road users need from it now and in the future.

Refining the ways maintenance work is delivered on state highways

5.9
Our audits highlighted the importance of NZTA reviewing some of its approaches to determining what type of maintenance work needs to be done. For example, some levels of service for maintenance – and the national balance of ways maintenance work is contracted across the state highway network – have been in place for many years without review. Our second audit also highlighted the importance of NZTA regularly reviewing maintenance work toward the end of contracts to assess how well quality and cost-effectiveness have been delivered, and to identify any wider lessons from the contract that could be applied to other work.

5.10
Reviews are important so that NZTA can learn lessons about what works best and refine its approach to delivering maintenance work on state highways on an on-going basis. NZTA has been improving how maintenance work is being delivered through its asset management and procurement planning.

5.11
In our view, continuing to refine how maintenance work is delivered will help NZTA ensure that the right maintenance is being done in the best way to delivery high quality and cost-effective work

Observation:

Core information on asset inventory and condition is fundamental to AM and decision making - good information support good decisions. Linking long-term and day to day planning is needed to ensure the focus is on the most essential work. [links to finding 1e, 2b, 2j, 2k]

Communication with stake holders enables all parties to increase their knowledge and understanding. A feedback loop to assess how well quality and cost-effectiveness have been delivered supports learning and accountability. [links to finding 2b, 3c, 4b, 6b]

3.6 Overall Observations and Findings

There are a number of common threads through the information reviewed, and these have been developed into the findings of this report.

Observations:

The 2008 GHD review of AMPs indicated that level of AM practice was highly variable and few RCAs were approaching an advanced level of practice. At this stage, the emphasis was on improving practice to high standards and the implementation of dTIMS was regarded by many organisations as essential to secure NZTA funding. [links to finding 1d, 2k, 3c, 5g]

The 2011 IIMM places a greater emphasis on determining and targeting a level of AM practice that suits the needs of an authority. This is consistent with the result of many of the levels of target practice identified in the 2011 Stakeholder Survey. [links to finding 2k, 5c, 5g, 6b, 6c]

The survey of RCAs revealed a range of results but overall suggested that organisations would regard themselves as currently being at a core - intermediate level of AM practice, and targeting core, intermediate or advanced practice.

Participants identified few areas where even moderate (more than 2%) reductions in total spend could be achieved. This may reflect the risk adverse and financially cautious nature of Asset Managers more than the potential savings the Research Topic Team believe are achievable.
The ability to measure AM performance is difficult given the lack of an effective monitoring approach and feedback loop. [links to finding 2h, 5d]

The Office of the Auditor General and the Ministry of Transport see scope for improvement in AM practice, the key areas include clarification of levels of service and alignment of financial forecasts with the objectives set.

4.0 ANALYSIS OF TARGET ROAD NETWORK AM PRACTICE

Section 2.3 provides an overview of what good AM looks like. The following discussion relates to particular topics raised within the scope of the Better Asset Management Planning and Delivery Research Topic Teams study.

4.1 Costs, Benefits and Gains

It has been noted that the Government is looking for cost savings across all Departments and sectors and that the Road Maintenance Task Force is just one of many work-streams tasked with meeting this cost saving objective.

Examination of the RCA funding requests (derived through the Regional LTP process, and examination of RCA asset management plans) are known to exceed GPS bands (MoT budget) for the next 12-15 year period. This creates tension with both maintaining current service levels, and increasing the available budget. The current Land Transport capital expenditure programme is also adding new assets that then require operation and maintenance.

What makes the Land Transport sector relatively unique amongst government funded sectors is the large local authority funding contribution – typically around 50% in subsidised activity categories and 100% in non-subsidised categories. These funding arrangements require that costs, benefits and gains analysis must take a whole of government/funding view (Central and Local Government) to be effective.

As an example, many communities when faced with a reduction in the NZTA Financial Assistance Rate will chose to increase their local contribution to maintain service levels. Whilst at a Central Government level this appears to be a saving, at a whole of community cost level, all that has happened is that the cost is still the same, but that funding has shifted from the Land Transport Fund to rates funding. This is not a benefit or gain to the community, merely a shift in funding sources.

Given government direction on cost saving and New Zealand's long term fiscal outlook (summarised in Section 6.0) it is clear that business as usual is not an option, and that change is needed. However, true cost savings need to be at a whole of community funding/cost level and not just a cost shift exercise between Central and Local Government.

4.1.1 Estimate of How Much Can Be Gained

Following analysis of the Road Maintenance Task Force Survey, and Working Party meeting discussions there is consensus that gains can be made and cost savings can be achieved. The potential gains can be made in the following areas

- Alignment of Strategic, Tactical and Operational practice – to ensure that the right level of service is being procured at the right time, using the right procurement method to achieve strategic objectives and agreed service levels [finding 2b]
- Performance Measurement frameworks agreed and aligned with strategic, tactical and operational practice [finding 3b]
- Fuller understanding and better management of the Budget-Level of Service-Risk Triangle of decision making [finding 2e]
- Better alignment of RCA practice with Central Government drivers (as detailed in NIP, GPS, NZTA Revenue and Investment Strategy). In achieving this better alignment – better recognition and management of overlapping statutory mandated planning and investment cycles [finding 2b]
- Better understanding and management of the Capital Expenditure, Renewal, Maintenance splits, and enhanced management of the trade-offs between these expenditure categories [finding 2d]
- Recognition of Capital Expenditure budget levels – potential big savings can be made in the capital planning cycle by examination of alternatives and lifecycle costs, constructed maintainability, and ensuring capital project alignment with national and regional objectives [4a]

- Potential paradigm shift in maintenance planning, management and delivery [finding 2l]
- Re-examination of service levels and more differentiation of service levels across the network finding 2e]

While the gains that could be achieved are difficult to quantify there was consensus that a 'stretch goal' was appropriate, particularly where this included a service level differentiation and maintenance delivery paradigm shift. While survey participants identified few areas where even moderate (more than 2%) reductions in total spend could be achieved, the working party agreed that cost savings of 10-15% could be targeted.

Further to the discussion in Section 6.0 the operations and maintenance activity is 23% of the current total land transport expenditure. Therefore a potential 10-15% cost saving translates to around $55M to $82M of savings per annum. The potential 15% saving translates to approximately 3.5% of total NLTP expenditure.

This potential saving is certainly worth trying to achieve; however, the political acceptability of the range of measures required at a national and local level remains to be tested.

4.1.2 Potential Costs and the Benefits (Short, Medium and Long Term) of the Recommended Changes

The Technical Working Group suggested a stretch goal of 10-15% estimated savings coming from the step change in maintenance (service level changes, efficiency and effectiveness cannot be achieved immediately).

This type of change could be achieved over a 5 year period as techniques / thinking developed and then transferred into procurement and contractual arrangements. The major impediment to early achievement of this change is contract updating and letting cycles, which vary across RCAs.

Prior to changing contractual arrangements broad industry agreement would be required around required service levels, different maintenance techniques, and the effective measurement and performance reporting of maintenance service delivery.

Phased transition would also be required to allow the local government, contracting and consulting sectors make an orderly adjustment of management and resource levels to respond to the new (lower) expenditure baselines. Medium term certainty of baseline funding levels and availability of funding assists the road maintenance sector in maintaining sufficient resources to ensure sustainable delivery of service.

4.2 Characteristics of Best Practice

4.2.1 Economic Best Practice

The goal of asset management is intrinsically linked with economic outcomes.
To meet the required level of service, in the most cost effective manner, through the management of assets for present and future customers.

Within this goal is the 'most cost effective manner' objective, which does not provide for constraints on activity funding. The tension between level of service provision and funding should be expected when a 'bottom up' AM approach is used to develop programmes. Limitations on funding and sensitivity analysis that allows for differing funding scenarios should be 'fed into the process'. While this will not remove the tension with individuals and sector groups lobbing for level of service improvements, but it will provide a platform for debate and informed decision making.

Should funding preclude a continuation of the current AM approach a change is necessary. A review of levels of service should consider the risks associated with that change and enable wise decisions to be made as to what to do differently.

Acknowledging issues beyond an RCAs boundaries is essential if AM planning is to be efficient and effective. For some RCAs this will be difficult as this will lead to an overall reduction in NZTA funding and ability to maintain the current levels of service.

The GPS has raised concerns regarding inefficiencies in the AM process and this highlights the need to 'plan the plan'. This may require some direction from NZTA to ensure RCAs undertake AM in a cost-effective manner and do not exceed appropriate practice where there is no real benefit.

The current framework of economic assessment focusses on capital works. With greater use of 'Better Business Cases' methods within central government improvements to project justification is expected. These tools may provide benefits to the analysis of maintenance strategies; however requiring RCAs to undertake complex analysis of maintenance programmes is likely to be arduous and less likely to produce significant savings.

4.2.2 Risk Identification and Management Best Practice

Risk Management involves a coordinated approach to assessing and mitigating the risks that affect an activity. Traditionally the focus has been on asset risk, but the issue of business risk and risks that affect the ability to achieve the desired objective has become more important as suggested by NZS4360:2004 and AS/NZS ISO 31000:2009.

With a focus in resilience and accessibility, Asset Managers have adopted a risk adverse approach to managing asset risk. Mitigation measures may be reasonably simple when there is redundancy in the network or more complex when assessments lead to asset improvement programmes.

The effectiveness of asset based risk is limited when planning occurs within RCA boundaries. Greater collaboration between agencies will improve the effectiveness and efficiency of the risk management process; this could be facilitated at a regional level.

When risk is considered as issues that affect the ability to achieve the desired objective, a different focus occurs. On-going adequate funding becomes an input in the risk process and is balanced with levels of service. This approach is recommended as it facilitates a scenario based approach.

To encourage this change Asset Managers will need to be incentivised to provide honest and realistic communication of issues and the associated risks, rather than build up a robust single position for funding.

Given the over-riding issue of funding restrictions, sensitivity analysis should become the norm. By referring to the GPS funding bands or acknowledging that NZTA may only be able to guarantee 90% of current funding levels (EXAMPLE ONLY) RCAs should be able to develop scenarios around their preferred option and a financially constrained option.

4.2.3 Governance to Systems Best Practice

The role of governance in the Land Transport sector is shared between Council and NZTA Highway Network Operations as RCAs, NZTA and the Ministry of Transport. NZTA encourages RCAs to perform and make wise decisions and operate in partnership. However at times a lead agency is required to provide direction and certainty to the planning process; this role could be performed by NZTA.

If RCAs are to take greater cognisance of national issues the governance structures and roles should support this. Direction to plan considering national, regional and local issues would need to be clearly stated nationally and assessed accordingly.

A review of the governance roles within the sector would clarify how integrated planning and governance align. Such a review would consider:

1. Governance Structures
2. Inputs required
3. Business Processes
4. Outputs required

5. Enablers – software systems, support mechanisms, models, economic analysis

4.2.4 Improvements in Maintenance Practice

Improvements to maintenance practices are occurring incrementally through the continuous improvements and innovations of Road Controlling Authorities, the Consulting Sector and Contractors. To achieve rapid gains in efficiencies and effectiveness a 'step-change' is required. A step change may be forced by a change in the operating environment (e.g. reduced funding or performance requirements) or through improved practices. Creating an inclusive environment of innovation and leadership is required to maximise opportunities and drives results. There is a role for NZTA, RCAs individually and industry groups (e.g. Contractors Federation, INGENIUM, RCA Forum, RIMS, Low Volume Roads Group) to collaborate and investigate and implement such changes.

4.3 Analysis of Sector's Performance Indicators

In preparing this brief analysis of the Sector's Performance Indicators the following documents were referenced:

NZIER (2012) *Role and Limits of Performance Measures*

Office of the Auditor General (2008). *The Auditor-General's observations on the quality of performance reporting*

Office of the Auditor General (2010). *Local government: Examples of better practice in setting local authorities' performance measures*

Office of the Auditor General (2011). *Central government: Case Studies in reporting forecast performance information*

LTNZ (2006). *NLTP 2006/7 Maintenance Guidelines – Performance framework based on Road User Satisfaction, safety and asset preservation*

Local Government Act 2002, Sections 261A, 261B, and 261C.

4.3.1 Current Indicators

Analysis of the above documents, and the authors knowledge of local government asset management plans and Long Term Plans shows that there is a range of guidance and publication of performance measures as they relate to the road networks and associated assets.

Performance measures and indicators are found in:

- Council Long Term Plans
- Council Annual Reports
- Council Asset Management Plans
- NZTA Performance Indicators for State Highways
- NZTA periodic summary analysis of roading sector performance

The report - Office of the Auditor General (2010). *Local government: Examples of better practice in setting local authorities' performance measure, Part 4: Roading Services* noted the following broad categories of performance measures*:*

- Faults, complaints and repair requests
- Smoothness/roughness
- Crashes, injuries, and fatalities
- Congestion
- Provision of cycle and pedestrian facilities
- Provision of public transport assets
- Parking Services

The Office of the Auditor General's discussion documents and reports, and the more recent NZIER report discuss a range of issues with current performance indicators. These issues are summarised by report below. For more detail refer to the original reports.

NZIER (2012). Roles and Limits of Performance Measures identified a need for:

- Common national performance framework
- Focus upon measuring effectiveness of road maintenance interventions
- Learning through communities of practice
- Enhancing capability of people to work in a different way
- Supported by leadership, engagement, focus and commitment

The two major deficiencies identified by NZIER were:

1. No cycle of performance measurement (open loop) with no feedback loop
2. Disconnect between data supplied and the presently unmet demand for different data and more measures

Office of the Auditor General (2008). ***The Auditor-General's observations on the quality of performance reporting***

- Lack of comprehensive standards
- No clear responsibility for professional leadership and oversight
- Relationships between outcomes and outputs are often not predictable or understood
- Wider set of information needed for operational management
- Weak incentives to improve

The Local Government Act 2002 (as amended 2010), Sections 261A, 261B, 261C contains rule for specifying performance measures, to be set by the Secretary (Department of Internal Affairs) so that the public may compare the level of service applicable to local authorities in relation to different local authorities. The provision of roads and footpaths is included in the rule requirements. The Department of Internal Affairs work programme is for these performance measures have been consulted, gazetted, and to be in place in 2014.

Observations:

- There are a range of performance measures in a range of documents and agencies that apply to the road sector
- There are known disconnects and issues that have been well documented in Office of the Auditor General and NZIER reports
- For local government RCAs there is a legislated requirement for unified performance measures – to be determined by 2014
- Analysis in report shows there is a need to re-examine assumptions and service-level thinking
- It is clear for the different regional growth pressures, road network structures, different heavy traffic and freight movement trends that once size does not fit all

4.3.2 What Perverse Behaviours are driven by the RCAs Performance Measurement Regime?

RCA Performance Measures are currently prepared to Community Outcome, Long Term Plan reporting and to meet NZTA reporting requirements. As noted by the Office of the Auditor General Reports current performance measures fall into general broad bands across local authority RCAs. The key issues that have been noted are:

- Lack of a feedback loop with NZTA after Programme submission'
- Lack of feedback loops leading to corrective behaviour (NZIER Report)
- Performance measurement is structured around task completion and budget spending rather than outcome achievement (from Working Group discussions)

RCA behaviours are being driven by current perceptions and requirements of the legislative and NZTA reporting requirements. With the challenges of the current and future fiscal environment it is inevitable that these requirements will be reviewed, and new or updated performance measures developed to reflect revised requirements. For local authority RCAs there is potential that this will occur in conjunction with the Local Government Act 2002 national performance measure setting in 2014.

4.3.3 What are some Innovative Approaches (including International) to Performance Measurement and Monitoring?

Refer to NZIER Draft Paper – Roles and Limits of Performance Measures, February 2012 which covers some of the more innovative approaches. It should be noted that the NZIER paper is limited in its scope, and more research will be required for a more detailed and definitive response to this question.

4.4 Any Legislative or Government Policy Issues which will Hinder Adoption of Changes Recommended by this Research

4.4.1 The Transportation Planning Framework

The Local Government Act 2002 (and subsequent amendments) provides the framework and authority for Councils to act. The act details the planning, consultation and operating regime, which gives Councils a wide range of choice in the services and levels of service they provide. These "powers of general competence" provide an enabling framework rather than a prescriptive approach. This results in the range in approach that is evident. A few portions of the Local Government Act 1974 remain in force, mostly relating to roads management.

Effectively the LGA 2002 sets the standards for AM practice as it details the Long Term Planning process and Councils practice is audited against compliance with is legislation.

The Land Transport Management Act 2003 (and subsequent amendments) describes the roles of NZTA as funder and process manager, as well as the State Highway manager. The LTMA details the roles of the Regional Councils and Regional Land Transport Committees along with the scope and processes involved with Regional Land Transport Strategies. The function of the Government Policy Statement on Land Transport Funding (GPS) is explained, along with the development of the National Land Transport programme and management of the National Land Transport fund is also described.

The Government Policy Statement on Land Transport Funding (GPS) is the core strategic directive for the sector. Its purpose is stated as follows:

The Government Policy Statement on Land Transport Funding (GPS) sets out the government's outcomes and priorities for the land transport sector. It describes:

- *what the government expects to be achieved from its investment in land transport through the National Land Transport Fund*
- *how it will achieve this through investment in certain areas known as activity classes (for example, the maintenance of State highways, road policing and walking and cycling)*
- *how much funding will be provided*
- *how the funding will be raised.*

(Government Policy Statement on Land Transport Funding, Ministry Of Transport, July 2011)

The GPS encourages RCAs to consider the Transport activity beyond an authorities' boundaries and align its planning approach with Central Governments objectives.

Considering networks from a national perspective

41. To help ensure that investment in land transport boosts New Zealand's long-term growth prospects, the NZ Transport Agency and local authorities need to continue to consider transport networks from a national perspective. Regional transport committees should consider the national aspect of networks, including the contribution local networks can make to achieving significant impacts at a national level.

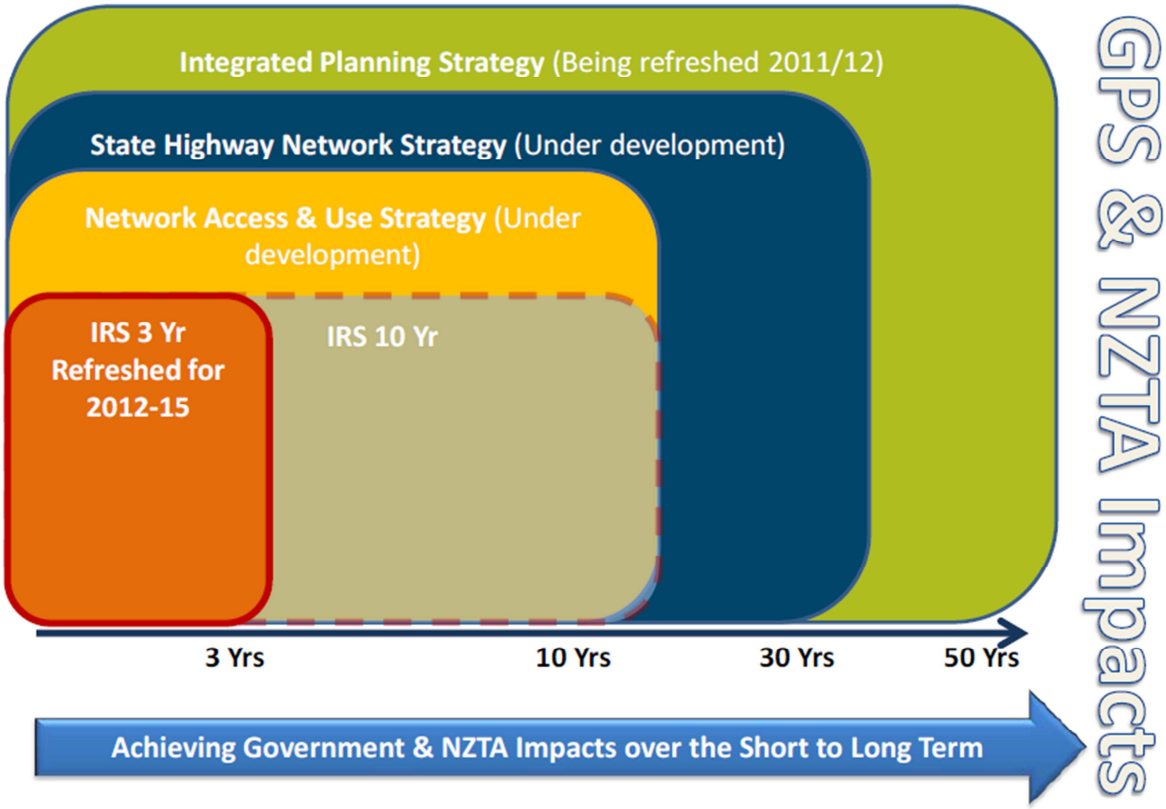
(Government Policy Statement on Land Transport Funding, Ministry Of Transport, July 2011)

NZTA provides a range of guidance to RCAs through publications and reference resources. Some documentation states how RCAs are to undertake planning, secure funding and obtain revenue. While these documents are not legislative they are generally regarded as mandatory by RCAs.

Some documents are older and being transformed into a more modern format, in particular the Planning Programming and Funding Manual (PPFM) to Knowledge Base transition.

Others documents are yet to be prepared, finalised or reviewed; their existence is indicated by NZTA. Refer Figure 4.1 below

Figure 4.1: GPS and NZTA Impacts



The Investment and Revenue Strategy is the tool we use to ensure our investment decisions give effect to the GPS 2012. It is also the tool we use to ensure our longer-term decisions and activities align with the direction in our strategies and to the government's longer-term outcomes for New Zealand, as stated in documents like the National Infrastructure Plan and the Safer Journeys Road Safety Strategy.

The IRS is the investment prioritisation tool that we use to ensure that we invest in value for money activities that collectively achieve the impacts set out in the GPS 2012. It is part of our 'family' of functional strategies:

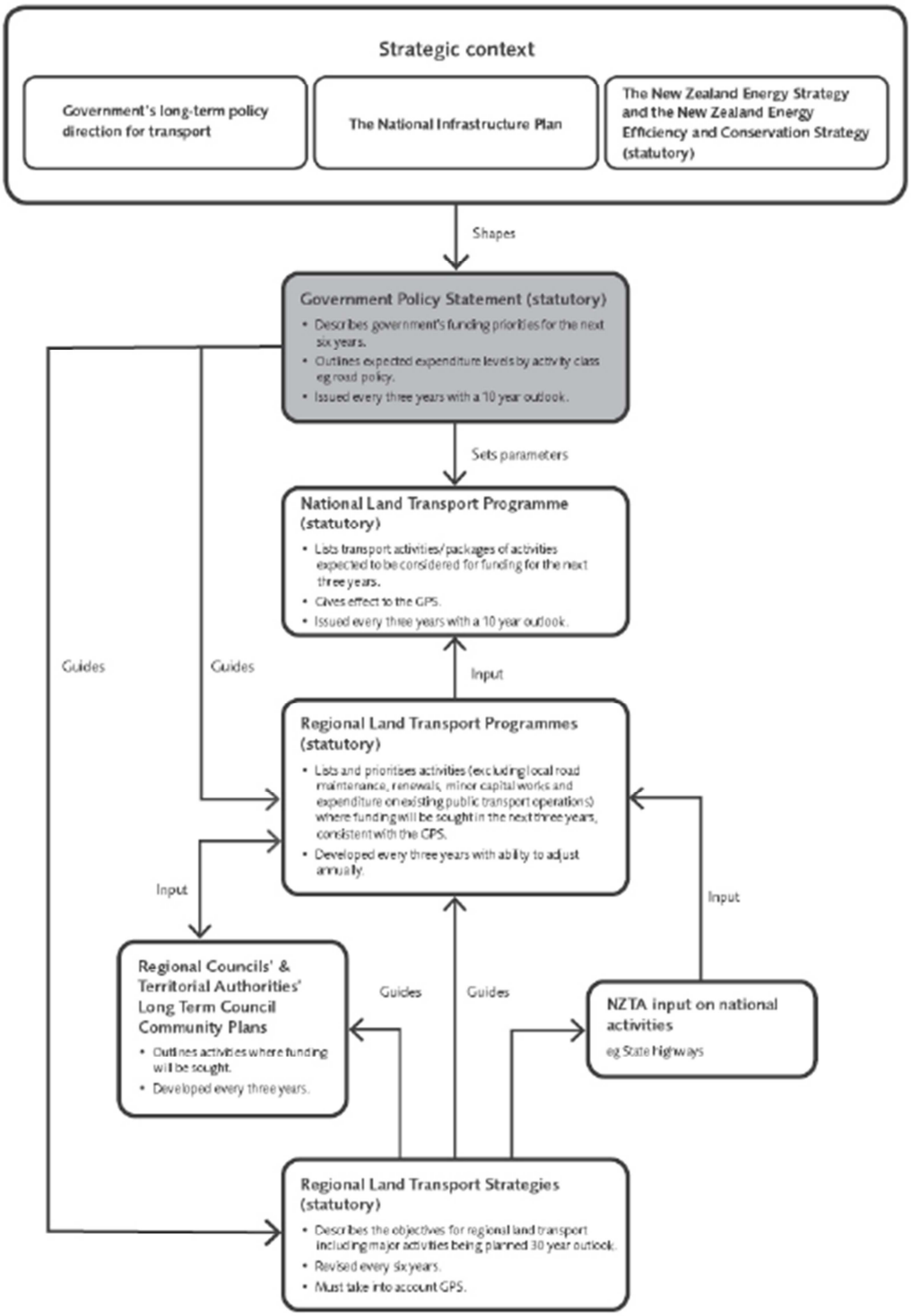
*The **Integrated Planning Strategy** focuses on integrating land use and transport planning and provides a set of integrated planning principles that we work with. Over the next year, it will be refreshed and may evolve into a wider integrated network planning strategy. This strategy is likely to set out the NZTA's perspective on land transport needs in the context of national, regional and local long-term land use. It is anticipated that it will identify the overall shape of the network required to achieve desired outcomes over the next 30–50 years.*

*The **State Highway Network Strategy** is under development. It sets out the role and function of the state highway network and how it operates within the wider context of the land transport network and land use. This strategy is about shaping, delivering and managing the state highway network in a wider network context, and differentiating (over a 30-year period) the customer levels of service offered on different categories of state highway to achieve desired outcomes.*

*The **Network Access and Use Strategy**, also under development, sets out how we'll shape networks and network use to achieve our desired outcomes. This Strategy is about network operators working together to maximise the efficiency and safety of the land transport network, including vehicles. It's also about network users having sufficient information and incentives to use the network in the most efficient and safe way. This document has a 10-year horizon and adopts a national, regional and local 'whole of network' perspective.*
(Source NZTA – Investment and Revenue Strategy)

The linkages across the planning framework span national regional and logical processes and aim to guide and inform each stage in the process. The linkages are illustrated in Figure 4.2 below:

Figure 4.2: Land Transport Planning Framework Strategic Context



(Source: Government Policy Statement on Land Transport Funding, Ministry Of Transport, July 2011)

Observations

The objectives and processes discussed above provide direction and a framework for planning. However in practice they do not encourage a seamless Asset Management process. There are issues with disconnected objectives and mandatory requirements as well as approval timeframes that are very difficult for Local Authorities to integrate with.

Local Authority RCAs are required to meet the expectations of their communities and elected representatives as decision makers, as well as NZTA as funding partner. This is a difficult balance given the differences in the legislation and processes involved. Local Authority Long Term Planning processes are driven by Council's Community Outcomes and objectives, while NZTAs are driven by the LTMA and GPS. There is little evidence of RCAs that have been able to combine the two regimes effectively and efficiently.

The timeframes associated with LGA 2002 Long Term Planning Process (AMP and LTP) and the LTMA 2003 (Regional Land Transport Strategy/Regional Land Transport Programme/National Land Transport Programme) do not align well and Councils may be required to adopt a Long Term Plan without certainty on the funding assistance they will receive.

Communication across the sector does not encourage an integrated approach between RCAs, Regional Councils and NZTA/MOT. There are issues of timeliness that affect each organisations and these are not well understood by all parties involved. Each agency should know what is required and when, while allowing sufficient lead in time for each party to contribute effectively

There is a wide range of Land Transport Planning documentation in circulation. The role and response associated with documents is not always clear, nor are documents disseminated in sufficient time for effective implementation across the organisations involved.

There may be a role for NZTA to act as a clearing house to ensure a greater degree on integration is achievable.

4.5 Skills Needed across the Sector to Deliver the Improvements in AM Planning and Delivery that are Envisaged by the Recommendations

Asset Management Planning and Delivery was formally required across the local government RCA sector to support the long term financial planning requirements set out in the Local Government Amendment Act (No3) 1996. Some larger urban councils had been undertaking asset management planning prior to this national requirement.

As a result of the asset management planning requirements the role of NAMS developed and a series of training courses was provided to the sector through NAMS,. Asset management plans were developed to varying standards in 1997/98. NAMS has continued to provide a range of yearly training courses, manuals and guides from 1996 forward.

Auditing of asset management plans and Council Long Term Plans have been undertaken by auditors acting for the Auditor General. NZTA and predecessor organisations have also undertaken reviews and sector wide collation of results for RCA transportation asset management plans.

Other transport sector specific initiatives have been the use and development of the RAMM asset management information system, RIMS group, dTIMS modelling, and advances in data capture methodologies. A collaborative approach in implementing dTIMS involving professionals across the sector is proving to be effective.

Through the use of consolidated reporting from RAMM and dTIMS results, a picture of national and regional road condition and performance statistics has been built up. New Zealand is relatively well placed in international terms in the development of national pavement management and road asset management systems and reporting.

The sector has now completed 4 cycles of asset management plans, audits and reviews.

Analysis of the results of asset management plan audits and reviews raise the following questions

- Is the level of asset management planning and delivery at an appropriate level?
- Is the level of asset management planning and delivery at a sufficient level of maturity?
- The accuracy and completeness of RAMM data

Observations:

New Zealand is fortunate to have a well-developed roading sector with leading professionals and practices. Like many sectors there are risks around skills shortage and ineffective organisational structures. There are many experienced Asset Managers within the sector and business continuity may become an issue as retirements occur.

Councils structure their organisations to suit themselves. In terms of Roading, some separate a strategic or planning role from day-to-day management while others combine the two. The size on an organisation is the main determinant, and in the smallest RCAs one person will fulfil multiple roles.

Some authorities carry out their AM in-house, while others outsource and engage consultants to supplement their resources. Again the approach will be defined by that Council's philosophy and procurement model. Securing subsidised funds through Work Category 003 is an opportunity some organisations progress.

Implementing a shared services model is an option some have chosen, and other RCAs work collaboratively on items such as road safety. Where RCAs have limited resource and skill levels these options could provide valuable. Such opportunities can be explored through the NZTA Procurement Strategy model.

The rapid growth of AM and gains made during the 1990s and early 2000s appears to have lost momentum. This may be due to less certainty in the objectives and direction or the resources that are applied during restrained economic times.

Advancing practice and furthering research and innovation is required for incremental improvement as well as developing or gaining from a paradigm shift.

On-going education is essential to develop core AM skills and ensure practical implementation occurs. While the NAMs training provides the framework for AM practice, further specific training opportunities addressing the issues specific to Land Transport is needed. This should include RCAs and NZTA partners to improve the integration of planning across the sector.

Collaborative development of asset information systems have been of significant benefit and should be encouraged into the future, particularly in highly specialised areas where the skill resource is limited. The Regional Transport Committee and their Technical Officers groups may be well position to facilitate greater collaboration.

There is currently no AM feedback loop beyond the LGA audit processes. A peer review process within the land transport sector should provide the same mutual benefits experienced through the technical audit process.

5.0 KEY FINDINGS AND RECOMMENDATIONS

5.1 Key Findings

The key findings of the research report are outlined below.

These findings are linked with the discussion in sections 3 and 4 under 'observations' and have been grouped in terms of the Research Topic Team's project scope and

5.1.1 Finding 1 - Current Practice

(Scope Item 1)

1a Service Levels are continually improving as a result of capital expenditure improving he roading networks across the country
1b The context of capital expenditure levels must be considered given that currently 50% of the NLTP is allocated to capital improvements
1c Local authorities are required to produce a Long Term Plan supported by Asset Management Plans, this requirement drives the approach to current practice
1d A 'compliance mentality' is evident with some RCAs, this occurs when Asset Management is undertaken with little consideration of the benefits of the AM process
1e Asset Management Information Systems are widely used, however the practice levels vary across organisations

5.1.2 Finding 2 – Target Practice

(Scope Item 3, 4)

2a Better Asset Management is appropriate and 'fit for purpose', it may not be 'best practice' or overly complex
2b There is a need for joined-up planning which reflects Strategic-Tactical-Operational and National-Regional-Local continuums
2c Some strategic drivers are short term (three or ten year), given they inform whole of life planning, the horizons are too short
2d There is a need to develop options and consider trade-offs as part of the AM process
2e An examination of service levels differentiation in line with available funding and acceptable risk is required
2f Different growth scenarios for different regions drives different practice needs (not one size fits all)
2g Better integration into planning of heavy vehicle and integrated freight movement is required regionally and nationally, this would include projected changes in land use
2h Risk Management improvements can be made with a focus on with resilience and regional solutions
2i Risk Management innovation opportunities exist when considering the inhibitors to achieving transportation objectives
2j Improved use of AM Systems and Models can facilitate scenario analysis
2k There is scope for development of appropriate AM planning, practices and financial strategies to effectively support sustainable development
2l A step change in maintenance is sought by Technical Working Group (re-thinking maintenance) as well as continuing incremental innovation.

5.1.3 Finding 3 – Performance Management

(Scope Item 5, 6, 7)

3a The core issues are contained in the NZIER Report Summary
3b Integrated Performance management requires an alignment of objectives and horizons
3c RCAs demonstration of NZTA's objectives is often poor (e.g. efficiency and effectiveness)
3d Measuring and Managing condition of assets is a core AM function
3e Determining and measuring appropriate levels of service is on-going and requires a feed-back loop (refer NZIER report for proposed model)

5.1.4 Finding 4 – Policy Implications

(Scope Item 8)

4a AM practices need to acknowledge the capital expenditure context and need to integrate with longer term programmes
4b The three year GPS is ratified after Council LTPs are adopted, this creates disconnects for Council financial strategies and causes Elected Representatives to approve financial forecasts that contain a degree of uncertainty
4c Impacts of decisions in other transport modes are not always well integrated into decision making

5.1.5 Finding 5 – Gains and Benefits

(Scope Item 2, 9)

5a There are more potential gains in Capital Expenditure given this constitutes 50% of the total NLTP
5b The potential operations and maintenance gains yield less savings in the short term, but the total is significant over time
5c The Technical Working Group sees a key opportunity within the planning and management of the maintenance activity
5d Managing Risk in combination with Levels Of Service creates a framework to assess savings
5e Asset Managers should acknowledge the long term fiscal tensions – there is no business-as-usual scenario
5f Developing common objectives across the National-Regional-Local continuum will highlight the pertinent issues
5g More effective asset management is needed to produce long term results

5.1.6 Finding 6 – Asset Management Skills

(Scope Item 10)

6a Asset Management Peer Audits could be used to improve the standard of AM Practice
6b There is scope for Regional clusters, workshops for peer mentoring, shared services and greater skills transfer
6c Documentation of appropriate practice case studies will provide reinforcement for those performing well and guidance for others
6d There is a potential to use additional economic modelling tools (for example Regional Wider Economic Benefit models) in addition to benefit / cost analysis for building robust economic case for investment

Table 5.1: Findings, Impact Horizon and Importance

Ref	Finding	Impact Horizon and Importance		
		Immediate	Medium	Long
1	**Current Practice**			
1a	Service Levels are continually improving as a result of capital expenditure improving he roading networks across the country	3rd		
1b	The context of capital expenditure levels must be considered given that currently 50% of the NLTP is allocated to capital improvements			
1c	Local authorities are required to produce a Long Term Plan supported by Asset Management Plans, this requirement drives the approach to current practice	2nd		
1d	A 'compliance mentality' is evident with some RCAs, this occurs when Asset Management is undertaken with little consideration of the benefits of the AM process			
1e	Asset Management Information Systems are widely used, however the practice levels vary across organisations	1st		
2	**Target Practice**			
2a	Better Asset Management is appropriate and 'fit for purpose', it may not be 'best practice' or overly complex			
2b	There is a need for joined-up planning which reflects Strategic-Tactical-Operational and National-Regional-Local continuums	1st		
2c	Some strategic drivers are short term (three or ten year), given they inform whole of life planning, the horizons are too short			
2d	There is a need to develop options and consider trade-offs as part of the AM process		3rd	
2e	An examination of service levels differentiation in line with available funding and acceptable risk is required			
2f	Different growth scenarios for different regions drives different practice needs (not one size fits all)			
2g	Better integration into planning of heavy vehicle and integrated freight movement is required regionally and nationally, this would include projected changes in land use			
2h	Risk Management improvements can be made with a focus on with resilience and regional solutions		4th	
2i	Risk Management innovation opportunities exist when considering the inhibitors to achieving transportation objectives			
2j	Improved use of AM Systems and Models can facilitate scenario analysis			
2k	There is scope for development of appropriate AM planning, practices and financial strategies to effectively support sustainable development			
2l	A step change in maintenance is sought by Technical Working Group (re-thinking maintenance) as well as continuing incremental innovation		2nd	
3	**Performance Management**			
3a	The core issues are contained in the NZIER Report Summary			

Ref	Finding	Impact Horizon and Importance		
		Immediate	Medium	Long
3b	Integrated Performance management requires an alignment of objectives and horizons	2nd		
3c	RCAs demonstration of NZTA's objectives is often poor (e.g. efficiency and effectiveness)		1st	
3d	Measuring and Managing condition of assets is a core AM function			
3e	Determining and measuring appropriate levels of service is on-going and requires a feed-back loop (refer NZIER report for proposed model)		3rd	
4	**Policy Implications**			
4a	AM practices need to acknowledge the capital expenditure context and need to integrate with longer term programmes	2nd		
4b	The three year GPS is ratified after Council LTPs are adopted, this creates disconnects for Council financial strategies and causes Elected Representatives to approve financial forecasts that contain a degree of uncertainty		1st	
4c	Impacts of decisions in other transport modes are not always well integrated into decision making		3rd	
5	**Gains and Benefits**			
5a	There are more potential gains in Capital Expenditure given this constitutes 50% of the total NLTP			
5b	The potential operations and maintenance gains yield less savings in the short term, but the total is significant over time			
5c	The Technical Working Group sees a key opportunity within the planning and management of the maintenance activity		2nd	
5d	Managing Risk in combination with Levels Of Service creates a framework to assess savings		3rd	
5e	Asset Managers should acknowledge the long term fiscal tensions – there is no business-as-usual scenario	1st		
5f	Developing common objectives across the National-Regional-Local continuum will highlight the pertinent issues			
5g	More effective asset management is needed to produce long term results			
6	**Asset Management Skills**			
6a	Asset Management Peer Audits could be used to improve the standard of AM Practice		2nd	
6b	There is scope for Regional clusters, workshops for peer mentoring, shared services and greater skills transfer	1st		
6c	Documentation of appropriate practice case studies will provide reinforcement for those performing well and guidance for others	3rd		
6d	There is a potential to use additional economic modelling tools (for example Regional Wider Economic Benefit models) in addition to benefit / cost analysis for building robust economic case for investment			

5.2 Implementation

If better Asset Management is to deliver the benefits recognised in this report, the operating environment of Asset Managers needs to be conducive to change.

Central to change is the goal of asset management:
To meet the required level of service, in the most cost effective manner, through the management of assets for present and future customers. (IIMM, 2011)

There are a range of options available to deliver identified levels of service, and alongside the funding required, there is a level of risk in the ability or inability to deliver that level of service.

The Asset Management Practice change recommended is to move to an options based asset management approach discussing relevant scenarios and methodologies that apply to these scenarios.

This approach will require a change in operating environment. Historically Asset Managers have aimed to maximise the funding assistance provided by NZTA (and its predecessors) in order to maintain (or improve) the transportation network provided to their local community. Frequently, Asset Management practice focussed on presenting a robust case for the level of funding deemed necessary for one management regime. For an options based approach to be effective, Asset Managers will have to be incentivised to offer realistic alternative strategies and be able to do so without fear of risking adequate funding support from either their community or NZTA.

Current and projected fiscal environments preclude a business-as usual approach. Funding requests for the 2012-15 period are significantly higher than the funding identified for the transportation sector and resulting from this a change is needed.

Part of the change process is for RCA Asset Managers to acknowledge the national context of transportation planning and management as well as the choices made by central Government and the priorities it determines through the Asset Management process. Asset Management practice based around “protecting one’s budget” show a lack of understanding of the wider context and cohesion across national, regional and local government. The statements in the National Infrastructure Plan and Government Policy Statement on Land Transport Funding illustrates where central government sees the issues and the priorities.

Improved alignment of strategic planning through national, regional and local sectors will require clear direction. This may include the roles of the Treasury (and National Infrastructure Unit), the Ministry of Transport, NZTA, Regional Council’s (and Regional Transport Committees) as well as Road Controlling Authorities. To align the objectives of the transportation system agreement will be required across these groups. Without honest dialog and an alignment of objectives the asset management process will fail to deliver a beneficial result across the transportation sector.

To affect change clear leadership is required. Recommended implementation actions associated with the priority findings are listed below.

Table 5.2: Implementation of Findings

Ref	Finding	Import-ance	Impact Horizon	Action	Lead Organisations
1	**Current Practice**				
1e	Asset Management Information Systems are widely used, however the practice levels vary across organisations	**1st**	Immediate Medium	Guidance and national standards required	NZTA RIMS
1c	Local authorities are required to produce a Long Term Plan supported by Asset Management Plans, this requirement drives the approach to current practice	**2nd**	Immediate Medium Long	Integrate LTMA & LGA Guidance and Practice assessment	INGENIUM/ NAMs
1a	Service Levels are continually improving as a result of capital expenditure improving he roading networks across the country	**3rd**	Immediate Medium Long	Review service levels and measurement framework – integrate with DIA process under way	DIA NZTA RCAs INGENIUM/ NAMS
2	**Target Practice**				
2b	There is a need for joined-up planning which reflects Strategic-Tactical-Operational and National-Regional-Local continuums	**1st**	Immediate	Guidance documentation required for directing and integrating into Regional Planning and RCA AM Practice	NZTA
2l	A step change in maintenance is sought by Technical Working Group (re-thinking maintenance) as well as continuing incremental innovation	**2nd**	Medium	Encouragement and leadership is required to enable study teams and technical working parties to identify and implement more efficient and effective maintenance practices	NZTA Industry Groups
2d	There is a need to develop options and consider trade-offs as part of the AM process	**3rd**	Medium	Create incentives for presenting and developing alternatives and guidance for presenting options	NZTA
2h	Risk Management improvements can be made with a focus on with resilience and regional solutions	**4th**	Medium	Explore effectiveness gain through more regional risk management practices	NZTA & RTC Representatives

Ref	Finding	Import-ance	Impact Horizon	Action	Lead Organisations
3	**Performance Management**				
3c	RCAs demonstration of NZTA's objectives is often poor (e.g. efficiency and effectiveness)	**1st**	Medium	Refer 2b above and NZIER Report	
3b	Integrated Performance management requires an alignment of objectives and horizons	**2nd**	Immediate	Ensure strategic documents provide an appropriate planning horizon	NZTA NZTA & RTC Representatives INGENIUM/ NAMs
3e	Determining and measuring appropriate levels of service is on-going and requires a feed-back loop (refer NZIER report for proposed model)	**3rd**	Medium	Refer 1a above	
4	**Policy Implications**				
4b	The three year GPS is ratified after Council LTPs are adopted, this creates disconnects for Council financial strategies and causes Elected Representatives to approve financial forecasts that contain a degree of uncertainty	**1st**	Medium	Refer 3b above	
4a	AM practices need to acknowledge the capital expenditure context and need to integrate with longer term programmes	**2nd**	Immediate	Expand narrative in National Infrastructure Plan and GPS to provide strategic direction and objectives in Regional and Local AM Practice	NZTA National Infrastructure Unit
4c	Impacts of decisions in other transport modes are not always well integrated into decision making	**3rd**	Medium	Integrate national/region and local planning and decision making to avoid programme disconnects	NZTA National Infrastructure Unit MOT

Ref	Finding	Import-ance	Impact Horizon	Action	Lead Organisations
5	**Gains and Benefits**				
5e	Asset Managers should acknowledge the long term fiscal tensions – there is no business-as-usual scenario	**1st**	Immediate	Refer 4a above	
5c	The Technical Working Group sees a key opportunity within the planning and management of the maintenance activity	**2nd**	Medium	Refer 2l above	
5d	Managing Risk in combination with Levels Of Service creates a framework to assess savings	**3rd**	Medium	Provide guidance to improve risk management practice as a tool integrated with levels of service and funding analysis Also refer 2h above	NZTA RCAs INGENIUM/ NAMS
6	**Asset Management Skills**				
6b	There is scope for Regional clusters, workshops for peer mentoring, shared services and greater skills transfer	**1st**	Immediate	Encourage and support greater collaborative practice (note recommendation from this study team)	NZTA RCAs INGENIUM/ NAMS
6a	Asset Management Peer Audits could be used to improve the standard of AM Practice	**2nd**	Medium	Develop a process for AM Peer Audits	NZTA
6c	Documentation of appropriate practice case studies will provide reinforcement for those performing well and guidance for others	**3rd**	Immediate	Document case study to acknowledge and share useful case studies	NZTA INGENIUM/ NAMS

5.3 Recommendations

Asset Management Practice provides a process for determine 'what is required, how it will be provided, and how it will be funded'. Over time AM practice has improved to analyse these issues thoroughly. AM practice in New Zealand is well-developed and generally adequate to support organisation's long term plans.

Asset Management can further provide benefits and service delivery optimisation as greater savings are sought if the appropriate environment for improvement is established.

The key findings indicate the AM process should include a greater cognisance of the economic context that planning occurs within, that a wider range of scenarios should be considered and that greater direction is needed to produce integrated results.

In order to progress the actions proposed the following recommendations should be considered by the Research Topic Team and Technical Working Group.

Recommendation One: Prepare guidance documentation to direct and integrate Regional Planning and RCA AM Practice

This links with finding 2b
There is a need for joined-up planning which reflects Strategic-Tactical-Operational and National-Regional-Local continuums with impacts within the immediate planning horizon.

This recommendation is also associated with findings:
3b Integrated Performance management requires an alignment of objectives and horizons
(immediate impact horizon)
4a AM practices need to acknowledge the capital expenditure context and need to integrate with longer term programmes
(immediate impact horizon)
4b The three year GPS is ratified after Council LTPs are adopted, this creates disconnects for Council financial strategies and causes Elected Representatives to approve financial forecasts that contain a degree of uncertainty
(medium impact horizon)
5e Asset Managers should acknowledge the long term fiscal tensions – there is no business-as-usual scenario
(immediate impact horizon)

Recommendation Two: Incentivise the development of options and trade-offs through AM Practice

This links with finding 2d
There is a need to develop options and consider trade-offs as part of the AM process with impacts expected in the medium horizon

Recommendation Three: Encourage and provide leadership to enable study teams and technical working parties to identify and implement more efficient and effective maintenance practices

This links with finding 2l
A step change in maintenance is sought by Technical Working Group (re-thinking maintenance) as well as continuing incremental innovation', which is expected to impact in the medium horizon

Recommendation Four: Seek Improvements in AM Practice

This recommendation links with findings 6a, 6b and 6c as follows:
6a Asset Management Peer Audits could be used to improve the standard of AM Practice
(medium impact horizon)
6b There is scope for Regional clusters, workshops for peer mentoring, shared services and greater skills transfer
(immediate impact horizon)
6c Documentation of appropriate practice case studies will provide reinforcement for those performing well and guidance for others
(immediate impact horizon)

6.0 RESEARCH – SUMMARY OF NATIONAL ISSUES / STRATEGIC DIRECTION

As part of the preparation for this paper a review of the of longer term national land transport issues was completed to ensure that the Road Maintenance Taskforce examination of Asset Management Practice was placed within an appropriate context. In effect this review of national issues was designed to provide the Strategic direction within the Strategic-Tactical-Operational spread of Asset Management Practice.

This review drew on the National Infrastructure Plan 2010 and 2011; National Land Transport Programme, Treasury Fiscal Long Term Fiscal Statement 2009, various NZTA research and discussion papers; and previous research by Ross Waugh on national infrastructure funding / expenditure trends.

The summary observations of this research have been placed in the appropriate sections of this report to inform the discussion. This Section provides more detail on how those observations were made.

6.1 Capital Expenditure relationships with Asset Operations, Maintenance and Renewal

This Road Maintenance Taskforce report is tasked with examining Asset Management Practice within the context of Maintenance and Renewals programmes and expenditure. The national transportation capital expenditure programme is not part of the brief – the working party has no mandate to examine capital policy decisions and expenditure programmes, nor wishes to do so.

That said, renewal and maintenance expenditure does not occur in a vacuum, and once capital expenditure programmes have created assets, then to deliver sustained service they must be operated, maintained and ultimately renewed. Capital expenditure programmes therefore clearly have an on-going impact and relationship with maintenance and renewal programmes.

This impact of capital expenditure programmes includes:

- The creation of new assets that require operation, maintenance and renewal (additional to current network)
- Changing the dynamics and use of transportation networks, which has effects on future operation, maintenance and renewal priorities across the network
- Changing network service levels – by improving service levels with capital expenditure this often creates expectations of the delivery of the same service level in other parts of the network
- Assuming a relatively fixed expenditure envelope higher capital expenditure levels necessarily restrict available expenditure for operations maintenance and renewal

With these points in mind a brief examination of the strategic context of capital expenditure was undertaken.

6.2 Comparison Countries and Potential Impacts of Service Levels

New Zealand likes to compare itself with other OECD countries to measure national progress and highlight areas of concern. These comparisons inform political and technocratic debate in this country.

The ‘National Infrastructure Plan March 2010’, p58, Table 17 and more recently ‘Insights of New Zealand – Infrastructure Development in Comparative Nations’ October 2010, Kensington Swan for NZCID, p8, Figure 1 provided information that showed comparisons of road networks across suitable comparator nations. The table below is a synthesis of the information presented in the two reports referenced above.

In comparison with like OECD nations (2007 data):

Table 6.1: NZ Transportation Network in 2007

	NZ	Scotland	Ireland	Finland	Norway	Denmark
Land Area (sq. km)	268,680	78,352	70,289	304,473	307,442	42,394
Population (m) 2009 est.	4.3	5.2	4.4	5.3	4.6	5.5
Population (m) of largest city 2009 est.	1.4	1.2	1.6	1.3	0.6	1.8
Railways (km) 2006	4,128	2,745	1,919	5,919	4,114	2,667
Roads (km) 2006	93,576	55,838	96,602	78,821	92,946	72,362
Expressways (km)	171	1160	200	700	664	1032
If additional Expressways to 2030+	552					
Transport Ranking (IMD)	31	24 (UK)	35	7		4

Source NZCID, Insights for NZ – Infrastructure Development in Comparative Nations, October 2010

Observation 1: Demand for Expressways

With the exception of Ireland the length of expressways in New Zealand is very low when measured against comparison OECD nations.

Excluding Ireland the average length of expressway in the other 4 comparison nations is 889km. New Zealand with 171km has only 20% of this expressway length.

It is fair to assume that in New Zealand continued freight and other traffic demand growth, coupled with on-going international level of service comparisons, will drive demand for the continued construction of expressways for the foreseeable future i.e. continued increased service level demand for a large capital expenditure programme.

6.3 Expressway Construction

A further examination of expressway construction is included below, including a quick analysis of possible future expressway construction to 2030.

6.3.1 Current Roads of National Significance Construction

The current identified RONS and expenditure estimates (2006 – 2016 period) are summarised in the table below. Expenditure in the NLTP 2009-2012 estimated at $1.359B.

Table 6.2: Current Roads in National Significance Construction

RON Name	Length (km)	2009 Est. in $B	$M/km
Puhoi to Wellsford	38		
Waterford Connection		2	
Auckland Victoria Park	0.44	0.43	
Waikato Expressway	102	1.9	20
Tauranga Eastern Corridor			
Wellington Northern Corridor	110		
Christchurch Motorway Projects			
Totals		**10.5**	

6.3.2 Possible Future Roads of National Significance Construction

Potential future RONS already identified in NZTA / MOT / Govt. briefing papers and a quick examination of known areas with issues provides a potential list:

Table 6.3: Possible Future Roads of National Significance Construction

RON Name	Length (km)	2009 Est. in $B	$M/km
Hamilton to Tauranga (SH1, SH29)	75	1.9	25
Cambridge to Taupo (SH1)	100	2.5	25
Additional Auckland	40	3.2	80
Napier – Hastings	20	0.6	30
Levin to Palmerston North	47	1.2	25
Christchurch SH1 Expressways	60	1.2	20
Total	**342**	**10.6**	

6.3.3 Summary of Expressway Construction

In 2006 New Zealand had a recorded 171km of expressway, developed over a 50 year period.

Table 6.4: Summary of Expressway Construction

Construction Period	# Years	Expressway km constructed	Average Km/year	Comments
1956 - 2006	50	171	3.42	Urban
2006 – 2016	10	39 (planned)	3.9	Mix
2016 – 2040	24	342 (projected)	14.25	Mainly rural

Note: if the cost of the future identified 342km of expressways is approximately $11B, and this was completed by 2040 then this would provide an annual capital cost of $0.44B per annum throughout this period. This is about the same level as the current RON programme. It can be seen that there is a reasonable likelihood of the current RON expenditure levels continuing for the next 30 years.

Observation 2: Probable National Transportation Capital Expenditure of $1B per annum for the next 30+ years [links to finding 1a, 1b, 4a]

Observation 3: Likely Capital Expenditure Programmes need to be more clearly signalled and defined (routes and timing) to allow subsequent optimisation of network maintenance and renewal decisions [links to finding 2b, 2c, 3b, 4a]

Having examined probable Expressway demand and estimates of possible cost it is relatively easy to predict the current NLTP capital expenditure of $1.2B per annum continuing for at least the next 30 years. This projected level of new capital expenditure would have a range of impacts on transportation network operations, maintenance and renewal expenditure – changing network dynamics in some regions, adding new major roads requiring maintenance and renewal, and changing usage impacts on some networks – particularly in the Auckland, Waikato and Bay of Plenty Regions. Whilst much further asset management and modelling work would be required to confirm findings, there is a strong possibility that such large and on-going capital expenditure programme would lead to a measurable increase in whole of network maintenance requirements and expenditure.

6.3.4 Other Expressway Construction Considerations

The current Ports of Auckland (POA) utilises some of the most high valued real-estate in New Zealand.

Within the last few months POA has been in a protracted industrial dispute that has highlighted at a national level some of the issues surrounding the operation and expansion of the Port.

Port of Tauranga is much more efficiently run, and provides a much higher return on capital invested. POA is relatively inefficient and is not making a sufficient return on capital. Given the value of the land, there are other alternative uses that potentially make better sense.

Compounding POA issues is the process of port expansion required to handle the larger class container ships visiting New Zealand (the current smaller vessels are being progressively withdrawn due to obsolesce and the greater operational efficiency of the new larger vessels). The current proposal is for 2 Billion capital expenditure, which would still only provide full tide (restricted) access to these newer larger container vessels. Both Port of Tauranga and Northport are currently able to service these larger vessels.

If the decision was taken at a national level not to expand Ports of Auckland, but rather shift container handling to Port of Tauranga and Northport, and free up land use for development at Port of Auckland then this scenario would have significant impact of the Waikato-Tauranga road network, and bring forward the development of the possible Hamilton – Tauranga expressway. It should be noted that a preliminary cost estimate of this expressway is $2 Billion, about the same amount of the preliminary cost of the Port of Auckland expansion.

It is likely therefore, that this debate will be held at a national level prior to the Ports of Auckland expansion being approved. The consequences for further RONS, expressway development, and subsequent local road network development would be significant if Ports of Auckland expansion was halted and demand shifted to other Ports.

Observation 4: Other Transport Mode Decisions have potential for major impact on transport network capital expenditure requirements [links to finding 4c]

The current national debate on port rationalisation, and in particular the issues surrounding the continuing use of the Ports of Auckland for containerised shipping have potential for large impact on transportation network capital expenditure requirements. This in turn has potential flow-on effects on network operations, maintenance and renewal projections.

6.4 Demand Projections

Data from the National Infrastructure Plan 2011 on growth / decline in regional populations 2006 – 2031:

Table 6.5: Regional Demand Projections (from NIP 2011)

Region	2006 Population	2031 Projected Population	Projected Increase	% Increase	Growth Driver
Northland	152,700	171,300	18,600	12.2	Static
Auckland	1,371,000	1,944,700	**573,700**	41.8	**Growth**
Waikato	395,100	468,200	73,100	18.5	Growth
Bay of Plenty	265,300	323,400	58,100	21.9	Growth
Gisborne	46,000	45,900	-100	-0.2	Decline
Hawkes Bay	152,100	158,300	6,200	4.1	Static
Taranaki	107,300	108,500	1,300	1.1	Static
Manawatu	229,400	236,900	7,600	3.3	Static
Wellington	466,300	541,200	75,000	16.1	Growth
Nelson	45,800	53,200	7,400	16.2	Static
Tasman	44,300	49,900	5,600	12.6	Static
Marlborough	43,600	48,700	5,200	11.7	Static
Westcoast	32,100	31,300	-800	-2.5	Decline

Region	2006 Population	2031 Projected Population	Projected Increase	% Increase	Growth Driver
Canterbury	540,000	652,400	112,400	20.8	Growth
Otago	199,800	225,900	26,100	13.1	Static
Southland	93,200	87,900	-5,800	-5.7	Decline
Totals	**4,184,000**	**5,147,700**	**963,700**	**23.0**	**Growth**

It can be seen from this table (adapted from p9 National Infrastructure Plan 2011) that Auckland Regions growth dominates the population growth projections from 2006 to 2031. Of the anticipated 963,700 additional population (the business as usual scenario – this is not a high growth scenario) by 2031 – 537,700 or 60% is projected for the Auckland Region.

When considering the adjacent 'Golden Triangle' Regions of Waikato and Bay of Plenty in conjunction with Auckland then the projected growth is 704,900 or **73.1%** of the projected increase.

From this analysis it is clear that the 'Golden Triangle' regions of Auckland, Waikato and Bay of Plenty are going to dominate transport sector inputs through to 2031 and beyond. This is expected to include new capital expenditure, renewals and maintenance. Clearly the projected growth in the Wellington and Canterbury regions (assuming earthquakes diminish and Canterbury growth kicks in on the back of earthquake recovery) will also require additional resources, whilst all other regions will be essentially maintaining and renewing the current infrastructure.

Transportation network demand growth is not solely tied to population growth, as changes / growth in freight movement patterns also has a significant impact on network performance, deterioration and maintenance / renewal requirements. It has been noted in discussions with the working party during the compilation of this report that the dynamics of freight movement patterns are not well understood / incorporated into local authority / RCA asset management planning.

Observation 5: Golden Triangle – Auckland, Waikato and Bay of Plenty Region growth will dominate New Zealand growth for the next 20 years [links to finding 2b, 2f]

Observation 6: Most other Regions are in a static or decline growth scenario – the focus will be on maintaining the status quo as opposed to growth [links to finding 2f, 2k, 5f, 5g]

Observation 7: More analysis is required of freight movement changes and growth to inform asset management growth and demand management links to finding 2g]

There is an immature understanding of Heavy Vehicle / Freight Demand planning as a component of demand. For example, the RLTP Freight Plan for Otago and Canterbury doesn't feed well into the local authority AMP/LTP process. We can do better on this issue as a country.

6.5 National Expenditure Priority Tensions

In the period 2012 – 2050 New Zealand has a number of major expenditure priority tensions, that are well canvassed in 'Challenges and Choices, New Zealand's Long-term Fiscal Statement' October 2009, New Zealand Treasury.

Future infrastructure expenditure will not be immune to these expenditure priority tensions and therefore decisions about capital, maintenance and renewal expenditure will need to be made within the context of multi-decade expenditure constraint, tension and public examination against competing priorities.

6.5.1 New Zealand National Infrastructure Expenditure Trends

During the period 1971 – 1986 the national infrastructure expenditure was high, both in % of GDP terms, and in comparison with international averages.

1971 – 1986 = 8% GDP.

Assisted by 2 major construction phases – Think Big, 1980's 'Construction Boom'

1986 – 2008 = 4% GDP
1996 – 2001 = 2.8% GDP c.f. OECD average 4.4% GDP
2001 – 2006 almost at OECD average

Source: The Role of Infrastructure In Developing New Zealand's Economy, Arthur Grimes, Motu Sept 2008

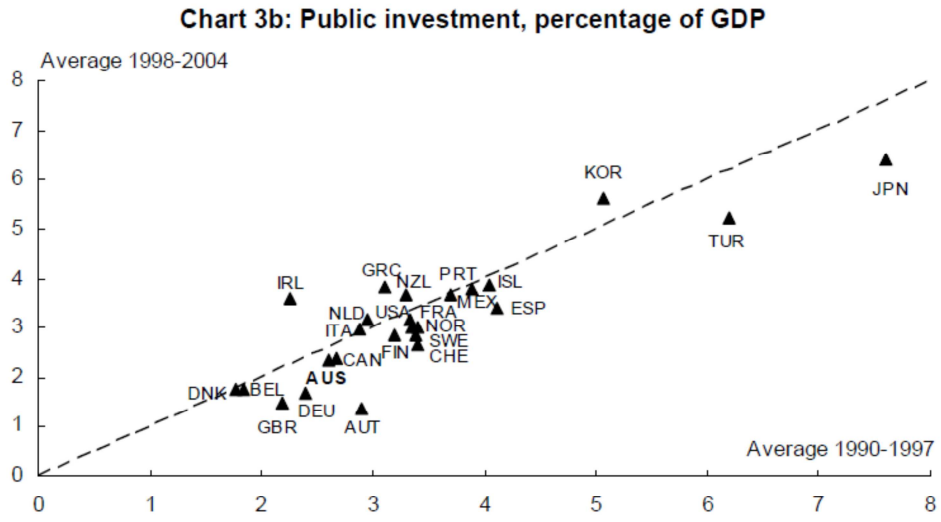
2010 = 6.8% GDP NZ infrastructure expenditure

NZ GDP $133B
Crown Infrastructure Expenditure: $6B pa
Local Government $3B pa
(Note: Roads 1.4% GDP up from 1% in 1999/2000)

Total Infrastructure Spend $9B pa / $133B GDP = 6.8% GDP

Source: National Infrastructure Plan, March 2010

Figure 6.1: Public Investment, Percentage of GDP



Source: OECD (2006a), data for 25 OECD countries.

1998 – 2004 New Zealand infrastructure investment about OECD average, but total infrastructure stock as % of GDP was relatively high (and relatively new) due to the 1971 – 1986 infrastructure investment programme.

6.5.2 Expenditure Priority Tensions

The information below is drawn from 'Challenges and Choice, New Zealand's Long –term Fiscal Statement', October 2009, New Zealand Treasury.

It is clear looking at New Zealand's long term fiscal expenditure that in the future – particularly the period 2030 – 2050 there will be a range of expenditure demands on public expenditure that will create tensions in the economy that will be very difficult to resolve politically.

Table 6.6: Expenditure Priority Tensions (Projections from Treasury Historic Trends Approach)

Expenditure Area	2011 - %GDP	2030 - %GDP	2050 - %GDP
Debt Projections	21.8%	79.5%	223%
Debt Servicing	1.6%	4.8%	12.7%
Superannuation	4.7%	6.7%	8%
Education	6.4%	5.5%	5.4%
Health	7.6%	8.5%	10.7%
Total S+E+H	18.7%	20.7%	24.1%
Difference 2010		+5%	+10%
Infrastructure (approx.)	7%	? 5%	? 3.5%

Information Source: NZ Long Term Fiscal Statement, Oct 2009, Treasury

6.5.3 Impacts of Expenditure Priority Tensions

It is reasonably clear that whilst New Zealand is spending a relatively high proportion of GDP (7% currently) on infrastructure over the next period (2012 – 2050), there will inevitably be pressure for this level of expenditure to reduce as other expenditure demands in the economy increase.

The size of this potential decrease will be dependent of economic, migration, population and a host of other factors over the next 20 years – but is it is quite possible that national expenditure on infrastructure could more than halve from current levels by 2050.

The conclusion from this is that, as always – infrastructure expenditure is expensive, and that infrastructure built will have to last a good long time. Achieving as close as possible to optimal infrastructure lifecycle costs is increasingly important given New Zealand's projected fiscal position over the next 40 years.

Observation 8: Major Expenditure Priority Tensions will be present in the New Zealand economy for the next 40 years – this will put on-going pressure on the level of total infrastructure expenditure – including expenditure efficiency, effectiveness and required service levels. [links to finding 3c, 3e, 5e]

Observation 9: There is no business- as-usual scenario for infrastructure expenditure going forward over the next 40 years. [links to finding 5e]

Observation 10: Effective asset management will become progressively more important in an environment of expenditure constraints and the need for expenditure trade-offs. [links to finding 2a, 2b, 2d, 2k, 3b, 5e, 5f, 5g]

Given the analysis above it is easy to see that there will be on-going pressure in infrastructure expenditure over the next 40 years. As New Zealand society has to make trade-offs between health, education, superannuation and other social expenditure there will also be inevitable infrastructure will face on-going and increasing scrutiny of both the level and effectiveness of expenditure.

In this context, the current Road Maintenance Taskforce analysis can be seen as another small step in what will be a multi-decade examination of infrastructure expenditure efficiency, effectiveness and required service levels.

Given the likely expenditure constraints and trade-offs in New Zealand society there is no business-as –usual scenario for transportation expenditure.

6.6 Analysis of National Transportation Expenditure

The following analysis data has been drawn from the National Land Transport Programme 2009-2012, August 2009. The table examines the three year spend projections.

A technique that Waugh infrastructure often uses when working with a new client to focus on the issues that matter, cut through the clutter of technical detail, and manage the larger risks is simply to analyse the long term expenditure trends then 'follow the money'. Focus on the bigger expenditure areas, and ensure that they are well managed.

Applying this analysis technique to the expenditure projections in the NLTP 2009-2012 yields the results shown in the table below:

Table 6.7: Analysis of NLTP Expenditure 2009-12 (3 year) Projections

Exp. Area	Item	$M	% of Total	5% gain $M	5% gain % Total	10% gain $M	10% gain % Total
Capital	RONS	1,359					
Capital	SH	1,716					
Capital	Local	480					
Capital	Total	3,555	49.5	177.7	2.48	355.5	4.97
Renewal	SH	633					
Renewal	Local	696					
Renewal	Total	1,329	18.5	66.5	0.93	132.9	1.86
O+M	SH	897					
O+M	Local	743					
O+M	Total	1,640	23	82.0	1.15	164	2.29
Public T	Total	630	9				
Total		7,154	100				

(gain indicates potential savings)

It can be seen from the analysis in this table that Capital Expenditure at 49.5% of total expenditure is clearly the area where the most gains are to be made in the NLTP – both for overall savings and optimising expenditure.

Operations and Maintenance expenditure offers far less potential gains at only 23% of total expenditure. It can be seen from the analysis that a 5% reduction in Operations and Maintenance Expenditure would yield a 1.15% reduction in total expenditure ($82M). Whilst gains like this are still worth trying to achieve, they are proportionally much smaller than the gains to be had from optimising capital expenditure.

Observation 11: Capital Expenditure optimisation will yield the greatest gains in NLTP expenditure. A 5% reduction on Operations and Maintenance expenditure would only reduce total expenditure by 1.15%. [links to finding 1b, 4a, 5a, 5b]

6.7 Other Issues

6.7.1 Understanding the Growth and Capacity Backlog

- Is there still a backlog of expenditure required for growth and capacity from the 1990's deferred expenditure?
- Do we have any research or indicators to demonstrate this?
- What impact does this have on maintenance and renewal expenditure going forward?
- Any issues around lead verses lag infrastructure?
- How does new asset growth impact on top on any growth and capacity lags?

6.7.2 Options for Maintenance Spend Optimisation

Waugh Infrastructure analysis of options for Maintenance Spend Optimisation produced the following options for consideration:

1. Minor adjustments to spend – could produce minor gains (say 1-2%)
2. Larger contracts / less contractors – but risks producing a duopoly and reduction of competitive tensions i.e. risk long term of higher cost base
3. Paradigm Shift – rethinking road maintenance – try for a major shift in practices, thinking, techniques etc. to produce 10-15% optimisation / savings. Would require multi-year innovation to be encouraged, industry collaboration etc. Note this would only achieve 2-3% reduction in total NLTP spend
4. Accepting a greater range of Levels of Service and user education
    a. Accepting lower levels of service
    b. Moving away from average for all to distinctly higher and lower levels of service – is this politically acceptable
        i. Debate – more efficient spend = greater variety of levels of service
        ii. Debate – determine criteria for applying this – very political
        iii. Debate – are for example 4WD only access roads acceptable
5. Further use of risk analysis techniques to optimise and refine spend against
    a. User satisfaction
    b. Safety
    c. Asset preservation
    d. This results in more effective budget prioritisation (Waitaki DC example)
6. Continuous Service level improvement occurs in transport networks as a result of capital expenditure programmes – what does this do to the maintenance expectations and subsequent expenditure
    a. Waterford connection
    b. SH1 Taihape to Mangaweka in mid-1970's was a 11/2 lane shingle road that wound around bluffs – now a well-designed sealed single carriageway with 100km driveability
    c. New Subdivisions and use of AC surfacing where city standard is chip seal
    d. Road users accept the higher levels of service – this also creates an unstated expectation of the same elsewhere

[Links to finding 2h, 2i, 2l, 5c, 5d]

6.7.3 Increasing Service levels

With 50% of total NLTP expenditure being capital expenditure and analysis suggesting this level of capital expenditure could remain then this:

- Improves service levels
- Increases expectations
- Translates into changes in renewals and maintenance

What is the renewal and maintenance effect?

When we compare ourselves with the Northern European countries, Scotland and Ireland then there is a case for continued demand for increasing service levels.
[Links to finding 1a]

6.7.4 Regional Wider Economic Benefit Analysis

NZTA commissioned a study 'Roads of National Significance – Economic Assessments Review' SAHA, July 2010. This study included as an Appendix a study 'The Wider Economic Case for the Roads of National Significance', Richard Paling Consulting, April 2010 which in turn included inputs from Infometrics and a review by Booz&Co.

These reports examined the benefits to New Zealand of the RON investment programme, and included the use of wider economic analysis tools than standard cost/benefit analysis. The economic toolset used included:

- Cost / Benefit Analysis
- Wider Economic Benefit Analysis
- General Equilibrium Benefit Analysis

These economic analysis tools have been deployed for project analysis in the UK and Australia, and provide a more complete analysis of project benefits than conventional cost benefit analysis.

With regard to the work of the Road Maintenance Taskforce there may be value in examining the use of these tools at a regional programme aggregation level to provide a more complete analysis of the relative economic benefit of competing expenditure priorities.

[links to finding 6d]

7.0 RESEARCH – NATIONAL INFRASTRUCTURE PLAN 2011

Extracts from the National Infrastructure Plan 2011, particularly as they relate to the Road Maintenance Taskforce have been included for reference below.

7.1 NIP Guiding Principles

1. Investment Analysis
2. Resilience
3. Funding Mechanisms
4. Accountability and Performance
5. Regulation
6. Coordination

Investment Analysis

Investment is well analysed and takes sufficient account of potential changes in demand.

Resilience

National infrastructure networks are able to deal with significant disruption and changing circumstances.

Funding Mechanisms

Maintain a consistent and long term commitment to infrastructure funding and utilise a broad range of funding tools.

Accountability and Performance

It is clear who is making decisions, and on what basis, and what outcomes are being sought.

Regulation

Regulation enables investment in infrastructure that is consistent with other principles, and reduces lead times and uncertainty.

Coordination

Infrastructure decisions are well coordinated across different providers and are integrated with decisions about land use.

7.2 NIP Three-Year Action Plan

Three-Year Action Plan

Government is committing to the following actions to give effect to the vision and principles and to move towards the next edition of the Plan in 2014.

1. Central government will commit to developing and publishing a ten year Capital Intentions Plan for infrastructure development to match the planning timeframe required of local government.
2. Increase understanding of and encourage debate on the use of demand management and pricing in infrastructure sectors.
3. Improve access to information on current infrastructure performance to create certainty about when, where and how infrastructure development is occurring, including consideration of whole of life costs.
4. Develop performance indicators for each sector on the stock, state and performance of central and local government infrastructure assets as well as those managed by the private sector.
5. Work with regions to develop more strategic infrastructure planning at a macro-regional level. Consider where adoption of spatial planning would produce optimum outcomes, particularly in metropolitan areas.
6. Improve scenario modelling to more accurately project likely infrastructure investment requirements from the short to very long term.
7. Use lessons from Christchurch to significantly enhance the resilience of our infrastructure network. This may include developing improved seismic design standards, reviewing organisation culture to improve performance in emergencies and identifying ways to quickly return services to full operational capacity.
8. Explore alternative sources of funding, and implement funding tools that can be used to manage the current portfolio more effectively.

7.3 Vision and Goals for Transport Infrastructure

Vision

A transport sector that supports economic growth by achieving efficient and safe movement of freight and people.

Goals

The goals for transport infrastructure are to have:

- A long-term strategic approach to transport planning which maximises the potential synergies between regional planning and central government strategies.
- A flexible and resilient transport system that offers greater accessibility and can respond to changing patterns in demand by maintaining and developing the capacity of the network. Improve operational management practice and the use of demand management tools especially in urban areas experiencing significant growth.
- A network of priority roads that will improve journey time and reliability, and ease severe congestion, boosting the growth potential of key economic areas and improving transport efficiency, road safety and access to markets.
- A continued reduction in the number of accidents, deaths and serious injuries that occur on the network.
- A public transport system that is robust and effective and offers a range of user options that will attract a greater percentage of long term users.
- A rail system that enables the efficient movement of freight and complements other modes of passenger transport and freight movement.
- Sea and air ports that are linked to the overall transport network to support efficient nationwide movement of passengers, domestic goods and exports and imports and are able to respond to technological changes and changing international safety and security standards.

7.4 Transport Demand Case Study

Case Study: Transport Demand

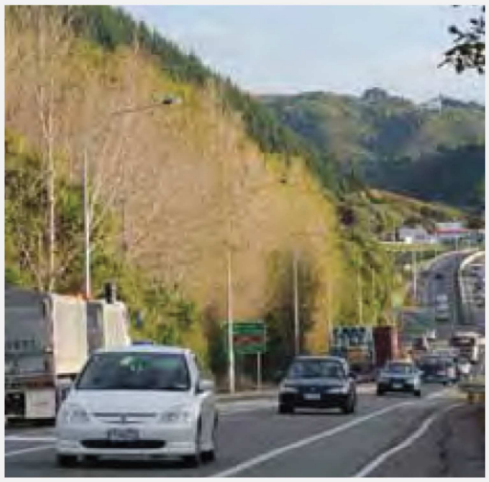
Based on historical trends, light passenger vehicle kilometres travelled are projected to increase by 14.4 percent in the 20 years to 2030. The Ministry of Transport modelling uses historical and projected data for fuel and vehicle prices, GDP, inflation and population.

With just one percent higher annual growth in real GDP, vehicle kilometres travelled could increase by 27.4 percent over the same period. If transport patterns change, the situation in 20 years could be very different to that shown here.

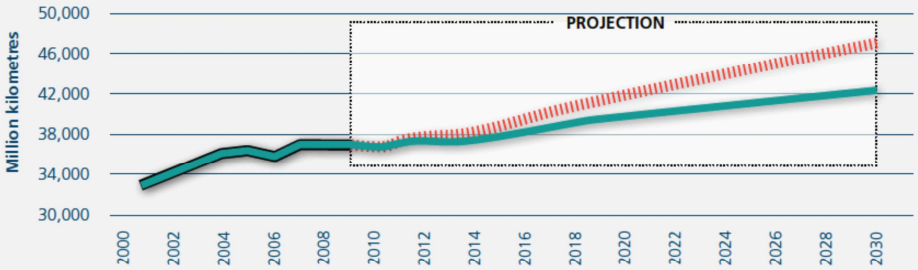
It is difficult to translate these overall trends into infrastructure pressures and appropriate responses, as the latter are location specific. In general, increases in light passenger traffic lead to increased costs from building new roads, maintaining the existing network and enhancing traffic management infrastructure such as traffic lights and traffic islands.

Over the same period, freight tonnes per kilometre travelled are projected to increase by 27.7 percent. Under a higher growth path the increase could be as much as 61.1 percent. This reflects increased movement of goods in a high growth economy.

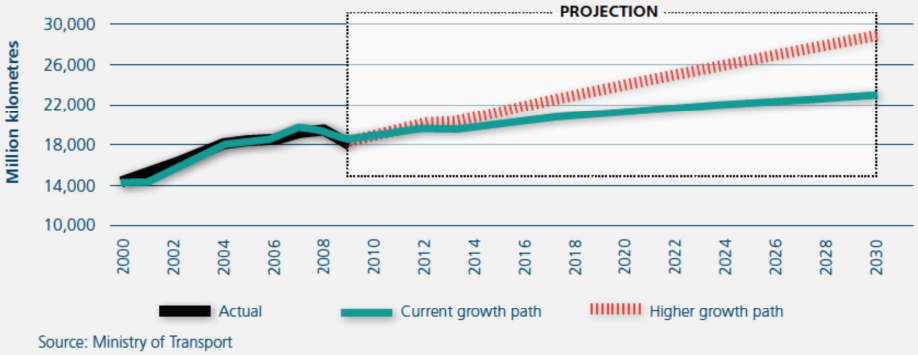
Increases in freight movement will put pressure on New Zealand's road, rail and port infrastructure. Developing these networks to provide the right level of service in the right location, and support the export sector will be a key focus for transport infrastructure providers.



Light Passenger Vehicle Kilometres Travelled *(incl motorcycles)*



Freight Tonne Kilometres Travelled



Source: Ministry of Transport

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