



Managing Traffic Congestion



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Auditor-General

Managing Traffic Congestion

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The Hon. Bruce Atkinson MLC
President
Legislative Council
Parliament House
Melbourne

The Hon. Ken Smith MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my report on the audit *Managing Traffic Congestion*.

Yours faithfully



Dr Peter Frost
Acting Auditor-General

17 April 2013

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Audit summary

Background

Traffic on our roads is a sign of mobility and of a dynamic economy. However, excessive congestion has a range of undesirable consequences including increased costs to the community and businesses through longer, less predictable travel times, lost productivity, additional running costs of vehicles, and environmental pollution.

In 2006, the Victorian Competition and Efficiency Commission estimated the economic costs of Melbourne's congestion ranged from \$1.3 billion to \$2.6 billion per year, and that this was likely to double by 2020.

Trends over the past 10 years demonstrate that Melbourne's traffic congestion is increasing. Specifically, road use, the duration of morning and afternoon peak hours, and the time spent in traffic have all grown substantially over the past decade, while the average travel speed on inner city freeways has steadily declined.

Congestion is generally worse in inner Melbourne than outer areas, with travel to and from work and school representing one of the most significant contributors. Other key causes relating to both supply- and demand-side factors include:

- the underpricing of road use
- road infrastructure design and operation
- the growing demand for travel
- inadequate public transport and cycling alternatives, especially in newer suburbs.

Congestion is a product of these supply- and demand-side factors, so effectively managing it requires a mix of measures to address the causes. Demand management can reduce congestion by encouraging less car commuting during peak periods. This contrasts with supply-side approaches, which seek to relieve congestion by supplying extra road space.

Under the *Transport Integration Act 2010* (the Act), the Department of Transport (DOT) is responsible for leading strategic policy, planning and improvements related to the transport system, and therefore has a key leadership role in managing Melbourne's traffic congestion.

Other agencies have roles in congestion management. VicRoads manages the road system, Public Transport Victoria (PTV) manages the public transport system and the Department of Planning and Community Development (DPCD) provides statutory and strategic guidance for planning in Victoria.

This audit assessed whether traffic congestion is being effectively managed. It examined how well key institutional arrangements support strategic planning, cross-government coordination for, and management of traffic congestion, and the effectiveness of key strategies and initiatives for managing congestion.

Conclusion

The economic costs of congestion are significant and rising. While the state each year invests in initiatives to relieve congestion, it currently does so in the absence of a statewide plan with clearly defined objectives, strategies and associated agency responsibilities for congestion and travel demand management.

Consequently, the state's approach to congestion management remains dominated by expensive supply-side initiatives focused on increasing capacity with little evident attention to demand management alternatives. While the immediate benefits from these initiatives are clear, the absence of demand management measures means it cannot be assured that they are the most economical and cost-effective options in the longer term.

Growing pressure on state finances and uncertainty around Commonwealth contributions mean there is a pressing need to explore more fiscally sustainable strategies that leverage demand management to tackle Melbourne's growing congestion. However, it is not evident that agencies are actively exploring such strategies.

Agencies manage the transport system to implement a range of legislative and policy objectives and it is recognised that these need to be balanced with any goal to manage congestion. However, the absence of a statewide traffic congestion and demand management framework linked to broader transport and land use strategies means it is not clear whether strategic planning and investment by agencies in congestion relief is soundly based, integrated and aligned.

Recent improvements in planning for road use, land use and public transport have significant potential to assist with alleviating road congestion and improving accessibility and productivity. However, there is currently little assurance this potential will be fully realised without coordinated statewide strategies that include clearly defined agency responsibilities and accountabilities for congestion and travel demand management.

Findings

Decision-making for infrastructure expansion

Congestion is extremely costly to the economy and costly to remedy. Therefore, it is vital that related investments in infrastructure expansion are properly targeted, that their congestion impacts are clearly demonstrated, and that alternative options involving demand management have been adequately assessed.

DOT advised that its key decision-making framework is the Act and that there are no separate portfolio-wide procedures for determining and assessing the congestion impacts of expansion priorities.

Without a transparent framework for assessing the congestion impacts of these proposals DOT cannot be assured they are the most effective and economical options for managing congestion in the long term.

DOT advised that the state's transport priorities are outlined in its 2012 submission to Infrastructure Australia and are driven by the need to fix the problems that hinder the performance of the transport network and state productivity. However, current assessments of congestion-related proposals do not sufficiently demonstrate the extent to which they address both the supply- and demand-side causes of congestion, or contribute to increased congestion by inducing extra road use. This limits confidence in the soundness of related infrastructure expansion decisions.

Planning and oversight of congestion management

Statewide strategic planning

The Act requires DOT to develop a transport plan that establishes the overarching planning framework within which other transport bodies are to operate. However, there is currently no such plan that clarifies the objectives, priorities, performance measures and roles of all transport agencies in managing traffic congestion. This situation is impeding effective congestion management and coordination of related initiatives.

DOT is currently working with other agencies to develop a new statewide Network and Service Strategy (NSS) to be completed in 2013. It aims to set out the main challenges facing the transport system and provide a basis for determining future investment priorities and service reform.

NSS is a positive initiative with considerable potential to strengthen strategic planning across the portfolio and to give practical effect to the integrated decision-making principles of the Act.

However, the high-level and necessarily broad, network-wide focus of NSS means its primary role is to establish a broad vision and priorities for the transport system, not to articulate the specific strategies that would be found within a congestion and demand management plan.

Such a plan, if developed within the context of broader transport and land use strategies, could assist with further developing and integrating existing planning for roads, public transport and freight by clarifying:

- how congestion management initiatives will support achievement of the state's transport system objectives and broader integrated land use and transport priorities
- how travel demand and roads will be actively managed to achieve defined congestion management objectives
- the role of different public transport modes in contributing to congestion management priorities
- how congestion management initiatives will support the achievement of priorities for freight movement.

The current absence of a congestion management plan means these linkages are not evident, thus heightening the risk that outcomes from these initiatives will not be optimal.

Integration of congestion management with land use planning

As traffic congestion is influenced by urban form and its impact on demand for travel, statewide strategic land use planning has a critical role in contributing to managing traffic congestion.

State Planning Policy Framework

DPCD administers the State Planning Policy Framework contained within all Victorian planning schemes, which comprises both general principles and high-level strategies for integrated land use and transport planning. If implemented effectively, these strategies have the potential to alleviate congestion. However, because they are high level strategies their implications for congestion management initiatives are not specified.

Metropolitan Planning Strategy

DPCD is currently leading the development of a new Metropolitan Planning Strategy (MPS) to guide Melbourne's future growth over the next 30–40 years. MPS is expected to be completed in 2013 and then incorporated within the State Planning Policy Framework.

Early work on MPS recognises the need to reduce traffic congestion, decrease dependency on car travel, and address the land use causes of congestion. Specifically, it shows that a 'polycentric' city where higher density residential areas are located near employment, education, services and activity centres can generate less need for travel and therefore contribute to reducing traffic congestion.

A discussion paper released in 2012 highlights a range of transport infrastructure and services necessary to achieve this vision, including:

- the East West Link
- the Melbourne Metro Rail Tunnel project
- extended tram services in the central city
- improved bus services particularly in middle and outer areas
- increased support for cycling and walking.

Integrating transport planning with the Metropolitan Planning Strategy

NSS aims to establish the strategic transport planning framework needed to further develop and effectively implement this vision. As a critical input to the MPS, NSS is important for integrating transport and land use planning and for shaping the related congestion management initiatives.

NSS was originally intended to be a stand-alone document to acquit DOT's statutory obligation to develop a transport plan. However, DOT now intends to incorporate it within MPS which, subject to government approval, will fulfil this purpose.

Work on NSS is currently at an advanced stage and includes a detailed analysis of system-wide transport challenges, priorities and initiatives. This has considerable potential to guide future investment decisions and achieve greater coordination and integration across the transport portfolio.

This work clearly aligns with the statutory intent and requirement for DOT to develop a dedicated transport plan, indicating considerable merit in DOT's initial proposal for NSS to fulfil this purpose.

The current intention to amalgamate NSS with the broader MPS and not develop it as a stand-alone document presents a risk that its detailed blueprint for transport system coordination will become diluted, and that the opportunity it currently provides for improving planning and integration across the portfolio may not be fully leveraged.

A further risk is that a diluted transport blueprint may not contain sufficient detail to enable effective community consultation on related transport system priorities including actions to address congestion. DOT should revisit this decision.

DOT emphasised that it is important for consultation on any transport plan to occur in conjunction with consultation on preferred land use, and while it does undertake consultation outside of land use this is usually at the project level. While this is appropriate, the current absence of a stand-alone transport plan means that the comprehensiveness of consultation at the project level cannot be assessed.

Road use planning for congestion management

VicRoads' *SmartRoads* initiative represents an important advance in its strategic planning for road use that has the potential to improve congestion management. It provides a principles-based decision-making framework to better manage congestion by assigning priorities to different transport modes such as public transport, pedestrian and cycling and private motor cars according to the place and time of day.

To date, *SmartRoads* principles have been successfully applied to improve road space management at selected locations across the network. However, there is currently no clear implementation strategy for activating these priorities across the whole road network to fully leverage the potential of *SmartRoads*.

Public transport planning to achieve mode shift and reduce car dependence

PTV's statutory object to seek to increase the mode share of public transport means that it has an important role in contributing to congestion management. However, while PTV is directly accountable for public transport services, its specific responsibilities for congestion management are not clearly defined.

Additionally, PTV no longer has an explicit mode share target against which it can monitor and assess achievement of its statutory goal to seek to increase the share of public transport trips. This reduces its accountability for contributing to statewide initiatives to reduce car dependence and alleviate congestion.

However, it is evident that PTV is implementing significant improvements in its planning for public transport with considerable potential for congestion management.

Specifically, it is refocusing its planning processes away from individual modal plans towards a multimodal place-based approach. This new approach aims to achieve an increase in patronage in targeted corridors by addressing inadequate coordination between bus and train services meaning that in some cases the only practical travel option currently is by car, adding to traffic congestion. Additionally, by reducing wait times for bus-train connections and other service improvements, these initiatives also seek to effect mode shift from private vehicles to public transport.

This is encouraging. However, as PTV has yet to develop related mode shift targets for these initiatives their effectiveness cannot be fully assessed. It also means that the extent to which they are designed to reduce car dependence and contribute to alleviating road congestion is not clear.

Oversight of statewide congestion management initiatives

DOT has established sound governance arrangements to oversee transport system projects and priorities. These arrangements focus on achieving the Act's goal of integrated decision-making and include cross-agency participation in the Portfolio Leadership Team, Transport Planning Group and End to End business process. They were developed by DOT in recognition of the complexity of the portfolio's business needs, and the need for all related agencies to align their own activities and proposals with the shared goals of the portfolio.

Although soundly based, these arrangements are compromised by the absence of clearly defined statewide objectives, and agency responsibilities for congestion management—including systematic reporting by them on related initiatives. This impedes DOT's capacity to effectively oversee, monitor and coordinate congestion related initiatives across the portfolio.

Addressing the demand-side causes of congestion

There is no statewide demand management strategy in place to complement or inform infrastructure expansion and enhancement initiatives related to congestion management.

While some limited demand management initiatives have been explored and implemented in recent years, such as the congestion levy, carpooling and travel planning programs, they have been neither comprehensive nor sufficient to materially impact demand for road use and related congestion.

This is partly because they have been deployed as individual and uncoordinated initiatives rather than as part of a statewide congestion and demand management plan that is integrated across all agencies and transport modes. The lack of sustained implementation has also been a factor.

As a result, congestion management strategies remain heavily weighted towards the supply side with little attention to demand management. Continuing this approach poses a significant risk for achieving any congestion reduction benefits attached to the MPS' preferred vision for Melbourne's future growth.

The state's increasingly constrained finances, coupled with significant population growth projected for Melbourne, indicates that an approach that ignores demand management is unsustainable. This warrants greater attention by transport agencies to address the demand-side factors contributing to congestion. Such strategies have been successful in alleviating congestion in other jurisdictions.

Optimising the efficiency of existing roads

VicRoads' efforts to improve network efficiency through initiatives to better manage road space have shown encouraging results.

However, the lack of clear performance data for network efficiency and congestion management, including arrangements within VicRoads to implement *SmartRoads* and traffic signal reviews, is impeding its ability to optimise the efficiency of existing roads.

Reviewing the operation of the road network

VicRoads has developed Network Operating Plans (NOPs) covering almost all of metropolitan Melbourne, which set out the intended operation of individual intersections. However, there is currently no dedicated strategy or funding to drive the implementation of these plans. Additionally, VicRoads does not presently know how much of the metropolitan road network is operating optimally in accordance with NOPs as it does not systematically review and record this information.

Reviewing traffic signal performance

Traffic signalling systems play an important role in optimising the flow of traffic and are the primary means for giving effect to *SmartRoads* principles within NOPs. Periodic reviews of their performance are necessary to assure that they effectively handle traffic conditions.

The absence of a dedicated strategy and funding within VicRoads to review traffic signalling systems and implement *SmartRoads* across the network is impeding its ability to optimise the efficiency of existing roads. VicRoads requires traffic signal reviews once every five years. However, it advised that due to limited resources, each set of traffic signals is currently reviewed around once every 10 years.

Leveraging SmartRoads to improve network efficiency

Currently, *SmartRoads* is primarily used as a reactive tool to evaluate and assess road improvement projects and signal reviews that have already been proposed. However, VicRoads has recognised that it can help to more strategically direct these investments by highlighting areas of the road network that are operating sub-optimally.

VicRoads has commenced a number of initiatives to leverage the potential of *SmartRoads* to improve network efficiency and better integrate land use and transport decisions.

Recommendations

Number	Recommendation	Page
1.	That the Department of Transport reconsiders its initial proposal for the Network and Service Strategy as a stand-alone dedicated transport plan.	22
2.	That the Department of Transport and Department of Planning and Community Development establish arrangements that assure comprehensive public consultation on transport issues, preferably in a stand-alone transport plan, but otherwise in the context of the Metropolitan Planning Strategy.	22
3.	That the Department of Transport, in collaboration with other transport agencies, develops a congestion management plan within the context of broader transport and land use strategies which sets out statewide objectives, priorities, targets and agency responsibilities.	22
4.	That Public Transport Victoria develops explicit mode shift strategies and targets that are demonstrably aligned with defined statewide congestion management priorities.	22
5.	That the Department of Transport, in consultation with stakeholders, reviews its governance arrangements and establishes mechanisms for systematic monitoring and reporting by agencies on the progress and outcomes of statewide congestion management initiatives.	22
6.	That the Department of Transport, in consultation with transport agencies, develops and systematically implements a portfolio-wide decision-making framework for congestion related infrastructure expansion projects that: <ul style="list-style-type: none"> • includes clear standards and procedures for assessing both the congestion benefits and disbenefits of proposed initiatives, including induced demand, relative to defined statewide congestion management priorities. • assures the nature and scope of proposals is adequately informed by sufficient consideration of statewide demand management options and initiatives. 	29

Recommendations – continued

Number	Recommendation	Page
7.	That the Department of Transport, in consultation with other stakeholders, develops and regularly updates a statewide travel demand management strategy that: <ul style="list-style-type: none"> includes initiatives and targets for moderating the use of private vehicles and the associated demand for road travel across the network during congested periods is informed by a review of the likely cost-effectiveness and feasibility of road pricing options and regimes includes targeted initiatives offering practical, sustainable transport alternatives to car use during peak periods, particularly for trips originating in car dependent areas is informed by a review of the lessons learned from previous statewide demand management initiatives, and leverages the opportunities identified by the Department of Transport in 2011 identifies clear agency responsibilities and accountabilities for contributing to road congestion and related travel demand management initiatives, and for updating the strategy. That VicRoads:	40
8.	improves the frequency and targeting of its traffic signal reviews by leveraging available congestion data from SCATS (Sydney Coordinated Adaptive Traffic System)	50
9.	develops a strategy, including time frames, for implementing Network Operating Plans and activating <i>SmartRoads</i> priorities across the metropolitan road network	50
10.	develops a strategy, in consultation with local councils, to better leverage the potential of clearways for managing congestion along the arterial road network	50
11.	systematically reviews the efficiency and effectiveness of its operational management of the road system	50
12.	develops measures and targets for network efficiency and congestion management initiatives in consultation with stakeholders.	50

Submissions and comments received

In addition to progressive engagement during the course of the audit, in accordance with section 16(3) of the *Audit Act 1994* a copy of this report, or relevant extracts from the report, was provided to the Department of Transport, VicRoads, Public Transport Victoria and the Department of Planning and Community Development with a request for submissions or comments.

Agency views have been considered in reaching our audit conclusions and are represented to the extent relevant and warranted in preparing this report. Their full section 16(3) submissions and comments are included in Appendix C.

1 Background

1.1 Introduction

1.1.1 The problem of excessive congestion

Traffic is a sign of mobility and of a dynamic economy. However, excessive congestion causes a range of undesirable consequences. It imposes costs on the community and businesses through:

- longer, less predictable travel times
- lost productivity and additional running costs of vehicles
- increased pollution, noise, loss of amenity, driver stress
- reduced time people spend with their families.

In 2006, the Victorian Competition and Efficiency Commission (VCEC) estimated the economic costs of Melbourne's congestion ranged from \$1.3 billion to \$2.6 billion per year, and that this was likely to double by 2020.

These costs incurred by the community as a whole generally are not paid for by the road users who have caused them.

While some level of congestion is a signal that existing road capacity is being used, the challenge is to reach an 'optimal' level of congestion where some road users:

- travel on other modes of transport or with other users
- travel at a different time of the day
- postpone their trips to another day
- eliminate the need to travel.

This requires actions to influence driver behaviour by shaping or reducing travel demand.

1.1.2 Defining traffic congestion

Although there is traffic congestion in most major cities of the world, there is no standard definition of it. In general, congestion occurs when the number of vehicles using the road is greater than the capacity of the available road space, impeding the efficient movement of traffic.

Traffic congestion is both:

- **a physical phenomenon**—relating to the way vehicles impede each other's progression as demand for limited road space approaches full capacity
- **a relative phenomenon**—relating to user expectations about road system performance, which can vary depending on the purpose, timing and route of travel.

Without an agreed definition of congestion, setting targets for its management is difficult.

1.1.3 Measuring traffic congestion

The economic and engineering approaches

In the past, there have been two main approaches to understanding traffic congestion. From an economic perspective, road congestion becomes an issue when the net benefits an extra car driver receives from using a road are less than the additional costs borne by other road users.

The engineering approach is based on traffic flow theories and uses both road performance and user-based indicators to show how a road is coping with traffic volumes and whether road users interfere with one another's travel time and reliability.

These approaches complement each other and the consensus is that a multifaceted approach to managing traffic congestion is needed. While the economic approach provides a framework for analysing and measuring the costs of congestion, the engineering approach provides some critical indicators of whether the nature of congestion is changing and whether responses or initiatives aimed at tackling congestion have been successful.

The concept of accessibility

Accessibility has recently emerged as an alternative way of understanding congestion. It typically refers to an individuals' ability to reach jobs, services and activities within a set time frame.

Various factors affect accessibility, including:

- the quality and availability of transport options, such as walking, cycling, public transport, and car access
- public transport network connectivity
- travel distances to services, jobs and activities
- alternatives to travel, such as telecommuting and web-based services which can improve accessibility and eliminate the need for travel.

Initiatives to enhance these factors may result in more efficient access to services, jobs and activities and, therefore, less congestion.

This approach regards congestion as a symptom of accessibility problems and therefore considers initiatives to improve accessibility as central to achieving better congestion outcomes.

1.1.4 Key causes and options for management

Congestion is the product of supply- and demand-side factors, so effectively managing congestion requires a mix of measures that addresses these root causes.

In 2006, VCEC undertook an inquiry into congestion management in Melbourne. It found that the key causes of congestion relating to the demand side include:

- economic growth, which contributes to rapid growth in road freight
- rapid growth of car use and poor accessibility in some areas to alternatives, such as public transport
- high use of cars for peak period trips, both for work and education
- patterns of urban settlement and employment, including low density land use
- underpricing of road use and the lack of a direct connection between the cost of using the road and traffic conditions.

On the supply side, VCEC found that the capacity of the road network can be affected by a variety of factors including:

- infrastructure bottlenecks, level crossings, coordination of traffic lights and management of access to freeways and highways
- the shared use of roads, such as with trams or parking at certain times of the day
- non-recurring incidents such as motor vehicle accidents or road works.

VCEC identified 58 options for improving congestion management focusing on:

- legislative reform to clarify transport system objectives and related institutional arrangements to improve the coordination of land use and transport planning
- demand management measures including a comprehensive Melbourne road charging study to understand better the benefits of road use charging in a future environment where congestion may be increasing
- initiatives for improving the efficiency of existing infrastructure such as ramp metering, incident management, and prioritising the allocation of road space
- selective expansion of transport infrastructure focused on major bottlenecks, additions to the rail network and greater use of local buses.

The government supported 52 out of the 58 options identified by VCEC.

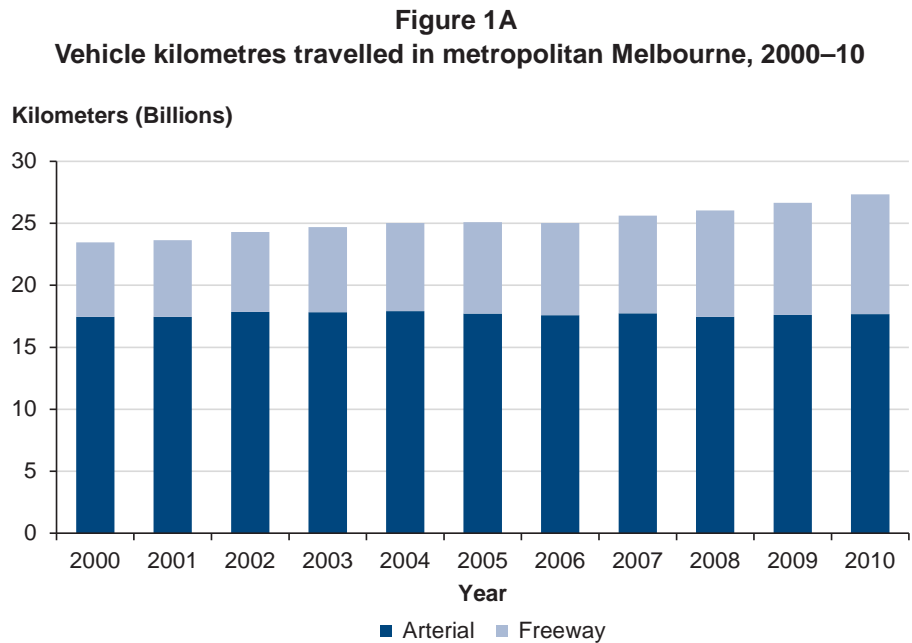
1.2 Melbourne's growing congestion challenge

The economic, social and environmental impacts of traffic congestion in Melbourne can be significant, and the evidence available indicates that they are increasing. If not managed effectively, excessive congestion can ultimately impede mobility and adversely affect Melbourne's attractiveness as a place to live and invest.

1.2.1 Trends in road use and congestion

In 2011 the Department of Transport (DOT) estimated that around 12.6 million trips on average are made in Melbourne each weekday, 77 per cent of which are by car. This is estimated to increase by 41 per cent to 17.8 million trips per day in 2036, as Melbourne's population approaches 5.5 million people. Data compiled by VicRoads indicates that road use and Melbourne's traffic congestion is increasing.

Figure 1A shows that road use has grown steadily over the past decade, with the total vehicle kilometres travelled in Melbourne rising from approximately 23.5 billion in 2000 to 27 billion in 2010.

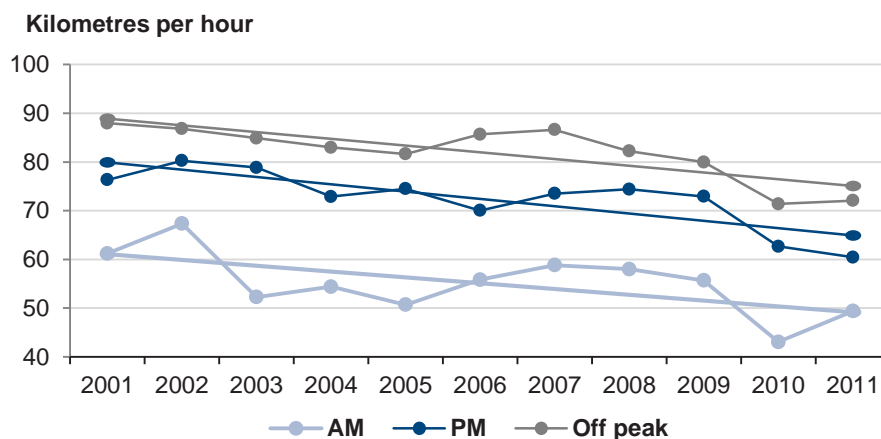


Source: Victorian Auditor-General's Office from VicRoads Traffic Monitor 2010–2011 (August 2012).

The combined duration of Melbourne's morning and afternoon 'peak hours' on freeways also increased by around 12 per cent, or half an hour, between 2005–06 and 2010–11. Each peak period has increased by around 15 minutes, with the morning peak now lasting an average of 2.75 hours and the afternoon peak an average of 3 hours.

As the time spent in traffic during this period has increased, Figure 1B shows that average travel speeds on freeways in the inner city area have declined over the past 10 years by approximately 11 kilometres per hour in the morning peak and 12 kilometres per hour in the afternoon peak.

Figure 1B
Average travel speeds on freeways in the inner area of Melbourne
by time of day, 2001–11



Source: Victorian Auditor-General's Office from VicRoads Traffic Monitor 2010–2011 (August 2012).

Between 2001 and 2010, Melbourne's population grew by approximately 17 per cent with the majority of that growth, around 63 per cent, occurring in the outer metropolitan zone. In the middle and outer zones, the percentage growth in vehicle kilometres travelled (VKT) since 2001 has followed the percentage growth of these populations very closely—around 25 per cent.

However, the inner Melbourne zone has experienced a significantly different trend, where a 25 per cent increase in population since 2001 has resulted in only a 4 per cent increase in VKT.

This shows that population growth in the inner suburbs of Melbourne has a far smaller impact on the road network than growth in the middle and outer suburbs. This is likely to reflect better public transport options and shorter trip lengths in inner areas.

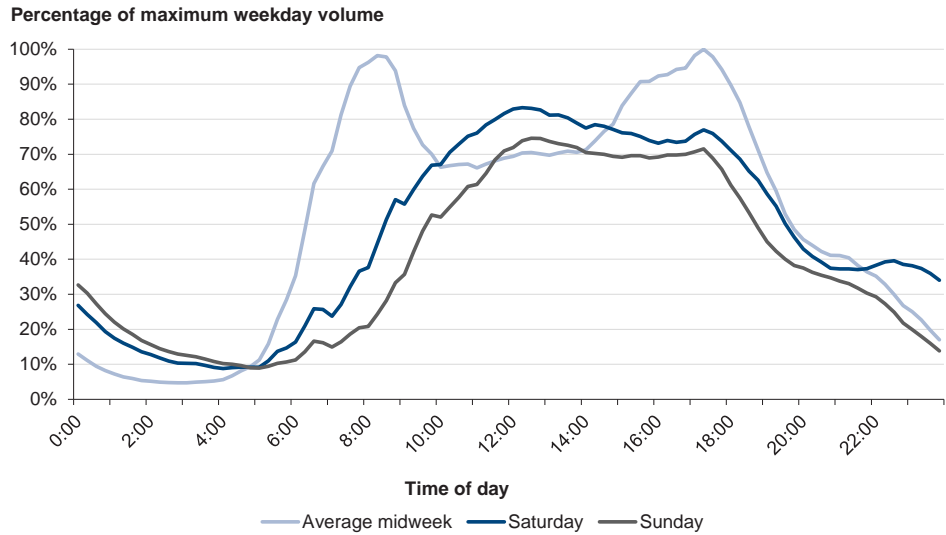
Despite this, information supplied by VicRoads indicates that overall road congestion is concentrated in inner Melbourne and the minutes of delay per kilometre travelled is more than twice that experienced on the outer network.

1.2.2 Commuting to and from work and school

Travel to and from work and school, particularly in the mornings, is a significant contributor to road congestion. Approximately one-fifth of Melbournians are travelling at 8.30am on weekday mornings and this places significant pressure on the road system.

Figure 1C shows that the challenge is to manage peak demand, with the morning peak accounting for the most travel.

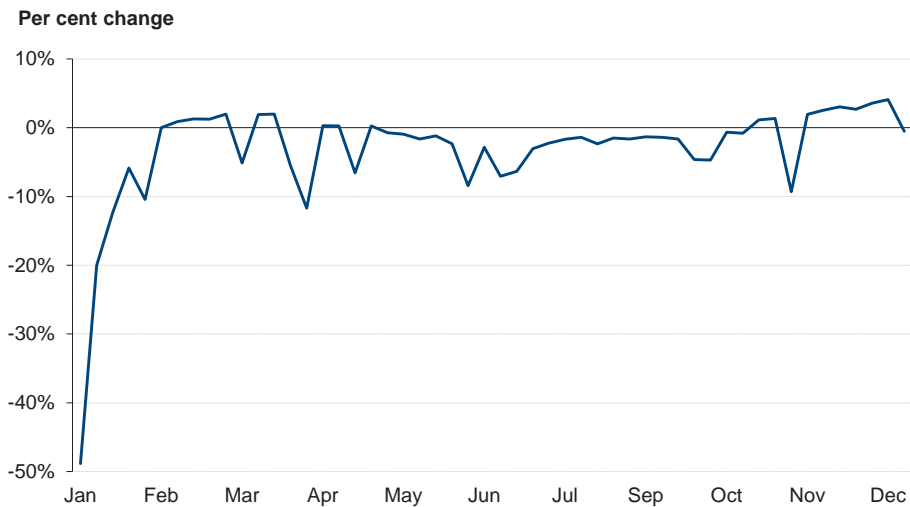
Figure 1C
Traffic volumes by time of day – Melbourne metropolitan area



Source: Victorian Auditor-General's Office from VISTA 2009.

Figure 1D highlights the changes in traffic volumes across the 12 months of 2010, and shows the significant decline in volumes during school holiday periods. This suggests that changes in road use behaviour for school commuting have the potential to reduce current traffic volumes by around 5 to 10 per cent. This could lead to substantial improvements in road network performance and accessibility.

Figure 1D
Traffic volumes by week of the year, 2010



Source: Victorian Auditor-General's Office from VISTA 2009.

1.3 Congestion management within the broader transport system

It is important to recognise that agencies manage the transport system to implement a range of legislative and policy objectives. These must be balanced with any goal to manage congestion.

The following sections summarise the legislative objectives for the transport system and provide an overview of agency roles and responsibilities.

1.3.1 Legislative transport system objectives

The *Transport Integration Act 2010* (the Act) came into effect in mid-2010 and requires that all decisions affecting the transport system be made within the same integrated decision-making framework and support the same transport-system objectives.

Figure 1E summarises the government's vision, objectives and decision-making principles for the transport system set out in the Act.

Figure 1E
Transport Integration Act – Vision, objectives, principles

Vision—recognises that Victorians want an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible state.

Objectives—the transport system should:

- **promote social and economic inclusion**—minimise the barriers to access so that the transport system is available to as many people as possible and provide tailored infrastructure, services and support to those who find it difficult to use transport
- **facilitate economic prosperity**—enable efficient and effective access for persons and goods to places of employment, markets and services, and reduce the costs and improve the reliability of transport
- **actively contribute to environmental sustainability**—protect and offset harm to the natural, local and global environment, promote less harmful forms of transport and improve the environmental performance and energy efficiency of all transport modes
- **provide for the effective integration of transport and land use**—better connect the transport system and land use to improve accessibility with a focus on reducing the need for private motor vehicle transport and the extent of travel
- **facilitate efficient, coordinated and reliable movement**—balance efficiency across the network to optimise capacity, maximise use of existing infrastructure, facilitate integrated and seamless travel within and between different modes, and provide predictable and reliable services
- **be safe and support health and wellbeing**—work to create a system where people are safe from the impacts of system failure and improper behaviour, and which promotes forms of transport that have the least negative impact on health and wellbeing.

Figure 1E
Transport Integration Act – Vision, objectives, principles – *continued*

- Decision-making principles**—agencies should have regard to the following principles:
- **integrated decision-making**—achieving objectives through coordination across government agencies and with the private sector
 - **triple bottom line assessment**—taking account of all the economic, social and environmental impacts of decisions and assessing their value for money
 - **equity**—achieving equity between persons irrespective of personal attributes or location
 - **transport system user perspective**—understanding what transport users need and improving the system in ways that address these needs
 - **precautionary principle**—acting to address serious environmental threats
 - **stakeholder engagement and community participation**—taking into account the interests of transport system users and members of local communities through appropriate engagement
 - **transparency**—providing reliable and relevant information in forms that help the community understand transport issues and the basis for government decisions.

Source: Victorian Auditor-General's Office from the Transport Integration Act 2010.

The objectives of facilitating economic prosperity, integration of land use and transport and facilitating efficient, coordinated and reliable movement are particularly relevant to managing traffic congestion.

DOT has developed a Transport Outcomes Framework to support and monitor achievement of the Act's objectives that is shown in Appendix B. The framework sets out high level outcomes and associated change indicators linked to the Act's broad objectives. However, the implications of this framework for congestion management initiatives are not currently specified.

Recent initiatives relevant to managing congestion

The state has implemented a number of land use and transport initiatives in recent years that are relevant to managing congestion. Appendix A provides a chronology of recent initiatives.

1.3.2 Agency roles and responsibilities

Department of Transport

Under the Act, DOT is responsible for leading strategic policy, planning and improvements relating to the transport system. It is also required to:

- collect transport data and undertake research into the transport system to lead strategic policy development and improve the transport system
- collaborate with other agencies to ensure that policies and plans for an integrated and sustainable transport system are developed, aligned and implemented.

It therefore has a key leadership and coordination role in managing Melbourne's traffic congestion.

Department of Planning and Community Development

The Department of Planning and Community Development (DPCD) provides statutory and strategic guidance for planning in Victoria. As land use and transport planning are inextricably linked, its current work on the Metropolitan Planning Strategy (MPS) may significantly influence future demand for travel including initiatives for managing traffic congestion. In planning the MPS, DPCD must have regard to the transport system objectives when exercising powers and performing functions.

VicRoads

VicRoads plans, develops and manages 22 000 kilometres of arterial roads across the state and is responsible for minimising congestion on a short- and medium-term basis. Its key priorities include managing key road infrastructure projects, developing and implementing plans for improving road access and efficiency including traffic monitoring, signalling and incident management initiatives to ease congestion. The Act also requires VicRoads to conduct research and collect information relating to the performance of its functions and the operation of the road system, and to provide information to Victorians about the road system and related matters.

Public Transport Victoria

Public Transport Victoria (PTV) manages the state's train, tram and bus services, and has key goals under the Act to seek to increase the share of public transport trips as a proportion of all trips in Victoria and actively promote public transport as an alternative to travelling by car. Through seeking to give effect to these goals, PTV can play a critical role in managing traffic congestion by reducing car dependency and the associated demand on road space. PTV must also report to government on the performance of the public transport system and whether passenger services meet contractual and community expectations.

The role of local government

While state agencies are primarily responsible for managing and mitigating congestion on freeways and arterial roads, local government can also play a role. Specifically, local councils manage the local road network, and regulate parking on all arterial roads which can influence road congestion through, for example, the enforcement of clearways during peak periods. Local councils are also important stakeholders in the implementation of statewide integrated transport and land use initiatives that include a focus on reducing congestion.

1.4 Audit objective and scope

The objective of the audit was to determine whether:

- institutional arrangements support effective strategic planning, cross-government coordination for, and management of, traffic congestion
- key strategies and initiatives for managing traffic congestion have been effective.

This audit included the Department of Transport, the Department of Planning and Community Development, VicRoads and Public Transport Victoria.

1.5 Audit method and cost

The audit was conducted in accordance with Australian Auditing and Assurance Standards. Pursuant to section 20(3) of the *Audit Act 1994*, unless otherwise indicated any persons named in this report are not the subject of adverse comment or opinion.

The cost of the audit was \$495 000.

1.6 Structure of the report

This report has four further parts:

- Part 2 examines planning and oversight of congestion management across transport agencies and its integration with land use planning.
 - Part 3 assesses how congestion management is considered in decision-making for infrastructure expansion
 - Part 4 assesses the extent to which existing strategies address the demand-side causes of congestion.
 - Part 5 examines whether the efficiency of existing roads is being optimised.
-

2 Planning and oversight of congestion management

At a glance

Background

Sound strategic planning and oversight including coordination, implementation and monitoring of related initiatives is critical for effective congestion management.

Conclusion

The absence of clear statewide objectives, agency responsibilities and reporting on congestion management means it cannot be demonstrated that current initiatives are properly targeted, or that strategic planning across the transport portfolio is soundly based, integrated and aligned.

Findings

- There is no statewide congestion management plan that specifies objectives, priorities, targets and responsibilities of agencies across transport modes.
- Public Transport Victoria has improved its strategic planning for public transport, but has yet to develop explicit mode shift targets for these initiatives.
- The full potential of VicRoads' *SmartRoads* initiative to improve congestion management is not being realised because it does not have an implementation strategy to support its application across the entire road network.
- The Department of Transport has established sound portfolio-wide governance structures to support integrated decision-making.
- However, the absence of systematic reporting by agencies on the impact of statewide congestion management initiatives impedes effective oversight and coordination.

Recommendations

That the Department of Transport develops a congestion management plan, reviews its governance arrangements, and establishes systematic reporting on congestion management initiatives.

That Public Transport Victoria develops explicit mode shift strategies and targets.

2.1 Introduction

Sound strategic planning, coordination, and oversight of congestion management is vital to achieve the transport system objectives of integrated, seamless and reliable travel, and to effectively integrate transport and land use.

Effective strategic planning provides clear direction to agencies for focused and coordinated action through:

- explicit statewide objectives, strategies and priorities for congestion management
- clearly defined agency responsibilities and accountabilities.

Additionally, sound governance arrangements reinforce accountabilities and assure effective coordination and implementation of congestion management initiatives across agencies.

This Part of the report examines whether strategic planning and oversight of congestion management is soundly based, integrated and aligned with clearly defined statewide priorities.

2.2 Conclusion

The objectives, priorities and associated responsibilities of agencies and transport modes for contributing to congestion management are not clearly defined. This means it cannot be demonstrated that current initiatives are properly targeted, or that strategic planning across the transport portfolio is soundly based, integrated and aligned.

Recent improvements by VicRoads and Public Transport Victoria (PTV) in their strategic planning for road use and public transport respectively have considerable potential to improve congestion management.

The Department of Transport (DOT) has established sound governance arrangements to oversee transport system projects and priorities and support integrated decision-making across agencies at a strategic and operational level.

However, the capacity of these arrangements to assure the effective integration and implementation of congestion management initiatives is currently limited by the absence of clearly defined statewide objectives and agency responsibilities for congestion management, including systematic reporting by them to DOT on related initiatives.

2.3 Statewide strategic planning responsibilities and initiatives

The *Transport Integration Act 2010* (the Act) requires DOT to develop a transport plan that establishes the overarching planning framework within which other transport bodies are to operate. However, there is currently no such plan that clarifies the objectives, priorities, performance measures and roles of all transport agencies in managing traffic congestion.

The 2008 *Victorian Transport Plan* included a focus on alleviating traffic congestion in metropolitan Melbourne but was discontinued following the change of government in 2010. A new transport plan is yet to be developed.

DOT has been actively working with other agencies since early 2012 to develop a new Network and Service Strategy (NSS). While it aims to establish a broad vision and priorities for the transport system, it is not likely to contain the detail of a congestion management plan.

NSS is due for completion in 2013. It intends to set out the main challenges facing the transport system by considering the likely transport demand arising from Melbourne's future growth and land use patterns. Accordingly, it aims to provide a high-level vision of the transport system at 2050 with a focus on:

- the role of various modes in carrying both people and goods on overlapping parts of the network
- integration of different transport modes and land use
- criteria for resolving clashes between modes and network functions
- outlining the key infrastructure and service requirements for 2021, 2031 and 2050, with a detailed focus on 2021
- key implementation issues and solutions, including arrangements for monitoring the strategy's progress over time.

As NSS's primary role is to establish a broad vision and priorities for the transport system, it will not articulate the specific lower level detailed strategies required to effectively manage traffic congestion in the longer term.

These lower level strategies would more appropriately be contained in a congestion management plan, for which NSS would provide the overarching strategic context. Such a plan, if developed within the context of broader transport and land use strategies, could assist with further developing and integrating existing planning for roads, public transport and freight by clarifying:

- how congestion management initiatives will support achievement of the state's transport system objectives and broader integrated land use and transport priorities
- how travel demand and roads will be actively managed to achieve defined congestion management objectives
- the role of different public transport modes in contributing to congestion management priorities
- how congestion management initiatives will support the achievement of priorities within the Victorian Freight and Logistics Plan.

These linkages are not currently evident, which increases the risk that outcomes from related initiatives will not be effectively achieved.

NSS is a positive initiative with considerable potential to strengthen strategic planning across the portfolio and to give practical effect to the integrated decision-making principles of the Act. It should serve to guide the development of a congestion management plan and complement other planning across the portfolio.

2.3.1 Status of the Network and Service Strategy

The current intention to amalgamate NSS with the broader Metropolitan Planning Strategy (MPS) and to not develop it as a stand-alone document presents a risk that its detailed blueprint for transport system coordination will become diluted, and that the opportunity it currently provides for improving planning and integration across the portfolio may not be fully leveraged.

A further risk is that this diluted transport blueprint may not contain sufficient detail to enable effective community consultation on related transport system priorities. DOT should revisit this decision.

Evolution of the Network and Service Strategy to date

DOT initially intended NSS to be a stand-alone document to fulfil the statutory requirement for a transport plan. However, it did not intend for it to replace the previous government's *Victorian Transport Plan* and assume the status of government policy. Instead it proposed that NSS be an internal working document.

As a critical input to the MPS, NSS is important for integrating transport and land use planning and has considerable potential to influence the government's future transport and congestion management initiatives. As such, it would benefit from broader distribution and consultation consistent with the principle of stakeholder engagement and community participation within the Act.

DOT has advised that NSS is no longer intended as a stand-alone document and that it proposes to incorporate it within the MPS and subject it to its associated consultative processes. It also now intends for the MPS to fulfil its statutory obligation to develop a transport plan subject to government approval.

It further advised that it is important for consultation on any transport plan to occur in conjunction with consultation on preferred land use, and while it does undertake consultation outside of land use this is usually at the project level. This is appropriate. However, the current absence of a stand-alone transport plan means that the comprehensiveness of consultation at the project level cannot be assessed.

Implications of amalgamating the Network and Service Strategy with the Metropolitan Planning Strategy

The wider land use planning and development focus of the MPS means that it remains uncertain to what extent it will fully encapsulate the transport-specific detail of NSS. The capacity of the MPS to fully leverage NSS's potential for improving integration and coordination across agencies also remains uncertain.

NSS's development is well advanced. It includes a detailed analysis of system-wide transport challenges, priorities and initiatives within the context of land use that have the potential to guide future investment decisions.

The specific detail and focus of this work clearly aligns with the statutory obligation and requirement for DOT to develop a transport plan. This indicates that there was considerable merit in DOT's initial proposal for NSS to be a stand-alone document to fulfil this purpose.

2.4 Integration of congestion management with statewide land use planning

The Department of Planning and Community Development (DPCD) is responsible for providing statutory and strategic guidance about planning in Victoria. As urban form impacts on the demand for travel, DPCD has an important role in contributing to managing traffic congestion through strategic land use planning.

DPCD administers the State Planning Policy Framework (SPPF) contained within all Victorian planning schemes, and is leading the development of the MPS. Both the SPPF and proposed MPS address integrated land use and transport priorities that have potential for congestion management. However, the implications of these for statewide congestion management initiatives have not yet been clearly defined.

2.4.1 State Planning Policy Framework

The SPPF comprises both general principles and specific policies for land use and development in Victoria. In September 2010, the SPPF was revised to include high-level strategies for integrated land use and transport planning. These strategies seek to:

- coordinate all transport modes to provide a comprehensive transport system
- promote the use of sustainable personal transport such as walking, cycling and public transport
- upgrade the public transport network and related services to improve connections between activity centres, to employment corridors and regional cities
- develop an efficient and safe road network that makes the most of existing infrastructure
- ensure an adequate supply of car parking that is appropriately designed and located
- recognise the transport and logistics role of Victoria's ports in supporting the state's economy, and ongoing sustainable operation and development.

If effectively implemented these strategies have the potential to alleviate congestion. However, they have not been given effect within a congestion management plan, and because they are high-level strategies, their implications for congestion management initiatives are not specified.

2.4.2 Metropolitan Planning Strategy

DPCD is leading the development of the MPS in consultation with a Ministerial Advisory Council, other agencies and stakeholders. The purpose of the MPS is to provide a blueprint to guide Melbourne's future over the next 30–40 years.

The MPS is scheduled for completion in 2013. Once completed, it is expected to be incorporated within the SPPF, which is also being reviewed by DPCD. Together, they will guide future land use and transport decision-making for metropolitan Melbourne.

In October 2012, the Ministerial Advisory Council released a discussion paper seeking feedback to inform the future development of the MPS. It is evident from the discussion paper that early work on developing the MPS is actively considering proposals to address key land use causes of road congestion. This is encouraging.

Addressing the land use causes of congestion

The discussion paper highlights that a 'polycentric' city is where higher density residential areas located near employment, education, services and activity centres can generate less need for travel and therefore contribute to reducing traffic congestion.

This suggests that concentrating employment, services, education opportunities and more affordable housing options in a smaller number of larger centres could lead to greater efficiencies and extend the benefits of the central city to other areas.

Integrating land use and transport

A range of transport infrastructure and services necessary for achieving this vision are identified in the discussion paper. These include:

- the East West Link
- the Melbourne Metro Rail Tunnel project
- extended tram services in the central city
- improved bus services particularly in middle and outer areas
- increased support for cycling and walking.

The paper also acknowledges that the absence of any policy on road pricing contributes to congestion. It recognises that community support for such schemes is difficult to achieve, but easier to implement when the revenue is clearly earmarked for a particular purpose.

2.5 Planning for managing the impacts of congestion on freight movements

Research undertaken by DOT indicates that the vast majority of traffic congestion is due to motor car use, which is increasingly becoming a barrier to the efficient movement of freight. If left unaddressed, this is likely to pose a significant problem for the state's freight industry and economy as the freight task is expected to double over the next 20 years.

In early 2012, DOT commenced work, in consultation with key stakeholders, on developing a new Victorian Freight and Logistics Plan (VFLP) that will include priorities for managing the growing freight task and associated impacts from congestion. DOT advised that the VFLP will include a framework for proposed short-, medium- and long-term actions, together with options to guide long-term management of the freight network up to 2050 with the goal of maximising its contribution to Victoria's productivity and liveability.

Early work indicates that the VFLP will seek to manage the growing freight task in a way that minimises its impact on amenity. In the short term, the focus is on encouraging freight movements on the freeway network rather than on arterial roads and hence on initiatives that are seen as 'completing the freeway network', including the construction of the East West Link and the North East Link.

In the longer-term, DOT envisages that new port capacity will be developed at Hastings and connected to the freeway system. The VFLP also supports developing a major new freight terminal at Truganina, which would potentially reduce congestion by relying on rail freight shuttles from the ports to this location, and then conveying freight further using trucks and in some cases trains. However, DOT emphasised that port related traffic is not the central issue in freight-related congestion. The more important issue is the impact to general freight movements as a result of congestion on the freeway system by private motor cars, which is likely to increase further as the population and freight task grows.

Current work on the VFLP does not explicitly address this issue, which further heightens the need for a complementary congestion management plan. DOT advised the VFLP will also inform development of the MPS.

2.6 Road use planning for congestion management

VicRoads is responsible for managing the efficiency of Victoria's road network and for minimising congestion on a short- and medium-term basis. Its 2012–14 Strategic Directions identify key areas where VicRoads can make a significant contribution to better road system performance and user outcomes. They also provide VicRoads with a framework to develop and prioritise investment and operational strategies to enable it to best serve the community.

The Strategic Directions set out four high level objectives:

- operate and maintain the road system to help its customers travel easily and reliably
- develop the road system to improve connections between places that are important to its customers
- make the road system more environmentally sustainable
- improve road safety.

The first two of these objectives deal directly with managing traffic congestion.

VicRoads undertakes a range of initiatives and projects that support these objectives. However, unlike the road safety area, it does not have a comprehensive strategic plan for managing traffic congestion with clear objectives, outcomes and related targets.

SmartRoads represents an important advance by VicRoads in its strategic planning for road use that has the potential to improve congestion management.

As an operational strategy for managing competing demand for road space and better linking transport to adjacent land use, *SmartRoads* provides a principle-based decision-making framework to better manage congestion by:

- making trade-offs between congested traffic streams through assigning priority to different modes according to the place and the particular time of the day
- laying the foundations for maximising person throughput by prioritising the movement and use of high capacity vehicles
- encouraging more efficient trip making by choice of route, type of vehicle and time of travel.

These priorities have been assigned to roads across the network in the form of Network Operating Plans (NOPs) developed in consultation with local councils for 31 local government areas across Melbourne.

While *SmartRoads* has been successfully applied at numerous locations, there are some limitations in the way it is implemented. VicRoads is working on opportunities to further improve the way that *SmartRoads* can help to integrate land use and transport planning. These issues are discussed in Part 4 of this report.

2.7 Public transport planning to achieve mode shift and reduce car dependence

Under the Act, PTV is responsible for planning the development of public transport networks as part of an integrated transport system under DOT's planning framework.

PTV's strategic planning for public transport involves preparing tactical plans for each of the public transport modes (bus, tram and train). These set out current performance and capabilities, as well as plans for network development in future decades and cost-benefit analyses on options to address future challenges and growth.

2.7.1 Developing strategies to achieve mode shift

PTV's statutory object to seek to increase the mode share of public transport means it has an important role in contributing to congestion management through initiatives and strategies designed to reduce car dependence.

However, while PTV is directly accountable for the level and quality of public transport services, its specific accountabilities for congestion management are not clearly defined.

PTV does not have an explicit mode share target against which achievement of its statutory mode shift goals can be monitored and assessed. Instead, its modal planning is based on a patronage growth target of 4 per cent per annum, which it advised is mainly attributable to mode shift given annual population growth is around 1.5 per cent.

PTV, however, acknowledges that this assumption is not equivalent to an explicit mode shift target.

PTV's tactical plans provide an opportunity to communicate how relevant initiatives and strategies will contribute to meeting its statutory object to seek to increase the mode share of public transport, as well as other related statewide congestion management initiatives.

Our review of tactical plans for the bus, rail and tram modes indicates that they focus appropriately on the future development and growth of the network, but do not include explicit mode shift or related congestion management goals. Therefore, while the tactical plans include initiatives focused on increasing patronage to meet expected future demand, they do not clarify to what extent this will be achieved through strategies designed to reduce reliance on car use.

The tactical plans instead normally assume that some mode shift and congestion relief will naturally occur as a by-product of increased patronage. While this is likely, the effectiveness of tactical plans in contributing to congestion relief cannot be fully assessed in the absence of explicit mode shift goals and related strategies.

Public transport accessibility is an important factor that influences demand for road use. Therefore, more explicit consideration of mode shift goals, targets and strategies within tactical plans would provide greater assurance that they are optimally focused and integrated with other initiatives to manage congestion across the transport portfolio.

Public reporting by DOT/ PTV against the prior statewide target to increase the mode share of public transport to 20 per cent by 2020 was discontinued at the end of 2010 following the change in government. The status of this target is presently uncertain and PTV has yet to establish alternative targets for mode share.

2.7.2 Current initiatives to improve planning across modes

PTV is refocusing its public transport planning processes away from individual modal plans towards a multimodal place-based approach. This positive initiative represents a major step forward from the previous mode-by-mode or silo-based planning approach and offers considerable potential to aid in the management of traffic congestion.

The new approach is designed to improve connections between transport modes within defined areas, increase accessibility of public transport, and therefore contribute to decreasing reliance on cars.

PTV aims to increase patronage in targeted corridors by addressing inadequate coordination between bus and train services which in some cases makes travelling by car the only practical option. Additionally, by reducing wait times for bus/train connections and other service improvements, these initiatives also seek to effect mode shift from private vehicles to public transport.

This is encouraging. However, as PTV has yet to develop related mode shift targets for these initiatives their effectiveness cannot be fully assessed. It also means that the extent to which they are designed to reduce car dependence and contribute to alleviating road congestion is not clear.

2.8 Oversight of statewide congestion management initiatives

DOT's governance arrangements are focused on achieving the Transport Integration Act's goal of integrated decision-making, and include cross-agency participation in the:

- Portfolio Leadership Team
- Transport Planning Group
- End to End business process.

These arrangements were developed by DOT in recognition of the complexity of the portfolio's business needs, and the need for all related agencies to align their activities and proposals with the shared goals of the portfolio.

They were also developed to recognise the need for a sound business process to support the integration of portfolio agencies to enable the government's outcomes to be achieved.

Although soundly based, these arrangements are compromised by the absence of clearly defined statewide objectives, or agency responsibilities for congestion management, including systematic reporting by them on related initiatives. This situation impedes DOT's capacity to effectively oversee, monitor and coordinate congestion-related initiatives across the portfolio.

The existing governance arrangements are outlined in Figure 2A.

Figure 2A
Governance arrangements for transport planning

Name	Description
<p>Portfolio Leadership Team (PLT) Established February 2012</p>	<p>Membership—Secretary of DOT and CEOs of VicRoads and PTV. Purpose—set strategic direction for the transport portfolio, jointly consider major projects and manage complex network and operational issues that cut across networks. Also identify opportunities to integrate and align infrastructure, land use and transport planning. Monthly status reports on cross portfolio projects monitor major transport projects with significant risk profiles, impacting on multiple networks. However, there is no systematic reporting on the effectiveness of statewide congestion management initiatives.</p>
<p>Transport Planning Group (TPG) Established June 2012</p>	<p>Membership—Deputy Secretary of DOT and senior executives of DOT, PTV and VicRoads. Representatives from other agencies, such as DPCD, attend by invitation to discuss the progress of related initiatives. Purpose—provide ongoing advice on high-level strategic issues that impact on the portfolio. Examples include planning for priority infrastructure projects and creating a policy framework that drives prioritisation of portfolio projects. Meetings actively consider progress of major strategic initiatives but do not regularly monitor progress of congestion management initiatives.</p>
<p>End to End Committee business process (E2E) Established mid-2010</p>	<p>Membership— Deputy Secretaries of DOT and CEOs of PTV and VicRoads. Representatives from other agencies by invitation. Purpose—E2E process aims to ensure evidence-based planning across the portfolio that is strategically aligned and coordinated, and that projects and initiatives are effectively managed and focused on achieving desired outcomes. Not intended to subject all projects to E2E. Does not include systematic monitoring of portfolio-wide congestion management initiatives.</p>

Source: Victorian Auditor-General's Office.

The establishment of these governance arrangements is a positive development that has strengthened cross-government coordination and integration across the transport portfolio.

However, as there is no focused systematic monitoring and reporting on statewide congestion issues, none of these arrangements has an explicit focus on congestion management.

Such a focus is warranted given the growing significance of the problem and its ongoing cost to Victoria's economy.

Recommendations

1. That the Department of Transport reconsiders its initial proposal for the Network and Service Strategy as a stand-alone dedicated transport plan.
 2. That the Department of Transport and Department of Planning and Community Development establish arrangements that assure comprehensive public consultation on transport issues, preferably in a stand-alone transport plan, but otherwise in the context of the Metropolitan Planning Strategy.
 3. That the Department of Transport, in collaboration with other transport agencies, develops a congestion management plan within the context of broader transport and land use strategies which sets out statewide objectives, priorities, targets and agency responsibilities.
 4. That Public Transport Victoria develops explicit mode shift strategies and targets that are demonstrably aligned with defined statewide congestion management priorities.
 5. That the Department of Transport, in consultation with stakeholders, reviews its governance arrangements and establishes mechanisms for systematic monitoring and reporting by agencies on the progress and outcomes of statewide congestion management initiatives.
-

3 Decision-making for infrastructure expansion

At a glance

Background

When appraising the merits of infrastructure expansion proposals for relieving traffic congestion, agencies should consider and document sufficient information to:

- decide whether, and in what form, the project should go ahead
- quantify the costs, benefits and risks, including the potential congestion impacts
- adequately assess alternative options, including demand management.

Conclusion

The state's major transport priorities are driven by the need to boost productivity and meet the demands of population and economic growth. Managing congestion is central to these goals. However, in the absence of a transparent framework for assessing the congestion impacts of major infrastructure proposals, it cannot be assured that they are the most effective and economical option for managing congestion longer term.

Findings

- Of the three transport agencies, VicRoads has the most developed and tested decision-making framework in relation to congestion management. However, none of the transport agencies explicitly mandate the assessment of congestion impacts.
- Where congestion management is a key project driver, appraisals do not currently provide an adequately quantified context:
 - The Melbourne Metro business case attributes a portion of the benefits to 'decongestion' incorporating road and rail congestion, but separate estimates of road and rail decongestion are not shown.
 - It is not evident that the impact of the East West Link on future traffic congestion levels has to date been adequately analysed and assessed.

Recommendation

That the Department of Transport, in consultation with stakeholders, develop a portfolio-wide framework for transparently assessing the congestion benefits and demand management options and alternatives of related infrastructure expansion proposals.

3.1 Introduction

Investments in infrastructure expansion to relieve traffic congestion need to be properly targeted, consider the congestion impacts, and assess alternatives including demand management options.

While the state has developed guidelines to assist this process, the *Transport Integration Act 2010* establishes important decision-making principles to further support the achievement of these outcomes.

Specifically, the principles of integrated decision-making, triple bottom line assessment and transparency are particularly important as congestion management is often one of several competing drivers of such proposals.

A robust and transparent decision-making framework is therefore needed to acquit these principles and effectively prioritise expansion proposals for congestion management. This framework should assure that related investment decisions:

- clearly align with defined statewide strategic plans, priorities and goals for alleviating congestion
- leverage and support relevant statewide demand management strategies and initiatives
- are evidence-based and consistent with defined statewide congestion management priorities
- are supported by rigorous assessments of risks and alternative options, including the congestion costs and benefits of proposed initiatives and of induced demand
- are clearly documented and support the achievement of the integration and coordination objectives of the transport system
- are transparent, making the expected congestion impacts of major transport projects known to Parliament and the public.

This Part examines whether infrastructure expansion decisions for alleviating congestion are soundly based.

3.2 Conclusion

The absence of a transparent framework for assessing the traffic congestion impacts of related expansion proposals means it cannot be assured that they are the most effective and economical options for managing congestion in the long term.

Although alleviating congestion is often one of several drivers for such proposals, current approaches to assessing their congestion benefits do not sufficiently demonstrate the extent to which they address the supply- and demand-side causes of congestion, or how they contribute to increased congestion by inducing extra road use.

This limits confidence in the soundness of related infrastructure expansion decisions.

3.3 Prioritising and assessing expansion initiatives relating to congestion

3.3.1 Determining statewide priorities

The Department of Transport (DOT) advised that its key decision-making framework is the *Transport Integration Act 2010*, and that there are no separate portfolio-wide procedures for determining and assessing expansion priorities relating to congestion. Further, details of the congestion impacts of major projects are not regularly published.

This limits transparency and poses a risk to effective decision-making. A key gap in this regard is the current absence of a statewide transport plan and related congestion management plan. This reduces assurance that current infrastructure priorities are soundly based.

Current infrastructure priorities relating to congestion

DOT advised that the state's transport priorities are driven by the need to fix the problems that hinder the performance of the transport network and to invest in infrastructure and services that contribute strongly to state productivity.

In this context, it identified congestion management as central to both network performance problems and the state's productivity agenda. DOT further acknowledged that congestion management requires an integrated, whole-of-network approach that recognises the interactions between key network components, such as road, rail and ports with land use.

It referred to the state's Growth Corridor Plans, current work on the Metropolitan Planning Strategy and Regional Growth Plans as examples of where integration between land use and transport planning is being pursued.

DOT identified 10 rail, road and freight projects, drawn mainly from the state's submission to Infrastructure Australia, as key priorities of relevance to congestion management. These are outlined below.

Rail projects

DOT advised that congestion on the metropolitan rail network results in crowding, lower punctuality and cancellations, which can contribute to road use. It noted that Victoria has experienced significant growth in public transport patronage in the past decade, with patronage on Melbourne's trains growing by 53 per cent between 2004–05 and 2011–12 and V/Line patronage more than doubling over a similar period.

While new trains have allowed additional services to be timetabled, DOT advised that the current rail system has very limited capacity for further service growth and thus for accommodating modal shift. Therefore, addressing congestion on rail requires new capacity boosting investments. Figure 3A outlines the key priorities identified by DOT.

Figure 3A
Key rail projects

Project	Description
Regional Rail Link	Australia's largest public transport infrastructure project that is expected to separate regional and suburban train routes and create capacity for an extra 23 metropolitan and 10 regional services during peak periods along Melbourne's west. This will result in capacity for an extra 54 000 passenger trips each day.
Melbourne Metro	Melbourne Metro is a proposed nine kilometre rail tunnel through the heart of Melbourne designed to increase passenger capacity, particularly along Melbourne's growth corridors, as well as improve train punctuality and public transport access to the commercial and education precincts around inner Melbourne.
Dandenong Rail Capacity Program	This program aims to deliver progressive upgrades to existing corridor infrastructure, including signalling upgrades, grade separations and platform lengthening to enable longer, more reliable trains with the potential to increase capacity by approximately 11 000 passengers per hour.
High Capacity Signalling	This project aims to introduce high capacity signalling systems for future rail links such as Melbourne Metro and future upgrades of existing lines such as Dandenong. These systems aim to increase the capacity, reliability and availability of the network by enabling trains to travel safely closer together and more frequently.
Procuring additional Rolling Stock—Trains	DOT advised that the state is continuing to purchase new rolling stock for the metropolitan and regional train network in order to meet the continued and forecast population growth. DOT advised that a total of 40 new metropolitan trains will be running on the network from 2014.

Source: Victorian Auditor-General's Office.

Road projects

DOT acknowledged that managing road congestion requires better management of existing road space, improvements to public transport and targeted investment for new and upgraded road links.

It also noted the recent introduction of *SmartRoads* operating plans and intelligent transport technologies as critical tools designed to better manage existing roads in the future.

DOT identified the investments outlined in Figure 3B as necessary to further connect and upgrade the motorway network and expand on-road public transport.

Figure 3B
Key road projects

Project	Description
Procuring additional Rolling Stock—Trams	The state is also purchasing new rolling stock for the tram network, with the first 50 new trams due to arrive in late July 2013. As part of this program, there will also be key upgrades to tram infrastructure.
East West Road Link	This project involves the construction of a new 18 kilometre cross-city road corridor. It will provide direct connections to the Port of Melbourne and an east-west central business district bypass for essential traffic. It is expected to free space on existing roads for buses and trams and reduce heavy truck traffic on residential roads in the inner west.
Upgrading the M80	This project aims to improve the 38 kilometre Western and Metropolitan Ring roads by adding more lanes and installing electronic systems to manage traffic flow across the entire route. Expected improvements include less congestion, more consistent travel times and safer journeys.
Expanding the Managed Motorways Program	This program aims to deliver intelligent transport systems to better manage Melbourne's freeway/tollway network and maximise infrastructure productivity. These systems enable incident management, operational prioritisation, integrated speed and lane use management and the provision of travel information. The project aims to enhance systems already delivered as part of the M1 upgrade.

Source: Victorian Auditor-General's Office.

Freight projects

As the vast majority of freight is carried on road, DOT indicated that its initiatives for managing on-road congestion will also benefit freight and passenger movements.

It advised that freight movements are vulnerable to congestion at critical points of the supply chain and that while road travel will always be dominant in freight movement, encouraging growth in rail freight is important to relieve the pressure on the road network, particularly in congested central Melbourne. Accordingly, DOT identified the priorities outlined in Figure 3C for managing the impact of congestion on freight.

Figure 3C
Key freight projects

Project	Description
Expansion of the Port of Hastings	The state has nominated the Port of Hastings as the preferred site of Victoria's next container port to support continuing growth and productivity post 2024–27. Commonwealth funding is currently being sought to construct the first stage of the Port's development including the required transport corridor planning.
Western Interstate Freight Terminal	Commonwealth assistance has also been sought for studies and investigations to complete the business case for an intermodal transport hub at Truganina in Melbourne's west with efficient rail and road connections, including to the interstate rail network.

Source: Victorian Auditor-General's Office.

3.4 Assessing proposed initiatives

Each of these projects has the potential to impact positively on road congestion. However, most are focused on increasing capacity and are currently proposed without reference to any related demand management initiatives, explicit mode shift goals, or clearly defined agency and statewide congestion management objectives.

Consequently, the extent to which they are sufficiently integrated and optimally focused on addressing both the supply- and demand-side causes of road congestion is presently unclear.

3.4.1 Aligning proposals with defined statewide priorities

DOT revised its Project Management Framework in 2011 to facilitate post-implementation reviews of projects that can be used to inform future investments. While this framework now requires proponents to define the objectives and expected benefits of proposals upfront, the current absence of a statewide transport plan and congestion plan to inform and guide this work is a key gap.

VicRoads uses its Network and Asset Planning Guidelines to assist in ranking possible projects. Additionally, it has developed a Benefits Management Framework based on the Department of Treasury and Finance's Investment Management Standard that provides a useful and consistent approach to determining project benefits and how they contribute to known government outcomes. This framework seeks to enable project developers to identify the key problems associated with a potential project, and to determine the key benefits and travel time savings that can be delivered compared to the situation without the project. However, the present lack of clearly defined statewide objectives for traffic congestion and demand management means that their effectiveness in optimally focusing congestion-related investments cannot presently be demonstrated.

Public Transport Victoria (PTV) advised that as it was not directly accountable for congestion on the road system, it did not have a prescribed set of procedures for prioritising road congestion related investment proposals. Despite this, PTV acknowledged that it manages public transport projects that are expected to contribute to congestion reduction on both the road and rail system. A portfolio-wide congestion and demand management plan would assist in providing a consistent basis for pursuing and demonstrating these outcomes.

3.4.2 Considering congestion impacts and demand management options

VicRoads has the most developed and tested decision-making framework in relation to congestion management. However, none of the three transport agencies explicitly mandate the assessment of congestion impacts as part of their frameworks for infrastructure expansion. Nor do examined proposals demonstrate sufficient consideration of demand management options and alternatives. This is a key weakness.

The decision-making frameworks of these agencies therefore require greater focus. Congestion is frequently alluded to in proposals for new road, rail and port infrastructure; however, there is no systematic portfolio-wide approach to its definition and measurement.

Congestion is sometimes invoked as a critical issue without adequate quantified context. For example, the business case attributes a portion of the benefits of the Melbourne Metro initiative to 'decongestion', incorporating road and rail congestion. However, separate estimates of road and rail decongestion are not shown.

Similarly, a key objective of the East West Link is to relieve congestion, but it is not evident to date that its impact on future traffic congestion levels and induced demand has been adequately analysed and assessed.

For example, while the project is expected to significantly improve travel times for users of the new east-west link, analysis to date also indicates that it is likely to:

- marginally increase congestion to city bound traffic in other parts of the freeway network during peak periods
- attract new road users and, therefore, additional traffic both along the east-west corridor and wider network
- result in some reverse mode shift from public transport to cars, as these new road users are attracted by the expected travel time savings.

These issues may adversely impact the net benefits of the project and have not yet been transparently quantified or fully assessed. DOT indicated that it intends to address these issues as it works to finalise the business case in 2013.

Recommendation

6. That the Department of Transport, in consultation with transport agencies, develops and systematically implements a portfolio-wide decision-making framework for congestion related infrastructure expansion projects that:
 - includes clear standards and procedures for assessing both the congestion benefits and disbenefits of proposed initiatives, including induced demand, relative to defined statewide congestion management priorities
 - assures the nature and scope of proposals is adequately informed by sufficient consideration of statewide demand management options and initiatives.
-

4 Addressing the demand-side causes of congestion

At a glance

Background

Demand management involves a range of strategies that can reduce traffic congestion by encouraging reduced car commuting at critical times and locations. It contrasts with supply-side approaches that seek to relieve congestion by supplying extra road space.

Conclusion

Demand management has not been effectively used in Victoria as a tool for managing traffic congestion. While limited demand management initiatives have been explored and implemented since 2006, collectively these have been neither comprehensive nor sufficient to materially impact demand for road use and related congestion. As a result, Victoria's efforts are heavily weighted towards the supply side.

Findings

- There is no statewide demand management strategy to complement or inform infrastructure expansion and enhancement initiatives related to congestion.
- Resource constraints mean an ongoing reliance on supply-side initiatives alone is unsustainable and that greater attention by transport agencies to demand management is required.
- Demand management initiatives to date have been limited, not sustained, and largely deployed as individual and uncoordinated initiatives rather than as part of a statewide congestion and demand management plan.
- There has been little action by agencies to explore the potential of road pricing in managing traffic congestion.
- Public education campaigns in relation to travel demand management are limited.

Recommendation

That the Department of Transport develop and regularly update, in consultation with other transport agencies, a statewide demand management strategy.

4.1 Introduction

As traffic congestion is a product of both supply- and demand-side factors, addressing the demand-side causes is essential for effectively managing it.

In relation to congestion, demand-side management initiatives normally aim to reduce the demand for road use during peak periods, either by encouraging motorists to use their cars at non-congested times or to use other, more sustainable modes of travel.

This is normally achieved by making the costs of car use during congested periods more transparent to road users, and making the choice of alternative and more sustainable forms of transport more attractive to them.

Demand management can mitigate the need to bring forward expensive investments in road infrastructure and free up limited resources for use in higher priority areas, such as public transport, where an even greater impact on congestion relief can be achieved.

Demand management plays an important role in major cities throughout the world in reducing traffic congestion.

This Part of the report examines whether strategies for managing traffic congestion in Victoria adequately address demand side factors.

4.2 Conclusion

Demand management has not been effectively used in Victoria as a tool for managing traffic congestion.

Since 2006, a limited number of demand management initiatives have been explored and implemented. However, they have been largely deployed as individual and uncoordinated activities rather than as part of a statewide congestion and demand management plan. As a result, they have been neither comprehensive nor sufficient to materially impact the demand for road use and the growing levels of traffic congestion evident in recent years.

Victoria's response to traffic congestion therefore remains heavily weighted towards the supply side with little attention evident to demand management. Increasingly limited state finances, coupled with the significant growth projected for Melbourne's population, indicate that this approach is unlikely to be financially sustainable.

This situation warrants urgent attention by agencies to develop initiatives that effectively mitigate the demand-side causes of congestion, including both the need for, and cost of, expensive infrastructure solutions.

4.3 Managing the demand for road use

4.3.1 Factors influencing demand for road use

Increased demand for road use in congested circumstances has been influenced by a number of factors. These include:

- economic and population growth
- the low density of urban development in Melbourne coupled with poor accessibility to public transport in some areas
- the lack of a direct connection between the cost of using the road and traffic conditions
- the existence of many cross-town trips that, except for key SmartBus routes, are not efficiently supported by Melbourne's mainly radial public transport system.

In addition to increasing road capacity, strategies addressing these demand-side causes can also assist in reducing demand for road travel and associated congestion.

To be effective, these strategies depend on frequent and reliable public transport services with capacity for extra passengers transferring from car commuting during peak periods. However, this is often not the case in outer suburbs where demand for private vehicle use is highest and where current public transport services are limited and in need of further development.

4.3.2 Typical demand management strategies

Common demand management initiatives for traffic congestion include:

- **road pricing**—an electronic tolling system on freeways and roads that can adjust charges to reflect the level of congestion, time of day or type of vehicle, so that the costs of congestion are borne by those responsible for it
- **parking policies and pricing**—designed to ensure that car commuters pay a fairer share of the costs of congestion they cause, and to influence the adoption of more sustainable travel practices
- **travel planning**—initiatives to help commuters consider and use more sustainable alternatives to car use for their intended travel plans rather than driving for all purposes and destinations
- **road space management**—strategies aimed at increasing the efficiency of roads though such initiatives as intelligent transport systems, freeway management systems, transit lanes, bus lanes, bicycle lanes, and the use of information technology to better manage freeway access and operation
- **publicity and public education campaigns**—aimed at increasing community awareness and up-take of related initiatives, including the use of more sustainable travel patterns and modes
- **ridesharing and carpooling**—aimed at reducing single-occupancy car use through initiatives that encourage the sharing of journeys to common or nearby destinations.

Demand management strategies have been used in various countries to manage traffic congestion and vary according to the conditions and culture in each region. Examples of some successful international approaches to demand management are outlined below.

International demand management initiatives

Singapore

A mix of strategies have been adopted in Singapore where limited road space has created a strong imperative for congestion management. Key initiatives have included establishing both high registration costs and a vehicle quota system that limits the growth in registration and overall vehicle population. Additionally, the world's first city-wide electronic road pricing system was introduced in Singapore in 1998 coupled with investment in intelligent transport systems and high quality bus and metro systems.

In 2000, the Land Transport Authority of Singapore reported that morning rush hour traffic had reduced by about 16 per cent since 1998 despite an overall increase in the numbers of vehicles on the road.

United Kingdom

In 2003, a congestion charge on private vehicles entering London's central city was introduced, along with an automatic number plate recognition system to monitor traffic entering the controlled area. Public transport improvements were also implemented at this time, including the introduction of around 300 extra buses that have since resulted in a marked increase in bus usage.

A 2012 review of the scheme by Transport for London found that it has had a significant impact in shifting people away from using cars, with vehicle kilometres travelled in central London falling by almost 19 per cent between 2000 and 2009.

United States

Congestion management in the United States focuses mainly on freeway management systems due to extensive low density urban development in areas with limited public transport. These systems use intelligent technology to control the motorway through, for example, the use of entrance ramp metering, improved incident control and variable vehicle speed limits. By actively managing freeway assets, this strategy aims to maximise productivity and traffic flow, and thereby reduce congestion.

In its 2006 report *Traffic management systems for Australian freeways*, Austroads noted that while such systems were relatively new to Australia they had been extensively used in the United States and parts of Europe. It found that unmanaged freeways typically perform at around 20 to 25 per cent below their capability. It also noted a 2000 review of freeway management systems in the Twin Cities of Minnesota that demonstrated a 14 per cent increase in throughput during peak periods, travel time savings of approximately 25 121 hours, and a reduction in unexpected delays of around 2.6 million hours annually.

4.4 Victorian demand management initiatives

Compared with these international approaches, demand management in Melbourne has received limited attention as a means for traffic management over recent decades.

There is evidence of some lessening of car dependence, increased use of freeway management systems and a rapid growth in public transport services and patronage since 2006. However, congestion in Melbourne has continued to increase during this period and remains a daily concern for many road users. The current high levels of car ownership and use is not offset by any strong group of demand management measures.

Currently, there is no statewide traffic congestion and demand management strategy, or strategic transport plan to guide the development of related initiatives. Also, there is no administrative unit within the Department of Transport (DOT) with the resourcing and responsibility for developing, implementing and coordinating statewide demand management initiatives.

Despite this, a limited number of individual demand management initiatives have been implemented in Melbourne in recent years. These are outlined below.

4.4.1 Road pricing initiatives

Road pricing in Melbourne currently relates only to the revenue requirements of private road operators and is not used to apply differential pricing to forms of car use that cause congestion. For example, road pricing options and technologies by which higher charges could be levied during peak periods against single occupancy vehicles have not yet been explored or pursued.

The 2006 Victorian Competition and Efficiency Commission inquiry into congestion management proposed a feasibility study be undertaken of road user charging as an option for improving congestion management. This initiative was not pursued as the state did not support this option.

However, in 2009, DOT undertook some limited modelling work to examine four hypothetical congestion charging options for Melbourne. These included:

- area charging in inner Melbourne
- charging at three concentric cordons around the central business district
- parking charges in inner areas
- distance-based charging across the metropolitan area.

This work was indicative and for information purposes only, and it did not recommend particular charging options or assess their feasibility for Melbourne.

However, the study showed that road pricing has the potential to substantially reduce travel times and the demand for road use during peak periods. It also showed potential for affecting an increase in public transport patronage, including average travel speeds across all network modes.

Despite this, policy options for the implementation of road pricing in Melbourne have yet to be developed.

4.4.2 Parking policy

The *Congestion Levy Act 2005* was introduced to reduce congestion in inner Melbourne, encourage public transport use and provide more parking opportunities for shoppers and visitors. A levy of \$400 per annum was initially applied to long stay parking spaces in 2006 within the defined levy area, rising to \$800 per annum in 2007 and indexed by inflation each year.

A 2010 review by the Department of Treasury and Finance found that the levy had contributed to lowering traffic volumes and increasing the use of alternative forms of transport within the levy area.

However, a 2011 study presented to the Australasian Transport Research Forum concluded that although there had been a swing away from private car commuting, only a small proportion of this could be attributed to the levy. This was because employers paid for the parking levy in the majority of cases. The study found that drivers were responsible for the levy in only 32 per cent of cases, resulting in an 11 per cent reduction in car travel demand.

Local governments also play an important role by adopting parking policies that support statewide congestion and demand management goals. However, there is little evidence of effective coordination and collaboration between the state and local councils on this issue, particularly in relation to clearways. The current absence of clearly defined statewide congestion and demand management goals is a key impediment.

4.4.3 TravelSmart

TravelSmart was a government initiative from 2001 to 2012, designed to reduce people's dependency on cars and encourage them to choose active low cost and environmentally friendly forms of transport such as walking, cycling, public transport and carpooling.

TravelSmart programs were conducted at various schools, universities, hospitals and other workplaces with over 150 travel plans developed across more than 38 funded projects.

Project evaluations indicate that TravelSmart achieved positive shifts in behaviour towards sustainable modes of transport. For example, a 2012 review commissioned by DOT of 134 projects found that 85 per cent reported a shift towards more sustainable travel options. A further 65 per cent reported reduced car use, 35 per cent reported increased public transport usage, and 49 per cent reported increased cycling. However, funding for the program was discontinued in 2012.

4.4.4 Transit and express lanes

A transit lane was implemented on the Eastern Freeway around 1992 to discourage single occupancy vehicle use by only permitting vehicles with two or more occupants. Similarly, an express lane was implemented on the Tullamarine Freeway in 2005 to assist the movement of buses, taxis and hire cars. Both lanes operate during peak periods only.

Research commissioned by VicRoads in 2007 in response to the 2006 Victorian Competition and Efficiency Commission inquiry showed mixed results and that the success of such lanes is highly dependent on effective enforcement. While the transit lane on the Eastern Freeway assisted in reducing congestion, enforcing compliance on Hoddle Street was found to be difficult and resulted in very low compliance rates.

Therefore, while this research identified a number of additional roads where transit lanes could reduce congestion, they were not pursued because of the limitations of existing enforcement methods.

4.4.5 Carpooling

In 2008, \$6 million was allocated for carpooling programs to reduce congestion in peak periods under the former *Victorian Transport Plan*.

Programs were implemented at various locations, and involved the designation of a carpooling coordinator responsible for ride matching and promoting the program at the organisation. Research commissioned by DOT in 2010 indicated that the program had the potential to reduce net car usage, particularly in localities with limited public transport options. The program, however, was discontinued in 2010 along with the *Victorian Transport Plan*.

4.4.6 SmartRoads

The VicRoads *SmartRoads* initiative, launched in 2010, has considerable potential to influence demand for road space by allocating priority to freight, cars, public transport, bikes or pedestrians, at various locations and times of day. However, it is still at an early stage and lacks a comprehensive implementation strategy to fully leverage its potential to better manage congestion across the road network.

4.4.7 Public education campaigns

Although prominent in other fields—such water, electricity and land fill usage—public education campaigns are seldom used in Victoria to address road traffic congestion. The only recent initiative is VicRoads' \$800 000 Unlock the Grid campaign. This was a relatively short internet-based campaign, operating from October to December 2012 that invited participants to make small changes to their daily commute to lower their impact on congestion. It was a one-off initiative that did not form part of a wider traffic congestion and demand management strategy.

4.4.8 Early Bird travel concession

The Early Bird free travel concession on Metro trains was introduced in 2007 with the aim of easing congestion on peak metropolitan train services. A 2008 evaluation of this initiative indicated that it had some success in creating more capacity on peak hour trains, with nearly one-quarter of early bird ticket users having shifted their time of travel to before the morning peak. This initiative also provides an important opportunity for encouraging a modal shift from cars to trains to take advantage of the less crowded conditions.

This initiative, however, is no longer actively promoted. Instead, it has been built into the myki ticketing system, with passengers automatically receiving the concession when they swipe on and off before 7.00 am on the suburban train system.

4.4.9 Park and Rides and parkways

Park and Rides and parkways with accompanying signage on freeways encourage car users to switch to public transport at these locations. Park and Rides have been serving Doncaster area buses since 2003, and parkways have been operating on the outer perimeters of Melbourne such as Ballan and Bacchus Marsh since 2006 and 2007 respectively. The provision of adequate parking at stations is critical to the achievement of modal shift. Despite some investments in recent years, station car parks and adjacent streets continue to regularly fill early at key locations, limiting the potential of this initiative.

4.4.10 Other road space management initiatives

In addition to *SmartRoads*, VicRoads identified the following demand management works which have been implemented to improve road space management:

- network-wide active tram priority at traffic signals, since the 1980's
- continuing works to facilitate walking and cycling, including the development and progressive implementation of the principal Bicycle Network
- bus lanes and increasing bus priority at traffic signals, plus road space priority works assisting the roll-out of SmartBus since 2006
- the incorporation of active and public transport facilities in all new road network planning and construction, especially for growth areas.

4.4.11 Impact of recent demand management initiatives

While these initiatives have had varying success, collectively they have been neither comprehensive nor sufficient to materially impact the growing levels of traffic congestion evident in metropolitan Melbourne in recent years.

This is because they have been developed and implemented in an ad hoc, uncoordinated manner, rather than as part of an integrated statewide demand management strategy covering all transport agencies and modes.

This weakness in coordination, coupled with limited state finances, has contributed to the lack of sustained implementation to date. It has also meant that valuable opportunities for leveraging the lessons learned from key initiatives have been missed.

4.5 Leveraging opportunities for demand management

In October 2011, DOT developed a Travel Demand Management Discussion Paper that identified six opportunity areas to implement demand management approaches.

The paper was limited in detail and scope but identified several general opportunities:

- **Using sustainable travel for short trips**—55 per cent of trips in Victoria are 5 km or less and these trips contribute significantly to localised congestion that can have cumulative and flow on effects across the network. While these trips are most amenable to walking, cycling or public transport, this presently occurs in only 15 per cent of cases.
- **Influencing behaviour in congested corridors**—the paper acknowledges the potential for demand management to influence behaviour in congested corridors, through initiatives that make the full cost of travel clearer to travellers, and which encourage mode shift alongside initiatives to expand capacity.
- **Influencing the commute to and from work and school**—the morning and afternoon commute places particular burdens on the system due to the fact that so many trips are taken at once. The paper notes that opportunities exist to ease peak congestion by shifting travel to non-peak times, by encouraging shifts to modes with more capacity, and by moving freight at non-peak times.
- **Reducing congestion from local freight delivery**—the growth in online purchasing and local freight delivery contributes both to localised and broader network congestion. The paper identifies the better coordination of vehicles used, rather than mode or time shift, as the more likely responses to this challenge.
- **Encouraging a switch away from cars for school trips**—the paper notes that the use of cars to drive children to school has risen steeply over the past three decades, contributing to widely dispersed areas of localised congestion. It further notes there is the opportunity for travel demand management measures to encourage mode shift for school journeys.
- **Better planning for new developments**—the paper acknowledges there will be increased demand on existing transport networks as Melbourne grows. Consequently, consideration of land use solutions to minimise demand on transport networks, to establish alternative behaviour patterns to curb reliance on private cars, and to provide for effective freight delivery through distribution centres is identified as a significant opportunity.

The discussion paper has not yet been used to inform the further development of any related demand management initiatives. There is little evidence of active follow-up on the opportunities identified.

DOT indicated that limited resources coupled with the cessation of the *Victorian Transport Plan* and its related demand management initiatives, have necessitated a refocusing of its activities on current statewide priorities.

4.6 Implications for future investment decisions

The absence of coordinated demand management strategies demonstrates that the state's main approach to congestion remains dominated by expensive supply-side initiatives, focused on expanding road and public transport capacity.

However, the state's increasingly limited finances coupled with the significant growth projected for Melbourne's population indicates that this approach is unlikely to be financially sustainable in the long term.

Victoria operates within fiscally constrained circumstances and there is a limit to the range of major transport infrastructure projects that can be funded through state sources within the practical ceiling of the state's credit rating. Additionally, Commonwealth and private funds for these projects are also contested and limited.

Coordinated and focused strategies that effectively address the main demand-side drivers of congestion will be increasingly critical for assuring that future infrastructure investments relating to congestion are fiscally responsible and soundly based.

Recommendation

7. That the Department of Transport, in consultation with other stakeholders, develops and regularly updates a statewide travel demand management strategy that:
 - includes initiatives and targets for moderating the use of private vehicles and associated demand for road travel across the network during congested periods
 - is informed by a review of the likely cost-effectiveness and feasibility of road pricing options and regimes
 - includes targeted initiatives offering practical, sustainable transport alternatives to car use during peak periods, particularly for trips originating in car dependent areas
 - is informed by a review of the lessons learned from previous statewide demand management initiatives, and leverages the opportunities identified by the Department of Transport in 2011
 - identifies clear agency responsibilities and accountabilities for contributing to road congestion and related travel demand management initiatives, and for updating the strategy.
-

5 Optimising the efficiency of existing roads

At a glance

Background

Making the most effective use of limited available road space is a key strategy for managing congestion. This requires understanding the efficiency of the network, strategies for managing competing demand for road use, and effective traffic signals and management systems that optimise traffic flow.

Conclusion

VicRoads has actively worked to improve network efficiency through initiatives to better manage road space that have shown encouraging results. However, the lack of clear system-wide performance data for network efficiency and congestion management, including limited resources within VicRoads to implement *SmartRoads* and traffic signal reviews, is impeding its ability to optimise the efficiency of existing roads.

Findings

- VicRoads reports on key trends in traffic performance across the network, but has yet to develop performance measures and targets for both network efficiency and congestion management.
- *SmartRoads* has been effective in managing competing demands for road space at selected locations, but there is no dedicated strategy or funding to implement it across the wider network.
- VicRoads requires traffic signal reviews to occur once every five years. However, due to limited resources, the current review cycle is around 10 years.

Recommendations

That VicRoads:

- improve the frequency and targeting of its traffic signal reviews
- develop strategies to extend the implementation of *SmartRoads*, and to leverage clearways in consultation with councils
- systematically review the efficiency and effectiveness of its operational management of the road system
- develop measures and targets for network efficiency and congestion management.

5.1 Introduction

It is generally acknowledged that cities cannot continue to build their way out of congestion and that a greater focus is needed on helping to meet demand by better managing the assets that already exist.

Achieving this requires a focus on optimising the efficiency of existing road infrastructure. Important initiatives in this respect include:

- allocating road space to higher priority travel modes that maximise person throughput and the efficient movement of freight
- incident response services and real time traffic management systems, such as traffic signalling and freeway management systems that aim to minimise disruptions to traffic and optimise flow
- ongoing monitoring and evaluation of the operation of the road network.

This Part examines the effectiveness of VicRoads' strategies for optimising the efficiency of the road network.

5.2 Conclusion

VicRoads has actively worked to improve network efficiency through initiatives to better manage road space that have shown encouraging results.

However, the lack of clear system-wide performance data for network efficiency and congestion management, including the absence of a dedicated strategy and funding to implement *SmartRoads* and traffic signal reviews, is impeding its ability to optimise the efficiency of existing roads.

5.3 Making decisions between competing road uses

5.3.1 *SmartRoads*

SmartRoads provides a principles-based decision-making framework to better manage congestion by assigning priorities to different modes such as public transport, pedestrian and cycling and private motor cars according to the place and time of day.

SmartRoads is in the early stages of implementation. However, it has been applied to successfully improve road space management at numerous locations across the network.

In the Kew triangle, for example, VicRoads addressed the problem of delayed trams during the morning peak by providing improved tram priority along arterial roads and redirecting some vehicle traffic to other preferred routes. This significantly improved tram travel times with no identifiable increase in congestion evident for general traffic.

However, *SmartRoads* is not currently being used to its full potential. VicRoads gives effect to *SmartRoads* principles through Network Operating Plans (NOPs) covering almost all of metropolitan Melbourne. However, there is currently no dedicated strategy or funding to drive the implementation of these plans.

Further, VicRoads does not know how much of the metropolitan road network is operating in accordance with NOPs as it does not systematically review and record this information. NOPs are instead mainly used as a guide for VicRoads and local councils to inform decisions on proposals that impact on the operation of the road network.

VicRoads advised that key challenges in implementing NOPs, and therefore *SmartRoads*, include:

- limited funding for road improvement programs and traffic signal reviews, which provide the main opportunity for implementing NOPs and *SmartRoads* principles
- the need to balance any operational improvements with other road network objectives, such as safety.

In 2011–12, 400 traffic signal sites were reviewed and adjusted to better match NOPs. However, due to limited funds, most of these were adjusted for operation in critical peak periods and not necessarily over the whole day. Based on this, VicRoads estimates that 10 per cent of sites are likely to be operating according to NOPs and that another 50 per cent would likely require only minor changes to match NOPs. The remaining 40 per cent are likely to need more significant changes.

5.3.2 Opportunities to improve *SmartRoads*

Currently, *SmartRoads* is primarily used as a reactive tool to evaluate and assess road improvement projects and signal reviews that have already been proposed. However, VicRoads has recognised that it can help to more strategically direct these investments by highlighting areas of the road network that are operating sub-optimally.

VicRoads is progressing various initiatives that could further increase the potential of *SmartRoads* to improve network efficiency and integrate land use and transport decisions. These are outlined below.

Leveraging the potential of *SmartRoads* to improve network management

VicRoads currently uses *SmartRoads* to assess parts of the metropolitan road network affected by proposed road projects to identify where existing traffic flow is not meeting the expectations of NOPs and therefore creates a gap¹. However, there is potential for these gap analyses to be applied more systematically to the whole network to:

- identify the locations of greatest need, thereby enabling road network improvements to be more effectively prioritised
- monitor the network-wide effect of transport programs and policies.

This network perspective will enable VicRoads to better target its decision-making and monitor associated results.

The challenge for VicRoads is to obtain sufficient performance data for all transport modes and each time period, to effectively cover the entire network. VicRoads advised that it is currently exploring options to address this.

Using *SmartRoads* to better integrate land use and transport planning

VicRoads has identified the potential for *SmartRoads* to better integrate land use and transport decisions by helping to identify land uses that minimise road travel and promote greater accessibility, including the safer and more efficient movement of people and goods. It intends to commence work on these initiatives in 2013 in consultation with the Department of Transport and the Department of Planning and Community Development.

While the main aim is to reduce the number and length of trips, it is also expected to reduce traffic congestion as a result.

5.4 Operating the network to improve efficiency

VicRoads undertakes a range of activities focused on achieving the efficient use of existing infrastructure and supporting safe and reliable travel for road users including:

- periodically reviewing and adjusting the operation of traffic signals
- implementing and operating the freeway management system
- providing an incident response service on freeways and arterial roads
- monitoring the performance of the road network, including congestion.

However, it could achieve greater network efficiency if it better targeted traffic signal reviews, more systematically reviewed its operational management of the road system and better leveraged the potential of clearways to improve traffic speeds in consultation with local councils.

5.4.1 Traffic signalling system

The absence of a dedicated strategy and funding to regularly review traffic signalling systems and implement *SmartRoads* across the network is impeding VicRoads' ability to optimise the efficiency of existing roads.

The Sydney Coordinated Adaptive Traffic System (SCATS) controls more than 3 700 traffic lights across Victoria and is the main traffic management tool for arterial roads. It can be used to optimise the flow of traffic by:

- being configured to increase throughput at intersections, where appropriate, to reduce delays and provide more reliable travel
- improving traffic signal coordination along routes to assist with traffic flow
- implementing *SmartRoads* principles that prioritise modes which maximise the movement of people and goods.

Arterial roads are monitored daily in real-time using SCATS, which shows which parts of the arterial road network are exhibiting congestion that is more than 40 per cent higher than typical average conditions for that road and time of day.

VicRoads monitors the effectiveness of the SCATS system using system alarms that indicate potential faults, periodic reviews of selected traffic signals and intersections, and unusual congestion alerts from SCATS. The Traffic Management Centre operators can alter the operation of the traffic signals to help manage this congestion.

However, various factors impede the optimisation of SCATS, which are outlined below.

The signal review and adjustment cycle is sub-optimal

According to VicRoads' Network and Asset Planning Program Guide, each set of traffic signals should be reviewed every five years to assess its effectiveness in handling the traffic conditions. However, VicRoads advised that due to limited resources it reviews each set of traffic signals, on average, once every 10 years.

The SCATS system self-adjusts by monitoring the prevailing traffic conditions. However, periodic signal reviews and adjustments are essential to maintain its effectiveness particularly where changes to traffic patterns are outside the system's automatic adjustment capability.

VicRoads recognises that the longer review cycle increases the potential for delay and disruption to freeway and arterial road travel. More regular signal reviews are likely to:

- increase the capacity to accelerate the implementation of NOPs
- improve road network efficiency through better alignment of signal operations with *SmartRoads* principles
- minimise the congestion impacts of system faults.

Current monitoring and prioritisation of signal reviews

VicRoads needs to prioritise its signal reviews to make the best use of its limited resources. Better capturing and utilising congestion data available through SCATS would improve the way that sites are identified for review.

SCATS is able to generate and record various types of data to monitor congestion levels and the operation of traffic lights in real-time. While VicRoads extracts information to identify sites that regularly experience congestion, it is not evident that it uses this information to prioritise signal reviews.

Factors that VicRoads considers when prioritising traffic signal reviews include:

- routes where traffic patterns have changed significantly after physical changes to the network or where there have been new or expanded developments
- locations where there is a large number of complaints due to congestion
- routes which have not been reviewed for at least five years
- routes selected after discussions with stakeholders, such as local government and public transport operators
- the operating performance of signals based on SCATS data.

Hence, SCATS data is primarily used to assess the performance of traffic signals after they have been selected for review, rather than to proactively identify and prioritise signals in need of review.

VicRoads acknowledges that making more proactive use of the objective data available through SCATS and developing performance measures for the network would improve the way that it identifies and prioritises signal sites for review.

Signal faults can contribute to congestion

In 2011–12, VicRoads undertook a modelling exercise that estimated that the total cost of the extra delays caused by traffic signals not operating optimally, equated to approximately \$28 million in 2011. The impact of congestion depended on the severity, frequency and duration of faults, indicating that the cost could have been avoided if traffic signals were operating correctly.

Despite this, VicRoads advises that the total annual impact from these faults is low, as average traffic signal availability across the state did not fall below 99.8 per cent in 2011–12.

Some of the technology is outdated

SCATS was developed in the late 1970s. While it is continually upgraded with new operating software, some of the field hardware, such as lanterns, controllers and cabling needs to be upgraded as it is at the end of its service life. Urgent sourcing of replacement parts for some of the controllers can be difficult and VicRoads has started a program to manage the replacement of older traffic signal components and sites.

It is not clear how the condition of these controllers impacts on signal operation and reviews. The next generation of controllers and software can provide more information on congestion and queue lengths by providing SCATS with more data from extra detectors.

5.4.2 Emergency and incident response

Staff at the Traffic Management Centre at VicRoads monitor the performance of the road system on a daily basis, using freeway and arterial road data. This enables a rapid response to serious issues, where these are amenable to immediate treatment.

The Incident Response Service undertakes patrols on all metropolitan freeways to identify and minimise the impact of unplanned, non-recurring traffic incidents and breakdowns that can cause congestion and delays.

In 2008 the state extended the service under the four-year Keeping Melbourne Moving initiative to patrol:

- selected arterial roads within 10km of the central business district to clear broken-down vehicles
- some critical clearways on arterial roads to tow away illegally parked vehicles.

However, the cessation of funding in 2012 has meant that, while VicRoads has increased patrols on freeways, routine patrols on arterial roads have now stopped. Nevertheless, VicRoads advised that it endeavours to attend major incidents on arterial roads where these occur.

The impact of VicRoads' incident response services on traffic and related congestion cannot be fully assessed as VicRoads does not systematically review this. However, in 2010, VicRoads undertook a 3-month review of its incident response service, which showed a positive impact on congestion.

Figure 5A shows that the duration of incidents involving lane closures, on both untolled freeways and major arterial roads within 10 kilometres of the central business district, was kept to within 10 minutes in approximately 60 per cent of cases. This is an encouraging result.

Figure 5A
Number of incidents by duration and road type

Duration	Arterial roads	Freeways	Total
1–10 minutes	206	229	435
11–20 minutes	56	55	111
21–30 minutes	32	23	55
30 minutes to one hour	37	55	92
One hour or longer	33	20	53
Total	364	382	746

Source: VicRoads data recorded between 24 March 2010 and 30 June 2010 for the Incident Response Trial.

A further 15 per cent were kept to less than 20 minutes. This data suggests that the absence of incident response patrols on arterial roads means that motorists may now experience longer delays following minor crashes and vehicle breakdowns.

5.4.3 Freeway management systems

Freeway management systems include the use of technology such as:

- electronic message signs that can be updated in real-time to alert road users to known hazards ahead
- freeway ramp signals designed to manage and optimise traffic flow by regulating the entry of traffic onto the freeway.

The recent Monash-CityLink-West Gate (M1) Upgrade involved major works along the 75 km freeway from Werribee to Narre Warren, to increase road capacity and implement an integrated freeway management system. New lanes opened progressively from 2009 with all works completed in June 2011.

Data supplied by VicRoads shows that considerable improvements in travel times, ranging from 13 minutes to 50 minutes during peak times, were achieved during 2011 as a result of the increase in road capacity and the implementation of the freeway management system. These improvements are positive. However, it is not currently possible to distinguish what proportion of this improvement is attributable to the implementation of freeway management systems rather than increased capacity.

Despite this, these results are encouraging and VicRoads advised it is currently undertaking a full evaluation of the M1 Upgrade with the results expected in the second quarter of 2013.

5.4.4 Using clearways to improve travel speed

The use of clearways on arterial roads can be an effective way to make the existing road network more efficient. However, recent difficulties in reaching agreements with local councils on the use of extended clearways—due mainly to concerns about the impacts on retail traders—has limited the effectiveness of this initiative for congestion management.

Under the previous Keeping Melbourne Moving initiative, the state committed \$12.6 million to extend clearway times and enforce them with tow-away over four years in an attempt to improve traffic flow on arterial roads during peak periods. More than 150 clearways along key public transport routes within 10 kilometres of the Melbourne central business district were extended and standardised to operate from 6.30 am to 10 am and from 3 pm or 4 pm to 7 pm. The new clearway times were strictly enforced, with the number of vehicles towed often exceeding 500 a month.

VicRoads measured the impact of the extended clearways, which showed improvements in travel times of around 9 per cent for drivers and 5 per cent for trams. VicRoads estimates that these improvements mitigated the equivalent of approximately five years' worth of congestion, given the average rate of congestion increase, as measured in travel time over the previous 10 years across the metropolitan area, has been about 2 per cent per year.

This initiative, however, was discontinued by the state following the 2010 election because of concerns raised by members of the community and some councils about its impact on retail traders. All original clearway times were subsequently reinstated at a cost of around \$1 million.

The state's increasingly limited capacity to expand the metropolitan arterial road network suggests that further consideration should be given to leveraging the potential of clearways to reduce congestion. In this context, VicRoads identified the following lessons for consideration in the development of future initiatives:

- The benefits of the increased clearway times were not sufficiently communicated during the consultation process.
- Most of the benefits came from increased parking restrictions particularly near signalised intersections. Hence, similar gains could be achieved by strategically focusing restrictions at these locations, rather than applying them uniformly along arterial roads, thereby minimising the impacts on local traders.

5.5 Monitoring and evaluating network efficiency

VicRoads measures and reports on a range of key indicators and trends in traffic performance across the network. However, it does not set clear performance measures and targets for both network efficiency and congestion management.

VicRoads measures the overall performance of the road network through a survey run twice a year, with results reported annually in its Traffic Monitor publication. VicRoads uses this information to inform road users, authorities and government of travel conditions, including planning for operational activities that seek to minimise congestion on an ongoing basis. The survey identifies a wide range of indicators measuring travel times, delays and speeds, including the duration of peak periods, along with other metrics that provide useful insights into the performance of the road network. A selection of these are shown in Part 1 of this report.

The use of these metrics for congestion management, however, is currently limited by the absence of an agreed definition of traffic congestion, including associated statewide objectives, priorities and targets.

VicRoads further advised that setting meaningful targets is difficult because:

- numerous factors that are beyond its control can influence the efficiency of the roads, for example, on-road parking, both legal and illegal, has a significant impact on arterial road capacity, as do traffic incidents, such as road works and accidents
- improving congestion in one area or for one mode of transport may displace it to another area or another mode
- of personal choices for living, working and travelling that are made with awareness of increasing peak period congestion
- there may be little urgency to address congestion if accessibility is high.

Consequently, VicRoads does not set and report against absolute targets and instead focuses on monitoring and reporting on the performance of the road network over time.

Key trends reported in Part 1 of this report indicate that congestion on the urban road network is getting worse and that there is a continuing need to address this growing challenge.

While identifying useful metrics is difficult, the current lack of clear performance targets and priorities for congestion management represents a significant impediment that needs to be addressed.

5.5.1 Setting targets and measuring effectiveness

SmartRoads' focus on optimising the movement of people, and therefore accessibility, means it has considerable potential to measure the overall effectiveness of the urban road network, and to inform the setting of agreed targets for congestion management.

SmartRoads can establish different expected levels of service of road network performance for different transport modes, by location and time of day. This means it has significant potential as a congestion management tool by establishing targets that give effect to priorities that optimise person and freight movement.

Using *SmartRoads* in this way provides an important opportunity for shifting the focus of congestion management away from simply maximising the movement of private vehicles, to the movement of persons and goods.

In this context, congestion management priorities could be redefined within the context of broader integrated transport and land-use strategies that seek to maximise accessibility for the community, and the effective and efficient movement of freight.

VicRoads acknowledges this and is investigating measures for assessing improved accessibility as a result of road improvement projects.

Achieving this will require the input and cooperation of key stakeholders. It may also necessitate revisiting and, where necessary, recalibrating existing NOPs and *SmartRoads* priorities so that they better align with defined statewide integrated land-use and transport objectives.

Recommendations

That VicRoads:

8. improves the frequency and targeting of its traffic signal reviews by leveraging available congestion data from SCATS (Sydney Coordinated Adaptive Traffic System)
 9. develops a strategy, including timeframes, for implementing Network Operating Plans and activating *SmartRoads* priorities across the metropolitan road network
 10. develops a strategy, in consultation with local councils, to better leverage the potential of clearways for managing congestion along the arterial road network
 11. systematically reviews the efficiency and effectiveness of its operational management of the road system
 12. develops measures and targets for network efficiency and congestion management initiatives in consultation with stakeholders.
-

Appendix A.

Recent initiatives to manage congestion

Previous statewide policies

The state has implemented a number of land-use and transport initiatives in recent years that are relevant to managing congestion. Figure A1 highlights a chronology of key initiatives focusing on those aspects of most relevance to congestion management.

Figure A1
Initiatives relevant to managing congestion

Initiative	Description
<i>Melbourne 2030: Planning for sustainable growth (2002)</i>	<p>A 30-year plan which aims to manage urban growth and development across metropolitan Melbourne.</p> <p>The policy contains transport 'directions' relevant to managing congestion including:</p> <ul style="list-style-type: none">• upgrade and develop public transport to connect activity centres with faster, more reliable and efficient on-road and rail services• manage the road system to achieve integration, choice and balance by developing an efficient and safe network and by making the most of existing infrastructure• coordinate all transport modes to provide a comprehensive system• plan urban development to make jobs and community services more accessible• give more priority to cycling and walking in planning urban infrastructure and promote the use of sustainable personal transport systems. <p><i>Melbourne 2030</i> currently forms part of the State Planning Policy Framework and is referenced within all planning schemes in Victoria.</p>

Figure A1
Initiatives relevant to managing congestion – *continued*

Initiative	Description
<i>Linking Melbourne: Melbourne Transport Plan (2004)</i>	The Melbourne Transport Plan recommended an investment of approximately \$1.5 billion to service the population growth in Melbourne's outer growth areas with public transport and roads. In addition to other objectives, such as improving safety, the plan intended to reduce congestion in inner Melbourne.
<i>Meeting our Transport Challenges (2006)</i>	This plan sought to build on Melbourne 2030 and the Melbourne Transport Plan through an investment \$10.5 billion over 10 years. While the plan intended to achieve various goals, 'cutting congestion' was listed as a priority.
Congestion Improvement Program (2007)	VicRoads delivered the Congestion Improvement Program over three years, which had an investment of \$30 million. The program aimed to improve traffic flows at strategically important parts of the arterial road network within a 15–20 km radius of the Melbourne central business district.
<i>Investing in Transport – East West Link Needs Assessment (April 2008)</i>	<i>Investing in Transport–East West Link Needs Assessment</i> report by Sir Rod Eddington (Eddington report), was commissioned by the state in 2006 to propose improvements to transport links between the eastern and western suburbs of Melbourne. Recommendations focused on improving rail services for commuters and freight, cycling links and enforcement of priority measures for trams and buses.
<i>Keeping Melbourne Moving (April 2008)</i>	<i>Keeping Melbourne Moving</i> was a four year plan with an investment of \$112.7 million to improve the flow of traffic and public transport on arterial roads within 10 km of Melbourne's central business district. Key aspects of the plan were to: <ul style="list-style-type: none"> • extend and standardise clearway times during peak hours on key public transport routes • extend the targeted tram and bus priority program to improve the flow • expand VicRoads' Rapid Response Service to arterial roads • develop a public education campaign to help ease congestion.
Audit of Melbourne 2030 (May 2008)	An independent audit of Melbourne 2030 identified improving integration of land use and planning and managing the road network to reduce congestion as key challenges and recommended: <ul style="list-style-type: none"> • developing major transport infrastructure in synchronisation with land-use planning, with a 30 to 90 year lead time • setting targets and implementing programs for reducing car use as a complement to the target of 20 per cent of motorised trips being made by public transport by 2020 • prioritising actions to support a rapid modal shift over the next five years from car to public transport and walking and cycling. <p>These actions have not been implemented and the status of the state's prior mode shift target currently remains uncertain.</p>

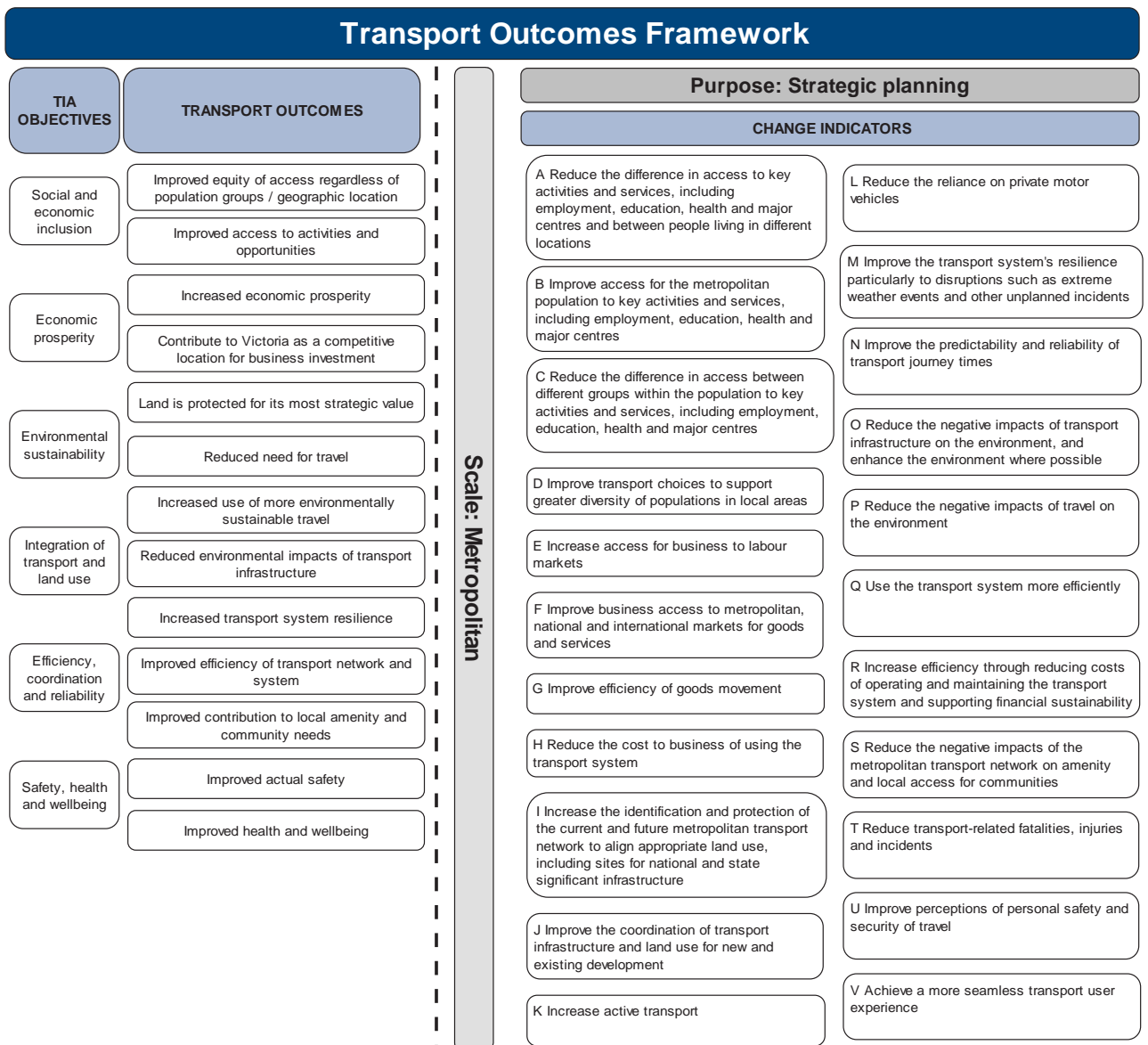
Figure A1
Initiatives relevant to managing congestion – *continued*

Initiative	Description
<i>Planning for all of Melbourne</i> (May 2008)	<p><i>Planning for all of Melbourne</i> was the state's response to the Audit of Melbourne 2030. It identified four priority areas for action and the congestion management activities were to:</p> <ul style="list-style-type: none"> • identify and implement priority projects under the government's <i>Meeting our Transport Challenges</i> plan to respond to demand • develop an integrated, long-term vision for Melbourne's transport system beyond 2035 • implement the \$112.7 million congestion plan, <i>Keeping Melbourne Moving</i>, to deliver traffic management and roadwork initiatives • develop improvements to alleviate congestion, and deliver new walking and cycling infrastructure to provide more choice • invest \$4 million to plan and protect future major transport routes, and ensure existing public transport services provide greater access to employment opportunities.
<i>Melbourne 2030: a planning update - Melbourne @ 5 million</i> (December 2008)	<p><i>Melbourne @ 5 Million</i> is an update on Melbourne 2030 in response to increased population forecasts and demand for housing. The update extended the Urban Growth Boundary and reinforced Melbourne 2030's aim of achieving a polycentric by reclassifying the centres of Box Hill, Broadmeadows, Dandenong, Footscray, Frankston and Ringwood as Central Activity Districts to provide similar services and functions as central Melbourne.</p>
<i>Victorian Transport Plan</i> (2009)	<p>The <i>Victorian Transport Plan</i> (VTP) was announced in December 2009, following the Eddington report. The VTP had six main goals which were:</p> <ul style="list-style-type: none"> • integrating current services with new and existing land developments • linking regional and metropolitan Victoria through rail and road • creating a Metro system as well as improving punctuality and capacity • better integration of rail, bus and road services and significant improvements and expansion of the freeway and road network • investing in alternative modes of transport to work and supporting the efficient movement of goods across Victoria.
Metropolitan Planning Strategy (expected completion–2013)	<p>The Department of Planning and Community Development is leading the development of a new metropolitan planning strategy for Melbourne in consultation with a Ministerial Advisory Committee (MAC) and other stakeholders.</p> <p>MAC has developed a set of strategic principles to guide development of the Metropolitan Planning Strategy and released a discussion paper, which recognises the need to reduce traffic congestion, decrease dependency on car travel, and address land use causes of congestion.</p> <p>The strategy is scheduled for completion in 2013.</p>

Source: Victorian Auditor-General's Office.

Appendix B.

Transport Outcomes Framework



Source: Department of Transport.

Appendix C.

Audit Act 1994 section 16— submissions and comments

Introduction

In accordance with section 16(3) of the Audit Act 1994 a copy of this report was provided to the Department of Transport, VicRoads, Public Transport Victoria and the Department of Planning and Community Development with a request for submissions or comments.

The submissions and comments provided are not subject to audit nor the evidentiary standards required to reach an audit conclusion. Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

Responses were received as follows:

Department of Transport.....	58
Public Transport Victoria	59
VicRoads.....	60
Department of Planning and Community Development.....	61

RESPONSE provided by the Secretary, Department of Transport



Department of Transport

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TRIM Ref: DOC/13/68003

Dr Peter Frost
Acting Auditor-General
Victorian Auditor-General's Office
Level, 24, 35 Collins Street
Melbourne Vic 3000

Dear Dr Frost,

Proposed Audit Report—Managing Traffic Congestion

Thank you for your letter of 21 March 2013 enclosing the proposed report on the audit of *Managing Traffic Congestion*.

I note your acknowledgement that whilst the audit was focused on traffic congestion, it was done so having regard to the range of competing transport system objectives set out within the *Transport Integration Act 2010*.

I accept recommendations 2, 5 and 6 and note that recommendations 1, 3 and 7 are accepted in principle but are ultimately matters for Government.

Yours Sincerely,


Jim Betts
Secretary

8 / 4 / 2013



RESPONSE provided by the Chief Executive, VicRoads



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Please Quote: VRPC005108
(File No: PC017389)

Dr Peter Frost
Acting Auditor-General
Victorian Auditor-General's Office
Level 24
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MELBOURNE VIC 3000

Dear Dr Frost

AUDIT ACT 1994 S16(3) - PROPOSED AUDIT REPORT MANAGING TRAFFIC CONGESTION

Thank you for your letter dated 21 March 2013, providing the proposed report on Managing Traffic Congestion.

I appreciate the opportunity to comment on the proposed report, but have no further comments to make.

Yours sincerely

GARY LIDDLE
CHIEF EXECUTIVE

8/4/2013



VicRoads ABN 61 760 960 490

PSL7

RESPONSE provided by the Chair and Chief Executive, Public Transport Victoria



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DOC/13/66598

Dr Peter Frost
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Victorian Auditor-General's Office
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Dear Dr Frost

PROPOSED AUDIT REPORT – MANAGING TRAFFIC CONGESTION

Thank you for your letter dated 21 March 2013 enclosing the proposed audit report on *Managing Traffic Congestion*.

The recommendation directed to PTV is that PTV develops explicit mode shift strategies and targets that are demonstrably aligned with defined statewide congestion management priorities.

PTV is happy to work with the Department of Transport and VicRoads in helping to develop defined statewide congestion management priorities.

Mode share and mode shift outcomes are the product of a range of factors, many of which are beyond PTV's control. PTV considers that any mode shift strategies must be underpinned by a whole of transport network approach and must have regard to broader social, economic and environmental considerations. As such PTV considers that the development of mode shift strategies is best addressed through a coordinated portfolio approach led by the Department of Transport.

For the same reasons, PTV is of the view that it would not be appropriate for PTV to set mode shift targets. Rather, PTV considers this is a matter best addressed by the Department of Transport in the context of the broader transport portfolio. PTV also notes that any targets would likely require the endorsement of government.

Thank you for giving PTV the opportunity to respond to your proposed report.

Yours sincerely

A handwritten signature in black ink, appearing to read "Ian Dobbs".

IAN DOBBS
Chair and Chief Executive

8 / 4 / 2013

RESPONSE provided by the Acting Secretary, Department of Planning and Community Development



**Department of Planning
and Community Development**

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Dear Dr Frost

PROPOSED AUDIT REPORT - MANAGING TRAFFIC CONGESTION

Thank you for your letter of 21 March 2013, to Mr Andrew Tongue, the former Secretary of the Department of Planning and Community Development (DPCD), which provided a copy of your proposed report on *Managing traffic congestion*.

I note that you have satisfactorily responded to comments provided by Mr Halvard Dalheim, Director, State Planning Strategy and Forecasting, on your provisional report, and consequently, DPCD will not be providing a submission or further comments for inclusion in the report.

I look forward to the conclusion of your project into managing traffic congestion.

Yours sincerely

Lachlan Bruce
ACTING SECRETARY
8 April 2013



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Fare Evasion on Public Transport (2012–13:3)	August 2012
Programs for Students with Special Learning Needs (2012–13:4)	August 2012
Energy Efficiency in the Health Sector (2012–13:5)	September 2012
Consumer Participation in the Health System (2012–13:6)	October 2012
Managing Major Projects (2012–13:7)	October 2012
Collections Management in Cultural Agencies (2012–13:8)	October 2012
Effectiveness of Compliance Activities: Departments of Primary Industries and Sustainability and Environment (2012–13:9)	October 2012
Auditor-General's Report on the Annual Financial Report of the State of Victoria, 2011–12 (2012–13:10)	November 2012
Public Hospitals: Results of the 2011–12 Audits (2012–13:11)	November 2012
Water Entities: Results of the 2011–12 Audits (2012–13:12)	November 2012
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Management of Unplanned Leave in Emergency Services (2012–13:23)	March 2013
Management of Freshwater Fisheries (2012–13:24)	March 2013

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